GUIDELINES FOR

THE TREATMENT OF ALCOHOL PROBLEMS

REVIEW OF EVIDENCE

Guidelines for the Treatment of Alcohol Problems:

A Review of the Evidence

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CHAPTER 1

AN INTRODUCTION TO THE REVIEW OF THE EVIDENCE

Chapter 1. An Introduction to the review of the evidence

The Guidelines for the Treatment of Alcohol Problems have been periodically developed over the past 25 years. In 1993, the first version of these guidelines, titled: *'An outline for the management of alcohol problems: Quality assurance in the treatment of drug dependence project'* was published (Mattick & Jarvis 1993). The Australian Government commissioned an update a decade later (Shand et al. 2003) and a further edition in 2009 to integrate the Guidelines with the *Australian Guidelines to Reduce Health Risks from Drinking Alcohol* (NHMRC 2009; Haber et al., 2009). The present version of the Guidelines was also commissioned by the Commonwealth of Australia to remain current and well integrated with the updated NHMRC consumption guidelines (2020). In order to ensure that guidelines remain relevant, the next set of guidelines should be updated in 2025, consistent with NHMRC recommendation that guidelines be updated every five years.

Purpose and Structure of the Review of the Evidence

This review of evidence covers the major treatments currently available for treating alcohol-related problems. The aim of the review is to provide a comprehensive overview of the research which informs the recommendations made by the Guidelines for the Treatment of Alcohol Problems. Unlike the previous editions of the guidelines, we have split the chapters up into 3 separate sections. Section 1 overviews the context of alcohol use in Australia including prevalence, screening, assessment, treatment planning and new chapters on models of care and stigma associated with alcohol use treatment. Section 2 overviews interventions and treatments for alcohol use, including brief in-person interventions, withdrawal management, psychosocial interventions, pharmacotherapies, support groups and programs, and a new chapter on e-health interventions. Section 3 overviews treatment for specific populations, including adolescents and young people, pregnant and breastfeeding women, Indigenous Australians, people from other cultures, older people, cognitively impaired patients, comorbidities (poly drug, mental health, physical), and two new chapters on LGBTQI and gender-specific issues. One of the challenges of preparing a review such as this is the selection of treatment categories. Since it is not always possible to divide treatments into discrete categories, readers may find that there is some overlap between treatment categories, for example, Motivational Interviewing (MI) is a key component in Brief Interventions (Chapter 6) and Psychosocial interventions (Chapter 8) and features in both chapters.

There are a number of additional changes that have been made to the guidelines in order to adhere to the most recent standards for guidelines (NHMRC, 2019). That is, the previous guidelines (Haber et al., 2009) did not meet some of the recent Guideline standards (1.3 be informed by public consultation, 2.3/4.1 declare conflicts of interest, 4.2 establish a process for how conflicts were managed, 5.1 be developed around clinical questions, 6.3 be peer reviewed, 8.2 propose a date for evidence to be updated). Thus, we aimed to meet these standards in the present Guidelines (see Appendix of the Evidence Review).

The focus of the review is on evidence that has emerged since the previous literature review, The Treatment of Alcohol Problems: A Review of the Evidence (Haber et al. 2009). Developments since that time include a significant volume of research into e-health interventions, pharmacotherapies, and specific populations (especially Indigenous Australian and LGBTQI). To highlight these changes, we also accompany the review of the evidence and the main guideline document with a document which outlines the changes made to the recommendations and the evidence which supports the changes. As per the previous guidelines, we have not revisited treatments that were considered previously to have little potential. These included aversive therapy, relaxation training, systematic desensitisation, interpretive therapy and hypnosis. Nor does the review give extensive coverage to interventions for which there is no new evidence.

The procedure used to identify research has involved searching relevant databases for published clinical trials, hand searching references from journal articles, searching the web for published guidelines, and contact with major research centres for unpublished research and other relevant guidelines. Databases searched include PROSPERO, the Cochrane Database of Systematic Reviews, the Trip Database and the Joanna Briggs Institute Database of Systematic Reviews, Implementation Reports, Evidence Based Medicine Reviews, as well as Medline, ISI Web of Knowledge, and PsycInfo. Articles were ranked on their order of strength of evidence according to the table 1 below.

Stakeholder and consumer engagement

We conducted a needs analysis with a range of health professionals about the most appropriate content and format for the guidelines and the best way to disseminate the guidelines. We used two methods to collect information from stakeholders. The first was to use an in-person presentation and structured feedback session with a group of members of a specialist drug and alcohol committee (with a follow up survey), the second was to use an online survey distributed to various health professionals through PHNs, professional societies, Facebook groups. The results from these sessions are described in detail in the Appendix pf the Evidence Review, but the main points arising from these sessions were:

- An easy to access webpage is the most preferred method for hosting Guidelines.
- The main barriers were time-poor work schedules and a lack of resources.
- The key facilitators to overcome identified barriers included providing succinct recommendations and strategies to implement into practice, developing a dedicated Guidelines website, provide hard-copy versions for distribution, and offering training courses with continuing professional development (CPD).
- Recommendations for dissemination included online dissemination and hosting the guidelines on health professional association websites.
- When asked what attitudes were to updated guidelines, most members were positive and suggested they would be very likely to implement the recommendations.

For consumer engagement, we conducted brief interviews with 4 consumers.

Levels of evidence and strength of recommendations

In contrast to the previous guidelines, each chapter is guided by a specific set of clinical questions it aims to answer using the most up to date research. The preferred level of evidence for answering these research questions is a recent and well-conducted meta-analysis of randomised controlled trials. Each chapter of this review presents first the evidence from meta-analytic reviews and findings from individual randomised controlled trials (published after the guidelines), followed by block-randomised and non-randomised controlled trials, and, if relevant, quasi-experimental studies, case-control studies and descriptive studies.

Overall, the quality of evidence available was high: meta-analyses have been completed for most of the major treatment modalities. However, quality evidence was scant for the effectiveness of treatment of specific sub-groups: Aboriginal and Torres Strait Islanders, LGBTQI, stigma, and models of care. For these areas, we have reviewed clinical trials where available, or otherwise relied on expert opinion.

A randomised controlled trial refers to a study that has at least one treatment group and a control group, usually placebo or no treatment. The study uses outcome measures before and after treatment, and randomly assigns participants to the groups. Some trials, normally those testing medications, also use a double blind where neither the participants nor the researcher know who is receiving which treatment, or a single blind design where neither the participants nor the researcher know who is receiving which treatment. Controlled trials allow the researcher to conclude with a degree of certainty whether or not the treatment being tested is more effective than no treatment. Sample size is important, with larger samples giving greater statistical power to interpret differences in outcomes between groups. In field research with patients, this ideal design is not always possible because of ethical concerns. However, it is still possible to draw conclusions from some of these quasi- experimental studies.

Meta-analysis is a statistical technique which combines a number of single trials to increase the overall power and certainty of outcomes, provided the correct statistical analysis is used to control for confounding variables. The conclusions drawn, though, might be more tentative, especially if the samples are heterogeneous.

The strength of recommendation reflects the available evidence and the clinical importance of research. In some circumstances, clinical recommendations are not based upon systematic evidence, but represent a consensus (practical or ethical) approach, indicated as GPP (Good practice point) (See Table 1.1).

Recommendations are included in the Review of Evidence to enable cross-reference with the Guidelines for the Treatment of Alcohol Problems (Haber et al. 2009).

Table 1: Definition of NHMRC (2009) grades of evidence.

Grade of recommendation	Description
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
D	Body of evidence is weak and recommendation must be applied with caution
GPP	Good practice point, but there is insufficient direct evidence for a higher grade

NHMRC Recommended drinking limits

NHMRC Guidelines to Reduce Health Risks from Drinking Alcohol (2020)

The most recent version of the NHMRC Guidelines to Reduce Health Risks from Drinking Alcohol (NHMRC 2020) has taken a population health approach. Their aim was to make the information simpler and easier to remember. In general, the Guidelines state that the risk of harm from drinking alcohol increases with the amount consumed. A 'standard drink' refers to the Australian measure, which contains 10g of ethanol.

Guideline 1 advises on reducing the risk of alcohol-related harm; Guideline 2 is for young people, and Guideline 3 is for women who are pregnant or breastfeeding.

1. ***Healthy men and women:***
   To reduce the risk of harm from alcohol-related disease or injury for healthy men and women, drink no more than 10 standard drinks per week and no more than 4 standard drinks on any one day.
   The less you choose to drink, the lower your risk of alcohol-related harm. For some people not drinking at all is the safest option.

2. ***Children and young people:***
   To reduce the risk of injury and other harms to health, children and young people under 18 years of age should not drink alcohol.

3. ***Pregnancy and breastfeeding:***
   To reduce the risk of harm to their unborn child, women who are pregnant or planning a pregnancy should not drink alcohol.
   For women who are breastfeeding, not drinking alcohol is safest for their baby.

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CHAPTER 2

PREVALENCE OF ALCOHOL CONSUMPTION AND RELATED HARMS IN AUSTRALIA: A REVIEW OF THE EVIDENCE

Chapter 2. Prevalence of Alcohol Consumption and Related Harms in Australia: A Review of the Evidence

Alcohol offers a mixed legacy to our society, having long been used in a broad range of social, cultural, and religious contexts; some societies routinely permit alcohol use while others frown upon or ban consumption. Although most of the world's population abstains from using alcohol, those who do consume alcohol drink on average 15.1 litres of pure alcohol annually (World Health Organization. Management of Substance Abuse Unit, 2018). Reasons for consuming alcohol are often attributed to providing a mechanism for relaxation, enjoyment, or as part of a celebration, although is also consumed in response to boredom, sorrow, sadness, or trauma. Frequent consumption can often lead to a habit or compulsive misuse of alcohol, with a dose-dependent relationship existing between alcohol use and related harms. Such harms include chronic and acute harms to the self, harms to others, along with boarder socio-economic consequences from alcohol consumption.

Within Australia, the current legal drinking age is 18 years; which was gradually harmonised across the States and Territories throughout the 20th century. This has led to a rise in alcohol consumption among young people and an accompanying rise to harms in this group. Further, as a culturally diverse nation, Australia is represented by over 190 countries and 300 ethnic ancestries including the broad cultural diversity of Aboriginal and Torres Strait Islander peoples (Australian Bureau of Statistics, 2016). As such, there is inherently broad variation of alcohol use and misuse and associated harms both across and within groups that represent Australia. In this chapter, we consider the context for the guidelines and provide evidence about the extent of problems related to alcohol use and misuse in Australia. To do so, we overview the prevalence of alcohol use in Australia and how it has changed over time, overview the prevalence of alcohol-related harms and the impact that drinking has on the drinker and others, and consider how alcohol use and harms differ by sub-populations (e.g., gender, age, ethnicity, socio-economic status, and sexuality).

Prevalence and patterns of alcohol use

Per capita alcohol consumption

Per capita alcohol consumption (i.e., the quantity consumed divided by the population aged over 15 years) in Australia reached the lowest point in 50 years (9.4 litres per capita of pure alcohol consumed annually). Despite the gradual decline over the past few decades (see Figure 1), Australia is still above the OECD average (8.9 litres) and ranks 16th in OECD countries for per-capita consumption of alcohol (above both New Zealand [19th] and the UK [16th]).[1] In the past 50 years, there has also been a change in the type of alcoholic drinks Australians consume (Australian Institute of Health and Welfare, 2018b). Although beer remains the most popular beverage, the proportion of beer consumed has dropped from 75% of overall alcohol consumed to 39%. In contrast, wine has increased from 12% to 38% (see Figure 1).

[1] Note that these results are for 2017 or the nearest available year. See https://www.aihw.gov.au/reports/phe/237/international-health-data-comparisons-2018/contents/health-risk-factors

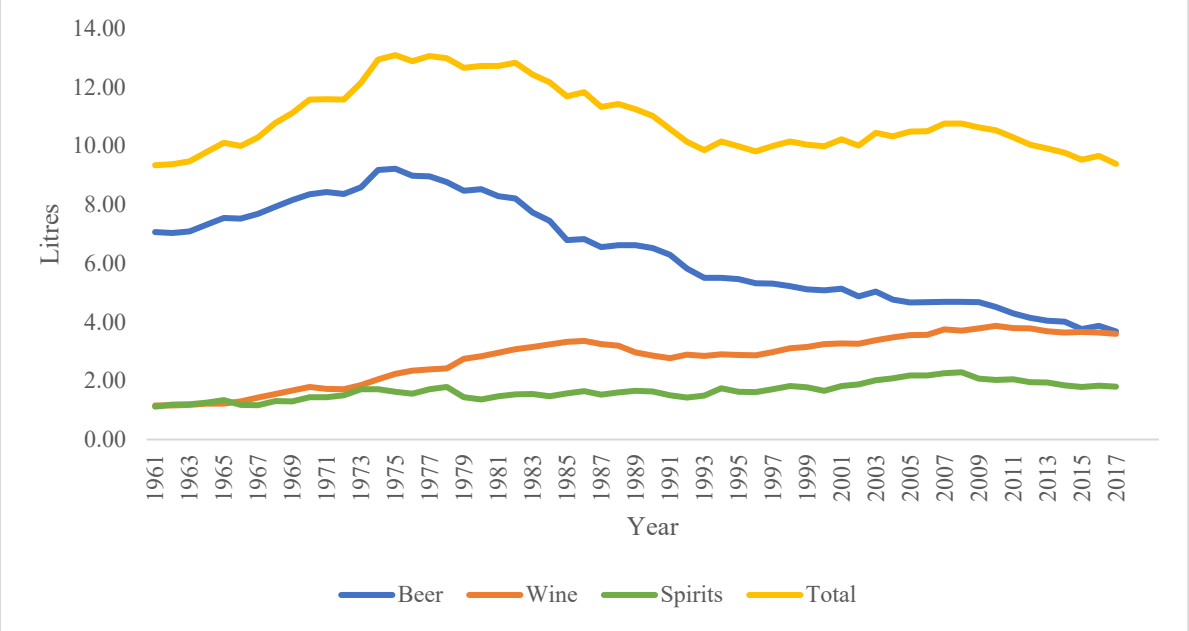


Figure 1. Per capita alcohol consumption by those over 15+ for each beverage type from 1961-2017. Figure reproduced from data from Supplement 2.3 (Australian Institute of Health and Welfare, 2018a).

Patterns of consumption from the National Drug Strategy Household Survey

The most comprehensive estimate of patterns and prevalence of drinking in Australia is from the National Drug Strategy Household Survey (NDSHS). The NDSHS began in 1985 and is conducted every three years, with the most recent data available from the 2016 survey (Australian Institute of Health and Welfare, 2018a). Although the NDSHS is an excellent resource, one of the drawbacks of population surveys is the omission of people who are living outside households (e.g., the homeless, those in institutions) and those who refuse to participate. However, this is considered by weighting and is somewhat counterbalanced by the large sample sizes taken (24,000 respondents in the case of the 2016 survey).

Results from the 2016 NDSHS suggest that alcohol use in Australia is still common and 77% of people aged 14 and over reported drinking alcohol in the past 12 months (Australian Institute of Health and Welfare, 2018a). However, like per-capita alcohol use, there is an overall downward trend in drinking and the proportion of those reporting past year consumption has steadily increased since 2001 (18% vs. 23%). Furthermore, compared to the 2013 survey, there were significant declines in the number of daily drinkers (6.5% to 5.9%), the number of weekly drinkers (37.3% to 35.8%), and a significant increase in the number of less than weekly drinkers (34.5% to 35.8%; see Figure 2). Men appeared to account for most of this change and there was a significant difference between daily drinking (8.5% to 7.6%) and weekly drinking (43.2% to 40.7%) between 2013 to 2016. In contrast, for women, there was a trend down but no significant difference between daily drinking (4.6% to 4.2%) and weekly drinking (31.5% to 31.0%) between 2013 to 2016.

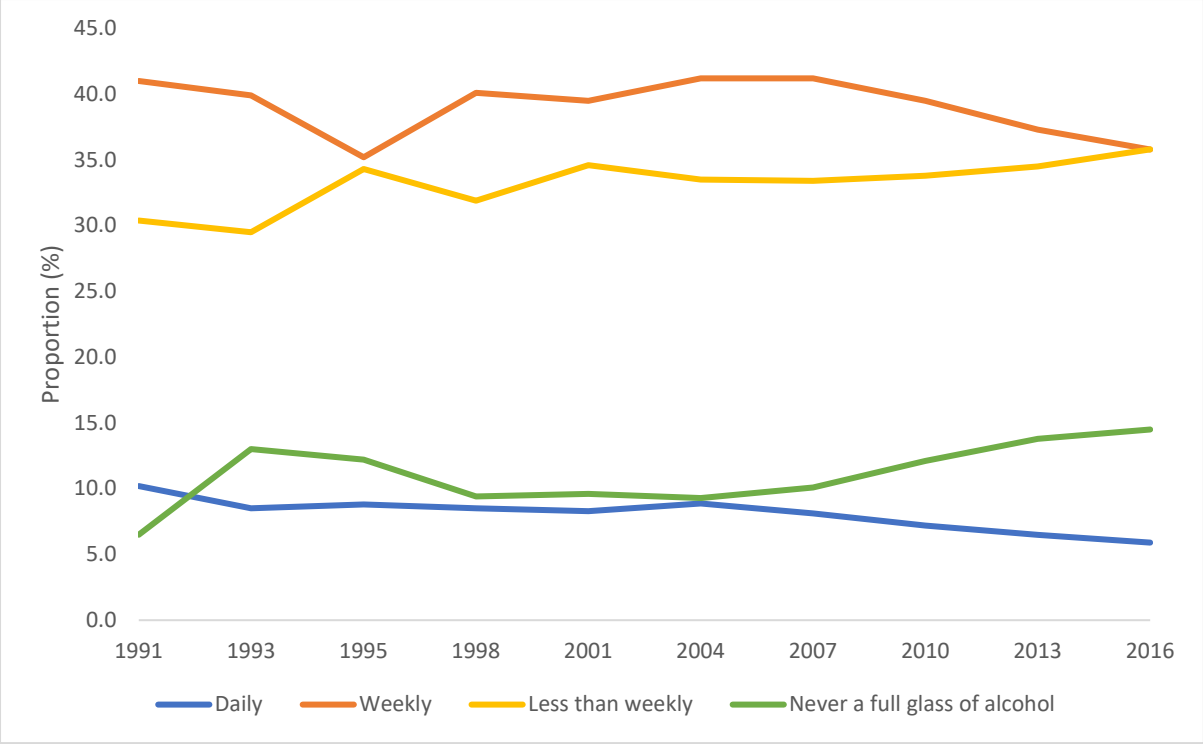


Figure 2. Proportion of daily drinkers, weekly drinkers, less than weekly drinkers and non-drinkers (i.e., never a full glass in the past year) from 1991-2016. Figure reproduced from data from Supplement 2.27 (Australian Institute of Health and Welfare, 2018a).

The NDSHS also reports a downward trend in risky drinking, which is defined by guideline 1 and 2 of the National Health and Medical Research Council (NHMRC) *Australian Guidelines to Reduce Health Risks from Drinking Alcohol 2009* (see Table 1) (Australian Government National Health Medical Research Council, 2009). At the time of writing this evidence review, we note that the NHMRC is currently revising these Guidelines, which are expected to be released in 2020, and will be updated in the final version of the *Guidelines for the Treatment of Alcohol Problems.*

Table 1. 2009 risky drinking guidelines.

1. ***Healthy men and women:***
   To reduce the risk of harm from alcohol-related disease or injury for healthy men and women, drink no more than 10 standard drinks per week and no more than 4 standard drinks on any one day.
   The less you choose to drink, the lower your risk of alcohol-related harm. For some people not drinking at all is the safest option.

2. ***Children and young people:***
   To reduce the risk of injury and other harms to health, children and young people under 18 years of age should not drink alcohol.

3. ***Pregnancy and breastfeeding:***
   To reduce the risk of harm to their unborn child, women who are pregnant or

planning a pregnancy should not drink alcohol.
For women who are breastfeeding, not drinking alcohol is safest for their baby.

Source: NHMRC 2020, Australian Guidelines to reduce health risks from drinking alcohol, National Health & Medical Research Council.

Indeed, compared to 2013, there was a significant decline in the proportion of people who exceeded the lifetime guideline (no more than two drinks on any day: 18.2% to 17.1%). However, compared to 2013, there was no overall change in the proportion of people who exceeded the single occasion guideline (no more than four in a single session; 26%). Despite the overall proportion of single occasion alcohol use remaining stable, the proportion of adolescents (12-17) and emerging adults (18-24) who exceeded the single occasion drinking guidelines significantly dropped from 2013 to 2016 (12-17 = 8.7% to 5.4%; 18-24 = 47% to 42%).

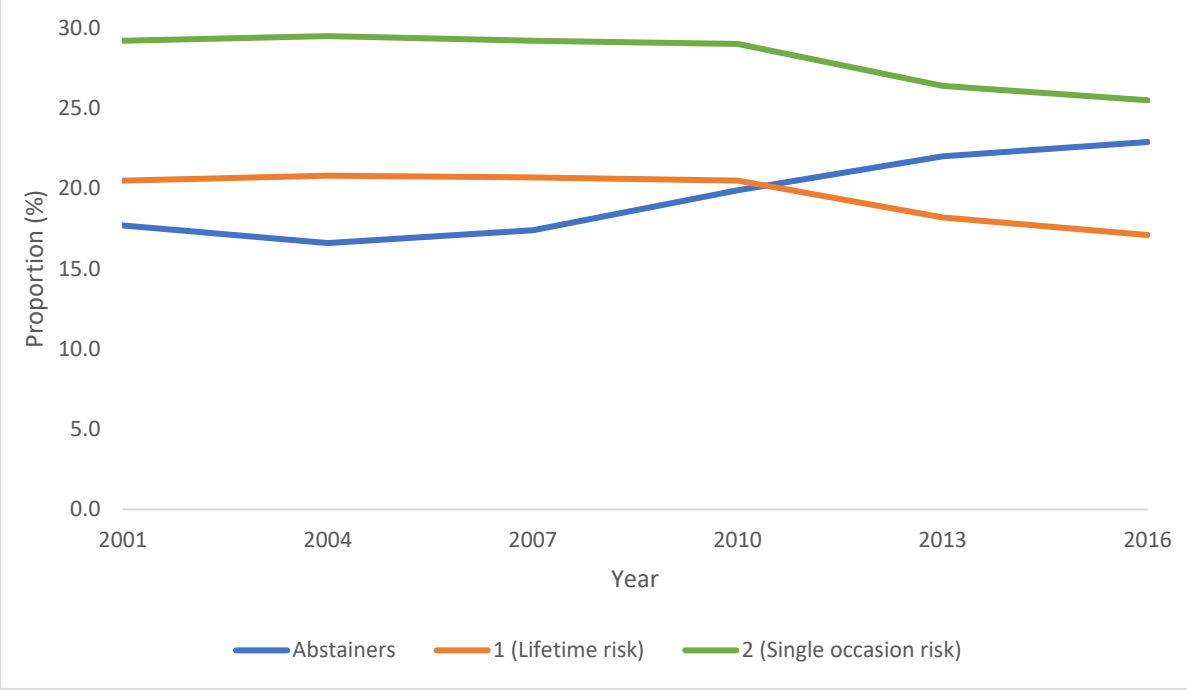


Figure 3. Proportion of abstainers, those who exceeded Guideline 1, and Guidelines 2 from 2001-2016. Figure reproduced from data from Supplement 4.7 (Australian Institute of Health and Welfare, 2018a).

Finally, there was also a decline in those who have had an extreme drinking session in the past year or month (i.e., 11 or more drinks in a single session; a single drinking session far above the NHMRC guideline for single session alcohol use). In Australia, 15.4% of those 12 years or older had an extreme drinking session in the past year and 6.9% in the past month. As seen in Figure 4, the proportion of those who had an extreme drinking session also declined since 2010 (although not significantly) and this downward trend appears to be largely driven by young drinkers (those aged 12-29). Although the 18-24 year old group are still more likely than other groups to report an extreme drinking session (15.3% in 2016), there has been a large drop in the proportion of those who reported an extreme drinking session in the past year (2016 =

15.3% vs. 2013 = 23.6%) and in the past month (2016 = 28.9% vs. 2013 = 37.6%). In contrast, there was a significant increase in the proportion of yearly extreme drinking sessions for those aged 50-59 years (2013 = 9.1% vs. 2016 = 11.9%) and 60-69 years (2013 = 4.7% vs. 2016 = 6.1%; See figure 5).

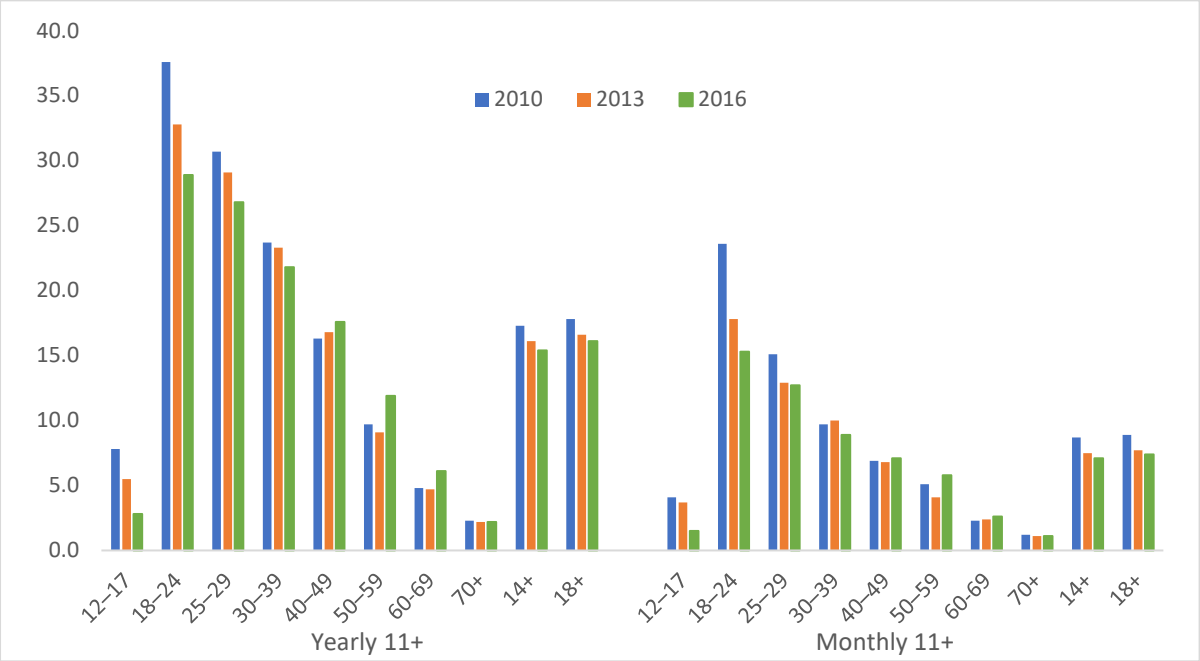


Figure 4. Proportion of monthly and yearly extreme drinking sessions from 2010-2013 for different age groups. Figure reproduced from data from Supplement 4.13 (Australian Institute of Health and Welfare, 2018a).

Patterns of consumption by specific populations in Australia

Invariably, there are differences in the consumption patterns of alcohol among specific populations. Here we explore the patterns of consumption pertaining to the following specific groups: gender, age, Aboriginal and Torres Strait Islander peoples, sexuality and gender diverse peoples, culturally and linguistically diverse peoples, geographical location, and socio-economic status.

Gender-related patterns of consumption

Research consistently finds that there are clear gender differences in patterns of alcohol consumption (Griswold et al., 2018), when comparing binary genders. In Australia, when compared to women, men begin drinking at a slightly younger age (16.8 years vs. 17.8 years), report more daily drinking (7.6% vs. 4.2%), report more weekly alcohol use (40.7% vs. 31.0%), and are more likely to have tried alcohol at some point in their lifetime (87.1% vs. 83.9%). Furthermore, when looking at risky drinking, men are more likely than women to exceed the lifetime guideline (no more than two drinks on any day; 24.5% vs. 9.8%) and are more likely to exceed the single occasion guideline (no more than four in a single session; 45% vs. 27%).

Although men stand out, they also appear to be reducing their drinking at a greater rate than women. As outlined above, there were significant difference between men's daily drinking (8.5% to 7.6%) and weekly drinking (43.2% to 40.7%) between 2013 to 2016 but for women there was a trend but no significant difference between daily drinking (4.6% to 4.2%) and weekly drinking (31.5% to 31.0%). Additionally, there was also a significant drop in the proportion of men who reported drinking at a risky level (26% to 24%) between 2013 to 2016, but for women the proportion remained stable (9.5% to 9.7%). Although it has been suggested that women are drinking more to match men, men are still out-drinking women but may be declining faster.

Furthermore, when looking at gender convergence from the 2001-2013 NDSHS, Livingston et al. (2018) found that there were large differences between men and women's alcohol consumption. Although overall there was some evidence for convergence (with men drinking less), the only evidence to suggest that there was convergence for those aged 50-69 (Livingston, Callinan, Dietze, Stanesby, & Kuntsche, 2018).

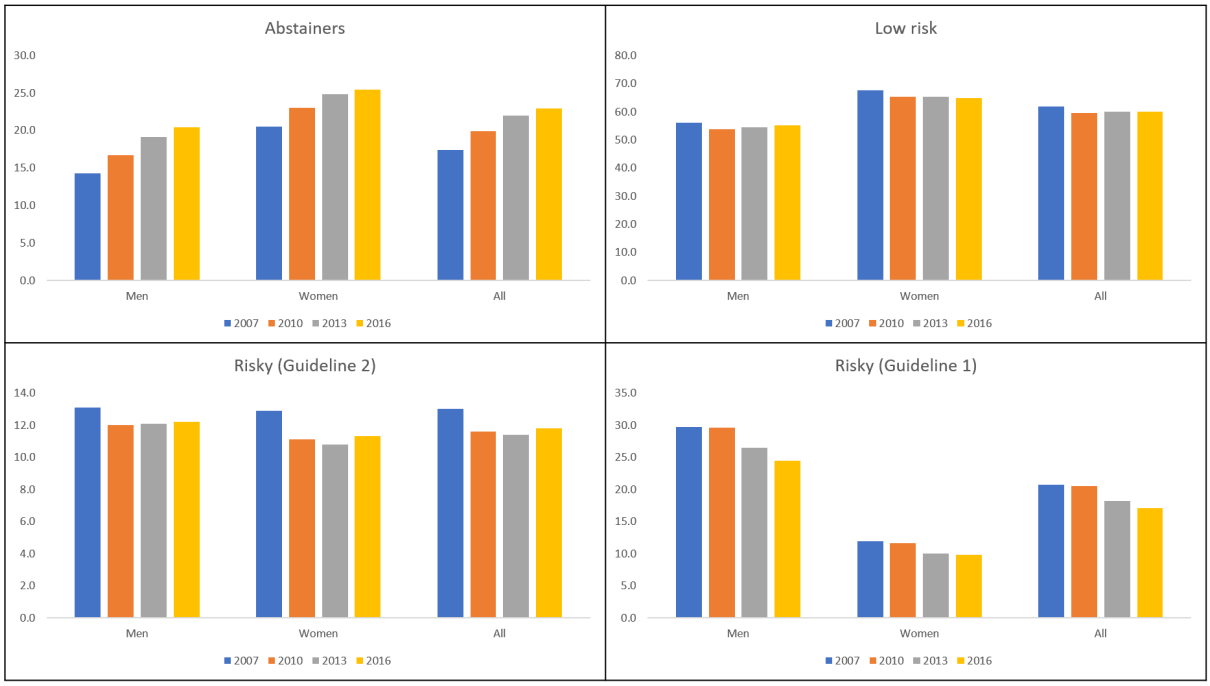


Figure 5. Proportion of abstainers, low risk drinkers, risky lifetime drinkers, and risky single session drinkers from 2007-2016. Figure reproduced from data from Supplement 4.3 and 4.8 (Australian Institute of Health and Welfare, 2018a).

Age-related patterns of consumption

Research consistently finds that there are clear age differences in patterns of alcohol consumption. In Australia, older adults are more likely to report daily drinking and the 70+ group stand out with 13.6% reporting daily drinking (see Figure 6), however, younger adults (18-24) are more likely to exceed the guidelines for single session alcohol consumption (56%; see Figure 7) and are more likely to report extreme drinking sessions (see Figure 4 above). However, there is little difference in age groups over 18 years old on lifetime risk (see figure 8).

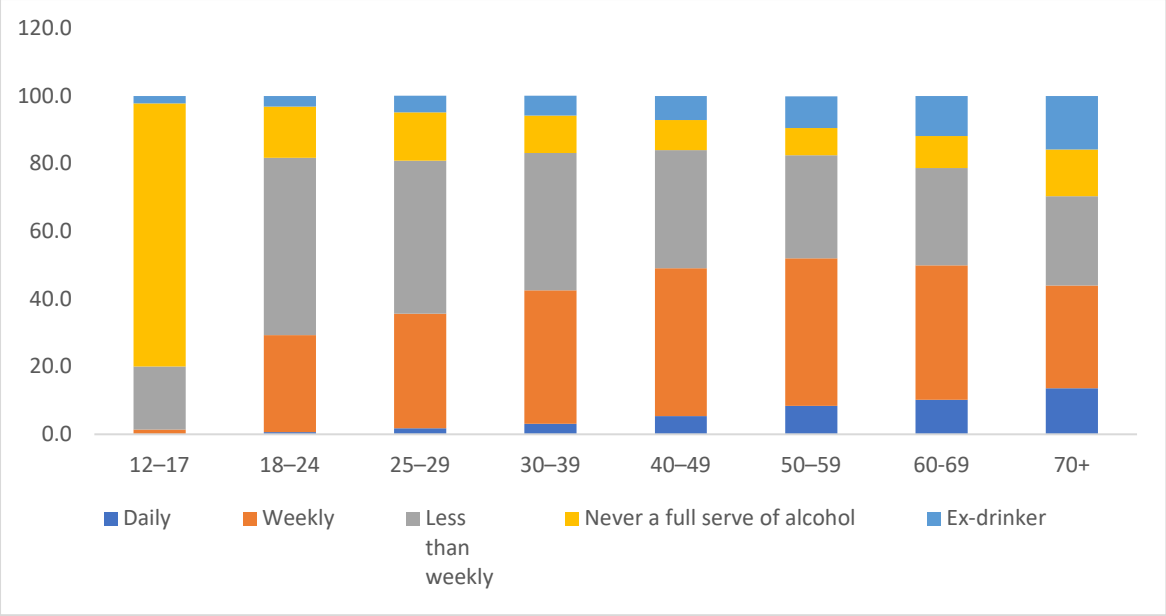


Figure 6. Proportion of daily, weekly, and less than weekly, and never a full serve of alcohol drinkers from 2016 survey by age groups. Figure reproduced from data from Supplement 4.8 (Australian Institute of Health and Welfare, 2018a).

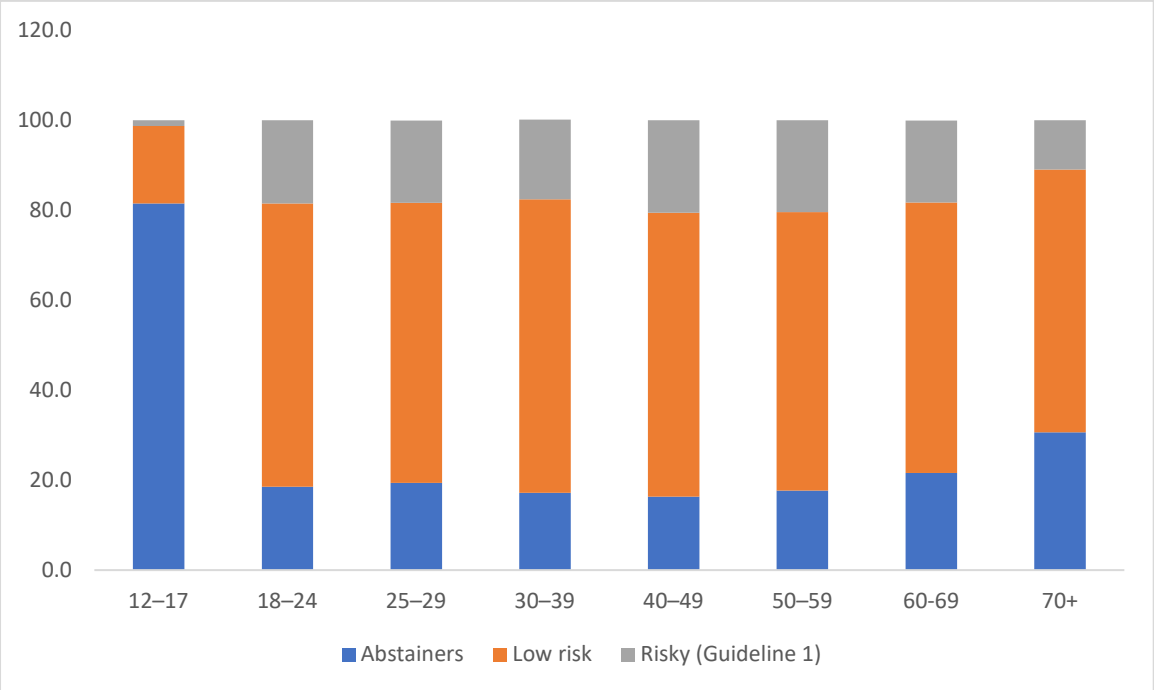


Figure 7. Proportion of abstainers, low risk drinkers, risky lifetime drinkers, and risky single session drinkers from 2016 survey by age groups. Figure reproduced from data from Supplement 4.8 (Australian Institute of Health and Welfare, 2018a).

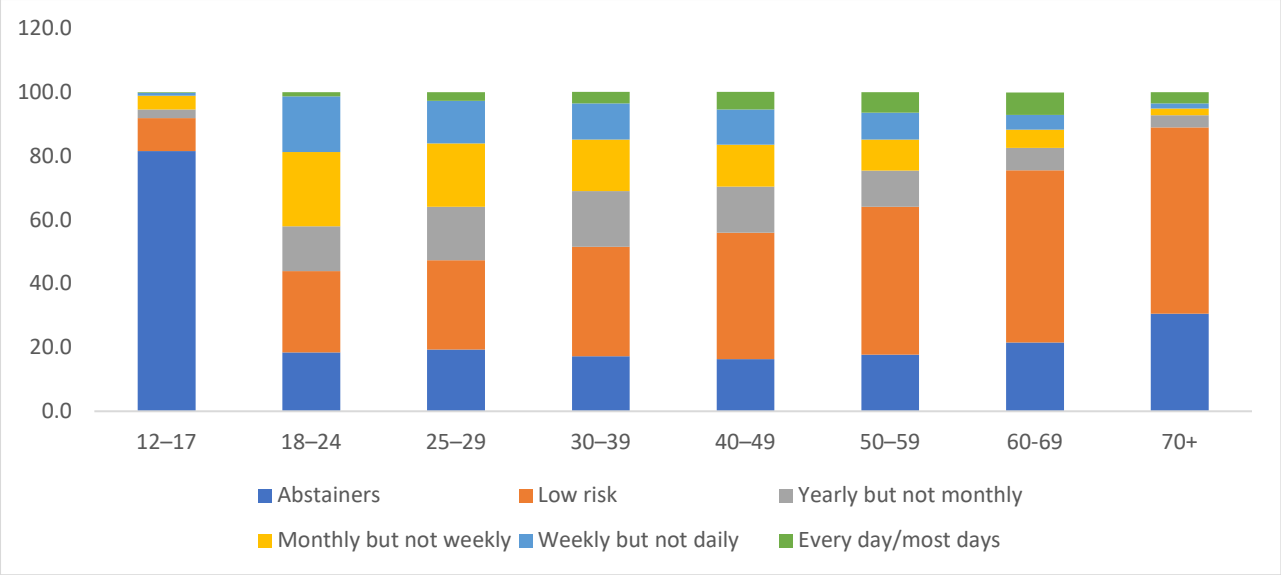


Figure 8. Proportion of those 12 and older drinking at different levels of risk for single session alcohol use from 2016 survey by age groups. Figure reproduced from data from Supplement 4.8 (Australian Institute of Health and Welfare, 2018a).

Similar to other countries, younger adults in Australia have seen a significant reduction in proportion of drinkers and risky drinkers in the past decade (while older adults have remained relatively consistent). For example, from 2013 to 2016, a greater proportion of those aged 12-17 years old reported abstaining from alcohol use (72% to 82%) and the age for trying alcohol for the first time increased among those aged 14-24 years old (15.7 years to 16.1 years). Similarly, there has been a significant decline in the proportion of those aged 18-29-years who report risky lifetime drinking from 2001. As seen in Figure 9, in 2001 18-29-year olds were the group most likely to exceed lifetime recommendations. However, for risky lifetime drinking, from 2001 to 2016, those aged 18-24 years old declined from 30.7% to 18.5% and 25-29 year olds declined from 23.4% to 18.3%. A similar, trend can be seen in the decline of those aged 14-29 years old on risky single session alcohol consumption (see figure 9). That is, the proportion of adolescents (12-17) and emerging adults (18-24) who exceeded the single occasion drinking guidelines significantly dropped from 2013 to 2016 (12-17 = 8.7% to 5.4%; 18-24 = 47% to 42%). Furthermore, there was a large decline in the proportion of adolescent and young adults (12-29) who consumed 11+ drinks in a session (see Figure 3 above).

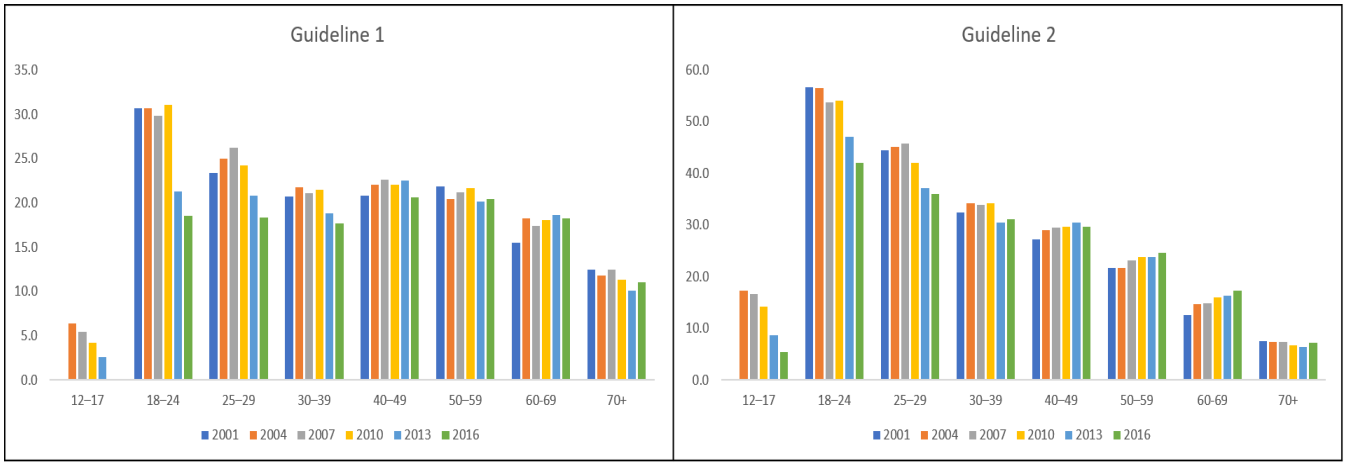


Figure 9. Proportion of those 12 and older drinking at different levels of risk for lifetime and single session alcohol use from 2001-2016 survey by age groups. Figure reproduced from data from Supplement 4.5 (Australian Institute of Health and Welfare, 2018a).

Alcohol consumption among Aboriginal and Torres Strait Islander peoples

Although the overall proportion of Aboriginal and Torres Strait Islander peoples who drink alcohol (69%) is smaller than in the general population (77%), those who *do* drink tend to drink in larger and more harmful quantities (AIHW, 2018). Specifically, 18.8% of Aboriginal and Torres Strait Islander peoples report consuming 11 or more standard drinks in a month, which is greater than non-indigenous (6.8%).

As seen in Table 2, age-standardised data from the Australian Aboriginal and Torres Strait Islander Health Survey found that although the lifetime risk of drinking was similar between Indigenous and non-Indigenous Australians, Indigenous Australians were more likely to exceed the single occasion guidelines (both monthly and yearly).

Table 2. Age standardized alcohol use by Aboriginal and Torres Strait Islander and non-Indigenous peoples aged 15 and over.

Drinking status	Aboriginal and Torres Strait Islander	Non-Indigenous
Did not drink in past 12 months	26.3	23.0
Lifetime risk		
Low risk	25.9	39.3
Risky	18.3	18.6
Single occasion		
Low risk	19.9	36.6
At least yearly but not monthly	50.2	44.3
At least monthly	41.9	25.6

Reproduced from Table S3.7 (Australian Institute of Health and Welfare, 2018a).

Alcohol consumption among sexuality and gender diverse peoples

Unfortunately, there is a dearth of data on sexuality and gender diverse peoples in Australia, which includes individuals who identify as lesbian, gay, bisexual, transgender, queer, intersex and others (LGBTQI+). What little data is available comes from the NDSHS, which has shown that since 2010 those who identify as LGBTQI+ consistently drink more alcohol than their non-LGBTQI+ peers. We note that the NDSHS presents this data based on the following categories: heterosexual, homosexual or bisexual, and not sure/other. Specifically, compared to non-LGBTQI+, those who identify as sexuality and gender diverse are more likely to drink (85.6% vs. 79.7%), be lifetime risky drinkers (25.8% vs. 17.2%), be risky single session drinkers (70.3% vs. 50.1%), and report an extreme drinking session in the past year (27.8% vs. 15.3%) and past month (12.6% vs. 6.9%).

Table 3. Alcohol use by heterosexual, homosexual or bisexual), and overall.

Drinking status	Heterosexual	Homosexual or bisexual	All
Abstainers/ex-drinkers	21.3#	14.4	22.9
Lifetime risk: Low risk	61.5	59.8	60.0
Lifetime risk: Risky	17.2#	25.8	17.1
Single occasion: Low risk	40.9	29.7	39.7
Single occasion: At least yearly but not monthly	12.2	13.9	11.8
Single occasion: At least monthly	25.6#	41.9	25.5
11 or more drinks: At least yearly	15.3	27.8	15.4
11 or more drinks: At least monthly	6.9	12.6	7.1

Reproduced from Table S3.60 (Australian Institute of Health and Welfare, 2018a).

Alcohol consumption, mental health, and psychological distress

Although there is a strong link between psychological distress (measured by the Kessler 10) and mental health diagnosis/treatment and other substance use in the NDSHS, the link is less pronounced in drinking. Despite this, the treatment or diagnosis of a mental illness was higher among those drinking at risky levels (see Table 4).

Table 4. Alcohol use by psychological distress (low, moderate, high) and those diagnosed/treated with a mental illness.

		Lifetime risk		Singe occasion risk		
Mental Health measure	Abstainers	Low risk	Risky	Low risk	At least yearly	At least weekly
Psychological Distress						
Low	71.3	68.0	62.5	71.1	63.3	60.3
Moderate	17.6	20.8	23.3	19.6	23.0	23.7
High/Very high	11.1	11.2	14.2	9.3	13.7	16.0
Mental Illness						
Diagnosed/treated	13.8	15.6	18.9	14.9	17.1	19.4
Not diagnosed or treated	86.2	84.4	81.1	85.1	82.9	80.6

Reproduced from Table S2.72 (Australian Institute of Health and Welfare, 2018a).

Alcohol consumption by geographic location

There are also a number of geographic differences in Australian alcohol consumption. Although all States and Territories have seen a reduction in daily drinking from 2001 to 2016, there was only a significant reduction in the proportion of daily drinking in the Australian Capital Territory (6.6% to 3.6%). Overall, the Northern Territory had the highest percentages of people aged 15 years or older who drank daily (7.3%) and drank at risky lifetime levels (27.5%).

Table 5. Lifetime risk of people aged over 15 by State and overall.

Drinking status	NSW	VIC	Qld	WA	SA	Tas	ACT	NT	All
Abstainers	24.1	23.6	20.4	26.0	21.9	16.9	21.2	24.1	23.1
Low risk	59.3	61.2	60.1	55.7	62.4	64.5	64.5	48.5	59.9
Risky	16.6	15.2	19.5	18.3	15.7	18.6	14.3	27.5	17.0

Reproduced from Table S2.30 (Australian Institute of Health and Welfare, 2018a).

Furthermore, there is also a difference in the drinking between people who live in urban or rural settings. That is, when compared to those who live in major cities, Australians who live in more remote areas report a greater proportion of lifetime risky (25.9% vs. 15.4%), single session monthly risky drinking (36.7% vs. 24.2%), yearly extreme drinking sessions (24.6% vs. 14.4%), and at least monthly extreme drinking sessions (15.0% vs. 6.3%).

Table 6. Alcohol use by remoteness (major city, inner region outer region, remote), and overall.

	Major City	Inner regional	Outer regional	Remote/very remote	
Proportion of population					
Abstainers/ex-drinkers					
Lifetime risk: Low risk					
Lifetime risk: Risky					
Single occasion: Low risk					
Single occasion: At least yearly but not monthly					
Single occasion: At least monthly					
11 or more drinks: At least yearly					
11 or more drinks: At least monthly					

Reproduced from Table S2.12 (Australian Institute of Health and Welfare, 2018a).

Alcohol consumption by socioeconomic position

When looking at alcohol use by socioeconomic position, those living in more advantaged conditions (5th quartile) compared to least advantaged (1st quartile), are less likely to abstain (18.2% vs. 31.8%), and are more likely to be lifetime risky drinkers (17.6% vs. 15.8%), yearly risky drinkers (12.5% vs. 9.0%), and monthly risky drinkers (25.9% vs. 23.5%).

Table 7. Alcohol use by socioeconomic position quintile (1st [most disadvantaged] to 5th [least disadvantaged]), and overall.

	1st	2nd	3rd	4th	5th	All
Proportion of population	20.7	20.1	19.7	19.5	19.9	100
Abstainers/ex-drinkers	31.8	23.3	23.3	17.7	18.2	22.9
Lifetime risk: Low risk	52.4	59.9	59.4	64.5	64.2	60.0
Lifetime risk: Risky	15.8	16.8	17.3	17.9	17.6	17.1
Single occasion: Low risk	35.6	39.3	40.1	40.4	43.4	39.7
Single occasion: At least yearly but not monthly	9.0	11.6	11.9	13.9	12.5	11.8
Single occasion: At least monthly	23.5	25.8	24.6	28.0	25.9	25.5
11 or more drinks: At least yearly	14.2	16.1	15.7	16.7	14.4	15.4

11 or more drinks: At least monthly	7.6	7.2	7.5	6.6	6.4	7.1

Reproduced from Table S2.13 (Australian Institute of Health and Welfare, 2018a).

Alcohol consumption among culturally and linguistically diverse peoples

Finally, as seen in Table 8, there is also a difference between culturally and linguistically diverse (CALD) peoples. For example, those whose main language at home was a language other than English were more likely to be non-drinkers and were less likely to drink at risky levels or have an extreme drinking session.

Table 8. Alcohol use by main language spoken at home.

Drinking status	English	Non-English	All
Abstainers/ex-drinkers	18.9	49.4	22.9
Lifetime risk: Low risk	62.4	45.2	60.0
Lifetime risk: Risky	18.6	5.4	17.1
Single occasion: Low risk	40.9	33.1	39.7
Single occasion: At least yearly but not monthly	12.6	7.2	11.8
Single occasion: At least monthly	27.6	10.3	25.5
11 or more drinks: At least yearly	16.6	7.2	15.4
11 or more drinks: At least monthly	7.4	4.0	7.1

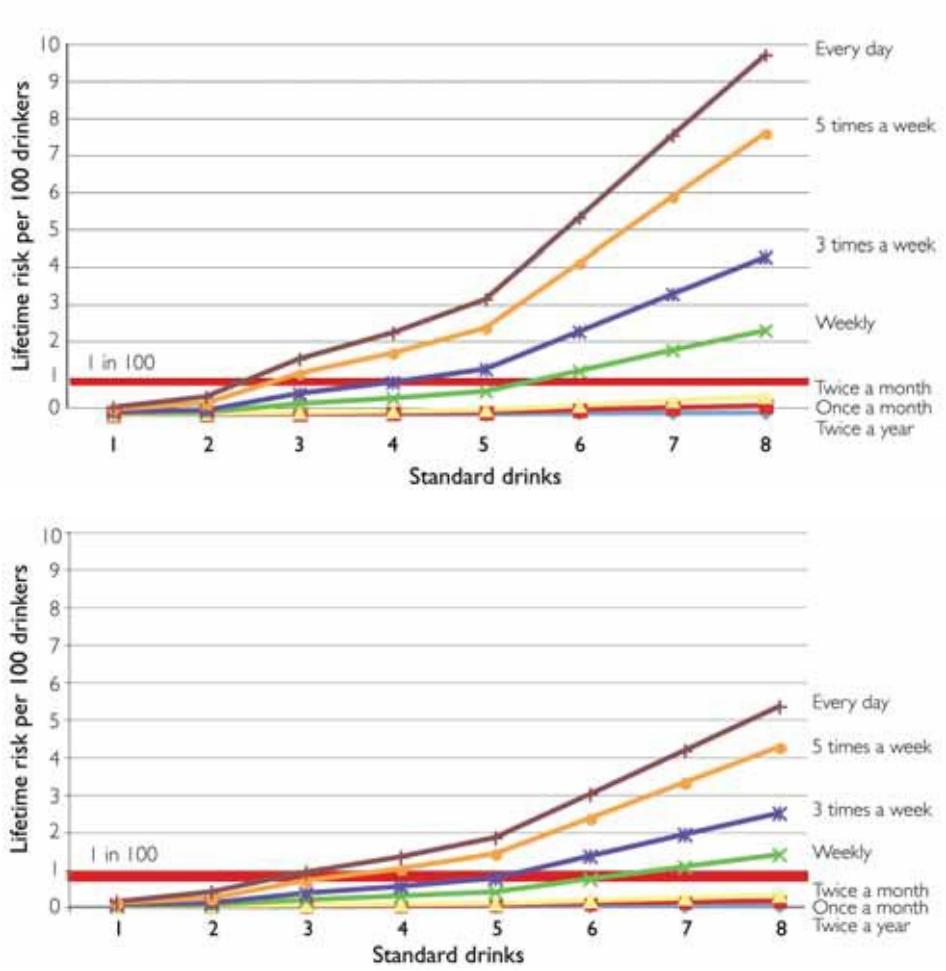
Reproduced from Table S3.51 (Australian Institute of Health and Welfare, 2018a).

Alcohol-related harm

Alcohol is the most harmful drug in Australia (Bonomo et al., 2019). A recent study asked 25 experts to rate 22 drugs on harms related to the individual and others (using multi-criteria Decision Analysis). Although fentanyl, heroin, and crystal meth were rated as more harmful to the individual, alcohol was consider the most harmful drug to others. Furthermore, when combining harm to self and others, alcohol was ranked as the most harmful drug overall (both when considering prevalence and when not considering prevalence). Specifically, alcohol scored highly on its impact on specific harms to the user (drug-related morbidity, drug-specific morbidity) and others (economic costs, family adversity, injury to others).

The link between alcohol use and harm

There is a dose-dependent relationship between alcohol use and harm. That is, the lifetime risk of death from alcohol-related injury increases with both the number of drinks and the frequency of drinking occasions (Australian Government National Health Medical Research Council, 2009). Although this is true for both men (Figure 2.1) and women (Figure 2.2), the risk of death or hospitalisation for men is higher than that for women, at all levels of consumption. The risk of hospitalisation for alcohol-related injury also rises exponentially; for example, if a man consumes eight drinks per day, every day, his risk of hospitalisation rises to 40 percent. When drinking occasions are frequent (for example, nearly every day) and the amount of alcohol consumed is two standard drinks or less, the lifetime risk of hospitalisation for alcohol-related injury is one in 10 for both men and women (Australian Government National Health Medical Research Council, 2009). Given the effect of alcohol, the NHMRC (2009) recommends limiting consumption to two or fewer drinks per day in order to lower a person's risk of death from injury to less than 1 per cent, even if that person drinks every day (Australian Government National Health Medical Research Council, 2009).



Alcohol-related deaths and the burden of disease

Globally, alcohol is estimated to cause 5.3% of all deaths and a net harm of 5.1% of the global burden of disease as measured by disability-adjusted life-years (DALYs) (World Health Organization. Management of Substance Abuse Unit, 2018). Alcohol consumption is linked to over 200 diseases such as alcohol-related injuries (car

crashes), mental health conditions, and liver cirrhosis and cancers (World Health Organization. Management of Substance Abuse Unit, 2018).

In 2016, alcohol-related injuries (unintentional = 20.9%; intentional = 7.8%), digestive diseases (21.3%), and cardiovascular diseases/diabetes (19.0%) were responsible for the most of the 3 million deaths. Similarly, alcohol-related injuries (unintentional = 30.0%, intentional = 9.5%), digestive diseases (17.6%), and infectious diseases (11.2%) were responsible for alcohol related DALYs. Similar to alcohol consumption, the burden of deaths is distributed unevenly across the population and in 2016 alcohol was responsible for 2.2% of women's and 6.8% men's deaths (Griswold et al., 2018). Younger adults were also disproportionately affected by alcohol and 13.5% of all deaths among those aged 20-39 years old are related to alcohol.

In Australia, alcohol is also a major cause of death and in 2017 there were 1,366 alcohol-induced deaths and 4,186 deaths which mentioned alcohol (Australian Institute of Health and Welfare, 2018a). Unlike the declining rate of per-capita alcohol use, the number of alcohol-related deaths in 2017 reached its highest number in 20 years (2017 = 5.1 vs. 2012 = 4.5 deaths per 100,000). Similar to global estimates, the burden of deaths is distributed unevenly across the population; men are over-represented in mortality and morbidity statistics compared to women and are 3.5 times more likely to die (Australian Institute of Health and Welfare, 2018a; Griswold et al., 2018). When looking at the burden of disease, alcohol contributed to 4.6% to the burden of disease in 2011 in Australia (Australian Institute of Health and Welfare, 2018a). In 2011, alcohol-related injuries (car accidents, drownings, unintentional and intentional injuries), cancers (liver, mouth), and liver diseases were responsible for the majority of alcohol-related DALYs. Like global statistics, younger adults (25-44) and men were disproportionately affected. Indeed, when using 2016 data, Griswold et al. found that men are more likely to experience a greater proportion of the burden of disease and that there had not been much change between 2000 and 2016. They found that in 2.2% of all women's deaths were attributable to alcohol (2010 = 2.1%; 2005 = 1.9%), 1.4% of total DALYs (2010 = 1.2%; 2005 = 0.7%) and for men 8.4% of all deaths were attributable to alcohol (2010 = 8.5%; 2005 = 8.4%), 8.2% of DALYs (2010 = 8.4%; 2005 = 8.2%). Thus, despite the downward trend of alcohol consumption, alcohol-related deaths and DALYs did not see a similar downward trend.

Alcohol-related injuries and hospitalisations

Data from the NDSHS found that 17.4% of past year drinkers over 14 engaged in an activity that would put themselves or others at harm while under the influence of alcohol. As seen in Table 7, 9.9% of past year drinkers drove, 6.5% swum, 3.8% worked, and 2.7% verbally abused someone. Overall, men (compared to women) were more likely to engage in activities that put themselves or others at harm. Finally, like overall alcohol use, compared to 2013 in 2016 there was a significant reduction the proportion of those who engaged in at least one risky activity (20.5% to. 17.4%), swum (7.5% to 6.5%), drove (12.2% to 9.9%), damaged goods or stole (3.1% to 1.8%), verbally abused (4.0% to 2.7%), or physically abused someone (0.7% to 0.4%). Men saw the greatest reductions in engaging in risky behaviours.

Table 7. Proportion of men and women drinkers over 14 who engaged in risky behaviours while drinking.

Activity	Men	Women	Overall
Worked	4.7	2.7	3.8
Swum	8.3	4.7	6.5
Operated machine	2.4	0.2	1.3
Drove	13.0	6.6	9.9
Damaged or stole	2.4	1.2	1.8
Verbally abused other	3.6	1.9	2.7
Physically abused other	0.5	0.3	0.4
At least one activity	22.1	12.4	17.4

Reproduced from Table S4.35 (Australian Institute of Health and Welfare, 2018a).

Regarding specific injuries experienced while consuming alcohol, 2.8% of past year drinkers in the NDHS reported that they had experienced an alcohol-related injury and 1.3% had experienced an alcohol-related injury which required admission to hospital. Compared to low risk drinkers, lifetime risky drinkers (2.0% vs. 5.5%), single session risky drinkers (1.9% vs. 4.6%) and those who reported extreme drinking sessions yearly (5.9%) and monthly (8.4%) were most likely to require medical attention because of an alcohol-related injury. When looking at individual AUDIT items, 6.7% of past year drinkers reported that they had injured themselves or someone else because of their drinking (2.3% in the past year). Among drinkers, emerging adults (18-24; when compared to other drinkers over 14) were more likely to have experienced an alcohol-related injury requiring medical attention (5.3% vs. 2.8%), experienced an alcohol-related injury which required admission to hospital (2.5% vs. 1.3%), experienced intoxication requiring medical attention (1.5% vs. 1.0%), and experienced intoxication which required admission to hospital (1.2% vs. 0.8%).

Despite the decline in alcohol consumption and self-reported risks and harms, alcohol attributable emergency department presentations, hospitalisations, and ambulance attendances have remained relatively stable or increased. In 2010, there were 157,132 alcohol-attributable hospitalisations recorded in Australia, with around two-thirds of these cases being male (Gao, C., Ogeil, R.P., & Lloyd, B., 2014). Another study, which examined alcohol-related hospitalisations trends between 2003-2013, found an increase in hospitalisations from 2003 to 2009 before stabilising (E Lensvelt, Gilmore, Liang, Sherk, & Chikritzhs, 2018).

When looking at trends in Emergency Department admissions, there appeared to be a slight increase (rather than decreasing with per-capita use) in Emergency Department presentations (E Lensvelt et al., 2015). This appeared for those aged 15+, 15-19, and 20-29 years old and for both men and women (although men are more likely to present) (Australian Institute of Health and Welfare, 2018a). Lesvelt et al. (2015; 2018) also found differences between the states with those in the Northern Territory seeing greater levels of hospitalisations and ED presentations. Finally, Andrew et al. (2019) analysed Ambulance attendances in Melbourne from 2008 to 2015 and found that there was a 1.4% increase in Ambulance attendances annually. The largest

increase was in patients with mental illness, followed by patients with alcohol and drug-related problems (Andrew, Nehme, Cameron, & Smith, 2019).

Harm to others (AKA secondhand harms/externalities)

The overall effects of alcohol-related harm extend beyond the individual to include social and economic costs of harm to families, communities and society at large (World Health Organization. Management of Substance Abuse Unit, 2018). Alcohol use or intoxication is implicated in violence, both domestic and public, unemployment, financial problems and poverty, drink driving, traffic accidents, industrial and work accidents, fires, falls, and suicide (Crombie, Irvine, Elliott, & Wallace, 2007). As mentioned above, when ranking alcohol's harm in Australia, Bonomo et al. (2019) found that alcohol was the drug that had the greatest harm on others.

Although alcohol's harm on others is less quantifiable than individual harms (Bonomo et al. 2019) there is some research in Australia highlighting the impact of alcohol use on others. For example, in the NDSHS, 22.2% of people in Australia had experienced an incident due to someone else's alcohol use. Specifically, 18.7% had been verbally abused, 7.3% had been physically abused, and 11.4% had been fearful. Compared to women, men were more likely to report an alcohol-related incident (22.7% vs. 21.6%), verbal abuse (20.2% vs. 17.2%), and physical abuse (8.1% vs. 6.5%), but women were more likely to be fearful (13.5% vs. 9.3%). Like other alcohol use variables, there was also a significant reduction from 2013 to 2016 in the proportion of those who experienced an alcohol-related incident (26.0% to 22.2%), verbal abuse (22.3% to 18.7%), physical abuse (8.7% vs. 7.3%), and were fearful (12.6% vs. 11.4%). Most of these declines are due to decreases in the second-hand harms experienced by men. Furthermore, 18-29-year-olds (compared to older groups) and risky drinkers (compared to non-risky drinkers) were more likely to experience second-hand harms than other age groups. Finally, when looking at who caused the second-hand harm, women (compared to men) were more likely to report that it was their spouse who caused verbal abuse (27.6% vs. 9.5%), physical abuse (32.2% vs. 11.1%), and made them fearful (20.3% vs. 5.0%). This finding is similar to the Personal Safety survey (2016), which found that alcohol contributed to the violence experienced by women (in the context of violence perpetrated by men) (Australian Bureau of Statistics, 2017).

Economic impacts

Alcohol use also has an economic impact and financially affects businesses through lost productivity and places a burden on healthcare, law enforcement, and court systems. In 2010, it was estimated that cost of alcohol use in Australia was 14.4 billion dollars, more than double the 7.1 billion dollars generated in alcohol's tax revenue (Manning, Smith, & Mazerolle, 2013). The greatest contributor to the overall cost was to lost productivity (6.1 billion), traffic accidents (3.7 billion), criminal justice (3.0 billion), and healthcare (7.7 billion). It is likely, however, that this estimate is conservative as it does not include an estimate of negative impacts on others. Indeed, Laslett et al. (2011) estimated that harms to others cost Australia 6.8 billion dollars in 2005 (Laslett et al., 2011). Unfortunately, more recent estimates are not available at the time of writing.

Conclusion

Alcohol use in Australia is common, but it appears that consumption is trending down. This downward trend appears more pronounced in men and younger adults (aged 18-29 years), however, these two groups still stand out in terms of their use and harm. Similar trends were also seen with self-reported alcohol-related harms and second-hand harms. Although alcohol use and some self-reported harms are trending down, there is less evidence to suggest that alcohol-related deaths and hospitalisations are following a similar trend. Indeed, in 2017 more people in Australia died from alcohol use than in the previous 20 years.

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CHAPTER 3

STIGMA AND DISCRIMINATION: EVIDENCE REVIEW

Livingston, M., Callinan, S., Dietze, P., Stanesby, O., & Kuntsche, E. (2018). Is there gender convergence in risky drinking when taking birth cohorts into account? Evidence from an Australian national survey 2001–13. Addiction, 113(11), 2019-2028.

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Chapter 3. Stigma and Discrimination: Evidence Review

Stigma is a label or stereotype that devalues, discredits and discriminates against individuals (Butt, Paterson, & McGuinness, 2008; Goffman, 1963). It can result in a range of negative material and social outcomes (Link & Phelan, 2001) including exclusion from and denial of health services (de Crespigny et al., 2015). It is also a fundamental cause of health and wellbeing inequalities (Couto e Cruz et al., 2018; Hatzenbuehler, Phelan, & Link, 2013). Stigma and discrimination are generally exercised and experienced beyond unfair treatment at the individual level, and are supported through, and manifested in, broader societal structures and systems (Lancaster, Seear, & Ritter, 2018). Discrimination against anyone is unacceptable.

Stigma and its links to alcohol use

A majority of the Australian population consume alcohol, and many do so without experiencing any significant harms. The use of alcohol in Australia is widely accepted and some argue deeply embedded in Australian culture (Pennay, MacLean, & Rankin, 2016). However, there are some people who are stigmatised and discriminated against for their use of alcohol because of their status or circumstance (Room, 2005). This includes already marginalised or discriminated against groups. The stigma associated with alcohol use compounds and intersects with the stigma experienced in other aspects of their lives.

Groups at particular risk of stigma associated with alcohol use (in the absence of any problematic consumption) include Aboriginal and Torres Strait Islanders people and other ethnic or racial identities (Allan & Campbell, 2011; Gray et al., 2014); those with mental health issues (de Crespigny et al., 2015); people experiencing poverty and homelessness (Lancaster et al., 2018); and/or those who have an already stigmatised health condition such as HIV (Livingston et al., 2012). Pregnant women who drink alcohol may also be discriminated against and are particularly criticised, judged harshly and viewed as immoral (Burns & Breen, 2013; Holland, McCallum, & Warwick Blood, 2015; Schober & Annis, 1996).

Stigma can occur where people choose not to consume alcohol (for brief or extended periods), especially where social and cultural norms (for instance at celebrations or after work events), life and identity are heavily connected to consuming alcohol or part of an explicit ‘drinking culture’ (Bartram, Eliott, & Crabb, 2017; Cherrier & Gurrieri, 2012).

Stigma also occurs for people experiencing problems with alcohol (Connor, Haber, & Hall, 2016; Keyes et al., 2010). This stigma may arise because some people view those experiencing problems with alcohol as being personally responsible for those problems and therefore deficient in some way and undeserving of sympathy (Erofeeva, 2016; Schomerus et al., 2011; Schomerus et al., 2014; Skinner et al., 2007; van Boekel et al., 2014). Others stigmatise and discriminate against people experiencing problems with alcohol because of beliefs that substance use and dependency is inherently 'immoral' and 'deviant' (Room, 2005), or they believe in stereotypes of people with alcohol dependency such as being 'violent' and 'manipulative' (van Boekel et al., 2013b).

Gender can also shape stigma associated with problems with alcohol, with some believing alcohol dependence is more likely to be a cause of 'bad character' in women (Lale et al., 2014; Sorsdahl, Stein, & Myers, 2012) leading to greater levels of stigma (Schober & Annis, 1996).

How does stigma manifest in clinical settings?

Research has found that stigma is commonly experienced across healthcare settings for people experiencing problems with alcohol and it is a significant barrier to accessing health and other services (Crapanzano, Vath, & Fisher, 2014; Keyes et al., 2010). People are less likely to use treatment services or seek advice or help for their alcohol use from health professionals if they perceive stigma exists (Keyes et al., 2010). Some will delay treatment where they fear being treated differently or poorly or expect rejection (Luoma et al., 2007).

Gendered stigma associated with alcohol use is a major barrier to help-seeking for women (Copeland, 1997; Verissimo & Grella, 2017) that has been found to result in less access to, and utilisation of, specialised treatment services (Gilbert et al., 2019). Any prior negative experiences in help-seeking for problems with alcohol may also deter subsequent help-seeking, diminishing the likelihood of treatment (McCann & Lubman, 2018).

Stigma also impacts on the level and quality of care provided (van Boekel et al., 2013a, 2015; Varas-Díaz et al., 2013). This is largely due to the attitudes of practitioners who may not believe people experiencing alcohol problems are deserving of alcohol treatment, or are less deserving of interventions such as liver transplants (Singhvi et al., 2016). Practitioners may deny treatment or appropriate care to patients due to their biases (Brener et al., 2019), such as doctors not wanting to 'take on' patients with known substance use problems for fear of 'attracting more' to their practice (Abouyanni et al., 2000). This is despite such attitudes running counter to the treatment of people experiencing problems with alcohol as per any other health disorder (Room, 2005).

Where stigmatising attitudes exist, patients may be treated poorly, including being talked down to, scolded or blamed for the problems they are experiencing with alcohol (Lancaster et al., 2018; Skinner et al., 2007). Clinicians may also offer advice based on their own opinions rather than evidence, insisting patients simply cease use (i.e. pursue abstinence without support) despite evidence that the treatment journey for anyone

experiencing problems with alcohol is likely to be long, involve multiple episodes of care and that the provision of support during treatment is critical to success (Lancaster et al., 2018; Lubman et al., 2014). Standard practices (such as routine screens) may be ignored if the clinician believes treatment will not work because of prejudicial views about people experiencing alcohol problems (Roche, Hotham, & Richmond, 2002).

Previous Australian research has shown that alcohol-related stigma is experienced in multiple ways with profound effects. Across these studies, people recount experiences of being denied health care and services:

> "Well, if an ambulance comes and picks me up after I feel like I'm having a heart attack, because I've got a swag, I'm homeless, and I be honest, I tell them that I drink a lot, and I just had two cans of bourbon, so it's not withdrawal. And the first thing ambulance driver did was tell the doctors it's just alcohol withdrawal and I got told to leave. I had a temperature of 41.9 and they said there was nothing wrong with me. Now, there is something wrong with you when you've got a temperature that high. Because I'm homeless and alcoholic, 'No thank you. We don't need you. We don't need to help you'." (Lancaster et al., 2018, p. 65)

People may also experience a lack of assistance and understanding:

> "It was difficult going - because the local doctor looks at you like, "well, just get off it." They don't understand. Well, from my experience, they don't understand that it is a disease. They just think, just stop using it. Well, it's not that easy." (Lancaster et al., 2018, p. 66)

People also reported being reprimanded for their consumption:

> "I was seen by the head of [the general hospital department (not drug and alcohol service)] and he just berated the crap out of me for drinking and you know, not particularly helpful. That's not really going to make someone who's not feeling very good about themselves and their drinking habits stop drinking, just because someone slaps you around your head a little bit." (McCallum et al., 2016, p. 833)

As well, some people reported being denied appropriate care (including pain relief) due to histories of alcohol or other drug use:

> "I'd actually been attacked and had fractured my back and they sent me out of the hospital with Panadeine [paracetamol and low-dose codeine]. I couldn't even get [Panadeine] Forte [paracetamol and higher-dose codeine] because they knew I had a past history of drug use. So they wouldn't give me anything stronger than Panadeine. I mean it's ridiculous. I had a fractured back." (Fraser et al., 2017, p. 196)

Perceived or experienced stigma can readily become internalised resulting in lower self-efficacy, self-esteem and internalised blame (Corrigan & Watson, 2002). This, in turn, can impact on treatment outcomes, decrease the likelihood of treatment completion (Luoma et al., 2014) and result in increased depression and substance use (von Hippel, Brener, & Horwitz, 2018). Concerns about public stigma and privacy can

be particularly acute in small communities and further dissuade people experiencing problems with alcohol and their families from seeking help (McCann & Lubman, 2018).

Structures in health care settings such as policies, practices and norms may also intentionally or unintentionally restrict access to health care (Lancaster et al., 2018). Workplace cultures within health care services that normalise stigma can influence whether or not patients are treated with care, respect and attention (Paterson, Hirsch, & Andres, 2013). Systems such as triage and lack of physical space and privacy for patients to disclose their health histories can also reproduce and contribute to stigma of patients (Paterson et al., 2013).

Discrimination against people experiencing problems with alcohol may also arise through a lack of practitioner knowledge about alcohol problems including treatment options and referral pathways where this results in denial of or diminished quality of services. For example, some health professionals have been found to avoid certain patients or avoid talking to patients about their alcohol use or do not follow-up when issues with substance use are raised by patients (Knaak, Modgill, & Patten, 2014; McCormick et al., 2006; Moriarty, Stubbe, & Bradford, 2009; Romero-Rodríguez et al., 2019). Ironically, this also includes those reluctant to discuss substance use for fear of further stigmatising patients (Moriarty et al., 2012).

Finally, practitioners working in the alcohol and drug treatment field can themselves experience stigma by association resulting in loss of self-esteem, psychological distress, burnout and staff turnover (Bos et al., 2013; Nicholas et al., 2017).

Education and training interventions to reduce alcohol-related stigma in health settings

Education and training are common tools for changing or improving the practice of health care providers and can be used to change discriminatory attitudes (Corrigan et al., 2012). It is especially useful where lack of knowledge or experience contributes to stigmatising attitudes and a reluctance to engage with people who are experiencing problems with alcohol or other drugs (Lancaster et al., 2018; Roche, Pidd, & Freeman, 2009).

Anti-stigma training involves behavioural, educational and social intervention programs that address the causes of stigma, how it is produced and its implications. Types of training that have been found to be particularly effective include:

- peer-led or contact-based training where those with lived experience are the trainer, have assisted in content development and emphasise inclusion of lived experience in course content (Knaak et al., 2014; Thornicroft et al., 2016)
- promotion of positive stories (Livingston et al., 2012)
- “myth-busting” i.e. dispelling misconceptions and confronting stigmatising tropes (Chen et al., 2017)
- utilisation of motivational interviewing approaches (Livingston et al., 2012)
- experiential learning, interactional, and/or more personal (e.g. through role playing or use of case studies and examples), less didactic approaches and ones

that provides time for "deep processing" i.e. (Brener et al., 2017; Bywood, Lunnay, & Roche, 2008a; Livingston et al., 2012)

- rotation/placement in an alcohol or other drug treatment service.

Specific training for working with patients experiencing problems with alcohol and/or generic skills-based training that includes 'soft skills' can be of use for health professionals as a method to decrease stigma, especially where lack of confidence and perceived competence causes practitioners to avoid treating patients which is discriminatory practice (Beaulieu et al., 2017; Chen et al., 2017).

Recommendation	Grade of recommendation
3.1 All healthcare workers should consider undertaking anti-stigma training, specifically those courses that are peer-led or have had substantial peer input into their development, and entail experiential learning	B

However, even where practitioners are willing to change behaviour and adopt best practice, individuals can struggle with making change where there are well established patterns of behaviour, and where change is not supported by the broader workplace or organisational culture (Anderson, 2009; Bywood et al., 2008a; Lancaster et al., 2018; Roche et al., 2009). This is why the recommendations for organisation and structural change (see later) must be implemented alongside any workplace training.

Language

The language used by health practitioners, whether that is with patients, colleagues or other members of the public (that may or may not also be heard by patients) can perpetuate stigma and contribute to an individual's feelings of worthlessness as well as materially shape access to care (Fraser et al., 2017; Pienaar et al., 2017). Terms that are prejudicial and conflate the individual with their alcohol consumption, such as "alcoholic" or "addict" should never be used and should instead be replaced with person-centred language (Ashford, Brown, & Curtis, 2019; Ashford, Brown, McDaniel, et al., 2019; Broyles et al., 2014; Kelly, Dow, & Westerhoff, 2010; Kelly & Westerhoff, 2010; Network of Alcohol and Other Drug Agencies & NSW Users and AIDS Association, 2018). Alcohol-related disorders such as liver disease should not be described as 'alcoholic liver disease' (European Association for Study of the Liver, 2018; Lucey et al., 2019). Diagnostic labels, including 'alcohol use disorder', 'alcohol abuse' and 'addiction' also have potentially stigmatising effects by pathologising particular behaviours and experiences (Keane, 2002; Fraser, Moore & Keane, 2014; Fraser & Seear, 2011).

Language guides developed by people with lived experience of problematic alcohol and other drug use, such as that produced by the Network of Alcohol and other Drugs Agencies and the NSW Users and AIDS Association (2018), provide suggestions for

non-stigmatising language as well as advice on how to integrate this language into practice. Guides such as these should be referred to by clinicians wanting to avoid stigma or improve their practice for people experiencing problems with alcohol.

Recommendation	Grade of recommendation
3.2 All health professionals should continually review their use of language and ensure they do not use pejorative or discriminatory language or non-verbal communication: **1. In front of or to a patient;** **2. About patients to other people, including other staff members; and** **3. In public discussions, including the media**	C
3.3 Health professionals should refer to language guides developed by peer-support organisations or produced by recognised organisations (for example such as NUAA) or other authorities	GPP

Non-stigmatising practice

It is important that clinicians implement best practice, quality care and interventions (as described in these guidelines) as they would for any other health issue and/or lifestyle risk factors because avoidance of patients or conversations about alcohol use can contribute to stigma (Marel et al., 2016). Provision of quality health care requires compassionate and non-judgmental communication and care and the ability of all staff to empathise, listen and provide support (Ferguson et al., 2019; Holt et al., 2007; Lloyd, 2013). Person-centred care that involves patients in discussions about their treatment is a guiding principle of primary health care (Australian Commission on Safety and Quality in Health Care, 2012b) that is critical to delivering non-stigmatising and supportive practice (McCallum et al., 2016) and may also help destigmatise alcohol problems (Connor et al., 2016).

Strengths-based approaches that view people experiencing problems with alcohol as whole people rather than characterising people merely by their use of substances (for example labelling someone an “alcoholic”) are also important (Lancaster et al., 2018; Pienaar et al., 2017). Approaches that focus on skills and assets are also valued by many patients and suggested as an appropriate response for supportive practice (Lancaster et al., 2018; Pienaar et al., 2017).

The National Centre for Education and Training on Addiction (NCETA) (2004, p. 25) suggests the following principles that healthcare professionals should adhere to when managing people experiencing problems with alcohol:

- not judge the person and do not insist on abstinence

- seek to engage and retain the person in treatment for as long as possible
- ensure understanding of the person's treatment goals
- tailor the treatment where possible to meet those goals, including referral when appropriate
- be flexible and adjust treatment to match changing goals and outcomes.

Recommendation	Grade of recommendation
3.4 All health professionals should apply best-practice standards (relevant to their own professions) to all patients irrespective of their alcohol use	GPP
3.5 Use person-centred practice that treats patients with respect and compassion and includes them in decision-making about their treatment	GPP
3.6 Consider using strengths-based practice for patients who may be or who disclose they are experiencing problems with alcohol	GPP
3.7 Refrain from making moral or personal judgements about alcohol use	GPP

Organisational change aimed at changing the environment and/or practice setting in which health care professionals work

As stigma is a product of broader social, political and economic structures, stigma-reducing interventions should be multifaceted and identify any structural factors within an organisation that contribute to the existence of stigma (Allsop & Stevens, 2009; Bos, Schaalma, & Pryor, 2008; Lancaster et al., 2018; Link & Phelan, 2001; Nyblade et al., 2019; Roche & Nicholas, 2017; Roche et al., 2009).

A range of interventions at an organisational level can be employed to challenge stigma in a healthcare service. Consultation with the workforce is a critical aspect of organisational interventions and should be undertaken to determine the existing barriers or facilitators for implementing best practice and which interventions and organisational outcomes are relevant for each workplace (Berends & Lubman, 2013; Knaak, Mantler, & Szeto, 2017; Knaak & Patten, 2016; Lancaster et al., 2018; Roche & Nicholas, 2017; Skinner et al., 2009).

Organisational cultural change is a long-term endeavour that should be addressed at all levels of an organisation (Skinner et al., 2009; Ungar, Knaak, & Szeto, 2016). Initiatives to address cultural change include development of clear service objectives or mission statements and goals for care of people experiencing alcohol problems including aspirational outcomes (Berends & Lubman, 2013; Roche & Nicholas, 2017).

Relevant anti-stigma metrics and targets can be developed and formalised, for instance in key performance indicators (Lancaster et al., 2018).

The use of prompts, reminders and feedback regarding stigma-related behaviours by health care practitioners have been found to be particularly useful for encouraging positive behaviour change and embedding practice change, and for implementation of material learnt in training. Managers are recommended to provide ongoing encouragement, recognition and reinforcement (Bywood et al., 2008a; Skinner et al., 2009). Personalised feedback, delivery of reminders automatically at critical times and those that blend with existing systems and procedures are the most effective forms of prompts (Bywood, Lunnay, & Roche, 2008b).

Staff skills and recruitment processes are another avenue for organisational change through selection procedures which can be revised to incorporate anti-stigma values and initiatives (Skinner et al., 2009). Large organisations or practices, and those with a high proportion of patients experiencing problems with alcohol may want to consider hiring peer workers and/or patient liaison officers. These specialised roles work with, and advocate for, patients experiencing problems with alcohol and can address systemic discriminatory practice and workplace cultures, as well as support those who may be feeling vulnerable or disempowered (Lancaster et al., 2018).

Internal complaint mechanisms provide recourse to people who have been discriminated against and an opportunity for health care providers to address, reflect on and avoid discriminatory practices. As such, complaints mechanisms are an important organisational tool for ongoing quality improvements and reflections on service delivery (Australian Commission on Safety and Quality in Health Care, 2012a; Lancaster et al., 2018).

Recommendation	Grade of recommendation
3.8 Healthcare organisations and practices that see, or are likely to encounter patients experiencing problems with alcohol should: **1. consult with their workforce about current practice towards people experiencing alcohol problems and how it may be improved; and** **2. implement cultural change initiatives such as review of mission statements or goals, or inclusion of anti-stigma actions in organisational plans and measurements, such as Key Performance Indicators**	GPP
3.9 Large healthcare organisations and/or those who have high volumes of patients experiencing problems with alcohol should consider hiring peer workers and/or patient liaison officers	GPP
3.10 All health practices should have an effective and accessible complaints mechanism	GPP

3.11 Internal audits of complaint mechanisms should assess whether they are: ○ **Available** ○ **Have ease of access including for those with low literacy** ○ **Publicly and openly advertised** ○ **Non-stigmatising e.g. anonymous**	GPP
3.12 Treatment settings that specialise in treating alcohol use disorder should conduct periodic audits of discriminatory practices	GPP

Structural (social, political) change aimed at changing the broader society in which health providers and organisations operate

Given the link between alcohol-related stigma and lack of access to services, it is suggested that anti-stigma initiatives should be integrated into broader public health efforts (Keyes et al., 2010). Beyond health services, stigma is produced and reproduced by society writ large and there is an argument that stigma interventions should address the social, economic and political causes of stigma in addition to individual and organisational-level discrimination (Bos et al., 2008; Buechter et al., 2013).

Research from the mental health field promotes a role for health professionals in taking on a public advocacy role in challenging stigma and seeing this as part of their profession (Schulze, 2007) and for health professionals more broadly to use their high standing in society to campaign at a policy level for adequate clinical resources and research to combat stigma (Lancaster et al., 2018).

Recommendation	**Grade of recommendation**
3.13 All health professionals should consider advocating for, or supporting change in the social, political and structural factors that perpetuate stigma against people experiencing problems with alcohol	GPP

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CHAPTER 4 SCREENING AND ASSESSMENT

Chapter 4. Screening and assessment

In this chapter, the key approaches for early detection of unhealthy alcohol use[2] are reviewed, including the place of screening. An overview of the evidence for approaches to, and components of, assessment with a view to establishing a diagnosis is then provided. Empirically-supported approaches to alcohol treatment are reviewed, spanning what can be offered in the initial consultation, and subsequent treatments. Where possible, the review has relied on Australian data, but where no Australian studies were found, the scope has been expanded to include international data.

The settings where screening and assessment occur are varied, and the level of detail collected will also vary. What is clear is that detection of an alcohol use disorder as early as possible is important to intervention effectiveness. The level of detail collected during assessment will vary across treatment settings and circumstances. In primary care settings, such as general medical practices and hospitals, screening is recommended to identify unhealthy alcohol use.

In Australia 12 month prevalence of ICD-10 alcohol use disorder was estimated at 6.1% for men and 2.2% for women (World Health Organization, 2018a), with 16.10% of Australians above the age of 18 drinking in excess of the 2009 NHMRC guidelines for lifetime risk (23.70% for men and 8.80% for women; Australian Institute of Health and Welfare, 2019). In healthcare settings the prevalence figures are typically higher. Data on the prevalence of alcohol use disorder in general medical wards and emergency departments is limited. A study of Australian and New Zealand hospitals found that 17.9% of emergency department presentations in Australia are due to alcohol, with nine hospitals reporting that more than a third of presentations were alcohol-related (Egerton-Warburton et al., 2014).

Textbox: NHMRC 2009 Guidelines

Guideline 1: For healthy men and women, drinking no more than *two standard drinks on any day reduces the lifetime risk of harm* from alcohol-related disease or injury.

Guideline 2: For healthy men and women, drinking no more than *four standard drinks on a single occasion reduces the risk of alcohol related injury* arising from that occasion.

Guideline 3A: Parents and carers should be advised that children *under 15* years of age are at the greatest risk of harm from drinking and that for this age group, *not drinking alcohol is especially important*.

Guideline 3B: For young people aged *15–17 years* the safest option is to *delay the initiation of drinking* for as long as possible.

Guideline 4A: For women who are *pregnant* or planning a pregnancy, *not drinking* is the safest option.

[2] The term "unhealthy alcohol use" (Saitz, 2005) encompasses hazardous (risky) and harmful alcohol consumption and alcohol use disorders. It is used as an umbrella term in this chapter to denote this spectrum of use.

Guideline 4B: For women who are *breastfeeding, not drinking* is the safest option.

Textbox: NHMRC Draft 2020 Guidelines

Guideline 1: To reduce the risk of harm from alcohol-related disease or injury for healthy men and women, drink no more than 10 standard drinks per week and no more than 4 standard drinks on any one day.

Guideline 1: The less you choose to drink, the lower your risk of alcohol-related harm. For some people not drinking at all is the safest option.

Guideline 2: To reduce the risk of injury and other harms to health, children and young people under 18 years of age should not drink alcohol.

Guideline 3A: To reduce the risk of harm to their unborn child, women who are pregnant or planning a pregnancy should not drink alcohol.

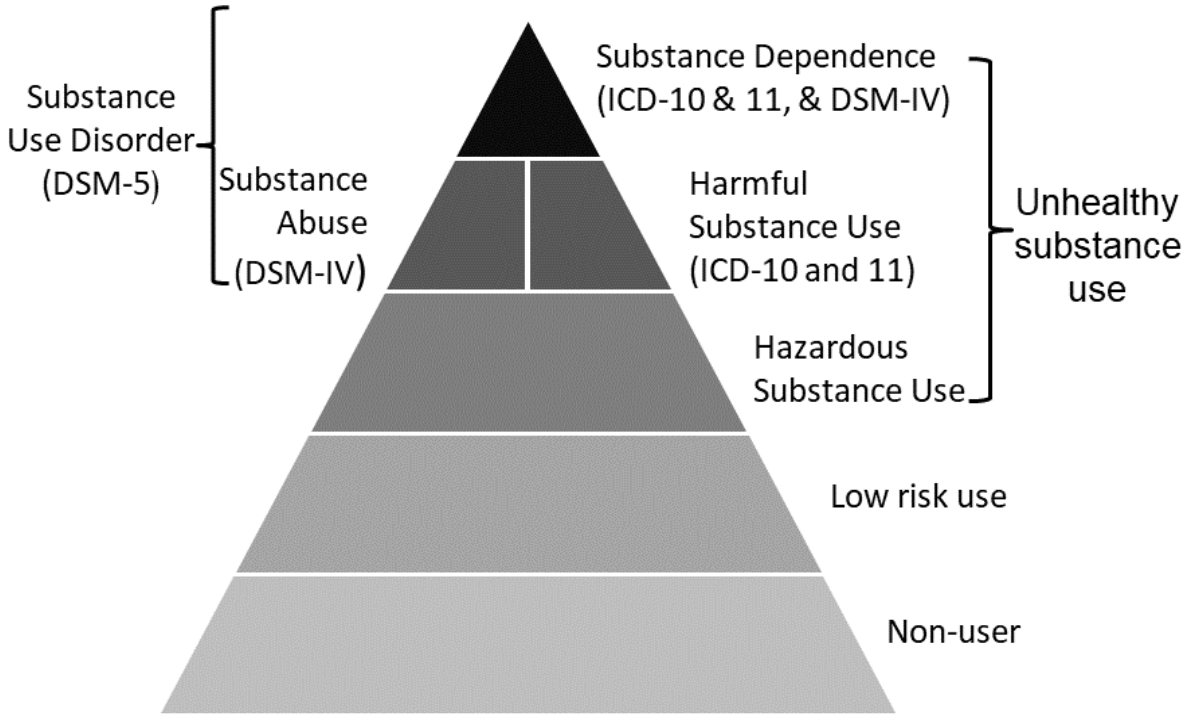
Guideline 3B: For women who are breastfeeding, not drinking alcohol is safest for their baby.

Early detection and screening

Objectives/Goals of detection

Broadly the goal of detection is to determine if a person has a form of unhealthy alcohol use (Connor et al., 2016).

Screening is intended to indicate the presence or absence of unhealthy alcohol use that might need further assessment and intervention. It can lead to early intervention (see *Chapter 7 Brief interventions*), further investigation and problem management within the existing setting, or referral to specialist services if the patient requires more intensive assessment and treatment (*Chapter 8 Alcohol withdrawal management*; *Chapter 9 Psychosocial interventions for alcohol use disorder*; *Chapter 10 Pharmacotherapies for alcohol dependence*).



Adapted from the substance use pyramid by Paton, Potter, & Saunders, 1981.

Diagnostic manual	**Criteria stem for Substance Dependence/Use Disorder**
DSM-IV-TR (2000)	A maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three or more of the following occurring at any time in the same 12-month period.
DSM-5 (2013)	A problematic pattern of substance use leading to clinically significant impairment or distress, as manifested by at least two of the following occurring within a 12 month period.
ICD-10 (1994)	A cluster of physiological, behavioural, and cognitive phenomena in which the use of alcohol takes on a much higher priority for a given individual than other behaviours that once had greater value. Three or more of the following [six] manifestations should have occurred together for at least one month, or occurred together repeatedly within a 12-month period.
ICD-11 (2022)	A disorder of regulation of alcohol use arising from repeated or continuous use of alcohol. The characteristic feature is a strong internal drive to use alcohol. The diagnosis requires two or more of the three central features to be present in the individual at the same time and to occur repeatedly over a period of at least 12 months or continuously over a period of at least one month.

DSM-IV-TR: American Psychiatric Association (2000)
DSM-5: American Psychiatric Association (2013)
ICD-10: World Health Organization (1992)
ICD-11: World Health Organization (2018b)

It is important to note that a difference exists between early detection and screening. Screening can be systematic or opportunistic. In systematic screening all patients complete a screening within a specific setting or context. Systematic screenings may occur in healthcare (e.g., new patient intake form at a general practice) or other settings (e.g., workplace induction paperwork). Opportunistic screening, on the other hand, is where there is an interaction between the person and the healthcare system and the opportunity is taken to examine if the individual has an alcohol problem for which they are usually not directly seeking assistance or treatment. Early detection refers to the practitioner being alert to the possibility of unhealthy alcohol use and having adequate tools to be able to confirm or exclude its presence.

Risky drinking needs to be identified and targeted in its early stages, in order to reduce its impact on the individual and the community. Although there have been positive changes in some alcohol consumption metrics, a large proportion of the Australian population continue to exceed lifetime and single occasion risk guidelines (see *Textbox: NHMRC 2009 Guidelines* and *Textbox: Current alcohol use and trends*), highlighting the need for broader screening, assessment and treatment.

Textbox: Current alcohol use and trends

The proportion of the Australian population aged 14 or older that consumed alcohol daily has declined from 6.5% in 2013 to 5.9% in 2016 (Australian Institute of Health and Welfare, 2017).

The proportion of Australians that report drinking daily has been in decline since 2004 (Australian Institute of Health and Welfare, 2017).

The proportion of people exceeding NHMRC guidelines for lifetime risk declined significant from 18.2% in 2013 to 17.1% in 2016. The proportion that exceeded the single occasion risky guidelines has, however, remained stable within the same period of time (Australian Institute of Health and Welfare, 2017).

The number of alcohol-related deaths in Australia was higher in 2017 than in any preceding year post-1997 (Australian Bureau of Statistics, 2019).

Screening in different settings

Given the pervasiveness of unhealthy alcohol use in Australia and the seriousness of the health consequences of risky drinking, approaches to detection have been evaluated in a wide range of health care settings.

General practice and other primary care settings

As indicated in the most recent Cochrane reviews (Beyer et al., 2019; Kaner et al., 2018), a number of studies, but not all, have shown that screening and brief intervention are effective for hazardous and harmful alcohol use in primary care settings. After 12 months, meta-analytic results showed that participants that had received a brief intervention consumed on average 20g less alcohol per week than those participants that received a minimal or no intervention (95% CI of 12 to 28). The overall effect of brief intervention on alcohol consumption is smaller than that observed in earlier meta-analyses, which reported larger reductions in mean

consumption (i.e., 38g/week as found by Bertholet et al., (2005). This diminution of the observed effect may be driven by the inclusion of fewer heavy drinkers in subsequent trials and an overall reduction in alcohol consumption at baseline across trials.

Importantly, the Cochrane review (Kaner et al., 2018) also noted significant reductions in consumption were present for both men (MD -42g/week; 95% CI of -65 to -20g/week) and women (MD -30g/week, 95% CI of -59 to -2g/week), with no significant difference between the two gender groups.

Though most studies examined the effect of screening and brief intervention only for 12 months post-intervention, Wutzke and colleagues (2002) conducted 9-month and 10-year follow-ups of brief-intervention for hazardous and harmful drinking. Results indicated significant reductions in consumption and less unsafe drinking at 9 months, but no difference in consumption levels or drinking behaviour at the 10-year follow-up point. These results suggest that the effects of brief intervention, without further follow-up and reinforcement, may not provide long-term benefits.

There is evidence that screening and early intervention in primary care settings is cost-effective, both within an Australian context (Cobiac et al., 2009; Wutzke et al., 2001) and in synthesis of global data (Angus et al., 2014; World Health Organization WHO, 2009).

Within Australia, 87% of GPs report routinely asking patients about their alcohol consumption, though few administer standardised screening tools (E. R. Miller et al., 2016). However, health practitioners may fail to identify alcohol problems without the use of specific screening techniques. A meta-analysis of global data found that up to 60% of patients with alcohol use disorder are not detected in routine general practice when practitioners rely solely on clinical judgment (Mitchell et al., 2012). Screening is the most important first step towards identification of problems and has been proven valuable in other common conditions such as raised cholesterol. GPs are well placed to undertake this important first step, as 85% of the Australian population have contact with a GP annually. A large study of 78,974 adult patients from 2,470 GPs in Australia found that heavy drinkers (n = 5,753) were more likely to see their GP for management of chronic problems, psychological problems and physical injuries than were light- or non-drinkers (Proude, Britt, et al., 2006). These opportunistic contacts provide for early intervention.

Barriers exist to early detection in screening. Lack of time is consistently reported as the primary barrier to the utilisation of standardised assessments, with the number of presenting health concerns per patient leading to the deprioritisation of the assessment of risky drinking. A qualitative review of Australian general practitioners identified three further themes as barriers to detection of risky drinking: (i) community stigma and stereotypes of 'problem' drinking, (ii) GP perceptions of unreliable patient alcohol use histories, and (iii) the perceived threat to the patient-doctor relationship from alcohol use assessment (Tam et al., 2013).

Derges and colleagues (2017) conducted a global systematic review of the barriers to alcohol screening and brief intervention in both adult and youth samples. A narrative summary of the barriers to implementation across the studies fell into three main

categories: (i) attitudes, (ii) institutional support, and (iii) training. A key attitude expressed by practitioners was a concern that enquiring about alcohol use may result in damage to the patient-practitioner therapeutic relationship. Additionally, practitioners expressed views that addressing alcohol issues may be hypocritical in relation to their personal alcohol use, suggesting possible lack of awareness of safe drinking guidelines. Most of the studies included highlighted a lack of structural and organisational support as a major barrier to alcohol screening and brief intervention. This related chiefly to insufficient time to implement screening and intervention. Also highlighted were lack of clarity in identifying the appropriate person to address alcohol use (whom to refer patients to, which makes practitioners reluctant to assess alcohol use), prioritisation of other issues before alcohol use, and poor organisational leadership (i.e., lack of guidelines for GPs in Finland and lack of proper assessment procedures provided to nurses in the US). Finally, lack of training was noted as a barrier to implementation. However, where training was implemented, it did not always translate into changed practice, as insufficient follow-up to training and continued support continued to act as barriers to the implementation of alcohol screening and brief intervention.

A number of initiatives to encourage screening have been undertaken worldwide. The Smoking, Nutrition, Alcohol and Physical Activity (SNAP) Framework for General Practice (Harris et al., 2005) and the Drink-Less program, developed by the University of Sydney in 1990s (Gomel et al., 1994) and revised and re-released in 2004 (Proude, Conigrave, et al., 2006) are two early examples. More recently, the Southeastern Consortium on Substance Abuse Training (SECSAT) aimed to increase screening and brief intervention in four primary care residency clinics in three south-eastern US states (Seale et al., 2015). The trial sought to increase screening and brief intervention delivery by, amongst other strategies, training physicians and nurses in screening and brief intervention. At the conclusion of this trial, screening with validated instruments increased from 22.8% to 82.8% of patients attending the clinic, with identification of unhealthy alcohol use similarly increasing from 1.8% at baseline to 6.3% at the conclusion of the trial. There was a more than double increase in the number of brief interventions performed, rising from 1.5% to 3.7% of patients.

Keurhorst and colleagues (2015) conducted a meta-analysis of the existing literature in order to understand what implementation strategies influence SBI uptake, and to measure the impact of different implementation strategies on heavy drinking and delivery of SBI in primary care. There was no effect on alcohol consumption when all implementation strategies were pooled together in the meta-analysis. However, studies that combined two of the professional, patient and organisational implementation strategies were effective in significantly reducing alcohol consumption relative to those implementing professional-oriented implementation strategies. This suggests that the type of strategy implemented is important. Combining professional- with patient-oriented strategies that, for example, involve primary health care staff working in conjunction with physicians leads to increased screening and brief intervention delivery.

Welfare and general (non-specialist) counselling services

Beyond primary care settings there is a range of welfare and general counselling

services where individuals can self refer. These include, inter alia, homeless shelters, criminal justice settings, and family protection services. Given the breadth of services, large variations in practitioner training, multiple delivery approaches and lack of Australian data it is difficult to draw conclusions on their effectiveness.

In these settings, there is a need to develop a structure where screening can occur in a routine way, thereby increasing the likelihood that it will become and will remain a part of the normal processes for detecting unsafe drinking patterns (Piccinelli et al., 1997).

There are, however, significant barriers to the widespread adoption of screening and intervention procedures within these context (Babor et al., 2005). Structural barriers will need to be addressed to increase the adoption of systematic screening within general counselling and welfare contexts.

Implementation of alcohol screening and brief interventions in welfare contexts have generally yielded mixed results (Schulte et al., 2014).This may, in part, be driven by a heterogeneity of settings where screening and intervention have been applied, ranging from homeless shelters, community drug rehabilitation settings, to criminal justice settings. This heterogeneity of contexts makes it difficult to compare results across studies.

Other primary care

Other primary care settings in which screening may take place include general community services, mental health services, government and non-government services (public sector or non-government organisations). Little is known about the prevalence of unhealthy alcohol use for individuals attending these services. In addition, we were unable to find any studies of early detection or screening.

For a review on services for Aboriginal and Torres Strait Islander peoples, please see *Chapter 15 Indigenous Australians*.

Emergency department

Emergency departments are generally regarded as another form of primary care, but with a very specific focus on (i) triage to effectively detect critically ill people, (ii) resuscitation and stabilisation, and (iii) referral for ongoing management. As the focus of emergency rooms is distinctly different from general practice, it is considered here separately.

Barata and colleagues (2017) conducted a systematic review of studies employing screening, brief intervention and referral to treatment in emergency department contexts. Their review identified significant, though seemingly short-term, reductions in a number of key markers across a large number of studies. Alcohol consumption, the key outcome in all reviewed studies, was significantly reduced in just over half of studies reviewed, in line with the findings of an earlier meta-analysis (Schmidt et al., 2016). Barata and colleagues demonstrated that studies which failed to find a difference between intervention and control conditions nevertheless showed trends towards the intervention condition in either a subgroup (e.g. low or moderate drinkers; adolescents) or a secondary outcome measure (e.g., days of alcohol use).

Hospital wards and clinics

Detection of alcohol use disorder is typically poor within hospital settings. One meta-analysis found about half of patients with alcohol use disorder were not identified by hospital staff (Mitchell et al., 2012).

Screening for alcohol consumption that is routinely captured via intake or registration forms is now considered good clinical practice among inpatients *and* outpatients. Screening in non-medical contexts can provide a valuable point of contact for groups that are not routinely accessed via primary health care settings, and is recommended by the National Institute for Health and Care Excellence in the UK (National Collaborating Centre for Mental Health Staff, 2011).

Improved health outcomes are not necessarily associated with improved generic screening and intervention for alcohol disorders in hospital wards (Saitz et al., 2007; Shourie et al., 2007). A key purpose of screening is to identify high risk patients for the development of alcohol withdrawal. High risk patients also include those that are malnourished and could be at risk of Wernicke's Syndrome and patients who are more likely to suffer complications during their admission and extended lengths of stay.

Watson and colleagues (2013) sought to understand the effectiveness of interventions for alcohol and other drug misuse in an outpatient context. While the review suggested that interventions based on motivation techniques may be effective in oral-maxillofacial clinics, they noted a lack of evidence for effective interventions in general outpatient settings. However, the major benefit may lie in earlier recognition, prevention and treatment of alcohol withdrawal and alcohol-related medical toxicity.

Specialist settings

Screening and brief interventions are feasible in specialist settings where prevalence of alcohol use is high, such as opioid treatment services (Henihan et al., 2016; Klimas et al., 2015; B. Watson et al., 2007). Large-scale trials are required to establish the effectiveness of screening and brief intervention in such settings.

Randomised controlled trials have evaluated the feasibility and effectiveness of alcohol screening and brief intervention in sexual health clinics. Though small in size, the majority of these RCTs have found that screening in sexual health services is feasible, acceptable to health practitioners and patients, and effective in lowering AUDIT scores at follow-up (Baguley, 2012; Lane et al., 2008; Roderick et al., 2016). A larger trial evaluating the effectiveness of brief intervention in sexual health clinics found a mean non-significant ($p = 0.53$) reduction of 2.33 units (or 23.3 grams of alcohol) per week, (Crawford et al., 2015).

The Workplace

There is evidence of high rates of problem drinking in some workplace settings, suggesting that this is a suitable venue for detection of risky drinking and intervention (Richmond et al., 2000; Roche et al., 2016). Detection of unsafe alcohol consumption should form part of any routine health evaluation in the workplace.

In a review of international studies implementing alcohol screening and brief intervention in the workplace, Schulte and colleagues (2014) noted only one study (of

nine studies included) showed significant reduction in at least one of their primary outcome measures, including alcohol intake, number of days drinking, and peak drinks per occasion. However, most studies had short follow-up periods, with only two extending follow-up beyond 12 months. Therefore it is not possible to identify if alcohol reduction was maintained in the longer term. Authors also highlighted relatively low participation rates and high drop-out in the workplace settings, likely driven by the stigma associated with receiving an alcohol-related intervention in the workplace.

There are not enough available data to identify if systematic screening in the workplace context is effective. There are additional ethical considerations that need to be addressed prior to the use of systematic screening in work settings. It is likely that there is a stronger rationale for screening and detection of alcohol problems in safety-critical workplaces and where the need for screening and detection arises.

Access to electronic interventions

Recent advancements in personal computing devices and the availability of high speed internet have enabled for the delivery of digital interventions designed to provide therapies for a number of mental health disorders (Holmes et al., 2018). Electronic interventions remove geographic restrictions and the need for a health provider. This could allow for greater accessibility of screening and brief intervention services to historically underserviced regions and groups.

Meta-analyses that have examined the use of electronic interventions for alcohol misuse have found significant reductions in alcohol consumption post-intervention (Riper et al., 2014) and at six month follow-up (Dedert et al., 2015). There is little evidence of longer-term clinically significant effects (i.e., meeting safe drinking guidelines) in either college populations or alcohol dependent populations (Danielsson et al., 2014; White et al., 2010). These meta-analyses are based on a small number of heterogeneous trials, therefore precluding moderator analyses examining potential demographic differences and effectiveness between guided (some therapist contact) and unguided (no therapist contact) interventions. It should be noted that a significant small effect in reducing unhealthy alcohol use may be useful from a public health perspective as internet interventions can be deployed at a population level at relatively low cost.

Recommendation		Grade of recommendation
4.1	Screening for unhealthy alcohol use and appropriate intervention systems should be widely implemented in **general practice**.	A
4.2	Screening for unhealthy alcohol use and appropriate intervention should be widely implemented in **emergency departments**.	C

4.3	Screening for unhealthy alcohol use and appropriate intervention systems should be widely implemented in **hospitals**.	B
4.4	Screening for unhealthy alcohol use and appropriate intervention systems should be widely implemented in **community health and welfare settings**.	C
4.5	Screening for unhealthy alcohol use and appropriate intervention systems are feasible in **specialist settings** where alcohol use is high. There is insufficient evidence at this time to recommend wider implementation.	C
4.6	Screening for unhealthy alcohol use and appropriate intervention systems should be prioritised in **high-risk workplaces**.	D

Approaches to early detection

Health practitioners can incorporate questions on alcohol consumption and experience of alcohol-related problems in their routine enquiry and these may form part of the patient's narrative history. Questions relating to alcohol consumption are often incorporated into questions about other lifestyle factors.

The methods for detecting risky drinkers include quantity-frequency estimates of alcohol consumption, screening questionnaires, physical examination for intoxication or signs of harmful use of alcohol and biological markers of excessive alcohol consumption.

Evaluation of all methods for assessing alcohol intake is hindered by the absence of a 'gold standard' against which they can be tested.

Quantity-frequency estimates

Assessing level and history of alcohol consumption

Once the practitioner has been alerted to the likelihood of unhealthy alcohol use (through a questionnaire such as the AUDIT), the next step is to undertake a more detailed assessment. In general practice this may need to take place over two consultations.

The assessment process should gather information about the drinking history, including how the drinking pattern evolved, fluctuated and/or progressed over time. The history should comprise the daily average consumption of alcohol (grams per day or standard drinks per day), the number of drinking days per week (or month) and the pattern of drinking (e.g. weekend drinking, special occasions).

There are several structured methods available to perform assessment of alcohol consumption, although these are not routinely used in clinical practice. The Timeline Follow-back Method (TLFB) helps to obtain an accurate, retrospective account of alcohol consumption over a particular period, typically three months (Sobell & Sobell, 1992). This method requires the patient and health practitioner to fill in a blank calendar with a detailed description of alcohol consumption. The patient is first asked to note all events that may assist with recall, for example public holidays or significant personal events. Any personal diaries may help with recall. The patient then fills in the drinking days, noting the amount consumed, and perhaps also the number of hours of consumption. One study found no difference between daily monitoring of drinking via smart-phone app and TLFB in the accuracy of recalling number of drinking occasions over a 6-week period (Dulin et al., 2017). However, participants were significantly more likely to under-report the amount of alcohol consumed per drinking occasion when assessed by TLFB. The TLFB can be completed as an interview or as self-report by the patient.

There is limited community recognition of the NHMRC alcohol consumption guidelines, with most consumers failing to identify the current guidelines which outline a safe drinking limit of two standard drinks per day, wherein 10g of ethanol is one standard drink (Bowden et al., 2014). Based on cumulative population self-report, overall alcohol use is under-reported, but interviewing style influences the accuracy of self-report (Stockwell et al., 2004, 2008). For example, the Lifetime Drinking History that examines alcohol use throughout the lifespan has been shown to be a valid assessment (Koenig et al., 2009).

Where use exceeds recommended NHMRC guidelines, a more detailed assessment is indicated to exclude harmful use and/or dependence.

Recommendation		Grade of recommendation
4.7	Quantity–frequency estimates is the recommended approach to detect levels of consumption in excess of the NHMRC 2009 or 2020 guidelines in the general population.	B

Screening questionnaires

Screening questionnaires assist in the early detection of persons with unhealthy alcohol use. There are many questionnaires which have been developed for this purpose, as well as older questionnaires developed primarily to detect alcohol dependence. Of the available questionnaires the most widely used worldwide is the Alcohol Use Disorders Identification Test (AUDIT). The AUDIT consists of ten questions covering four conceptual domains: alcohol consumption, drinking behaviour, adverse reactions and alcohol-related problems (Saunders et al., 1993).

There are also questionnaires that specifically estimate quantity and frequency of alcohol consumption. A derivation of the AUDIT, the 3-item AUDIT-C (Bush et al., 1998), is one of these.

To be effective, a questionnaire needs to be sensitive (capable of correctly identifying patients with the condition) and specific (capable of discriminating those who do not have the condition from those that do). A sensitivity of 0.90 indicates that 90% accuracy in identifying those with the condition; and a specificity of 0.90 indicates that the test correctly identifies 90%of those who do not have the condition as such. Screening questionnaires are not diagnostic interviews. They are short instruments best used to establish if the person is likely to have unhealthy alcohol use.

In specialist alcohol and drug treatment settings, diagnostic interviews and questionnaires help to assess the severity of unhealthy alcohol use so that appropriate treatment goals and strategies can be selected. A range of questionnaires are available. Note that in these settings it is more likely that those identified will have higher levels of risky alcohol use, harmful use and alcohol use disorders such as alcohol dependence than in primary care populations.

Below is a list of the most commonly used screening and assessment instruments:

Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT (www.auditscreen.org) is a 10-item instrument designed to screen for both unhealthy alcohol use and a range of drinking problems, particularly hazardous and harmful consumption (Saunders et al., 1993; Saunders & Latt, 2015). It was developed by a WHO collaborative study and has been translated into over 40 languages. Several translations have been developed for various ethnic populations in Australia. The response to each item in the AUDIT is scored from 0-4, and the AUDIT as a whole therefore has a range 0-40. A cut-off score of 8 (or more) is used to identify risky drinkers, hazardous and harmful consumption (Saunders et al., 1993). Higher levels (e.g. 15 or more) indicate the likelihood of alcohol dependence.

At a cut-off score of 8 to identify hazardous and harmful drinking, the full AUDIT has demonstrated a sensitivity of 0.92 and specificity of 0.94 (Saunders et al., 1993). The WHO criteria for unhealthy alcohol use were then 40 grams daily and to capture more recent thresholds for harm, there is an argument for reducing the cut-off points. However, in the absence of empirical support for this, the simple expedient of calculating average consumption from the first two questions may be employed in addition to the total score. When validated against a diagnostic interview, physical examination and laboratory tests, the AUDIT was better than the MAST at distinguishing between hazardous and non-hazardous drinkers (Fiellin et al., 2000). Both instruments effectively identified dependent drinkers. The AUDIT performed as well as the MAST and the CAGE when validated against Composite International Diagnostic Interview (CIDI) scores for dependent drinking and had higher sensitivity and specificity for detecting risky, non- dependent drinking (Piccinelli et al., 1997). Furthermore, the AUDIT and the short-form AUDIT-C have been demonstrated to be proficient in detecting DSM-5 alcohol use disorder in samples drawn from US college students (Hagman, 2015, 2016) and the general adult population of Germany (Moehring et al., 2019).

The AUDIT can be also used effectively to identify hazardous, problem and dependent alcohol consumption amongst psychiatric patients; AUDIT-C can be used to detect

alcohol use disorders, using a cut-off of 5 (Dawson et al., 2005).

Derivatives of the AUDIT

The AUDIT-C (the first 3 questions of AUDIT) is a short version of the AUDIT comprising the first 3 questions. It also performs well at identifying alcohol misuse (Bradley et al., 2007), especially in primary care. A score greater than 3 has been found to optimize sensitivity and specificity for the diagnosis of any AUD under both the DSM-IV and DSM-5 (Dawson et al., 2012). Upon transitioning from DSM-IV to DSM-5 diagnostic criteria, the performance of the AUDIT-C is suggested to be improved with the DSM-5 benefitting from fewer false positive screening results (Dawson et al., 2012).

AUDIT-C has been used successfully with male Veterans' Affairs patients to screen for heavy drinking, performing similarly to the full AUDIT. Patients were considered to be heavy drinkers if they drank more than 14 drinks a week or five or more drinks on one occasion in the past or in a typical month (Bush et al., 1998).

A number of other short forms of the AUDIT exist, though these have been examined less intensely than the AUDIT and AUDIT-C. AUDIT-PC extracts five questions from the original AUDIT, namely questions 1, 2, 4, 5, and 10. The AUDIT-QF asks the first two questions from the AUDIT regarding frequency of drinking and quantity consumed. The AUDIT-3 consists only of the third question of the AUDIT taken alone, and has been shown to have almost as good sensitivity and specificity as the longer forms (level 1 evidence; Bradley et al., 2007). AUDIT-4 consists of questions 1, 2, 3 and 10 of the original AUDIT. These shortened versions of the AUDIT have been evaluated against each other, the full AUDIT, and other measures, and tend to correlate highly with the AUDIT and to be effective in screening for risky or heavy drinking in various populations (Aalto et al., 2006, 2009; Cortés-Tomás et al., 2016; Gual, 2002).

NIAAA-recommended 2-item screener

The US National Institute on Alcohol Abuse and Alcoholism (NIAAA; 2005) recommended a 2-step screening that, in the first instance, asks *whether individuals sometimes consume beer, wine or other alcoholic beverages*, and (if the answer is 'yes'), follows that question by asking *how many times in the past year the individual has had 5 (for men <65 years old) or 4 (for women or for men ⩾65 years of age) or more drinks in a day*. A response indicating at least one occasion where consumption exceeded these thresholds constitutes a positive screen.

The NIAAA-recommended 2-item screener is frequently shortened by dropping the first step, thereby creating a single question tool that can be implemented quickly in various settings. The NIAAA-recommended screener has been widely adopted within the USA, with meta-analytic analysis (O'Connor et al., 2018) indicating high specificity (ranging 0.74 to 1.00) and sensitivity (ranging 0.73 to 0.88) in detecting a spectrum of unhealthy alcohol use. These values were generally comparable to those observed for the AUDIT-C in the same meta-analytic study, though the AUDIT-C exhibited a broader range of reported specificity across studies.

The NIAAA-recommended screener does not require responses to be scored. This is an

advantage in time sensitive settings.

Comparison with other instruments

MAST and CAGE questionnaire

The prototype alcohol dependence questionnaire is the MAST (Selzer, 1971). Instruments such as the MAST and the CAGE questionnaire were derived on the basis of their ability to distinguish chronic alcohol dependent individuals from non- alcohol dependent individuals (Mayfield et al., 1974).

The MAST is a 24-item instrument designed to identify a history of alcohol abuse and dependence. It has adequate sensitivity and specificity at a cut-off score of 13 in identifying both of these disorders, but is long, taking at least 10 minutes to complete. The S-MAST, a shorter 13-item version of the MAST, has also demonstrated good reliability as a self-administered questionnaire. There is little recently published research on these instruments. In one study, the Brief Michigan Alcohol Screening Test (b-MAST) was validated against AUDIT. The study found significant correlations between instruments and proved effective in measuring severity of problem drinking in a treatment-seeking population (Connor et al., 2007). The MAST and its shorter versions have been criticised for their lack of sensitivity in detecting alcohol problems among women (Dawe et al., 1997).

In a study with drink drivers participating in a jail diversion program, the MAST correlated more highly than the AUDIT with DSM-IV criteria for alcohol use disorders, although both had acceptable internal validity (Conley 2001).

When used with a group of drug-dependent patients, the AUDIT and the MAST were equally able to detect alcohol dependence, but the AUDIT was better at identifying hazardous drinking (Skipsey et al., 1997). The AUDIT has also been evaluated in psychiatric patients and in one study demonstrated very high sensitivity and specificity at detecting alcohol abuse using a cut-off of 10 (Cassidy et al., 2008). The AUDIT-C also performed well against the S-MAST and CAGE in detecting risk drinking among people with any past-year mood disorder (Dawson et al., 2005). In another study of Italian patients affected by a mood disorder, AUDIT and CAGE were compared with the NIAAA-recommended 2-item screener. Both instruments achieved high sensitivity, using a cut-off of 5 for AUDIT and 1 for CAGE (Agabio et al., 2007).

The CAGE is a four-item screening instrument (see textbox *CAGE Questionnaire* below) intended to identify alcohol abuse and dependence. Because of its brevity, it is less sensitive than the AUDIT or the MAST. It is not a diagnostic instrument, however a 'yes' to two or more questions indicates the need for further assessment for "alcohol abuse" (as it was then termed; Mayfield et al., 1974)

Textbox: CAGE Questionnaire
1. Have you ever felt you needed to cut down on your drinking? **2.** Have people annoyed you by criticizing your drinking? **3.** Have you ever felt guilty about drinking? **4.** Have you ever felt you needed a drink first thing in the morning (eye-opener) to

steady your nerves or to get rid of a hangover?

Japanese translations of AUDIT and CAGE have also been tested against a semi-structured interview diagnosis; results showed that AUDIT had superior sensitivity and specificity for detecting dependent and problem drinkers (Volk et al., 1997).

CAGE was found to have poor validity with a sample of USA university students (Heck & Lichtenberg, 1990). It is not sensitive to the full spectrum of unhealthy alcohol use (Dhalla & Kopec, 2007; Maisto & Saitz, 2003), with sensitivity further reduced in ethnic minorities when tested in the USA (Steinbauer, 1998).

Based on available data, the AUDIT is superior to other instruments in detecting a range of current alcohol problems. CAGE is proven to be insufficient to detect DSM-III-R alcohol abuse among primary care patients, and conventional laboratory tests were shown in at least one study to be of no use in this setting (Aertgeerts et al., 2001).

The ASSIST

The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) is an instrument which covers a range of substances with a focus on those substances which are highlighted by the patient. It may also be used to assess the likelihood of somebody having unhealthy alcohol use. But there are fewer data on the ASSIST as an alcohol instrument.

A number of other screening instruments have been developed to overcome some of the limitations of existing inventories. Given the lack of available validation data, they are most useful for research rather than clinical settings and are not considered further in these guidelines.

Recommendation		Grade of recommendation
4.8	The AUDIT is the most effective screening tool available and is recommended for use in primary care and hospital populations. For screening in the general community the AUDIT-C is an alternative and can be used as a first-phase screening tool.	A

Screening for alcohol use in special populations: Pregnant Women

The NHMRC guidelines recommend that it is safest to consume no alcohol during pregnancy (National Health and Medical Research Council (Australia), 2009). The low levels of consumption highlighted as a concern in recent guidelines cannot usually be identified by current questionnaires. A clinical history to estimate the quantity and frequency of alcohol use is the preferred method.

In light of the potential for adverse effects on the fetus, screening for alcohol use should be included in the usual antenatal history. All pregnant women should be asked

about their level of alcohol consumption.

A large number of biomarkers have been investigated as screening tools for alcohol consumption in pregnant women. However, none have demonstrated high sensitivity and specificity when contrasted against self-report (Howlett et al., 2017). The use of biomarkers alone is, therefore, not recommended.

Questionnaires in pregnant women

In light of the potential for adverse effects on the foetus, screening for alcohol use should be included in the usual antenatal history. All pregnant women should be asked about their level of alcohol consumption in the context of a clinical assessment.

The NHMRC advises that it is safest to consume no alcohol during pregnancy, in line with international guidelines. The low levels of consumption highlighted as a concern in recent guidelines cannot be identified using current questionnaires. A clinical history to estimate the quantity and frequency of alcohol use is the preferred method.

Although specifically derived questionnaires such as the TWEAK and T-ACE have been recommended in the past, with the current advice that pregnant women should not consume any alcohol (and that usually includes women planning pregnancy), the place of these questionnaires derived as they are from the MAST and the CAGE is dubious. It is better to assess alcohol intake using the AUDIT-C (followed by the full AUDIT if necessary) or use quantity-frequency questions to screen for unhealthy alcohol use. The AUDIT-C has been shown to be effective in detecting risky drinking, alcohol abuse and alcohol dependence in pregnant women. Burns and colleagues (2010) conducted a systematic review of brief screening questionnaire use during pregnancy and found the AUDIT-C to have both high sensitivity (95%) and specificity (85%) in identifying risky drinking. Additionally, the AUDIT-C has been recommended by UK Department of Health for screening in pregnant women (British Medical Association, 2016).

The ASSIST questionnaire that screens for alcohol and other substances has been recommended for use in this population (World Health Organization, 2014). The US National Institute on Drug Abuse has developed a short-form version of the ASSIST, the NIDA Quick Screen-ASSIST, which consists of a single question that probes the individuals' consumption of alcohol, tobacco, illicit drugs, and the use prescription drugs for non-medical purposes. Sensitivity and specificity for the test were 79.7 and 82.8%, respectively, with a 1-week test-retest reliability of 0.77 (phi-correlation coefficient) in a cross-sectional prospective sample of pregnant women in the USA (Coleman-Cowger et al., 2019). Lower sensitivity of the NIDA Quick Screen-ASSIST relative to other instruments renders it a potentially less useful measure in detecting alcohol use in pregnant women.

The SURP-P is a drug and alcohol screener that consists of three questions: one question on the patient's use of marijuana, one on alcohol use prior to finding out pregnancy status, and one on whether the patient desires to reduce alcohol and/or drug use. While the sensitivity of the instrument is high (92.4%), it suffers from very low specificity (21.8%).

The 4P's Plus is a copyrighted test that demonstrates high sensitivity, but low

specificity, when tested in a sample of pregnant women (Coleman-Cowger et al., 2019). As the 4P's Plus is not a free instrument its use will be limited in clinical contexts.

Physical examination for intoxication or signs of harmful use of alcohol

Certain physical disorders or signs are indicative of unhealthy alcohol use. Common physical indicators include hypertension, a pattern of accidents, dilated facial capillaries, blood shot eyes, hand or tongue tremor, history of gastrointestinal disorders, duodenal ulcers and cognitive deficits (Saunders & Hanratty, 1990; Skinner et al., 1986). Conditions such as liver cirrhosis and pancreatitis are commonly alcohol-induced. Key physical signs that may be indicative of intoxication or alcohol disorder are listed in the table below.

The listed problems are indicative of alcohol misuse, but it should be noted that they are not conclusive, nor does their absence rule out the existence of hazardous alcohol consumption.

However, patients presenting with such problems should be screened for alcohol use, and if appropriate, proceed to a more comprehensive assessment. General practitioners and other health and welfare workers encountering these presentations should have screening systems in place.

Textbox: Common features on physical examination
• Smell of alcohol on the breath • Facial flushing, telangiectasia, periorbital oedema, parotid swelling • Poor self-care, malnourishment, vitamin deficiency • Pallor, fever, flushing • Bruises of different ages • Conjunctival injection • Sweating (alcohol withdrawal) • Tremors (alcohol withdrawal) • Jaundice (alcoholic liver disease)

Source: Saunders et al. (2016). *Addiction Medicine*. Chapter 5.

The Le Go Grid method (Le Go, 1976) is a historically relevant quantitative diagnostic procedure based on physical signs associated with chronic alcohol use. The method focuses on cardinal signs detected by examination of two aspects of the patient's physical appearance (eyes and skin; examining, for example, the presence of puffy facial features), two kinds of tremor (tongue and hands), and the size of the liver. Summary scores are obtained by totalling the individual items, each rated on a four point scale ranging from "not present" to "severe". While the Le Go Grid method has fallen into disuse as a systematic tool, it may still be in used by some health practitioners to alert them to the presence of potential unhealthy alcohol use.

Biological markers of excessive alcohol consumption

Biological markers of excessive alcohol use include direct measures of alcohol (e.g. alcohol in breath or blood) and a range of indirect indices such as liver enzymes activity, the levels of carbohydrate-deficient transferrin, characteristics of blood erythrocytes (e.g. mean corpuscular volume) and others (Connor et al., 2016). Most alcohol consumption measurement continues to use self-report, with measurement of biological markers acting as an adjunct in specific contexts (i.e., confirming recent alcohol use via breathalyser in medico-legal contexts).

Measures of alcohol levels

Alcohol concentrations may be measured in breath, blood, urine and sweat. Use of breath alcohol testing has been incorporated into emergency department practice by a number of groups (Cherpitel, 1995; Robinson et al., 1992; Walsh & Macleod, 1983) as part of screening and brief intervention programs. There is evidence that such programs prevent readmission with alcohol-related trauma (Longabaugh et al., 2001).

False positive detection may result from technical failure but may also be rarely encountered in low levels due to endogenous production of ethanol (Spinucci et al., 2006). Endogenous production of ethanol by yeasts is accentuated by gastrointestinal stasis and dietary sucrose, and is reduced by antibiotics (Baraona et al., 1986).

Biomarkers

The term *biomarkers* encompasses a range of laboratory tests that represents the pathophysiological effects of alcohol on the organs and body systems. They include tests of liver damage: gamma-glutamyltransferase (GGT), aspartate aminotransferase (AST), alanine aminotransferase (ALT), haematological makers such as mean cell volume (MCV), and other physiological markers such as carbohydrate-deficient transferrin (CDT).

Additionally, various metabolites of alcohol can be measured, including ethyl glucuronide (most commonly employed in Australia), ethyl sulphate and fatty acid ethyl esters.

Several of these physiological markers are used as practical tools to detect unhealthy alcohol use (Conigrave et al. 2003; Hannuksela et al. 2007).

Serum GGT, a liver enzyme, is elevated in approximately 60% of alcohol dependent people (Conigrave et al. 2002). CDT has similar sensitivity to GGT but higher specificity (Scouller et al. 2000). CDT results vary depending on the laboratory method used (the more commonly used modified test is less sensitive than the original test) and consequently may be no more sensitive than GGT (Scouller et al. 2000) in detecting alcohol dependence.

A multi-site international study comparing CDT, GGT and AST found that CDT was marginally better than GGT in detecting the broader range of unhealthy alcohol use, although both were better than AST (Conigrave et al., 2002). CDT and GGT levels were influenced by body mass index, sex, age, and smoking status (Agarwal et al., 2015; Fagan et al., 2014; Whitfield et al., 2008). More recently introduced CDT assays offer greater sensitivity, and with the advantage of a specificity of 98%. False positives or

negatives may occur with certain types of non-alcoholic cirrhosis, certain medications, and pregnancy (Bortolotti et al., 2006; Kenan et al., 2011). When AST values exceed ALT, then it points to alcohol as the cause, particularly when AST values exceed ALT values by a factor of two.

In summary, the liver function tests reported as part of a multi-channel biochemical profile, namely GGT, AST and ALT, are helpful pointers to unhealthy alcohol use and are more likely to be abnormal in persons with alcohol dependence or longstanding harmful alcohol consumption. CDT is used in some clinical settings. However, given its expense and that it is not rebateable through Medicare, it is more suitable for screening and monitoring in medicolegal and forensic situations. It is not recommended as a stand-alone screening technique.

The other generally available laboratory tests are less sensitive: for example, an elevated mean cell volume (MCV) is found in only 5-20% of alcoholic patients. The value of these tests in detecting non-alcohol dependent people with risky/harmful alcohol consumption is correspondingly lower. The combination of a number of biological markers can provide a rate of detection above the rate achievable by any biochemical marker alone, with a sensitivity of 78% (Vanclay et al., 1991). However, combinations of tests are not recommended for clinical use because of reduced specificity (Musshoff & Daldrup, 1998).

Alcohol Metabolites

Alcohol metabolites reflect the metabolism of alcohol through subsidiary pathways. They are typically used to monitor abstinence from alcohol, usually when a person is under surveillance of a professional registration organisation or forensic order. Their cost, availability of specialist laboratories and the fact that they are not included in the Medicare schedule limits their usefulness in everyday clinical practice.

Assessment window, sensitivity, specificity and availability of alcohol consumption markers

Biomarker	Sample	Sensitivity	Specificity	Behaviour	Assessment window	Availability on Medicare
GGT	Serum/Plasma	32-65%[§]	88.9-97.5%[§]	Chronic heavy drinking	2–3 weeks	Yes
MCV	Blood	30-76.5%[§]	75-98[§]	Chronic heavy drinking	2–4 months	Yes
ALT/AST	Serum/Plasma	6.5-33%[§]	94-97.9%[§]	Chronic heavy drinking	2–3 weeks	Yes
CDT	Serum/Plasma	15-86.2%[§]	68-98.9%[§]	Heavy use	2–3 weeks	No
5-HTOL	Urine	40-100%[†]	–	Recent use	5–20 hours;	No
PEth	Blood	84-100%[‡]	100%[‡]	Heavy use	2–4 weeks	No
FAEE	Serum/Hair	89-100%*	90%*	Recent use Chronic heavy drinking	2–3 days Several months, depending upon hair length	No
EtG	Urine/Hair	73-92%[§]	91-96%[§]	Recent use; Chronic heavy drinking	2–5 days; Several months, depending upon hair length	No

*Values drawn from Hastedt et al. (2013) and Kulaga et al. (2009).
[†]Values drawn from Høiseth et al. (2008) and Torrente et al. (2012).
[‡]Values drawn from Isaksson et al. (2011) and Walther et al. (2015).
[§]Values drawn from Tavakoli et al. (2011).

Recommendation		Grade of recommendation
4.9	Direct measures of alcohol in breath and/or blood can be useful markers of recent use and in the assessment of intoxication.	B
4.10	Indirect biological markers (liver function tests or carbohydrate-deficient transferrin) should be used as an adjunct to other screening measures as they have lower sensitivity and specificity in detecting at-risk people than structured questionnaire approaches (such as AUDIT).	A
4.11	Many of the newer biological markers not covered by medical rebates (high private costs) and/or only available from specialists laboratories (limited availability) might be considered in medico-legal assessments, self-report or questionnaire data is not attainable and consequences of drinking are major: e.g. pre liver transplant assessments.	GPP

Assessment

Assessment seeks to characterise a person's alcohol consumption, experiences of alcohol related problems, and other relevant aspects of their history, including their medical history, psychiatric history and family history. It represents the body of information that is required to make a diagnosis or appraisal of the patient which in turn is the foundation for an intervention and ongoing management.

Assessment has three important functions:

a) to assist the patient and health practitioner to identify shared treatment goals and develop a treatment plan;

b) to engage the patient in the assessment and treatment process;

c) to motivate the patient to change drinking patterns and related behaviour.

A thorough clinical assessment should be conducted before developing a comprehensive treatment plan for patients who: have not responded to advice to reduce their consumption of alcohol, have severe alcohol-related problems and in patients who asked for or need help to deal with their drinking.

Assessment ideally should combine a variety of techniques for gathering information about the patient, including diagnostic interviews, physical examination, biological markers and clinical investigations, as well as collateral information from significant

others if available.

The areas for assessment include: motivation to change, alcohol consumption pattern, severity of alcohol-dependence, physical health problems, mental health problems, social problems (such as relationship, occupational, and legal problems), family factors and cognitive functioning (Pilling et al., 2011).

The need for comprehensive assessment must be balanced with the desire to engage and retain the patient in treatment. If the patient perceives that little or no progress is being made in the first sessions—or their treatment goal conflicts with that of the health practitioner—their motivation to stay in treatment may reduce.

Recommendation		Grade of recommendation
4.12	Assessment should include patient interview, physical examination (when medical practitioners are available), clinical investigations, and collateral history. It may include structured questionnaires. The length of the assessment should be balanced against the need to keep the patient in treatment and address immediate concerns.	C

Diagnostic interviews

The initial assessment procedure ideally takes the form of an open-ended, semi-structured interview where the patient and the health practitioner compile a narrative history, using questionnaires as appropriate and necessary. This has the advantage of health practitioner involvement, which is personal and responsive to the drinker, rather than mechanistic and impersonal. Yet, it should maintain a purposeful structure so as to avoid a vague, directionless discussion of the drinker's history.

Structured diagnostic interviews are available but infrequently used in clinical practice. Examples include: Composite International Diagnostic Interview (CIDI), the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) and the Alcohol Use Disorder and Associated Disabilities Interview Schedule-Alcohol/Drug-Revised (AUDADIS-ADR).

The Composite International Diagnostic Interview (CIDI) is a standardised and comprehensive interview designed to assess psychological disorders against the International Classification of Diseases (ICD) and DSM diagnoses. It must be administered or supervised by a fully trained mental health professional who has undertaken recognised CIDI training. As well as substance use disorders, it provides a structured approach to diagnosing other mental health presentations. WHO also recently produced the World Mental Health (WMH) Survey Initiative version (Kessler & Üstün, 2004).

The CIDI, the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) and the Alcohol Use Disorder and Associated Disabilities Interview Schedule-Alcohol/Drug-Revised (AUDADIS-ADR) all have sound test-retest reliability and diagnostic concordance for alcohol dependence, but not for risky alcohol use or abuse.

ICD-10, DSM-IV, and ICD-11 alcohol use disorder diagnoses have excellent consistency when assessed by the CIDI (Degenhardt et al., 2019). However, low concordance between ICD harmful use and DSM-5 mild use disorder impairs agreement between ICD-11 and DSM-5 diagnoses.

Assessing dependence and alcohol-related harms

When assessing the patient's dependence on alcohol and the associated related harms, health practitioners should examine patient's severity of dependence, the consequences of drinking and any previous experiences of abstinence and treatment.

Severity of dependence

While ICD-10 and the new ICD-11 continue to define alcohol dependence, the DSM-5 diverges in suggesting levels of Alcohol Use Disorder severity from Mild to Severe. DSM-5 Severe Alcohol Use Disorder is most consistent with ICD-11 Alcohol Dependence.

A number of instruments are available to assess the severity of alcohol dependence. However there is little current research regarding the concurrent validity with each scale and ICD-11 Alcohol Dependence and DSM-V Alcohol Use Disorder.

Some of the most commonly used questionnaires are described below.

The Severity of Alcohol Dependence Questionnaire (SADQ-C) is most useful as an assessment tool with problem drinkers rather than as a screening tool (Stockwell et al., 1994). It takes about five minutes to complete and has five subscales: physical withdrawal symptoms, affective withdrawal symptoms, craving and withdrawal relief drinking, consumption and reinstatement. An addition, the Impaired Control Scale (ICQ) part of SADQ assesses the extent to which subjects perceive loss of control with alcohol use (Marsh et al., 2002).

The original SADQ had good concordance with health practitioner ratings of alcohol dependence (Stockwell et al., 1979), high test-retest reliability, and significant correlations with observed withdrawal severity and narrowing of drinking repertoire (Stockwell et al., 1983). A cut-off score of 30 was found to indicate severe dependence. However, a lower cut-off score may be appropriate for females due to the contribution of consumption questions to the total score. The shortened version of the SADQ (SADQ-C) demonstrated good reliability and validity in a general (Australian) population sample (Stockwell et al., 1994). A key difference between the SADQ and the SADQ-C is that the latter focuses on the last three months, rather than a 'recent period' of heavy drinking.

The Short Alcohol Dependence Data Questionnaire (SADD), a 15-item questionnaire, is similar to the SADQ, although less focused on the experience of withdrawal symptoms. The SADD and the SADQ are thought to measure the same theoretical construct, i.e. the

alcohol dependence syndrome (Heather, 1995; Raistrick et al., 1983).

The Severity of Dependence Scale (SDS) was the subject of an Australian study aiming to determine a cut-off point that discriminated between the presence and absence of a DSM-IV diagnosis of alcohol dependence. It was found that a score of 3 or above on the SDS was the optimal cut-off to detect alcohol dependence (Lawrinson et al., 2007).

The Alcohol Dependence Scale (ADS), a 25-item questionnaire, is designed to identify and assess alcohol abuse and dependence. It assesses four aspects of the alcohol dependence syndrome: loss of behavioural control, psychoperceptual withdrawal symptoms, psychophysical withdrawal symptoms and obsessive-compulsive drinking style. The validation study for the ADS reported high correlations with daily consumption of alcohol, lifetime use of alcohol, social consequences from drinking, prior treatment for alcohol abuse, use of alcohol to change mood, feelings of guilt over drinking, and MAST scores (Skinner & Holt, 1984). For alcohol use disorders, a cut-off score of six or seven had a sensitivity of 0.97 and 0.75 specificity.

An early study found high correlations between the ADS and the MAST, with an ADS score of eight or nine accurately classifying 88% of patients with an alcohol use disorder (Ross et al., 1990). The ADS was also found to correlate well with a structured diagnostic interview amongst a sample of homeless women (Chantarujikapong et al., 1997).

A more recent study identified nine of the 25 ADS items as reliably discriminating between those with no or minimal alcohol problems and those with symptoms of excessive or abusive drinking, in a sample of high-risk drinkers mandated to a domestic violence program (Kahler et al., 2003). However, another study evaluated the concurrent validity of the ADS as a general measure of severity and the screening accuracy of the total score and subscales to detect DSM-IV physiological dependence, with patients entering the COMBINE study. These authors conclude that the ADS reflected variation in symptom severity, but did not adequately identify physiological dependence or withdrawal in treatment-seeking individuals with DSM- IV alcohol dependence (Saxon et al., 2007).

Consequences of drinking

The health practitioner should assess the range of problems the patient has encountered as a result of their drinking. In addition to physical and mental health, the patient's drinking may have led to family problems, detrimentally affected work performance, social relations or financial stability. Alcohol-related offences such as drink–driving are also relevant. A specific crisis in one of these areas may have been the impetus for seeking help, and this should be explored. Discussion of the 'less good things' about drinking can enhance the patient's readiness for change. Alcohol harms are usually assessed using unstructured clinical interviewing.

The Alcohol Problems Questionnaire (APQ) is a reliable instrument that covers eight domains: friends, money, police, physical, affective, marital, children and work (Drummond, 1990).

Previous experiences of abstinence and treatment

Previous episodes of abstinence or reduced drinking and treatment exposure are important to record and understand as it helps to plan future treatment, both in terms of what worked and what did not, as well as to clarify patient experiences, tolerance.

Recommendation		Grade of recommendation
4.13	Assessment of the patient's alcohol-related problems, diagnosis and severity of dependence should be recorded.	GPP

Assessing physical health and well-being

Determined by the professional background and skills of the health professional, all patients should be assessed regarding their physical health. If there are any active medical issues, it is appropriate to encourage the patient to see his/her GP or other medical practitioner. If there are no significant symptoms but the alcohol history places the patient at risk of medical illness, medical review for physical examination and blood tests should also be recommended. Medical practitioners should conduct a thorough assessment, including history, examination and clinical investigations.

Physical examination should at least assess signs of intoxication or withdrawal, signs of liver disease, vital signs (temp, blood pressure, pulse) and screen for organic brain damage (W. R. Miller et al., 1988).

There is demonstrated value in the simple act of providing feedback to the patient on their results of the medical examination and any other clinical investigations. For example, discussion about the implications of abnormal liver function tests has been shown to reduce subsequent alcohol consumption. The Drinker's Check-up is an example of a computer software program that relies heavily on this motivating function of feeding back objective information (Hester et al., 2005; W. R. Miller et al., 1988).

The advantages of feedback are less clear when the medical tests show normal results. However, the whole assessment process should allow patients to assess accurately the degree of their alcohol- related problems and normal medical results should not detract from this process. The issue of normal results can be looked at within the context of a clinical interaction and is further discussed in the motivational interviewing material in *Chapter 9 Psychosocial interventions for alcohol use disorder*.

Recommendation		Grade of recommendation
4.14	Assessment for alcohol-related physical health problems should be routinely conducted. A medical practitioner should assess patients at risk of physical health problems.	GPP

Assessing psychological and psychiatric disorders

Unhealthy alcohol use is associated with a range of mental health problems. It is therefore important to assess for comorbid psychiatric disorders and symptoms, particularly depression and anxiety symptoms. A range of short questionnaires is available for assessing mental health disorders. See *Chapter 21 Co-morbidities – Co-occurring mental disorders* for a comprehensive overview of common alcohol-related mental health comorbidities and treatment procedures.

A limited range of measures of mental health are outlined below. Their use will depend to some extent on the setting, the type of patients being seen, the amount of time available for assessment, the skill level/qualifications of the health practitioner and if the instrument is copyrighted and requires ongoing purchase. However, at least a brief assessment for depression and anxiety—the two most prevalent comorbidities—should be routinely carried out for patients with a suspected alcohol use disorder. This can be done using the Depression, Anxiety and Stress Scale (DASS), the Kessler 10 Symptom Scale (K-10, provides a measure or 'psychological distress' rather than depression and anxiety) or the General Health Questionnaire (Goldberg, 1972; Kessler et al., 2002; Lovibond & Lovibond, 1995). The DASS and K-10 are copyright free and can be used in clinical practice without fees to the publisher.

Comorbidities are discussed in further detail in *Chapters 20 (Comorbidities – Polydrug use and dependence)*, *21 (Comorbidities – Co-occurring mental disorders)* and *22 (Comorbidities – Physical comorbidity)*.

The following list is a sample of the more widely used assessment tools for assessment of possible psychiatric co-morbidity. For a more extensive review of instruments, see (Dawe et al., 2002).

- The General Health Questionnaire (GHQ) is designed as a screening instrument to identify likely non-psychotic psychiatric 'cases' in general health settings (Goldberg, 1972).
- The Short Form 12 (SF-12) assesses possible limitations in both physical and mental health (Ware et al., 1996).
- The Beck Depression Inventory - Second Edition (BDI-II) measures depression and its symptoms (Beck et al., 1996).
- The Spielberger State-Trait Anxiety Scale measures current anxiety (state anxiety) and a more enduring personality characteristic (trait anxiety) (Spielberger et al., 1983).
- The Social Anxiety Interaction Scale and the Social Phobia Scale are useful for assessing social phobia (Mattick & Clarke, 1998).
- The Modified PTSD Symptom Scale is a brief (17-item) measure of post-traumatic stress disorder symptoms (Falsetti et al., 2012).

Note: The Kessler 10, the Mattick scales and the Modified PTSD Symptom Scale are all in the public domain. The other scales may need to be purchased, based on their intended use (for profit, clinical, research).

Recommendation		Grade of recommendation
4.15	Assessment for mental health problems, such as anxiety, depressive symptoms and suicidal risk, should be routine, including mental state examination. Referral for further specialist assessment may be needed if significant psychiatric problems are suspected.	GPP

Assessing motivation

The Transtheoretical Model of Change (DiClemente et al., 1985, TTM; 1991; Prochaska et al., 1992) is the most widely applied model of motivation for change across the social and behavioural sciences and is common within primary care (Davis et al., 2015). Readiness for change is conceptualised as involving five (or six if pre- contemplation is included) stages:

- A pre-contemplative stage, during which the person is not considering changing
- A contemplative stage, during which the person becomes more aware of the benefits of changing, but is ambivalent about changing and does not act
- A preparation stage, during which the person formulates plans for change, may take steps to monitor their problem behaviour and initiate behaviour change
- An action stage, during which the person will engage in active attempts to moderate or to cease the behaviour
- A maintenance stage, which occurs after the behaviour has been moderated or stopped but during which the person could relapse and return to an earlier stage
- A relapse stage, when the individual resumes or even increases the intensity or frequency of the previous behaviour

The model also includes change processes and levels of change. However, the assessment tool's primary purpose is to measure stages of change and our discussion is limited to this aspect. The TTM theory has been tested widely, garnering limited empirical support (Cahill et al., 2010; Littell & Girvin, 2002). It has also been questioned on theoretical grounds (Dijkstra et al., 2006; West, 2005).

There is some evidence of its ability to predict treatment outcome with alcohol dependent patients. Project MATCH assessed readiness to change using a subset of the University of Rhode Island Change Assessment (URICA) scale, and hypothesised that patients low in motivation would do better in the motivational enhancement therapy than in cognitive behaviour therapy. On an analysis of data, overall a median of only 3% of the drinking outcome at follow-up could be attributed to treatment; however the effect appeared to be present before most of the treatment had been delivered, with the zero treatment group showing the most improvement.

The long-term results found that patient-treatment matching was unsuccessful and that the three treatments produced essentially the same results (Cutler & Fishbain, 2005).

Callaghan's additional analysis found that, contrary to expectations, the individuals who made a progressive stage transition to action-oriented stages did not manifest greater improvements in drinking than those remaining in preparatory stages (Callaghan et al., 2007). A similar effect, that greater readiness to change was not predictive of reduced alcohol consumption, was found in a prospective cohort study (Williams et al., 2007), where patient confidence in their ability to change was more predictive of a favourable outcome. Others have challenged the concept that well- defined 'stages' actually exist; West's criticism partly rests on the premise that people sometimes change their behaviour on strong situational determinants without any prior evidence of motivation (West, 2005).

In an Australian study of brief interventions, heavy drinkers who were less ready to change did better with a brief motivational interviewing intervention than with a skills based intervention; however, those classified as ready to change did not do better in the skills-based intervention (Heather et al., 1996). In a more recent study of hospital patients, Saitz et al. (2007) found that brief motivational counselling did not reduce alcohol consumption significantly among the intervention group of heavy drinkers (1.8 drinks per day) compared to 'usual care' patients (2.6 drinks per day) at 12 months; neither did it reduce the need for alcohol assistance in the intervention group at 3 months.

However, both groups reduced their drinking and this may be attributable to the screening and feedback process in itself (Saitz et al., 2007).

Results of these studies suggest that factors other than 'stage of change' (e.g. confidence, self-efficacy, peer group behaviour) probably play a more important part in behaviour change. However, treatment planning should take motivational state into account to assist in treatment retention and capacity to control excessive drinking.

Recommendation		Grade of recommendation
4.16	Motivation to change should be assessed through direct questioning as it can inform engagement strategy, although expressed motivation has only a moderate impact on treatment outcome.	C

Assessment of cognitive functioning

There is a high prevalence of cognitive dysfunction among people with alcohol problems (Cook, 2000). It is estimated that more than 50 percent of patients over the age of 45 who have lengthy histories of drinking at risky levels will show some degree of cognitive dysfunction, although this may not be permanent (Lishman, 1987). Between 75 and 100 percent of patients admitted to alcohol treatment facilities perform below normal for their age groups on tests of cognitive function (Goldman, 1995).

Mild-moderate cognitive deficits attributable to alcohol-abuse and dependence have been demonstrated during both short and long term abstinence (Stavro et al., 2013). The cognitive domains affected include: attention, working memory, speed of processing,

visuospatial abilities, executive functions, impulsivity, learning, memory and verbal fluency. Cognitive dysfunction has been shown to abate after an average of 1 year post-detoxification (Stavro et al., 2013).

Severe alcohol-abuse and dependence may result in several medical causes of cognitive impairment, including Korsakoff's syndrome, Wernicke's encephalopathy, and alcohol-related dementia. Symptoms include cognitive decline, mental confusion, confabulation, memory loss, and anterograde amnesia.

For a detailed overview of cognitive implications of unhealthy alcohol use see *Chapter 2 Prevalence of alcohol consumption and related harms in Australia*.

Screening instruments for cognitive impairment

The most useful short instrument to assess for alcohol-related cognitive impairment is the Montreal Cognitive Assessment tool (MoCA; Nasreddine et al., 2005) as this screens for executive dysfunction. This aspect of functioning is barely covered by screeners such as the MMSE, which is a screening test for neurodegenerative disorder such as Alzheimer's. The MMSE is of limited value in screening for alcohol-related cognitive impairment. An alternative test, which take approximately 10-15 minutes is the Addenbrookes Cognitive Evaluation (ACE; Hodges & Larner, 2017), which is available in an Australian version. Mild-moderate cognitive deficits are often too subtle to be recognised in routine evaluation requiring administration of extensive neuropsychological test batteries to be identified (Gupta et al., 2018). Brief assessments are being developed, though none have been sufficiently validated (Gupta et al., 2018).

Caution needs to be applied to ensure testing is not conducted while the patient is intoxicated or undergoing detoxification, or while affected by benzodiazepines or other sedatives. As well, the health practitioner must be aware of other factors, such as concomitant anxiety or depression, when interpreting tests of cognitive dysfunction. Some of these instruments for screening cognitive impairment require completion of short training courses (usually online) and there may be a fee payable for use of the instruments.

Recommendation		Grade of recommendation
4.17	Screening for cognitive dysfunction should be conducted if the health practitioner suspects the patient has cognitive impairment. Referral to a clinical psychologist or neuropsychologist for further testing may be appropriate. The need for formal cognitive assessment is generally deferred until the patient has achieved several weeks of abstinence.	GPP

Gathering collateral information

Excessive alcohol use and its consequences are stigmatised problems that many patients are reluctant to acknowledge. Most alcohol consumption is measured via self-report, which could be biased due to a number of reasons, for example because the stigma associated with alcohol problems (under report), in forensic assessments (under report) or sometimes competition for limited detoxification and inpatient treatment services (potential to over report). Collateral interviews, therefore, can play a central role, particularly where the patient does not self-report their use of alcohol or its consequences. Collateral information is particularly needed where a discrepancy appears likely.

There are significant barriers that limit access to collateral reports, including legal (privacy legislation limits the distribution of personal information without consent), ethical and financial (the enquiry can be time consuming). Patients may object to such enquiries and the therapeutic relationship may be disrupted

Recommendation		Grade of recommendation
4.18	Collateral reports should be incorporated in the assessment where inconsistencies appear likely, with the patient's permission where possible, and subject to legal and ethical boundaries.	GPP

Family factors

Patients should be encouraged to explore relevant family issues during assessment including the relationships with their spouse or partner, their parents, their children, and other significant people in their lives including any attributions about the effects of the patient's drinking.

Domestic violence and sexual abuse, either as perpetrator and/or victim, are common and serious problems associated with alcohol and other substance use. Because of the sensitivity of these issues, it may not be appropriate to raise them in the first contact session unless there is reason to believe there may be a current safety risk. It is

important to determine whether the patient wishes to discuss these issues. Specialist assessment and intervention is typically required.

When it is possible the health practitioner should interview the spouse or the family members, ideally separately and also with the patient. The family interview is also an opportunity for family members to ask questions and to voice their concerns. It may also help the family see the drinking problem in perspective.

While this kind of complex information is best obtained by clinical interview, Alcohol Problems Questionnaire has a subscale assessing family problems and one assessing marital/relationship problems (Drummond, 1990).

Recommendation		Grade of recommendation
4.19	The social support for the patient should be assessed and this information should be incorporated into the management plan.	GPP
4.20	Health practitioners should determine if the patient cares for any children under the age of 16, and act according to jurisdictional guidelines if there are any concerns about child welfare.	GPP

Assessing risk

Full risk assessment involves assessment of a number of aspects of safety of the patient or others, including homicide, suicide risk, violence risk, physical safety (for example, self-care, risk of accidental injury), childcare, driving and workplace safety. Detailed considerations of full risk assessment are beyond the scope of these guidelines. In many cases, intervention to help the patient abstain from alcohol will substantially reduce many risks. However, where concern about safety of the patient or others remains, specialist consultation should be advised.

While suicide deaths are rare events, suicidal ideation and attempts are less rare, with prevalence of 4.2% for suicide attempts and 11.0% for suicidal ideation in Australian data (Bertolote et al., 2005). In a review of existing data, Luoma and colleagues (2002) found that 38% of adults who go on to commit suicide have had contact with a primary care provider in the month preceding their death. This combined with meta-analytic results showing that screening in primary care may be able to identify adults at increased risk of suicide (O'Connor et al., 2013) provides encouragement for the use of suicide screening. It may be, therefore, desirable to screen for suicide as part of standard risk assessment.

A large number of standardised screeners exist for this purpose, including *Adult Suicidal Ideation Questionnaire*, *Beck Scale for Suicide Ideation*, *General Health Questionnaire*, *Hamilton Rating Scale for Depression*, and *Positive and Negative Suicide Ideation Inventory*. These tests readily available—some at cost—and have been developed and utilised in

various populations, with strong internal psychometric validity. More details on these and other suicide screeners are available in the appendix of (O'Connor et al., 2013) available at: https://www.ncbi.nlm.nih.gov/books/NBK137737/.

Recommendation		Grade of recommendation
4.21	In the event of suspected or continuing concerns over safety of the patient or others, specialist consultation is recommended.	**D**

Treatment Planning

Treatment Planning

As part of treatment planning it is important to identify suitable interventions, set goals, and plan long-term follow-up aftercare to prevent relapse.

Identifying suitable interventions and developing treatment care plans

The factors that promote change in individuals are broader than treatment alone, but treatment can help patients change by learning to think and act differently in relation to drinking (Orford et al., 2006).

The cumulative evidence from the results of the large scale treatment trials, such as Project MATCH (Project Match Research Group, 1997) and the United Kingdom Alcohol Treatment Trial (UKATT Research Team, 2005) suggests that there are a range of effective interventions and treatment approaches for alcohol disorders. The key aim is to engage the patient an empirically supported intervention and assess treatment response.

Assessment and feedback

A comprehensive assessment is fundamental in treatment planning. Feedback of assessment information to patients, that is sharing this information in plain, non-judgemental language, should be standard practice in a collaborative and motivationally oriented approach to treatment (W. R. Miller & Rollnick, 2013), and can increase the patient's understanding, motivation to change and engagement in the treatment process.

Recommendation		Grade of recommendation
4.22	Assessment should lead to a clear, mutually acceptable comprehensive treatment plan that structures specific interventions to meet the patient's needs.	D

Engaging the patient in treatment

Patient engagement may be viewed in terms of intensity and duration of treatment

participation. Higher levels of engagement are predictive of positive treatment outcomes and are, in turn, contingent upon patient, health practitioner and clinic characteristics.

- Patient characteristics include pre-treatment motivation, severity of disorder and prior treatment experiences, strength of therapeutic relationship, perceived helpfulness of the treatment services.
- Health practitioner factors include degree of empathy, non-judgmental attitude, therapeutic relationship and clinical skills.
- Clinic factors include removal of practical access barriers such as transportation, fees, hours, physical surroundings, and perceptions about other patients of the service.

In addition to identifying clinical disorders and effective interventions, negotiation of treatment goals requires clarification of the patient's insight, values and expectation. There is also evidence that providing the patient with a choice of treatment options improves treatment retention (Rokke et al., 1999).

Treatment adherence and completion are prominent issues in alcohol and other drug treatment and the factors that improve it are not yet well understood (Braune et al., 2008; Martinez-Raga, 2002). A focus in early interactions with patients should be on maximising engagement with the professional and the service and fostering a sense of collaboration (A. Zweben & Zuckoff, 2002; J. E. Zweben, 2002).

Central to the provision of any intervention is a strong bond and therapeutic alliance between patient and health practitioner (Shand, 2003). Basic counselling "micro skills" including warmth, empathy and optimism, and strong interpersonal skills and non-judgemental approach are associated with better retention in treatment and indirectly with better treatment outcomes (W. R. Miller & Rollnick, 2013; Shand, 2003).

- **Goal setting: abstinence, moderation and reduced drinking**

Identifying and agreeing upon treatment goals regarding alcohol consumption is an important process for many patients.

Continued abstinence is the optimum outcome for most patients with severe alcohol use disorders, and/or those presenting with associated problems such as organ damage, cognitive impairment and co-existing mental health problems (Connor et al., 2016; Marshall et al., 2010). The risk of relapse is considerably reduced following abstinence, with some analyses finding that relapse hazard approaches zero after 14 weeks (Kirshenbaum et al., 2009). Similarly, a review of the effectiveness of alcohol treatment in alcohol use disorder found that 1 in 4 patients remained continuously abstinent during the year following treatment, while an additional in 10 used alcohol moderately and without problems (W. R. Miller et al., 2001). Patients with severe alcohol use disorders who have abstinence as their own treatment goal are more likely to remain abstinent and have a greater reduction in DSM-IV Alcohol Dependence criteria than those who aim for low-levels of alcohol use or do not have a treatment goal (Berglund et al., 2019). For patients with no treatment goal, abstinence is to be encouraged.

Few patients with severe alcohol use disorder can return to moderate drinking (Helzer

et al., 1985; Witkiewitz, 2008; Witkiewitz et al., 2017). However, many patients are often reluctant to commit to alcohol abstinence, impeding their engagement in treatment (Berglund et al., 2019). A pragmatic approach can be to engage clinically with patients that insist on moderate drinking as a goal, thereby developing a therapeutic relationship which leaves open the future modification of their treatment goal to one of abstinence (Connor et al., 2016; Marlatt & Witkiewitz, 2010).

For patients with no or low levels of dependence, and who are not experiencing significant alcohol related harms, a goal of moderation may be achievable (Dawe & Richmond, 1997; Heather, 1995; Mann et al., 2017). Outcomes at 2.5 and 5 years following treatment are, however, more favourable in patients who report abstinence as their goal for treatment than patients that report moderation as their outcome or have no stated goal (Berglund et al., 2019).

Greater focus has recently been on the utility of 'low-risk drinking' goals as a means of increasing treatment engagement and improving alcohol related harm reduction. Several placebo-controlled trials with alcohol have provided support for harm-reduction goals, demonstrating stable reductions in drinking among alcohol dependent patients over 6-12 months. This suggests an initial harm reduction strategy may be beneficial when patients are unwilling to aim for a goal of abstinence.

When a patient's expressed preference for moderation is at odds with health practitioner advice, options include (Jarvis, 2005; W. R. Miller & Page, 1991):

- to accept the patient's goal on a provisional basis for a stipulated period of time, and:
    1. negotiate a period of abstinence (e.g. one to three months) with the rationale that this would allow the patient to get through withdrawal (if relevant), provide some much needed recovery from the effects of alcohol, and provide time to acquire new skills that can be applied to learning moderation (controlled drinking strategies);
    2. agree on a gradual tapering down of drinking towards abstinence, setting realistic, intermediate goals, and monitoring the number of drinks consumed daily;
    3. negotiate a period of trial moderation, with daily drink monitoring and controlled drinking strategies (coping skills training).

The above recommendation is generally in agreement with the NICE guidelines adopted within the United Kingdom and Germany (National Collaborating Centre for Mental Health Staff, 2011).

Central to this process is ongoing review and monitoring of drinking against identified goals. If these goals are too difficult to achieve, then abstinence may seem a more reasonable goal, and this should be clearly identified and agreed upon with the patient from the outset. Interventions with some patients require protracted but important negotiation for goal setting (Jarvis, 2005; W. R. Miller & Page, 1991).

Recommendation		Grade of recommendation
4.23	Patients should be involved in goal setting and treatment planning.	A
4.24	Sustained abstinence is the optimum outcome for most patients with alcohol dependence. For those with lesser degrees of unhealthy alcohol use, reduced consumption may be feasible.	C

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CHAPTER 5

MODELS OF CARE

Chapter 5. Models of Care

Coordination and delivery of care for the treatment of alcohol use disorders

Patient-centred care

Essential to any effective treatment for alcohol use disorder are the principles of patient-centred care and shared decision making. The clinical 'encounter' is often the most opportune time for patients to become engaged in their own healthcare and presents an opportunity to develop a collaborative relationship on which to base shared-decision making. The term patient-centred care is used to emphasise the importance of improving understanding of the experience of illness and addressing the patient's need. This endeavour is increasing more challenging when health delivery systems are complex and fragmented. This approach uses the expertise of the clinician in appropriately explaining to the patient the features of the illness, the impact the condition may have, and the benefits and risks associated with various treatment approaches. Providing a supportive environment within which the patient can explore their values and preferences to treatment options (or indeed the option of no treatment) places value on the therapeutic relationship between clinician and patient. When impaired decision-making is a feature of the presentation, consultation with the patient's family, caregivers, or other support people can be an effective substitution.

Integrated care

Integrated care is an approach that aims to deliver seamless care within the health system across settings and providers. It places patients at the centre of care by providing wrap-around services for patients with complex needs. Successful integration of care is responsive to the needs of patients and provides patients more choice and greater opportunities to engage with the health system.

Screening, assessment and treatment planning is often the first step in determining appropriate care. The most common approaches to the coordination and delivery of care for people with alcohol problems include the stepped-care approach, case management, residential rehabilitation, and involuntary treatment. The following chapter does not discuss the content of interventions employed within these care systems but focusses on the types of coordination and delivery of care that are available.

The Stepped Care Approach

A stepped care approach is a proposed framework that serves as a guide to clinical decision making and treatment planning (Sobell & Sobell, 2000). Stepped care identifies several key features; 1) treatment should be individualised according to the presenting problem, available treatment resources, and the acceptability to the patient, 2) the treatments should be consistent with current research literature, and 3) that patients should be offered the least "restrictive" intervention appropriate to their presentation that is likely to yield results. Should the first intervention prove to be insufficient to achieve the agreed treatment goals for the patient, the next level of intensity of treatment should be offered until the desired treatment goals are achieved. Key to this approach is regular review and monitoring of the patient, their response to treatment and any changes in their presentation (ie continuous assessment). It is this self-correcting mechanism that informs the next step required (Davison, 2000).

Current practice of stepped care is widely used and provides an adjunct to decision-making and does not replace clinical judgment and expert advice (NSW Department of Health, 2008).
Despite the fact that stepped care has been accepted as a useful guide in selecting treatment strategies and using resources efficiently (Heather, Raistrick, & Godfrey, 2006), there are few randomised controlled studies evaluating the effectiveness of the stepped care approach.

A review of the evidence for the use of stepped care in the provision of psychological therapies (Bower & Gilbody, 2005) was unable to identify a significant body of research. Based on the existing evidence they reviewed they concluded that while there was some evidence to support stepped care as a clinically and cost-effective system for the delivery of psychological therapies, there was no evidence to support strongly the overall effectiveness of the approach. However, in recent years more efforts to evaluate this approach have been made with several randomised controlled studies having been published regarding stepped care and alcohol use disorders.

A large scale randomized controlled study in Germany compared telephone-based stepped care, a full-care intervention, and an untreated control group (Bischof et al., 2008). The stepped care group participants received approximately half of the amount of counselling (in minutes) compared to full-care intervention group. Drinking outcomes did not differ between the two intervention groups and both groups significantly reduced their alcohol consumption compared to the control group. The stepped care group showed small to medium effect size for at-risk drinkers only when compared to the control group. Interestingly, many of the stepped care group participants received only a brief intervention and did not 'step up' to the next level. The study concluded that the stepped care is a cost-effective approach for individuals with at-risk (hazardous) drinking.

A UK study (Drummond et al., 2009) randomized male primary care attendees who scored 8 or more on the AUDIT to either a brief intervention (control group) or stepped care intervention consisting of three successive steps (single session of behaviour change counselling, four 50 minute sessions of motivational enhancement therapy; and referral to a community alcohol treatment agency). Results showed reduced alcohol consumption on both groups after 6 months with greater, although not significant, improvement for the stepped care group. Motivation to change was found to be greater in the stepped care group and resulted in greater costs savings compared with the brief intervention group. This study was unable to recruit participant numbers required to rigorously detect differences and as such serves best as a pilot study to establish feasibility and determine effect size on which to power a larger study.

A further RCT in the UK recruited older adults ≥55 years (Coulton et al., 2017) using similar recruitment methodology as the Drummond study. However, participants were randomized to either stepped care or brief intervention with no control group. The study was powered to detect differences between the groups. Both groups reduced alcohol consumption at follow-up (12 months) compared to baseline but the difference between intervention and control was small and not significant. Findings concluded that stepped care does not confer an advantage over brief (minimal) intervention for older

at-risk (hazardous) alcohol users in primary care but has a greater probability of being more cost-effective.

At present, there is limited evidence to suggest that stepped care is any more effective at reducing alcohol use in at-risk patients than brief interventions although some evidence exists to suggest it may be more cost-effective.

Recommendation	Strength of recommendation
5.1 Stepped-care may provide a useful adjunct to decision-making but does not replace clinical judgement and expert advice.	GPP
5.2 Stepped-care may be a cost-effective approach to initiating treatment.	GPP

Case Management

For the purposes of this literature review we have adopted the definition of case management used by NSW Health Drug and Alcohol Council Case Management Sub-Committee's position paper. It defines case management as comprising the following: A direct client service in which case managers and clients collaborate in comprehensive assessment, individual care planning, service facilitation, outcome monitoring, and advocacy.

Case management is an area of practice that is employed across a range of professions in drug and alcohol programs. It provides a central process of co-ordination of individual client care and works to overcome obstacles in services access.

There is a myriad of case management styles, or models, each with different focus and often targeting a different population or level of need. The three types of case management covered in this chapter include broker/generalist case management, clinical case management, and assertive community management/treatment.

Broker/Generalist case management is the traditional style of case management. This type of case management is widely used in the drug and alcohol field and emphasises assessing client needs, providing referrals to other services and providing coordination and monitoring of treatment.

Clinical case management has the clinician assume responsibility for treating the client utilising interventions such as counselling, psychotherapy and pharmacotherapy while providing brokerage type services where needed. There is little evidence available examining the effectiveness of this type of case management, and only one focussed primarily on people with substance use, including alcohol use problems (McLellan et al., 1999).

Recommendation	Strength of recommendation
5.3 Consider case management for people with moderate to severe alcohol use problems where extra support to	B

access ancillary services, and maintain treatment engagement, may be required.	

While there exists a moderate amount of literature examining case management, the generalisability of findings is limited. Studies often lack adequate descriptions, or the intervention is poorly defined; and inconsistencies in the application of the intervention, or poor intervention fidelity are common. These limitations make it difficult to properly control for non-experimental variables. Given the limitations described above, the evidence for case management is difficult to ascertain.

Three meta-analyses examining case management for substance abuse problems have been published. A Cochrane review (Hesse, Vanderplasschen, Rapp, Broekaert, & Fridell, 2007) found that there was current evidence to support case management can enhance linkage with other services. However, evidence that case management reduces drug use or produces other beneficial outcomes is not conclusive.

A meta-analysis (Rapp, Van Den Noortgate, Broekaert, & Vanderplasschen, 2014) examining case management for persons who have substance abuse problems also found that case management is effective across a wide range of treatment task outcomes, specifically outcomes such as linking with and staying in treatment.

The most recently published meta-analysis of the efficacy of case management for substance use disorders (Vanderplasschen, Rapp, De Maeyer, & Van Den Noortgate, 2019) included several case management styles/models and found the same difficulties regarding the wide variety of type and intensity of case management and the poor description of intervention practices. Despite these limitations, Vanderplasschen et al concluded that case management is more effective than treatment as usual conditions for improving outcomes, although further research is needed to assess its potential for supporting recovery from a longitudinal perspective.

Assertive Community Management (ACM)

Assertive Community Management, also known as Assertive Community Treatment, was originally established in mental health settings and uses an intensive, mobile, community management system. Key features of ACM include; low threshold and rapid access to services, small protected caseload, home/community visits, assertive engagement, and a multi-disciplinary approach.

ACM was initially developed by Stein, Test and colleagues for people with serious mental illness in the community (Thompson, Griffith, & Leaf, 1990). The Madison Model of Community Care, as it was then called, was intended to prevent or reduce hospital admissions. ACM/ACT has since been well defined (McGrew & Bond, 1995; McGrew, Wilson, & Bond, 1996) and the international literature offers strong evidence for its use for severe mental illness (Marshall & Lockwood, 1998). Further, observational studies have demonstrated improved health outcomes using ACM, i.e. improving engagement, treatment retention, reduction of substance use, improvement of social problems (Clark et al., 1998; Inciardi, Martin, & Scarpitti, 1994; Martin & Scarpitti, 1993). ACM has also

been shown to be effective in treating unmotivated and difficult to engage clients with severe and enduring illnesses with complex co-morbidities (Hesse et al., 2007; Penzenstadler, Machado, Thorens, Zullino, & Khazaal, 2017).

More recently, however, ACM has been adapted for patients with primary substance use disorders, including alcohol use disorders. To date, the evidence for the effectiveness of ACM/ACT used for this patient population is still emerging. Very few randomised controlled studies exist, and many studies have severe mental health diagnoses as part of the eligibility criteria.

A recent systematic review of the effect of Assertive Community Treatment for patients with a substance use disorder (Penzenstadler, Soares, Anci, Molodynski, & Khazaal, 2019) have examined a number of studies including randomised controlled studies and observational studies. Most of the included studies reported a reduction in substance use overall but these reductions were also found in the control groups. This could be due to the control arm often using standard clinical case management as the control intervention. Case management often uses ACM/ACT principles and if caseloads are small, the treatment could be similar to ACM/ACT in terms of intensity. A meta-analysis was not conducted as the studies and populations studied were heterogeneous and did not always report on similar outcome measures. Briefly, a decrease in substance use in both the ACM/ACT and control groups was found by (Essock et al., 2006; Gary A. Morse et al., 2006), whereas other studies detected greater reductions of substance use in the ACM group (Clark et al., 1998; Drake et al., 1998; Frisman et al., 2009; McHugo, Drake, Teague, & Xie, 1999). A study by (Bond, McDonel, Miller, & Pensec, 1991) found no difference in alcohol use between the ACM/ACT and control groups. A higher level of engagement with treatment is commonly reported, and higher treatment retention was found in two studies (Bond et al., 1991; McHugo et al., 1999). A higher quality of life after the ACT intervention, high satisfaction with treatment and more stable housing in the ACT groups were also reported by (Calsyn, Yonker, Lemming, Morse, & Klinkenberg, 2005; Drake et al., 1998; Gary A Morse et al., 2006).

Research examining the effectiveness of ACM among persons with alcohol use disorder without a focus on co-occurring severe mental health is limited.

A single blind, individually randomised controlled trial in adults with alcohol dependence and a history of unsuccessful alcohol treatment was conducted in the UK (Drummond et al., 2017). Participants were randomised into either ACM plus treatment as usual (intervention arm) or treatment as usual (control arm). While this study was not statistically powered to provide a definitive test of the effectiveness of ACM, it was able to detect some difference in outcome between the two groups. The intervention group reported fewer drinking days at 6 months than the control group but lower quality of life and greater alcohol–related problems. The intervention group had greater engagement with alcohol services at follow-up (6 and 12 months) and significantly less unplanned inpatient care and outpatient hospital visits than the control group.

There is limited evidence that ACM is effective for alcohol use disorders and the evidence from the field of dual diagnosis is currently weak.

Residential Treatment

Residential rehabilitation services offer intensive, structured interventions after withdrawal from drugs of dependence, including alcohol. Short-term residential treatment programs are commonly delivered in conjunction with a medically supervised withdrawal program and incorporate skills-building with a focus on cognitive/behavioural and relapse prevention interventions. Some evidence exists suggesting that people with more severe alcohol problems may benefit more from inpatient care, and those with low levels of alcohol problems may benefit more from outpatient care (Rychtarik et al., 2000; Tiet, Ilgen, Byrnes, Harris, & Finney, 2007). Therapeutic communities are a type of residential rehabilitation that emphasises a holistic approach to treatment and aims to address the psychosocial and other issues related to alcohol and/or other substance use disorders. Therapeutic communities are generally long-term programs from 12-52 weeks in length. A narrative review (Vanderplasschen et al., 2013) based on 16 studies concluded that there is some evidence for the effectiveness of therapeutic community treatment. However, there is little evidence that therapeutic communities offer significant benefits in comparison with other residential treatment, or that one type of therapeutic community is better than another. Evidence does exist to suggest that longer time in treatment is linked to improved outcomes (Simpson, Joe, Rowan-Szal, & Greener, 1997).

In Australia, residential treatment services are offered by a range of providers including, government-administered agencies (Area Health Services), private for-profit providers (Private hospitals and clinics), and not-for-profit agencies.

Recommendation	Grade of recommendation
5.5 Residential treatment may be considered for people with severe alcohol use problems for whom non-residential treatment options have failed to address their treatment needs.	GPP

Involuntary Treatment

Involuntary, compulsory, or mandatory treatment is often reserved for the treatment of people with the most severe substance use disorders. In Australia, NSW[3], Victoria[4], Tasmania[5], and Northern Territory[6] have laws which allow for a period of detention for the purposes of treatment. Involuntary treatment programs in Australia generally provide short-term care with an involuntary supervised withdrawal component and a voluntary aftercare component.

There is limited scientific literature evaluating compulsory drug treatment outside of the criminal justice settings. Evidence does not support improved outcomes related to compulsory treatment, with some studies suggesting potential harms (Broadstock, Brinson, & Weston, 2008; Werb et al., 2016).

[3] Involuntary Drug and Alcohol Treatment Act 2007
[4] Severe Substance Dependence Treatment Act 2010 (SSDTA)
[5] Alcohol and Drug Dependency Act 1968
[6] The Alcohol Mandatory Treatment Act 2013

Recommendation	Grade of recommendation
5.6 Evidence currently does not support improved outcomes related to involuntary treatment beyond the period of detention.	D

Managed Alcohol Program

Managed alcohol programs (MAPs) are a novel harm reduction intervention for people who
experience long-term homelessness and severe long-term alcohol dependence. MAPs provide regulated amounts of alcohol onsite under supervision. Preliminary international evidence suggests that MAPs are associated with some reduction in consumption although still at WHO high-risk levels. Consumption of non-beverage alcohol (such as 'meths') decreases along with some alcohol-related harms. There are currently no MAPs in Australia but further evaluation of this model is underway. These developments may play a role in reducing the harm associated with severe alcohol dependence but no recommendation can be made concerning the effectiveness or cost-effectiveness of a MAP in Australia at this time.

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CHAPTER 6

BRIEF INTERVENTIONS FOR ALCOHOL USE AND RELATED-PROBLEMS: A REVIEW OF THE EVIDENCE

Chapter 6. Brief interventions for alcohol use and related-problems: A review of the evidence

Brief interventions (BIs) are an important component of alcohol treatment. They are an effective way of reducing alcohol consumption and related harm for individuals with a broad range of alcohol use. Brief alcohol interventions achieve positive outcomes across a range of healthcare, education and community settings. There is also growing evidence for the cost-effectiveness of BIs. By providing brief, cost-effective alcohol treatment to large numbers of people, BIs have the potential to help reduce the impact of alcohol on the burden of disease and injury in Australia (Crosland, Ananthapavan, Davison, Lambert, & Carter, 2019). Despite this, the implementation of BI remains remarkably low (Cheeta et al. 2008).

This review summarises the evidence base for the efficacy of BIs as a standalone intervention for reducing alcohol use and related-problems, and provides recommendations for their use. Given the effects of BIs vary between different target groups and settings, diverse studies are reviewed and key learnings presented. Research on the use of BIs in combination with more intensive psychosocial treatments are covered in Chapter 9.

What are BIs?

BIs are psychosocial interventions that include screening, assessment feedback and the provision of counselling and information to achieve a reduction in alcohol use and/or alcohol-related problems (Bien, Miller, & Tonigan, 1993). Most recent definitions of BIs use motivational interviewing (MI) techniques to achieve these goals. BIs are by definition delivered in a time-limited way, ranging from one to four sessions of between 5 and 30 minutes.

BIs are an important part of the overall approach to alcohol use. Opportunistic BIs are offered to people who have not sought treatment for alcohol use, but who present to other settings (e.g., emergency departments (EDs), primary care) with risky alcohol use, alcohol-related illnesses, injuries and/or problems. Routine screening is sometimes used in these settings to identify people drinking at risky levels. Such interventions aim to increase people's awareness that they are drinking at risky levels, and encourage them to decrease their use to prevent or reduce their risk of alcohol-related harm.

BIs are also offered to people seeking help for alcohol-related problems. They can be delivered as a standalone treatment or as a motivational prelude to pharmacological and/or other intensive psychological alcohol treatment (see Chapter 7). They are also offered as the initial step in stepped care models of healthcare, in which those who do not respond to a BI are stepped up to more intensive alcohol treatment. Brief MI interventions are also delivered as part of integrated interventions, in which they are combined with more intensive psychosocial treatments for alcohol, such as cognitive behaviour therapy (CBT).

What are the Key Components of BIs

There is considerable variability in the content and length of BIs. The majority contain screening, feedback, information and MI strategies. There are a number of frameworks

with comparable structures that can be used to guide the delivery of a BI, including: FLAGS (feedback, listen, advice, goals, strategies) and FRAMES (feedback, responsibility, advice, menu, empathy, self-efficacy) (see Appendix A; Bien et al., 1993; Miller, Zweben, Di Clemente, & Rychtarik, 1992). The treatment context and clinical skills of workers are key determinants of which components are delivered.

Motivational interviewing

The majority of BIs are delivered in the spirit of MI. MI is a client-centred therapeutic style that enhances readiness for change (Miller & Rollnick, 2012). MI facilitates treatment engagement and behaviour change by assisting clients to explore and resolve ambivalence about change (Miller & Rollnick, 2012). The following four basic principles of MI are used to enhance a client's motivation and commitment for change: (i) express empathy, (ii) highlight discrepancies, (iii) support self-efficacy, and (iv) resist the "righting reflex" (Miller & Rollnick, 2012). A summary of the key components of brief MI interventions is provided in Table 1.

Screening, feedback and information

Brief standardized screening tools (e.g., Alcohol Use Disorders Identification Test (AUDIT); Bohn, Babor, & Kranzler, 1995; Alcohol Smoking and Substance Involvement Screening Test (ASSIST); Humeniuk et al., 2008) are an alternative to comprehensive alcohol and other drug (AOD) assessments, and are used to identify people who may benefit from a BI. Screening tools can also provide valuable clinical information on the frequency, quantity and consequences of alcohol use.

The delivery of personalized, informal feedback on screening tools is a key component of BIs. This may include information for the client on the frequency, quantity or severity of alcohol use and related problems, as well as how they compare with clinical or population norms. The feedback process provides an important opportunity to provide information on the psychological, social and physical consequences of alcohol use. Information on harm reduction strategies (e.g., set limits, drink water) for reducing risk of alcohol-related harms is also commonly provided. This includes take-home materials (handouts, internet sites, self-help materials) tailored to the needs of the individual. Assessment feedback and information is typically provided in a collaborative manner according to the principles of MI, using the 'elicit-provide-elicit' approach (i.e., first ask for permission, offer the information, and then ask for the client's response). This provides an important opportunity to increase the individual's awareness of their alcohol use, and begin to explore and understand the associated risks or consequences.

Goal setting

Goal setting is another key component of BIs. People who acknowledge they may be drinking too much may be willing to set a goal for making a change in their alcohol use. It is important to ensure these goals are specific, realistic and achievable and to help them develop a plan for how they can make this change. Some people who are identified as drinking at risky levels may not perceive change as necessary. Providing these individuals with information about the potential consequences of continued use may help them recognise their alcohol consumption is excessive. If they are not receptive to making a change in their alcohol use, it may be useful to focus on how they can use harm

minimisation strategies (e.g., drink water, eat first) to make a change in their alcohol-related behaviours.

Referral to treatment
The additional step of referral to treatment has been added to recent BI frameworks (e.g., SBIRT: Screening, BIs, and Referral to Treatment) (Babor et al., 2007). This enables BIs to be delivered across the full spectrum of alcohol use, including those with severe problems and dependence, such that people who are assessed to require further treatment or do not respond to a BI are referred for more intensive alcohol treatment (Babor et al., 2007).

Table 1: Key components of BIs

Engagement
Screening and assessment feedback
Information
Motivational Interviewing *General principles* Express empathy Highlight discrepancies between current behaviour and the client's goals and values Resist the "righting reflex" (don't tell your client what to do) Support self-efficacy *Build motivation to address alcohol use* Skills Ask open ended questions Listen reflectively Affirm Summarize Rate importance of making a change and confidence in making a change *Build commitment to change and develop a change plan* Skills Summarize/recapitulate Develop goals Develop a change plan Rate how likely it is the client will implement their change plan
Referral to further alcohol treatment (if required)

How effective are BIs?
A growing number of meta-analyses have examined the efficacy of BIs for alcohol use and include studies from a variety of treatment settings. In the following sections, meta-analyses of brief alcohol intervention studies conducted across multiple settings in adults and young people are first examined.

This is followed by a review of BI studies conducted in specific settings, namely primary care, ED, general hospital inpatient and outpatient settings, pharmacies, specialist outpatient services, education settings, community counselling and welfare services, workplace settings, and criminal justice settings.

Adults

Seven meta-analyses examining the effectiveness of BIs for adult drinkers delivered across multiple settings were conducted between 1997 and 2017. Several of these meta-analyses have examined the effectiveness of BIs/MIs for multiple health behaviours (Burke, Arkowitz, & Menchola, 2003; Hettema, Steele, & Miller, 2005; Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010). Only the results for alcohol use are reported here. The meta-analyses are presented in chronological order, meaning the more recent meta-analyses may have included the same studies as previous ones.

Wilk et al (1997) conducted the first meta-analysis of BIs for heavy or problem alcohol users compared to no treatment (assessment only) control conditions. Twelve randomized controlled trials (RCTs) conducted in adults (n = 3,948) in a variety of settings (outpatients, inpatients, the general population) with sample sizes greater than 30 were included. Five of the 10 alcohol studies excluded people with severe alcohol dependence. All BIs provided MI including advice, feedback and education and were less than one hour in duration. The quality of the methodological design and statistical analysis were assessed using Chalmers (1981) scoring system (high quality score > 0.42) The mean overall quality score was 0.49 (SD = 0.17), with 8 RCTs scoring above this threshold. Only eight of the RCTs could be included in the meta-analysis. Heavy drinkers who received the brief alcohol intervention were twice (Odds Ratio (OR) = 1.95; 95% confidence interval (CI) 1.66, 2.30) as likely to reduce their alcohol use than those who received no treatment at 6 and 12 months follow up. The inclusion of only the six high-quality RCTs in the analysis did not alter results (OR = 1.91, 95% CI 1.61, 2.27). Three of these high-quality studies included people with alcohol dependence. Results were consistent across sex, length of intervention (> or < 1 session), type of clinical setting (inpatient vs outpatient), and low versus high-quality clinical trials. Conclusions were that heavy drinkers who received the BI were twice as likely to reduce their drinking at 6- to 12-months follow up compared to no intervention.

Burke et al. (2003) conducted the first meta analyses of MI trials. Thirty RCTs of face-to-face individual MI for alcohol and/or drug addiction, diet and exercise were included. Two independent raters assessed study quality on 12 dimensions using the Methodological Quality Score (MQS) (Miller & Wilbourne, 2002). Severity of alcohol or drug addiction was also assessed based on the amount of alcohol consumed at intake or a diagnoses of DSM-III-R OR DSM-IV substance abuse. Fifteen studies (n = 3,719) examined alcohol outcomes in AOD treatment services (n = 6), colleges (n = 3) and hospital or ED settings (n = 7). Compared to no treatment, MI had significant small effects on alcohol use (d = 0.25, 95% CI 0.13, 0.37) and moderate effects on peak blood alcohol concentration (BAC; d = 0.53, 95% CI 0.20, 0.86) outcomes, but was not more effective than other active alcohol treatments (d = 0.09, 95% CI -0.04, 0.23). Study quality, length of follow up and the severity of alcohol or drug addiction were not associated with outcomes. Burke et al. (2003) concluded MI was superior to no-

treatment for alcohol problems but was not more effective than other active alcohol treatments.

A meta-analysis by Hettema et al. (2005) examined 72 clinical trials of MI on multiple health behaviours, including 32 studies on alcohol abuse. Studies including people with alcohol dependence were included. Study quality was rated using the MQS (Miller & Wilbourne, 2002). The mean between-group combined effect size for the 32 alcohol studies ranged from −0.08 to 3.07, with a mean of 0.41 at post treatment (≤3 months; 95% CI 0.31, 0.51) and 0.26 (95% CI 0.18, 0.33) across all follow up points. MI for alcohol was more effective than no treatment at post treatment (d = 0.44, 95% CI 0.30, 0.59) and across all follow up points (d = 0.38, 95% CI 0.20, 0.56), and more effective than standard or other active treatment at post treatment (d = 0.38, 95% CI 0.23, 0.53) but not across all follow up points (d = 0.11, 95% CI 0.05, 0.17). It was also found to have positive additive effects when combined with other alcohol treatments (d = 0.33, 95% CI 0.23, 0.44). MI had stronger effects for alcohol quantity (d = 0.31 (0.18, 0.44; $p < 0.05$) and frequency variables (d = 0.22, 95% CI 0.10, 0.34; $p < 0.05$), than BAC variables (d = 0.08, 95% CI −0.02, 0.19; $p > 0.05$) across all follow up points. Moderation analysis across all 72 included studies (targeting multiple health behaviours) found MI was not effective when delivered using strict adherence to a manual (not otherwise defined). No relationship between outcomes and MI treatment duration (MI mean of 2 sessions, mean = 2.24 hours, SD = 2.15), MI adherence, time of follow-up assessment, type of comparison group, counsellor training, participants' age, sex, problem severity, or problem type were found. In summary, MI had small to moderate effects on alcohol outcomes compared to no treatment across all follow up points, and was more effective than standard or other active treatments at post treatment only. This suggests there may be some variability in the effectiveness of MI for alcohol compared to other active treatments according to the type of comparison group and the length of follow up.

Lundahl et al (2010) conducted a meta-analysis of 119 studies on MI for substance use (tobacco, alcohol, drugs, marijuana; dependence not excluded), health-related behaviours (diet, exercise, safe sex), gambling, and treatment engagement. Study rigor was coded using a bespoke 18-point methodological quality scale. The 68 MI studies on alcohol had an overall significant small effect (Hedge's g = 0.15, 95% CI 0.09, 0.21) on alcohol outcomes. MI had a small but significant effect on alcohol outcomes compared to no treatment, waitlist, minimal treatment groups (information brochure) or treatment as usual (TAU) (47 studies; effect size = – 0.20; 95% CI 0.12, 0.27), but not compared to active treatments (21 studies; effect size = 0.03; 95% CI -0.08, 0.13). Across the 119 included studies, study rigor and length of follow up (up to 24 months) had no impact on outcomes and client age, sex, and level of distress had little to no impact on outcomes. Lundahl et al (2010) concluded MI had better substance use outcomes than no treatment, but was not significantly different from other specific treatments.

A meta-analysis by Vasilaki et al (2006) of 22 RCTs reviewed the evidence for the efficacy of MI for alcohol abuse and/or dependence. Of these studies, seven were conducted among college students; six were tested in outpatient settings; five in emergency rooms or clinics; and two in specialist substance use services. Study quality of each study was assessed using the MQS criteria developed by Miller and Wilbourne (2002). Seven studies which did not meet inclusion criteria or provided insufficient

information were excluded. The final sample comprised 15 studies (n = 2,767), which included seven with excellent methodological quality. MI (mean duration = 87 minutes) was significantly more effective than no treatment for reducing alcohol consumption in 9 studies, with an aggregate Cohen's effect size of 0.18 (95% CI 0.07, 0.29). The effect size was significant at ≤ 3-month follow up (5 samples; d = 0.60, 95% CI 0.36, 0.83) but not at 6-months follow up (4 samples; d = 0.06, 95% CI -0.06, 0.18). The effect at ≤ 3-month follow up remained significant after one study containing individuals with severe alcohol problems was excluded to reduce heterogeneity (4 samples; d = 0.40, 95% CI 0.36, 0.44). MI (9 studies; mean duration = 53 minutes) was also found to be more effective than a diverse set of other active treatments, with an aggregate effect size of 0.43 (95% CI 0.17, 0.70). However, it cannot be concluded that MI is more efficacious than any one of the alternative treatments alone. These alternative treatments included six studies delivering brief treatments (advice, standard care, educational intervention), and three studies with more extensive treatments (directive confrontational counselling, skill-based counselling, CBT). In a narrative synthesis of results, the authors reported MI was efficacious in both treatment-seeking (5 studies) and non-treatment-seeking samples (4 studies) compared to no treatment; however, when compared to active treatments, MI was more efficacious in treatment seeking (1 study) than non-treatment seeking (6 studies) samples. The within-subject effect sizes in four studies that included dependent drinkers were also observed to be larger for help-seeking people with low dependence. However, these conclusions were based on a narrative review only. The authors concluded that brief MI was an effective treatment for reducing alcohol consumption compared to no treatment and other active treatments. They also suggested MI may be more cost-effective than extended active treatments, as its average duration was shorter.

A Cochrane review of 59 RCTs (n = 13,342), which included 21 RCTs on people with primary alcohol use, examined the effectiveness of individual face-to-face MI among people with substance abuse or dependence (Smedslund et al., 2011). Included studies were from a range of delivery settings (except studies delivering one session in EDs), and used MI as a standalone therapy either as prelude to or integrated with another therapy. Included studies must have conducted MI fidelity checks of audio or video recordings. Study quality was assessed using Cochrane GRADE criteria (Higgins & Green, 2011). Compared to no treatment, MI had a significant moderate to large effects on the extent of substance abuse at post treatment (4 studies, low quality; SMD = 0.79, 95% CI 0.48, 1.09) and significant but weaker effects at both short (1-6 months; 15 studies, moderate quality; SMD = 0.17, 95% CI 0.09, 0.26), and medium term (7-12 months; 12 studies; low quality; SMD = 0.15. 95% CI 0.04, 0.25) follow up. The one low quality study (n = 363; college student drinkers) examined longer term outcomes (12 months) and found no significant effects. No significant differences on substance abuse outcomes between MI and TAU were found at post treatment (9 studies, moderate quality), 1-6 months follow up (10 studies; moderate quality) or 7-12 months follow up (5 studies, low quality). No differences between MI and other active treatments were found at post treatment (2 studies, low quality; SMD = -0.07, CI 95% -0.37, 0.23), 1-6 months (12 studies, moderate quality, SMD = 0.02, CI 95% -0.07, 0.12), 7-12 months (6 studies, moderate quality; SMD = -0.02, CI 95% -0.16 to 0.13), or > 12 months follow up (2 studies low quality; SMD = -0.03, CI 95% -0.21, 0.14). Not enough studies with sufficient data were available to conduct planned subgroup analyses to determine if MI was more effective among

people with more or less severe abuse, or for difference types of substance use (e.g. alcohol versus cocaine). Smedslund et al. (2011) concluded there was mostly low quality evidence that MI was more effective than no treatment at post treatment, and had significant, but weaker effects at short and medium term follow up. MI was not more effective than TAU or other active treatments at any time point. It should be noted that these results are applicable to the use of MI for substance abuse or dependence more broadly, not just alcohol use.

Finally, Sayegh et al (2017) conducted a meta-analysis of five RCTs comparing MI to non-active treatment controls. All studies included biochemical verification of alcohol outcomes. Effect sizes at < 3 months (excluding post treatment) and 3-6 months were examined. Study quality was assessed using Cochrane GRADE criteria (Higgins & Green, 2011), but individual study results were not reported. MI had a small to moderate effect on alcohol outcomes at 3-6 months follow up (4 studies; d = 0.30, 95% CI 0.03, 0.57) compared to non-active control. Only one RCT reporting short term outcomes (< 3 months) among people with alcohol dependence and hepatitis C was found, which reported MI had small effects (d = 0.20, 95% CI 0.32, 0.71) compared to controls (Sayegh et al., 2017). While a strength, the requirement for all studies to use biochemical verification of alcohol outcomes limited the conclusions which could be made from the meta-analysis due to the small number of studies.

Summary. Is MI more effective than no treatment or TAU/alternative active treatments in adults across multiple settings?
There is consistent evidence from the seven meta-analyses conducted between 1997 and 2017 that brief MI is more effective than no treatment for reducing alcohol use in adults (Burke et al., 2003; Hettema et al., 2005; Lundahl et al., 2010; Sayegh et al., 2017; Smedslund et al., 2011; Vasilaki, Hosier, & Cox, 2006; Wilk et al., 1997).

MI was not found to be more effective than TAU or alternative active treatments for reducing alcohol or substance use in three meta-analyses (Burke et al., 2003; Lundahl et al., 2010; Smedslund et al., 2011). Mixed results were reported in two other meta-analyses (Hettema et al., 2005; Vasilaki et al., 2006). Therefore, there is insufficient evidence to conclude that MI is more effective than standard care or alternative active treatments for reducing alcohol use.

The two most recent meta-analyses either did not focus specifically on alcohol (Smedslund et al., 2011) or were limited by the use of restrictive inclusion criteria (Sayegh et al., 2017). Variability in the scope, study inclusion/exclusion criteria, type of comparison treatments used, study quality criteria, analysis strategy and reporting of results also limits the conclusions which can be made. While earlier BI studies (pre-2002), tended to exclude individuals with alcohol dependence, none of the meta-analyses included in this review excluded studies involving people with alcohol dependence. More recent studies have tended to only specify a minimum not a maximum alcohol use threshold for study entry, and have not assessed for the presence of alcohol use disorders. As a result, it remains unclear if people with alcohol dependence are more or less likely to benefit from a BI/MI.

Adolescents and young adults

Two meta-analyses have examined the efficacy of BIs in adolescents and young adults in studies from a variety of clinical settings. Tanner-Smith & Lipsey (2015) meta-analysed 185 studies on brief alcohol interventions (≤ 5 hours) for adolescents and young adults (11-30 years) compared to no treatment, a waitlist control or TAU. Studies comparing different types of active treatments were excluded; RCTs and controlled quasi-experimental designs were included. Overall, brief alcohol interventions led to significant reductions in alcohol consumption and alcohol-related problems among adolescents (g = 0.27, 95% CI 0.16, 0.38 and g = 0.19, 95% CI 0.06, 0.31) and young adults (g = 0.17, 95% CI 0.13, 0.20; and g = 0.11, 95% CI 0.08, 0.14). These effects persisted for up to 1 year after intervention and did not vary across participant demographics, intervention length, or intervention format. BIs containing certain intervention components were associated with larger reductions in alcohol use (decisional balance, goal-setting exercises) and alcohol-related problems (personalised feedback, norm referencing) in adolescents. Intervention components had no impact on these outcomes in young adults. Results did not vary by delivery site (school/university, primary health care clinics) but those delivered in emergency room settings did not show significant effects on alcohol-related problems in young adults. The authors concluded that brief alcohol interventions yield modest effects on alcohol-related outcomes for adolescents and young adults and are potentially worthwhile given their brevity and low cost.

A 2016 Cochrane review of 84 RCTs (Foxcroft et al., 2016) compared brief MIs with control conditions in young people (n = 22,872; 15-25 years), with most studies (n = 54) taking place in a higher education setting (e.g., universities, colleges). An additional 14 studies were in a healthcare setting including hospital EDs (n = 7), outpatient AOD treatment (n = 2), community health care clinic (n = 2) and an HIV centre (n = 3); and the remaining 16 were across a range of other settings, including criminal justice (n = 5), army recruitment (n = 6) settings (Foxcroft et al., 2016). Comparison conditions included no treatment (n = 49) or alternative active treatments without MI components including alcohol counselling, education or information only (n = 25), feedback only (n = 7), relaxation (n = 3) and alcoholics anonymous mutual support group (n = 1).

Data from 68 of the 84 studies were available for inclusion in the meta-analysis. There was low to moderate quality evidence that MI, compared to no treatment or non-MI alternative treatment, resulted in small significant reductions at short- (< 4 months) and longer-term (≥ 4 months) follow up for: the quantity of alcohol consumed (SMD = -0.17, 95% CI -0.25, -0.09; SMD = −0.11, 95% CI −0.15, −0.06); frequency of alcohol consumption (SMD = -0.18, 95% CI -0.29, -0.07; SMD = −0.14, 95% CI −0.21, −0.07); peak BAC (SMD = -0.23, 95% CI -0.32, -0.13; SMD = −0.12, 95% CI −0.20, -0.05) and reduced alcohol problems (SMD = −0.10, 95% CI -0.18, -0.01; SMD = −0.08, 95% CI −0.17, 0.00). There was also moderate quality evidence for no difference between MI and non-MI treatment for binge drinking, drink-driving, average BAC and other risky behaviour at short and long-term follow-up. The type of control condition (no treatment, alternative active non-MI intervention) had no impact on long term alcohol outcomes. However, at short term follow up, pooled effects were larger for quantity, frequency and binge drinking in MI versus no treatment comparisons compared to MI versus alternative active treatment. No relationship between the length of MI and its effectiveness was found. There were no subgroup differences in MIs effects by

treatment setting (college/university vs other settings), or risk status (high risk vs all/low-risk) of young people.

In summary, this Cochrane review and meta-analysis found that MI led to small significant reductions in the quantity and frequency of alcohol consumption and peak BAC compared to no treatment or an alternative treatment at both short- and longer-term follow up. A small marginal effect for alcohol-related problems was also found. Foxcroft et al., (2016) concluded that the effect sizes were so small they were unlikely to be clinically meaningful. This conclusion attracted considerable debate when the original Cochrane review was published in 2014 (Mun, Atkins, & Walters, 2015) . The review was subsequently updated in 2016, but the conclusions remained unchanged. Critics have interpreted the effect sizes found in these reviews as modest yet beneficial and potentially meaningful, given the brevity and inexpensiveness of MI (Grant, Pedersen, Osilla, Kulesza, & D'Amicio, 2016). Commentators have also advocated for the field to consider using minimal clinically important differences when interpreting the outcomes of meta-analyses, rather than dismissing interventions with small effects (Grant et al., 2016).

Summary. Is MI more effective than no treatment or TAU/alternative active treatments in adolescents and young adults across multiple settings?
Brief MI is more effective than no treatment for reducing alcohol-use and related problems in young people (Foxcroft et al., 2016; Tanner-Smith & Lipsey, 2015). However, effect sizes are small, and tend to be larger at post treatment and short term follow up (e.g. first 3 months of treatment) than at long term follow up (Foxcroft et al., 2016). Finally, the Foxcroft et al. (2016) Cochrane review found MI was more effective than alternative non-MI treatments in young people, but effect sizes were larger in MI versus no treatment comparisons.

How effective are BIs delivered across multiple settings?
The results of the above review of the evidence base for brief alcohol interventions for young people and adults, including studies from a variety of treatment settings, are summarised in the recommendations below:

Recommendation	Grade of recommendation
6.1 Brief motivational interviewing reduces alcohol consumption in adolescent, young and older adults with risky patterns of alcohol use, compared to no treatment, but effects are small.	**A**
6.2 Brief motivational interviewing is not more effective than standard care or alternative alcohol treatments for reducing alcohol consumption in adults with risky patterns of alcohol use.	**B**

6.3 Brief motivational interviewing is more effective than alternative alcohol treatments in young adults, but effects are very small	**A**

Where should BIs be delivered?
BIs can be delivered in a variety of settings including primary care (general practice, EDs, general medical inpatient wards and outpatient clinics), AOD specialist services, pharmacies, educational facilities, community counselling and welfare services, justice settings and the workplace.

Limited studies have specifically compared the efficacy of BIs across study settings. Platt et al.'s (2016) systematic review and meta regression comparing BIs to no or minimal interventions, included 52 studies (N = 26 891) with studies grouped into ED (n= 10); community-based (non-health; n = 6); primary or ambulatory care (n = 19); inpatient hospital (n = 5); and university (n = 10) settings. While setting did not explain heterogeneity of outcomes, interventions conducted in university settings (d = −0.20, 95% CI −0.39, −0.09) and in primary or ambulatory care (d = −0.20, 95% CI −0.27, −0.13) appeared to be the most effective in reducing alcohol use, with small but statistically significant effects for the intervention. Those conducted in community settings, which included military, justice and research settings, did not appear to be effective (d = −0.03, 95% CI −0.16, 0.10). However, the results of this meta-regression are limited by the small number of studies in each group.

The evidence base for each of the different settings where BIs have been delivered is examined below.

General practice and other primary care settings
Primary health care is typically the first contact a person has with the health system, with 381,000 visits to the general practitioner occurring within Australia every day, and 85% of Australians contacting their general practitioner each year (Australian Institute of Health and Welfare, 2016; Britt et al., 2016). As primary care commonly offers comprehensive health care models, alcohol screening can occur opportunistically in the course of patient registrations or general health checks. These early screens normal consisting of a small number of standardised alcohol-related questions (e.g., frequency, quantity and intensity of use), and have the potential to identify a broad range of alcohol use patterns, from unhealthy use just above drinking guidelines, to risky use associated with alcohol-related harm, to dependence. Positive screening can be followed by a BI, delivered by health practitioners who already have the resources and skills in offering health-related interventions.

A number of meta-analyses have previously examined the effectiveness of BIs in primary care settings (Ballesteros, Duffy, Querejeta, Arino, & Gonzalez-Pinto, 2004; Beich, Thorsen, & Rollnick, 2003; Kaner et al., 2007; Moyer, Finney, Swearingen, & Vergun, 2002; Poikolainen, 1999). Only the latest and most comprehensive meta-analyses of the effectiveness of brief alcohol interventions in primary care will be reviewed here.

A 2018 Cochrane review of 69 RCTs (n = 33,642; mean age 40 years SD = 11.18) compared BIs (≤5 sessions of brief advice or lifestyle counselling; < 60 minutes in total) aimed at reducing hazardous or harmful alcohol consumption, to no treatment (assessment only) or minimal treatment (TAU for presenting complaint or written information such as an information brochure) in people attending general practice (38 studies), emergency care (27 studies) or other primary care settings (61 studies) for reasons other than alcohol treatment (Kaner et al., 2018). Nineteen of the 69 RCTs (28%) excluded people with alcohol dependence and/or excessive alcohol use (defined as > 42-95 standard drinks/week). All BIs provided feedback and structured advice, MI/motivational enhancement therapy (MI + feedback; MET) (n = 32) or CBT (n = 2). Five studies also included an extended intervention arm (> 5 sessions and/or > 60 minutes duration). Data from 38 studies (n = 15,197) that reported alcohol consumption outcomes at 12 months were included in the meta-analysis. There was moderate-quality evidence that BIs resulted in significant reductions in the quantity of alcohol consumed (MD = -20 grams/week, 95% CI -28, -12) at 12 months follow up compared to no or minimal treatment. There was also moderate-quality evidence that BIs had a very small impact on the frequency of binges per week (MD = -0.08, 95% CI -0.14, -0.02) and drinking days per week (MD = -0.13, 95% CI -0.23, -0.04), and no impact on drinking intensity (MD = -0.2 grams/drinking day, 95% CI -3.1, 2.7).

There was low quality evidence of no differences in alcohol quantity (3 studies; 552 participants; MD = 2 g/week, 95% CI -0.42, 0.45), frequency (1 study; 147 participants; MD = -0.5 drinking days/week, 95% CI -1.2, 0.2) or the percentage of binge drinkers (2 studies; 339 participants; RD = 2%, 95% CI -8, 12) for BIs compared to extended interventions (e.g., 4 x 30mins MI; 1 x 30-45mins MI + 2 x shorter; 5 sessions over 60mins). There was no evidence that extended interventions reduced consumption any more or less than BIs. However, these meta-analyses were less robust, as they included much smaller groups of participants. In addition, these comparisons of BI versus extended interventions may be confounded by the fact that session attendance was not always reported (i.e. participants may not all have received a full 'extended' intervention).

Twenty of the included studies reported alcohol-related harms, but the large number of scales used to measure different outcomes precluded meta-analysis of alcohol0-related harm. Subgroup analyses using meta-regression found age, gender, treatment duration, treatment type (advice or counselling), control condition (extended intervention, no or minimal intervention) and follow up time-point (minimum 6 months) had no impact on effects, after controlling for year of publication. For every one-year increase in the publication date the mean difference in alcohol consumption outcomes between the BI and control group decreased by 2.3 grams/week (95% CU 1.3 to 3.4). Most earlier trials took place in general practice-based primary care, whereas more recently published trials were more likely to take place in EDs, where the effect size appears to be smaller (Kaner et al., 2018; see section below with specific regard to BIs in EDs). Six studies reported an economic evaluation, suggesting the use of BIs in primary care is likely to be cost effective. The authors concluded that BIs reduced the amount of alcohol consumed for people accessing primary care settings (including adolescents, young adults and adults) who engaged in hazardous and harmful drinking, compared to no intervention or minimal treatment.

There has been general consensus that BIs are ineffective in heavy drinkers or people with dependence accessing primary care settings. There is minimal research to support this view, with one 2010 review of 16 RCTs reporting BI's were ineffective in the two studies which included people with dependence (Saitz, 2010). However, the later review carried out by Kaner et al. (2018) found significant 9% reductions in the proportion of heavy drinkers (18 trials, 7,623 participants; risk difference (RD) = -9%, 95% CI -13, -4) who received BIs compared to no treatment. While it is unclear what proportion met criteria for alcohol dependence, and further research is needed, these results suggest people with alcohol dependence could benefit from BIs within a primary care setting.

There has been general consensus that BIs are ineffective in heavy drinkers or people with dependence accessing primary care settings, following a 2010 review of 16 RCTs reporting BI's were ineffective in the two studies which included people with dependence (Saitz, 2010). However, Kaner et al. (2018) found significant 9% reductions in the proportion of heavy drinkers (18 trials, 7,623 participants; risk difference (RD) = -9%, 95% CI -13, -4) who received BIs compared to no treatment. While it is unclear what proportion met criteria for alcohol dependence, and further research is needed, these results suggest they could benefit from BIs within a primary care settings.

Should BIs be implemented in primary care settings?
The level of evidence for the effectiveness of BIs delivered primary care settings (i.e. to people attending general practice, emergency care or other primary care settings for reasons other than alcohol treatment) is strong, compared to no or minimal treatment or TAU (Kaner et al., 2018).

Recommendation	Grade of recommendation
6.4 Brief interventions reduce alcohol consumption in people with risky patterns of alcohol use accessing primary care settings, and should be routinely offered in these settings.	**A**

Cost effectiveness
A systematic review of the cost-effectiveness of screening and BIs in primary care identified 22 studies (Angus, Latimer, Preston, Li, & Purshouse, 2014). Study quality was assessed using the Drummond checklist for economic evaluations used in Cochrane reviews (Higgins & Green, 2011). There was variation in study quality, with 7 rated as low quality, 10 moderate and 5 high quality. The results of 14 economic modelling studies which compared BI to TAU using a range of health outcome measures (QALYs, DALYs, life years gained) indicated BIs were likely to be cost-effective as compared to TAU. BIs were found to be cost-saving and health-improving, or had very low costs relative to the heath gains. The authors concluded BIs are a cost-effective option for reducing alcohol use in primary care settings.

Two meta-analyses have examined the health service utilization outcomes of BIs in medical settings. Bray et al. (2011) examined whether the relationship between BI and health service utilization differed by the type of setting (primary care, ED and non-ED hospital) they were delivered in and the type of healthcare care utilization (outpatient care [including primary care], ED care and inpatient care). Twenty-nine studies were identified, 21 were conducted in primary care, 4 in EDs and 4 in non-ED hospital settings. Study quality was assessed using the 12-item MQS checklist (Miller & Wilbourne, 2002).Thirteen studies had excellent methodological quality (14/total score of 17), with an overall mean score of 13.17. The results of the pooled meta-analysis of BIs delivered across all three settings found they had little to no effect on outpatient or inpatient healthcare service utilisation, and a small non-significant reduction in ED use (SMD = -0.06; 95% CI -0.16, 0.03). While highlighting the need for more studies collecting health utilization data, the authors suggested BIs may reduce health care costs given the cost of ED.

The second meta-analysis examined whether brief alcohol interventions increased specialty AOD treatment service utilisation among adolescents and adults attending medical settings including medical inpatient units, general healthcare settings and EDs (Glass et al., 2015). Thirteen RCTs were identified. The majority (n = 11 studies) delivered brief advice or MI, and four offered additional counselling or booster sessions. Studies that delivered BIs in inpatient settings (19-56%) had higher rates of AOD treatment utilization than those delivering them in ED settings (2-33%). Nine of the 13 studies were included in the meta-analysis, with exclusions on the basis of data unavailability (3 studies) and risk of bias (1 study). People who received the BI were not significantly more likely to attend an AOD treatment service (RR = 1.08, 95% CI 0.92, 1.28). The inclusion of the five studies which only referred people in the BI arm to further AOD treatment did not alter results, nor did subgroup analyses for age (adult versus adolescents), healthcare setting or risk of bias. The meta-analysis also found that BIs did not increase AOD service use regardless of the severity of alcohol use (low versus high [alcohol dependent]) in the sample. The authors suggested future research examine other factors which may influence referral to future treatment, including the initial response to the BI, and what criteria and processes were used to refer people to further treatment, as not all individuals may need or be ready for referral.

In summary, BIs are also likely to be a cost-effective option for reducing alcohol use in primary care settings (Angus et al., 2014). However, a meta-analyses on BIs delivered in medical settings (primary care, ED and non-ED hospital) found it had little impact on outpatient or inpatient healthcare service utilization, and only resulted in a small non-significant reduction in ED use (Bray et al., 2011). BIs delivered in medical settings (general inpatient units, general healthcare, EDs) were also found to have no impact on AOD service utilisation, regardless of the severity of the patient's alcohol use or the healthcare setting (Glass et al., 2015).

Recommendation	Grade of recommendation
6.5 Brief interventions delivered in primary care settings are likely to be cost-effective, compared to treatment as usual.	**A**
6.6 Brief interventions delivered in primary care, emergency department, and general hospital inpatient settings have little impact on future healthcare or AOD service utilisation.	**A**

Emergency departments

There is a high rate of alcohol-related injuries and conditions among people attending accident and EDs. One Australian study across nine hospitals (representing five states and territories) reported that a third of the presentations were alcohol-related (Egerton-Warburton, Gosbell, Wadsworth, Fatovich, & Richardson, 2014). A weekend point prevalence study of 2am presentations to 92 EDs across Australia found that of the 2,452 presentations, 13.8% (n = 339) were alcohol-related (Egerton-Warburton, Gosbell, Wadsworth, Fatovich, & Richardson, 2014). Findings from a large study of injured ED patients indicate that a recent alcohol-related emergency admission increases patient receptivity to intervention (a "teachable moment"), suggesting that EDs may provide an invaluable opportunity for delivering brief alcohol interventions (Walton et al., 2008).

Adults

Havard et al., (2008) conducted the first meta-analysis of studies examining the effects of brief alcohol interventions (not defined) in ED settings. Although 14 studies were identified, the results of only 10 RCTs could be included in the meta-analysis, as three studies were not RCTs and the fourth delivered a community-based intervention. Seven of the counselling studies incorporated principles of MI combined with a handout comprising either generic advice only (3 studies); generic advice with personalized feedback (2 studies), personalized feedback only (1 study); or generic or personalized advice (1 study). The non-MI BI delivered brief counselling plus a drinking information leaflet. The counselling was delivered during the ED visit in five of the studies, and as an outpatient in two studies. The comparison condition included standard care in all 10 studies, which was combined with generic written advice in two studies, 5-minute brief advice plus generic written advice in two studies or generic written advice alone in one study. Two studies had two comparison conditions involving standard care.

Results indicated the BIs did not significantly reduce the frequency/ quantity of alcohol consumption (SMD = -0.14; Z = 1.79; P = 0.07) or the frequency of heavy drinking (SMD = 0.01; Z = 0.21; P = 0.83) at 12 months. The results for the frequency of heavy drinking at 3 months and drinking consequences at 6 and 12 months were inconclusive, due to significant heterogeneity in the pooled effect sizes. However, significant reductions in alcohol-related injuries at 6 and 12 months follow up were found. People who received the BI had approximately half the odds of experiencing an alcohol-related injury (OR = 0.59, 95% CI 0.42, –0.84) compared to control conditions. The methodological quality of studies was generally high, but there was a lack of consistency between studies in the

outcomes selected. The authors concluded that ED-based alcohol interventions are associated with a reduction in alcohol-related injuries compared to control conditions involving standard care, but no differences in alcohol consumption were found.

Schmidt et al. (2016) conducted a meta-analysis of 28 RCTs (n = 14,456; ≥ 13 years of age) on the effectiveness of alcohol screening and BIs (≤ 4 sessions x 5-30 minutes) for injured and/or intoxicated patients accessing emergency care settings. A total of 33 publications (including 28 separate studies) investigating the effects of BI on alcohol consumption were identified. The impact of BIs on alcohol-related problems was not examined. Twenty-two of the studies employed face-to-face BIs including eight with brief BIs (5-10mins; individual feedback with brief advice or MI), and 14 with extended MI BIs (14-40mins, including 8 with a booster session). The remaining six interventions comprised an interactive computer program (1 study), and printed computer generated feedback (2 studies), leaflets (1 study) or mobile phone text messages (2 studies). The majority of BIs occurred in the ED, and occurred afterwards in only seven studies. The control conditions were comprised of no treatment or TAU (15 publications), an information leaflet (10 publications) or a specific intervention (7 publications; handout + brief counsellor advice, personalised feedback). The risk of bias assessment indicated 19 publications were low risk and 14 were classified as high/unclear. Small significant effects in favour of BI compared to control condition were found on mean drinks per week/month at 12 months (SMD = 0.09, 95% CI 0.05, 0.14); mean alcohol consumption/day or occasion at ≤ 3 months (SMD = 0.19, 95% CI 0.08, 0.31), 4 to 6 months (SMD 0.14, 95% CI 0.07, 0.22) and 12 months (SMD = 0.09, 95% CI 0.03, 0.15); and the number of heavy drinking episodes at 4 to 6 months (SMD = 0.13, 95% CI 0.03, 0.23) and 12 months (SMD = 0.07, 95% CI 0.01, 0.13). None of the moderation variables impacted outcomes, including intervention length (< 15 versus > 15 minutes), intervention modality (face-to-face or not [e.g. computer, text-message or printed feedback]), intervention deliverer ('internal' ED staff versus 'external' professionals), study quality, or type/intensity of control intervention. The authors concluded there was evidence brief alcohol interventions have very small effects on alcohol consumption as six of the nine comparisons were non-zero and significant.

Elzerbi et al. (2017) conducted a meta-analysis of 23 RCTs (n = 15,173; 16-74 years) to determine if the efficacy of alcohol screening and BIs (≤ 4 sessions of not > 45mins) in EDs differ in injury versus non-injury specific presentations. All BIs were ≤ 4 sessions (maximum 45 minutes), and were delivered in the ED. The control groups varied from no treatment (assessment only), TAU or minimal intervention (e.g., information leaflet). Trials were excluded that focused exclusively on dependent drinkers. The Cochrane GRADE risk of bias tool was used to assess study quality (Higgins & Green, 2011), 19 studies were rated as low risk or adequate, and risk was unclear in the remainder. Non-injury specific trials (n = 13 studies; 8 using MI) showed significant differences in the quantity of alcohol consumption in favour of BI at ≤ 5 months (SMD = -0.15, 95% CI -0.24, -0.07) and 12 months (SMD = -0.08, 95% CI -0.15, -0.01) follow up, but not at 6 months follow up. In contrast, targeted injury trials (n = 9 studies; 8 MI) showed significant differences in the quantity of alcohol consumption in favour of BI at 6 months follow up (SMD = -0.10. 95% CI -0.17, -0.02), but not at ≤ 5 months or 12 months follow up. The authors concluded non-injury-specific studies are associated with a better response to BI than targeted injury studies. However, replication is needed and the

potential inclusion of injured patients in some of the non-injury-specific studies limits the conclusions which can be made from this meta-analysis.

Adolescents and young adults

One meta-analysis and three systematic reviews have examined the efficacy of BIs for alcohol consumption in young people accessing emergency care. Kohler and Hofmann (2015) identified six RCTs examining the effect of MET (Motivational Enhancement Therapy; i.e. MI + feedback) on alcohol consumption in 1,433 young people aged 13 to 25 years accessing an ED with a positive screen for present or previous risky alcohol consumption. The comparison conditions were either minimal (information brochure, a contact list, a phone follow-up or personal feedback) or no intervention delivered in an ED setting. Two studies provided booster sessions. Alcohol-related problems were not included in the meta-analysis. Study quality was rated poor to good on the Critical Appraisal Skills Program (CASP) RCT Checklist (CASP., 2019). Two meta-analyses were performed. The first meta-analysis aimed to identify the largest mean difference in drinking behaviour between MI and control (at any follow up time point). Results indicated the frequency of drinking was significantly lower in the MI groups (SMD = -0.17, 95% CI -0.32, -0.02), in comparison to the control condition. No difference between MI and control conditions was found on drinking quantity. However, when only a subset of studies from the US were analysed (in order to address concerns about heterogeneity), both the frequency and quantity of alcohol consumption was lower in the MI group. The second meta-analysis aimed to identify the smallest mean difference in drinking behaviour between MI and control at any time point. This analysis approach showed no differences in the frequency or quantity of alcohol use. This meta-analysis was limited by the inclusion of studies with attrition rates of up to 31% of participants and the lack of adaptation of the MI to the developmental characteristics and needs of young people. Together these results indicate that at best MI is better than control interventions for reducing drinking frequency or quantity, and at the most conservative estimates, MI is no different than control interventions. The authors concluded that MI was at least as effective as control conditions young people accessing emergency care (Kohler & Hofmann, 2015).

Merz et al. (2015) conducted a systematic review of four RCTs (n = 618) comparing a brief MI with control conditions in young adults (18-24 years) accessing EDs for an alcohol-related event (alcohol intoxication or injury). Studies which used alcohol screening to identify participants were excluded. The control conditions were TAU (2 trials), personalised feedback or an educational brochure, and all interventions were delivered face-to-face. The Cochrane GRADE risk of bias tool (Higgins & Green, 2011) indicated that four studies were of good quality and had low risk of bias, except for allocation concealment, which was uncertain in three studies and high in one study. There was also a bias of blinding of participants and staff in all four studies. The BI was delivered in the ED in three studies, with one study including telephone boosters at 1 and 3 months. The fourth study delivered the BI 10 days after the ED presentation. Two of the four studies (both low risk of bias) reported reductions in alcohol use which lasted for up to 12 months. Both of these studies either delivered MI after the ED visit or included booster sessions (Merz et al., 2015). Similar reductions in alcohol use were reported in both the MI and control group in the other two studies. Larger reductions in alcohol-related problems were found in the MI group compared to control in three out

of four studies. The authors concluded that the results of the systematic review were inconclusive but the most effective BIs included at least one therapeutic contact after alcohol-related ED presentation (Merz et al., 2015).

A systematic review of 7 RCTs of BI for adolescents and young adults (n = 1,125; 12 - 25 years; 4 US studies, 1 Australian, Brazil and German study) accessing EDs for an alcohol-related event had similar mixed results (Diestelkamp et al., 2016). The BIs ranged from 1 to 3 sessions (maximum of 60 minutes). All studies delivered at least one session face-to-face in the ED. Six of the seven studies delivered MI. Five studies used minimal active controls including TAU (n = 3 studies), an educational brochure, or assessment feedback. Two studies compared BI with enhanced BI comprised of a family intervention or additional computer-delivered exercises. The Cochrane GRADE risk of bias tool indicated the studies were of adequate to good quality (Higgins & Green, 2011). The authors reported reductions in either alcohol consumption or alcohol-related harm were found in four out of seven RCTs. However, there was wide variability in the alcohol outcome measures used and little consistency in results overall. Only two of the seven RCTs found reductions in alcohol consumption, with both reporting reductions in heavy drinking/high volume drinking days alcohol consumption in favour of BI at different time points (6 and 12 months; 3 months). One study reported reductions in the frequency and quantity of alcohol use at 6 and 12 months. Four studies examined indicators of alcohol-related harm. One out of these 4 studies found a reduction in alcohol-related problems in favour of BI. One in four reported a reduction in drink driving and one in three reported a reduction in alcohol-related injuries in favour of BI. The authors concluded that there is only limited evidence for the effectiveness of BIs for reducing alcohol consumption and related problems in young people following an ED presentation for an alcohol related event.

Finally, a systematic review of seven SBIRT RCTs in adolescents (12 – 21 years) accessing an ED for an alcohol-related event, injury or illness in the US also found inconclusive results (Yuma-Guerrero et al., 2012). All but one of the studies used MI and the control conditions included information only (n = 3 studies), assessment feedback (n = 1 study), or TAU (n = 3 studies). Study quality was not assessed. Three of the seven RCTs showed no differences between the BI and control groups on alcohol consumption or consequences. The four studies which did report an effect found reductions in either alcohol consumption or alcohol-related consequences, but not both. These results indicate there is little consistent evidence for the efficacy of SBIRT for reducing risky alcohol use among adolescents presenting to EDs.

Summary: *Should BIs be implemented in emergency departments?*
Evidence from the two most recent meta-analyses indicates that BIs reduce alcohol consumption among adults with alcohol-related ED presentations at short-term and 12 months follow up, compared to no treatment, TAU or minimal alcohol treatment, but effects were very small (E. Elzerbi et al., 2017; Schmidt et al., 2016). These effects were restricted to non-injury specific presentations in one of these meta-analyses, although some of these studies may have included injured patents (E. Elzerbi et al., 2017). Neither of these meta-analyses examined the impact of BIs on alcohol-related problems. An earlier meta-analysis that did so reported that BIs were associated with reductions in alcohol-related injuries compared to standard care, but found no differences in alcohol

consumption at 12 months (Havard et al., 2008). However, this meta-analysis only included 10 RCTS compared to 22-28 RCTs in the more recent studies. It also did not use a clear definition of BIs when selecting studies, but the length of the BIs in the 10 RCTs included in the meta-analysis was comparable to those included in the more recent meta-analyses (Elzerbi et al., 2017; Schmidt et al., 2016). Moderation analyses indicated the intervention length, modality, interventionist, study quality or type/intensity of control intervention had no impact on outcomes (Schmidt et al., 2016). Future research is required to determine if the impact of BIs vary among patients identified via alcohol screening, or the type of alcohol-related ED presentation (alcohol intoxication versus injury).

There is less evidence for the effectiveness of BIs for adolescents and young adults with alcohol-related ED presentations. The only meta-analysis in this age group concluded that MI was no more effective than minimal or no treatment control conditions for reducing alcohol consumption (Kohler & Hofmann, 2015). Similar results were found in three systematic reviews of RCTs of BIs (majority MI) for adolescents and young adults with alcohol-related ED presentations (Diestelkamp et al., 2016; Merz et al., 2015; Yuma-Guerrero et al., 2012). Only two of these reviews rated study quality but neither reported ratings for the overall quality of evidence when reporting results (Diestelkamp et al., 2016; Merz et al., 2015). These results did not appear to vary according to whether participants were identified via alcohol screening or a presentation for an alcohol-related event (alcohol intoxication or injury) (Kohler & Hofmann, 2015; Merz et al., 2015; Yuma-Guerrero et al., 2012). Studies which either delivered MI after the ED visit or included booster sessions had better alcohol use outcomes (Merz et al., 2015)

Further research is required to determine if BIs containing MI are beneficial for reducing alcohol consumption and related-problems in EDs, particularly in young people. This should include consideration of potential moderators of the effectiveness of BIs in this context including how participants are identified (via alcohol screening vs alcohol-related presentation) and the type of alcohol-related presentation (intoxication, injury, event). More consistency in the definitions and measures of alcohol consumption and related harm are also required.

In summary, BIs in this setting result in reductions in alcohol consumption among adults with alcohol-related ED presentations at both short-term and 12 months follow up compared to no treatment, TAU or minimal alcohol treatment, but effects are very small. There is little evidence BIs are more effective in young people than no treatment, standard care or minimal alcohol treatment, but further research is needed.

Recommendation	Grade of recommendation
6.7 Brief interventions are beneficial in emergency departments for reducing alcohol consumption among adults with alcohol-related presentations, compared to no treatment, standard care, or minimal alcohol treatment (e.g. educational brochure, assessment feedback).	**B**

6.8 Brief interventions are not more effective than no treatment, standard care, or minimal alcohol treatment (e.g. educational brochure, assessment feedback) for reducing alcohol use in adolescents or young adults accessing emergency departments.	**A**

General hospital inpatient units and outpatient clinics

The estimated cost of alcohol on the Australian health care system was $1.686 billion in 2010, with 46% of this cost accounted for by hospital admissions (Manning, Smith, & Mazerolle, 2013). In 2012/13 there were an estimated 144,192 alcohol-related hospitalisations, with common presentations including alcohol dependence/abuse, cancers, cardiovascular disease and digestive diseases (Gao, Llyod, & Ogeil, 2014; Lensvelt, Gilmore, Liang, Sherk, & Chikritzhs, 2018). Frequent use of alcohol has been strongly associated with more frequent hospitalisations (Springer, Condon, Li, & Guthridge, 2017), and a positive screen for risky drinking a year before surgery predicts more days in intensive care and hospital post-surgery and a higher likelihood of returning for further surgery within 30 days (Rubinsky et al., 2012). Hospital wards may be a particularly effective setting for delivering BIs to risky drinkers who already demonstrate or may be at risk of developing alcohol problems. Patients are also often more motivated and willing to change their drinking behaviours after being hospitalised, and reductions in alcohol use are also likely to have benefits for their medical presentation.

General hospital inpatient units

McQueen et al. (2011) conducted a Cochrane review of 14 RCTS on BIs to reduce alcohol consumption and improve other outcomes for heavy alcohol users admitted to general hospital inpatient units for any reason other than alcohol treatment. Participants were 4,041, adolescents (16+ years) and adults admitted to general inpatient hospital care (not psychiatric or addiction units). Four studies included men only (n = 1,066). Studies that identified participants as consuming alcohol above recommended levels in the relevant country were included. BIs (up to 3 sessions) comprising information and advice, feedback and counselling type skills (including MI) to encourage a reduction in alcohol consumption and related problems were compared to no treatment or TAU. All control groups received TAU, except for one study which also provided screening and feedback. Six studies were conducted in general medical wards, three in trauma centres, and the rest in a range of medical units.

Data from eight studies (n = 2,196) that reported data on the primary outcome of mean alcohol consumption (grams/week) at service entry were eligible for inclusion in the meta-analyses (McQueen et al., 2011). Seven of the eight studies were assessed to be at high risk of selection and allocation concealment bias. All but one study reported blinding of outcome assessors and only two used intent to treat analysis. Therefore study quality was assessed as low overall. The BIs resulted in significant reductions in alcohol consumption at 9 months follow up (MD = -182.88, 95% CI -115.33, 4.35) compared to TAU, but no significant differences were found at 6 or 12 months follow up. Results in favour of BI were also found in one study (n = 616) on drinking days per week

at 4 months (MD = -0.56, 95% CI -1.02, -0.10), 6 months (MD = -0.78, 95% CI -1.32, -0.24) and 12 months follow up (MD = -0.71, 95% CI -1.26, -0.16). Meta-analysis of self-reported alcohol consumption (3 studies, n = 603) found no difference at 3- and 6-months, but a difference in favour of BI at 12 months follow up (SMD = - 0.26, 95% CI -0.50, -0.03). The BI group also had a significantly lower death rate than TAU at 6 months (RR = 0.42, 95% CI 0.19, 0.94) and 12 months follow up (RR = 0.60, 95% CI 0.40, 0.91), but not at 3, 4- or 9months follow up (9 studies, n = 3,256). Further meta-analyses found no significant differences between BI and TAU on mean alcohol consumption per week (3 studies, n = 1,318) at 6 or 12 month follow up, laboratory markers (Gamma GT results; 3 studies, n = 426) at 6 months; number of binges (1 study, n = 341), driving offences (4 studies, n = 126), or the number of days hospitalised or ED visits in previous 3 months (both 1 study, n = 616). The authors concluded that delivering BIs to patients admitted to general hospital wards, who were identified as heavy alcohol users via screening, may result in benefits in terms of reduced alcohol consumption and death rates, but evidence is limited due to inconsistency in results (McQueen et al., 2011). The authors identified a need for further research on the optimal content and treatment exposure for BIs, and whether BIs are likely to be more successful in patients with certain characteristics.

An additional, more recent RCT investigated BIs delivered in an inpatient setting. McQueen et al. (2015) compared the efficacy of screening plus BI to screening alone among 124 hazardous or harmful drinkers admitted to medical and orthopaedic wards. An 85 gram mean difference in alcohol use per week (95% CI 162.46, 7.54, p = 0.03) in favour of the BI was found at 6 months. There was also a significantly larger reduction in heavy drinking episodes in the BI group, but no difference in absolute weekly alcohol consumption.

General hospital outpatient clinics

A systematic review by Watson et al. (2013) examined RCTs for adults presenting with alcohol or illicit drug use problems in hospital outpatient populations (other than emergency, addiction or psychiatric units). Participants could be attending hospital for any reason other than treatment for substance use. Seven studies were identified, five targeting excessive alcohol use, one on drug use, and one on both drug and alcohol use. Only the results of the four BI alcohol studies are reported here. Two studies were conducted in oral and maxillofacial outpatient clinic. The first study compared MI with an alcohol information brochure, finding no differences in alcohol outcomes at 3 months. The MI group had significantly larger reductions in total days and heavy days drinking at 12 months, but not in the quantity of alcohol use (Goodall et al., 2008). In the second study, MI achieved significantly larger reductions in total alcohol consumption at 3 and 12 months, and in the proportion of hazardous drinkers at 12 months than TAU (Smith, Hodgson, Bridgeman, & Shepherd, 2003). One study conducted in a women's hospital outpatient clinic found no difference in alcohol outcomes at 12 months between risky drinking females who received an assessment interview with and without a BI (Chang et al., 2011). Finally, a study conducted in a general internal medicine outpatient clinic also found no differences in the outcomes of brief MI plus an assessment and feedback session 1-2 weeks later, compared to TAU a mean of 28 weeks later (Emmen, Schippers, Wollersheim, & Bleijenberg, 2005). Together these four studies provide preliminary evidence that brief MI may be effective for reducing alcohol use in oral and maxillofacial

outpatient clinics, but it is not effective in general outpatient clinics. However, the volume of studies is particularly small and more research in these settings is needed.

Should BIs be implemented in general hospital inpatient units and outpatient clinics?

Recommendation	Grade of recommendation
6.9 Screening and brief interventions may reduce alcohol consumption in heavy alcohol users with non-alcohol related presentations admitted to general hospital inpatient settings.	**B**
6.10 Brief MI may be beneficial for heavy alcohol users attending oral-maxillofacial outpatient clinics, but appear to be ineffective in other hospital outpatient clinics among adults with non-alcohol related presentations.	**D**

Pharmacies

Pharmacists have regular contact with consumers through their role of dispensing medication and aiding consumers in the management of minor ailments (Hattingh, Hallett, & Tait, 2016); hence pharmacies have been identified as a potential site where brief alcohol interventions could be implemented. However, while there is feasibility evidence in favour of BIs in pharmacy settings (Hattingh et al., 2016; Ornstein et al., 2013; Shonesy et al., 2019), there is no evidence to support the efficacy of BIs in this context.

Only one RCT has been conducted, which included 17 community pharmacies and 407 patients (Dhital, Norman, Whittlesea, Murrells, & McCambridge, 2015). The trial compared an MI-framed BI (comprising an assessment, a 10-minute discussion with the pharmacist, and an alcohol information booklet, which included alcohol monitoring information and alcohol services referral information) with a control treatment (comprising assessment plus a leaflet with broad information about alcohol). There was no improvement in AUDIT scores between groups or across time when comparing the BI with the control treatment (Dhital et al., 2015). In instances where a difference did exist (dependence score and health status) the control group did better. In explaining these findings, the authors identified the limited training that pharmacists received (3.5 hours), and their limited prior experience in MI techniques, as potential factors contributing to these outcomes.

Should brief interventions be implemented in pharmacies?

Recommendation	Grade of recommendation
6.11 There is no evidence that screening and brief interventions are effective for alcohol users presenting to community-based pharmacies.	**B**

Specialist outpatient substance use treatment services

Almost 130,000 Australians sought treatment for AOD concerns in 2016-17 (Australian Institute of Health and Welfare, 2019a). Current AOD services are only able to meet between 27% and 56% of the demand for treatment (Ritter, Chalmers, & Gomez 2019). Alcohol is the most common drug of concern for which people seek help, accounting for 35% of treatment episodes. Outpatient care in the form of counselling is the most common form of treatment accessed, but on average clients only attend 1.6 treatment sessions (Australian Institute of Health and Welfare, 2019a). Failure to complete treatment, often referred to as "drop-out", is common in AOD treatment settings. One review of 122 AOD treatment studies found a wide range of drop-out rates, with between 0.4% and 85% of clients not completing treatment (Brorson, Ajo Arnevik, Rand-Hendriksen, & Duckert, 2013).

While drop-out has traditionally been associated with relapse (Brorson et al., 2013), a recent meta-analysis of RCTs of psychosocial treatment in alcohol outpatient settings found the length of scheduled or attended treatment did not impact long-term alcohol outcomes in adults who had attended at least two sessions (Kramer Schmidt, Bojesen, Nielsen, & Andersen, 2018). The authors of the meta-analysis suggested this may be because some clients leave treatment due to improvements in AOD use (Kramer Schmidt et al., 2018). Together these findings suggest that not all clients who present to AOD services need intensive psychosocial or pharmacological treatment to achieve their goals, and some clients may benefit from a BI. BIs (assessment feedback and MI) are also typically the first components of most psychosocial treatments delivered in these settings. Kramer Schmidt et al. (2018) recommended a more flexible approach to AOD treatment that could include a stepped care model offering lower intensity BIs first, followed by more intensive AOD treatment to those who request it, who are assessed to require more (e.g., presence of withdrawal symptoms), or who do not respond to treatment (Bower & Gilbody, 2005; Sobell & Sobell, 2000). This model of healthcare could help meet unmet demand and maximise the cost-effectiveness of AOD treatment in Australia (Andreas et al., 2012). However, there is still limited research examining stepped care models, or the efficacy of BIs within specialist AOD settings (McKellar, Austin, & Moos, 2012).

Only one meta-analysis has examined the efficacy of BIs (≤ 4 sessions) for treatment-seeking samples in AOD settings (Moyer et al., 2002). Twenty of the 21 studies included in the meta-analysis compared BIs to more extended forms of alcohol treatment. Limited descriptive information on the samples was provided, however 50% of the studies excluded individuals who either met diagnostic criteria for or showed signs of alcohol dependence, or who drank at high levels or for an extended period of time. The meta-analysis of 20 studies found no differences in alcohol consumption outcomes at <3 months, 6-12 months and >12 months follow up. An effect in favour of the extended intervention over BI was found at 3-6 months (d = 0.42, 95% CI 0.12, 0.71). Effect sizes for each of the four time points were homogeneous, so there was no variation in results due to the inclusion of people with severe alcohol problems.

The Smedslund et al. (2011) Cochrane review of 59 MI studies for substance abuse included 12 trials conducted in AOD specialist settings. Nine of these 12 studies were

not included in this current evidence review: two studies focused on drugs other than alcohol (Carroll et al., 2006; Miller, Yahne, & Tonigan, 2003); one study included alcohol as a primary drug of concern but the treatment focus was Naltrexone in combination with psychotherapy (Anton et al., 2005); four studies examined BIs as a pre-cursor or supplement to further treatment (Anton et al., 2005; Bell, 2007; Connors, Walitzer, & Dermen, 2002; Kahler et al., 2004; Walitzer, Dermen, & Barrick, 2009), with outcomes relating to subsequent treatment attendance, or confounded by the other treatment; and two were already included in the Moyer (2002) review detailed above (MATCH, 1993; Bien et al., 1993). Therefore the three remaining studies are examined below.

The UKATT study (United Kingdom Alcohol Treatment Trial Research, 2005) was a seven site multisite RCT with 742 clients with alcohol problems. The trial compared three 50 minute sessions of MET (n = 442) to eight 50 minute sessions of social behaviour network therapy (n = 320). Risk of bias was assessed as low on all categories, except allocation concealment which had unclear risk (Smedslund et al., 2011). There was no difference between groups in reported outcomes. Both groups achieved significant improvements in abstinance rates (29% to 46%), and reductions in mean adjusted alcohol consumed (27 drinks to 19), mean Leeds Dependence Questionnaire scores (17 to 12) and alcohol problem (12 to 7) scales when comparing baseline to 12 month follow up data.

Two multisite RCTs (Ball et al., 2007; Carroll et al., 2009) compared MET (MI + feedback) to counselling as usual across five outpatient AOD treatment program sites in English and Spanish-speaking substance users. In both studies, the treatment condition clients attended up to three sessions. The first RCT consisted of a predominately Caucasian sample (n = 461). Alcohol was the most common primary drug of concern across the sites (30% to 69% of clients) (Bell, 2007). Smedslund et al. (2011) rated the RCT as having low risk of bias for all categories, except for the “other category” which was rated as high risk of bias for differences in travel times between sites and possible contamination between sites. For primary alcohol users, MET resulted in more sustained weekly reductions in alcohol use at up to 4 months follow up; however, counselling as usual resulted in an initial decrease in alcohol use immediately post-treatment and then a subsequent increase in alcohol use, $F(4, 1632) = 13.92$, $p = .001$. The second RCT focused on a Hispanic speaking population (n = 436, with 18 to 90% of clients reporting alcohol was the primary drug of concern across sites) (Carroll et al., 2009). Smedslund et al. (2011) rated the RCT at high risk of attrition bias, with 28% lost to follow-up. Similarly to the first RCT, clients with alcohol as their primary drug of concern showed greater improvements for MET compared to counselling as usualat up to 4 months follow up, $t(3,573) = 2.41$, $p = .02$.

In summary, relatively few studies have examined the efficacy of BIs in specialist AOD settings. Research to date has compared up to four sessions of MI/MET with TAU or longer interventions. Two high quality RCTs provide evidence that brief MET interventions lasting three sessions was more effective than counselling as usual for reducing alcohol use at 4 months follow up. A 2002 meta-analysis and the high-quality, large scale UKATT study found 3 sessions of MET were no less effective than longer interventions at up to 12 months follow up (Moyer et al., 2002; United Kingdom Alcohol Treatment Trial Research, 2005). Further research using non-inferiority trials is

required to estabish whether MET has equivalent outcomes to longer psychosocial interventions in specialist outpatient AOD treatment settings.

Should brief interventions be implemented in specialist substance use treatment settings?

Recommendation	Grade of recommendation
6.12 There is preliminary evidence that three sessions of motivational interviewing with feedback results in larger short-term reductions in alcohol consumption in adults accessing outpatient substance use treatment, than standard counselling.	**B**

Education Settings

Across the globe, adolescent alcohol use has been gradually decreasing, and the age of onset of drinking has been increasing (Guerin & White, 2018; World Health Organisation, 2018). Despite these improvements, a recent national report found over half of Australian adolescents (aged 12 to 17 years) had consumed alcohol in their lifetime, with the frequency of use increasing as they enter later adolescence (Geurin & White, 2018). Drinking rates still remain high in young adults (18-24 years), with 42% drinking above national single occasion risk guidelines (≥5 standard drinks), and 15.3% consuming more than 11 standard drinks on a single occasion (Australian Institute of Health and Welfare, 2019b). There is strong evidence that the earlier young people start drinking, the more at risk they are for long-term alcohol dependency and alcohol-related harm such as drink driving, risky sexual activity and violence (Hingson & Zha, 2009). Therefore, there is a need for early interventions for these youth populations. Educational settings such as schools, universities and colleges, provide a practical site to implement BIs focused on young people.

High School Students

A Cochrane review last updated in 2015, has examined brief early interventions, delivered face-to-face, in public secondary schools or alternative school settings for adolescents under the age of 19 years (Carney, Myers, Louw, & Okwundu, 2016). Six trials were included in the review; however, only five of these trials specifically focused on adolescent alcohol use. The BIs consisted of screening, MI and information provision, and were delivered in a single session in three studies (McCambridge, Slym, & Strang, 2008; McCambridge & Strang, 2004; Werch et al., 2005), and in two sessions plus a BI for parents in two studies (Winters, Fahnhorst, Botzet, Lee, & Lalone, 2012; Winters & Leitten, 2007). Two studies which compared BIs to information only, revealed moderate-quality evidence that the BIs did not have a significant effect on alcohol frequency or quantity at either 1-3 months or 4-6 months follow up (n = 527; McCambridge et al., 2008; Werch et al., 2005). Three studies compared BIs with assessment feedback, and provided low- or very low-quality evidence (n = 444; 3 studies; McCambridge & Strang, 2004; Winters et al., 2012; Winters & Leitten, 2007) that BIs were more effective than assessment feedback for reducing alcohol frequency

and dependence at 4-6 months (SMD = -0.91; 95% CI -1.21, -0.61, n = 242; SMD = -0.58; 95% CI -0.90, -0.26, n = 190) but not at >6 months follow up (SMD = -0.20; 95% CI -0.53, 0.14, n = 242; SMD = -0.13; 95% CI -0.47, 0.20, n = 170). One study provided low-quality evidence that the BI reduced alcohol abuse at 4-6 months and >6 months follow-up (SMD = -0.38; 95% CI -0.70, -0.07, n = 170; SMD = -0.72; 95% CI -1.07, -0.38, n = 170). Despite evidence of some positive short- and medium-term benefits, Carney et al. (2016) concluded no definitive statements could be made about the effectiveness of BIs for reducing adolescent alcohol use in school settings, due to the small number and lack of high-quality studies. The impact of brief MI on alcohol-related problems was not examined.

One RCT was conducted after Carney et al.'s (2016) Cochrane review was last updated. Giles et al. (2019) conducted an RCT (n = 443) with 14-15 year olds who screened positive to an alcohol question. Participants were randomized to the BI or a health leaflet control. The BI consisted of a 30 minute one-on-one session that included an A3 colourful assessment feedback sheet detailing a six-step intervention based on the FRAMES approach (feedback, responsibility, advice, menu, empathy, self-efficacy). The intervention was intended to guide an interactive discussion with the young person about their alcohol use, based upon MI principles. The intervention was delivered by a trained learning mentor and students were taken out of class to complete the intervention. There were low initial consent rates (<50%) but high follow-up rates (85%) at 12 months. No improvements in alcohol scores or group differences were found at 12 month follow up.

College Students

The efficacy of brief MI interventions for reducing alcohol use and related harm in young adult college students has been demonstrated in many RCTs (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001; Borsari & Carey, 2000; Feldstein & Forecehimes, 2007; Marlatt et al., 1998; McCambridge & Strang, 2004). Carey et al. (2007) conducted a meta-analysis evaluating 62 RCTs of individually delivered alcohol BIs for college students published between 1985 to early 2007. The most common elements of the interventions were alcohol education (73%), MI (44%), feedback (49%), and normative comparisons (56%). The most common control condition was no treatment (55%), followed by time-matched irrelevant (16%) or relevant interventions (10%), briefer but relevant intervention (10%), or alcohol education (8%). At post-intervention, there were reductions in the quantity of drinking (d = 0.19, 95% CI 0.07, 0.32) and frequency of heavy drinking (d = 0.17, 95% CI 0.03, 0.31) compared to controls (55% no treatment, 45% active treatments). These reductions were maintained at short-term follow up (4–13 weeks post-intervention), with the addition of reductions in alcohol-related problems (d = 0.15, 95% CI 0.08, 0.21), which had significant heterogeneity. Moderation analyses indicated the interventions were more successful at reducing alcohol-related problems among women and people who were not heavy drinkers, or if they were delivered individually or in-person. At intermediate follow-up (14–26 weeks post-intervention), effects remained for the quantity of alcohol consumed, the frequency of heavy drinking and alcohol-related problems compared to control. Finally, at long-term follow up (27–195 weeks post-intervention), only the frequency of drinking days and alcohol-related problems were reduced compared with controls. Together this indicates brief alcohol interventions achieved small reductions in alcohol use and related problems for up to six

months, but the effect on all alcohol variables attenuated over time. Additionally, this meta-analysis did not consider study quality.

A 2012 meta-analysis compared the alcohol use outcomes of a brief alcohol screening intervention for college students (BASICS; 2 sessions of personalised feedback and MI) to control conditions (no treatment, alternative active alcohol treatment) among heavy drinking students (Fachini, Aliane, Martinez, & Furtado, 2012). Alcohol dependent (unclear how assessed), other substance using and mandated or adjudicated college students were excluded. Study quality of the 18 included RCTs was assessed using the Methodological Quality Score (Miller & Wilbourne, 2002). Fourteen studies had good methodological quality and 4 had excellent quality, however, despite these high ratings, several of the included studies were at risk of bias in randomization sequence (unclear; n = 10), allocation concealment (unclear; n = 17), or blinding (outcome assessor blind; n=2). At approximately 12 months follow-up, students who received BASICS had a significant reduction in alcohol consumption (SMD = −1.50 drinks per week, 95% CI -3.24, −0.29) and alcohol-related problems (SMD = −0.87, 95% CI -1.58, −0.20) compared to controls. Outcomes at other follow up points were not examined.

The Foxcroft et al. (2016) Cochrane review (reviewed earlier, found MI resulted in significant reductions in alcohol use and related problems, but had very small effects. Huh et al. (2015) conducted an individual participant-level-data (IPD) meta-analysis of 17 RCTs of brief MI interventions for college student drinking (n = 6,713). IPD meta-analyses are considered the 'gold standard' of systematic reviews as they use originally collected, participant-level data, rather than pooled summary data used in typical meta-analyses (Huh, Mun, Walters, Zhou, & Atkins, 2019). MI was only associated with small non-significant reductions in the probability of drinking (OR = 0.79, 95% CI 0.61, 1.10), drinking quantity (RR = 0.96, 95% CI 0.91, 1.00), peak drinking (OR = 0.82, 95% CI 0.60, 1.15) and alcohol-related problems (*B* = -0.02, 95% CI -0.05, 0.02) compared to control conditions (no or minimal treatment) (Huh et al., 2015). Post hoc comparisons of different types of BIs (BMI, MI + personalised feedback (PF), or group MI vs control) found no differences in alcohol use outcomes; the only exception was a small significant reduction in alcohol-related problems in the MI + PF group relative to controls (*B* = -0.06, 95% CI -0.12, -0.01) (Huh et al., 2015). Effects were not moderated by sex or the severity of baseline alcohol use, and there was no difference in results when the analyses were stratified by short-term (≤ 3 months) and long-term (6-12 month) assessments. Limitations of these findings include the non-random selection of college student studies published in or before 2010, with studies only included if the original investigator was willing to provide data. Risk of bias within the 17 RCTS was also not considered when interpreting the results.

The reasons for the discrepant findings between earlier (Carey et al., 2007; Fachini et al., 2012) and later meta-analyses are unclear (Foxcroft et al, 2016; Huh et al., 2015). All four meta-analyses compared BIs to no treatment and alternative treatment control conditions. All BI studies included in the four meta-analyses used MI, except only 44% of the studies in the Carey et al. (2007) meta-analysis contained MI strategies. Study quality was only considered in the Foxcroft et al. (2016) and Fachini et al. (2012) meta-analyses. The role of publication year on the reduced effect sizes observed between earlier and later meta-analyses of brief MIs for college students is yet to be determined.

The small effects found in recent meta-analyses have resulted in calls for future research to consider minimal clinically important differences when interpreting the outcomes (Grant et al., 2016). Recent research has focused on identifying the mechanisms of change of brief MIs among college students to identify the characteristics of the individuals most likely to benefit, and identify which variables mediate the impact of brief MIs on alcohol use and could be targeted to enhance their effects.

Cost effectiveness
Only one cost effectiveness study of BIs in college students appears to have been conducted to date. Cowell et al (2012) examined cost-effectiveness in an RCT of MI, feedback only, MI + feedback, or a no treatment (assessment only) control in college students. The mean costs per student were $16.51 for MI, $17.33 for feedback, $36.03 for MI + feedback and $0 for assessment only. Results indicated the longest MI + feedback intervention was found to be the most cost-effective for reducing alcohol use.

Should BIs be implemented in educational settings?
Only one meta-analysis has examined the effects of BIs in high school settings, concluding that although some positive short- and medium-term benefits were identified, but no definitive statements could be made about the effectiveness of BIs for reducing adolescent alcohol use in school settings (Carney et al., 2016).

Four meta-analyses have examined the effects of BIs in college students. Three found BIs significantly reduce alcohol use and related problems in college students compared to control conditions (no treatment, alternative alcohol treatment) but only small effect sizes were reported (Carey et al., 2007; Fachini et al., 2012; Foxcroft et al., 2016). The effect sizes in the 2016 Cochrane review were so small that the authors questioned their clinical significance. The individual participant level meta-analysis containing 6,713 college students found no difference in alcohol consumption use or alcohol-related problems between brief MI and control conditions (Huh et al., 2015). However, this study captured data from a non-random selection of MI studies conducted in or before 2010. In conclusion, there is evidence for the effectiveness of brief alcohol interventions for reducing alcohol consumption and related problems in college students, compared to no or minimal alcohol treatments. There is also preliminary evidence for their cost effectiveness.

Recommendation	Grade of recommendation
6.13 Brief motivational interviewing may be used in high school settings, but should not be a sole intervention strategy.	**C**
6.14 There is evidence brief motivational interviewing can result in small reductions in alcohol consumption in young adults attending higher education settings compared to no or minimal alcohol treatment (e.g., information	**B**

brochure, assessment feedback). There is also preliminary evidence for their cost effectiveness.	

Community counselling and welfare services
Patients may present to community counselling services with a variety of complaints that may be related to their AOD use, including financial, relationship, employment or parenting problems. BIs may be appropriate for those drinking at risky levels (O'Connor et al. 2007; Sullivan et al. 2005); however as yet there is little evidence for their effectiveness in these settings.

Should BIs be implemented in community counselling and welfare service settings?

Recommendation	Grade of recommendation
6.15 Brief interventions in community health and welfare settings may be used, but should not be a sole intervention strategy.	**D**

Workplace settings
Excess alcohol consumption has been linked to multiple adverse consequences in the workplace including increased absenteeism, reduced productivity and reduced profits (Foster & Marriott, 2006). One study estimated that the loss to Australian productivity due to alcohol consumption was over $6 billion in 2010, which represented 42.1% of the total financial cost to society due to alcohol-related problems (Manning et al., 2013). With 28.4% of Australian employees estimated to experience an alcohol disorder in their lifetime (Teesson et al., 2010), and many adults spending approximately one third of their day in the workplace, there is potential for brief alcohol interventions to be opportunistically delivered within workplace settings (Yuvaraj, Eliyas, Gokul, & Manikandanesan, 2019).

Three systematic reviews examining alcohol interventions in workplace settings have been conducted (Kolar & von Treuer, 2015; Schulte et al., 2014; Yuvaraj et al., 2019). Yuvaraj et al. (2019) included parallel arm, individual or cluster RCTs for employed adults aged over 18 years who were current drinkers. There were no restrictions based on work profile or type of intervention examined. Interventions were only included if they were provided by the workplace or initiated by a workplace organisation and if they measured reduction in average weekly alcohol consumption as an outcome. Of the seven interventions included for review, only three could be classified as BIs (Hagger, Lonsdale, & Chatzisarantis, 2011; Ito et al., 2015; H. Watson et al., 2015).

Hagger et al. (2011) compared a mental simulation exercise containing information on ways to reduce alcohol consumption to an information only control (n = 285). The RCT was rated as high risk of bias for the lack of blinding of participants, and unclear risk for selective reporting of outcomes, lack of blinding of outcome assessors and high attrition

rates (44%). No differences in alcohol consumption were found between the BI and control condition (MD = -1.36; 95% CI -5.62, 2.90, n = 159).

Ito et al. (2015) compared a BI (2 x 15min sessions 4 weeks apart, with a workbook), a BI plus drinking diary, to a control which received a booklet on the adverse impacts of drinking (n = 310). Yuvaraj et al.'s (2019) systematic review examined the BI compared to control (n = 210). The RCT was rated as high risk of bias for the lack of blinding of participants, and unclear risk for selective reporting of outcomes and lack of blinding of outcome assessors. No differences in alcohol consumption were found between the BI and control condition (SMD = -2.80; 95% CI -9.32, 3.72, n = 197).

Watson et al. (2015) compared a brief face-to-face counselling session delivered by an occupational health nurse at the workplace to no treatment control (n = 55). The RCT was rated as high risk of bias for the lack of blinding of participants and unclear risk for selective reporting of outcomes. No differences in alcohol consumption were found between the BI and control condition (SMD = -3.67; 95% CI -13.22, 5.88, n = 53).

Another systematic review was conducted in 2015 with no restriction on study design (Kolar & von Treuer, 2015). Articles were included for review if they implemented and evaluated a workplace intervention aimed at reducing alcohol consumption or related harms. Of the 18 included papers, eight were classified as BIs. Only three BI studies were reviewed here, as two studies delivered extended interventions (Mc Carthy & O'Sullivan, 2010; Richmond, Kehoe, Heather, & Wodak, 2000), two were not RCTs (Anderson & Larimer, 2002; Tinghg, 2014), one did not report alcohol outcomes (Osilla et al., 2010), and one has already been reviewed above (Hagger et al., 2011).

The first RCT, involved three treatment arms (n = 194) and compared a 15 minute BI, a comprehensive intervention, and a screening only control (Hermansson, Helander, Brandt, Huss, & Rönnberg, 2010). The BI consisted of individual feedback and written advice on consequences of alcohol use delivered by the occupational health and safety nurse. The comprehensive intervention consisted of the BI delivered by the company physician plus two additional sessions (one focused on the TLFB and the second on a self-monitoring drinking diary) delivered by company counsellors. All interventions were delivered to employees with an AUDIT score > 7 attending routine health and lifestyle check-ups. There was no difference in 12-month outcomes between groups, with all groups showing significant reductions in positive AUDIT screens at 12 months. Some major limitations of this study are that an unknown number of individuals volunteered for the alcohol screen; and only 18.2% (n = 12) of individuals in the comprehensive intervention group wanted additional treatment and attended more than a single session.

Next, two studies investigated BIs involving web-based components. In the first, 124 participants were randomly assigned to one of three conditions: web-based feedback, web-based feedback plus a 15 minute MI session, or a control group (Doumas & Hannah, 2008). There was no difference between the intervention groups, indicating that the addition of MI did not increase the efficacy of the web-based feedback program. Although there was a greater reduction in drinking levels for the two intervention

groups compared to the control, there was no difference between groups in reported drinking levels at follow up (M = 0.39 95%CI -0.76, 1.54).

In the second study, there were challenges in getting people to access and participate in the workplace-initiated website program (Matano et al., 2007). Matano et al.'s (2007) pilot study gave 145 employees working in Silicon Valley access to a web site that provided feedback on their levels of stress and use of coping strategies. Participants randomised to receive full individualized feedback also received feedback about their risk for alcohol-related problems. On 10 measures of alcohol use, it was found that moderate drinkers in the individualized feedback condition reduced their alcohol use only in relation to frequency of beer binge drinking (i.e, by 48%, compared to a 13% increase for the limited feedback condition). Low-risk drinkers in the individualized feedback condition also had greater reductions in frequency of beer binges (Mann–Whitney *U* test (*df* = 33) = 95.50, *p* < .02) and hard liquor binges (Mann–Whitney *U* test (*df* = 36) = 133.50, *p* = .05) compared to limited individual feedback. The major drawback of these findings is that only 3% of employees took up the offer of participation, severely limiting the results and any conclusions that could be made.

Finally, one additional systematic review (Schulte et al., 2014) was identified that included three additional references not referred to above. However none of the interventions were instigated by or directly connected to the participants' workplaces and are consequently not reviewed here.

Should BIs be implemented in workplace settings?
The limited studies that have been conducted on BIs in workplace settings found that a BI either did not differ to the control condition or resulted in small improvements in alcohol use outcomes. The low participation and poor follow-up rates of workers reported in many of these studies question the feasibility of delivering BIs in workplace settings. More studies are needed to determine the feasibility and efficacy of BIs in workplace settings.

Recommendation	Grade of recommendation
6.16 Brief interventions delivered in workplace settings are unlikely to be effective for alcohol users	**B**

Criminal Justice Settings
Alcohol is estimated to cost to the criminal justice system $2.958 billion per year, with much of this cost incurred by policing (38%) and prisons (21%) (Manning et al., 2013). Alcohol use disorders are highly prevalent and experienced by approximately 24% of prisoners worldwide (Fazel, Yoon, & Hayes, 2017). Within Australia, 58% of prisoners reported high-risk drinking, yet only 8% of prisoners report receiving some form of treatment for their alcohol use disorder (Australian Institute of Health and Welfare, 2015; Justice Health & Forensic Mental Health Network, 2015). This is particularly concerning considering that alcohol use problems are associated with increased criminal recidivism (Dowden & Brown, 2002). BIs have been identified as a viable option for

targeting alcohol use in criminal justice settings; however, there remains a limited number of high-quality efficacy trials particularly beyond prison in settings such as police custody probation and parole, or the courts.

Three recent systematic reviews have examined the efficacy of AOD interventions for incarcerated people (de Andrade, Ritchie, Rowlands, Mann, & Hides, 2018; Doyle, Shakeshaft, Guthrie, Snijder, & Butler, 2019; Newbury-Birch et al., 2018). Each of these reviews included articles up to August 2017, and no additional studies have been subsequently identified. From these reviews, six face-to-face BI studies were identified (Begun, Rose, & Lebel, 2011; Davis, Baer, Saxon, & Kivlahan, 2003; Owens & McCrady, 2016; Prendergast, McCollister, & Warda, 2017; L. A. R. Stein et al., 2011; M. D. Stein, Caviness, Anderson, Hebert, & Clarke, 2010). The intervention length varied from 45 to 150 minutes and were predominantly MI-based. Control conditions included relaxation training (L. A. R. Stein et al., 2011; M. D. Stein et al., 2010), educational videos (Owens & McCrady, 2016), information about substance use (Prendergast et al., 2017) or unspecified TAU (Begun et al., 2011; Davis et al., 2003; M. D. Stein et al., 2010). Only one of the studies was conducted with juveniles (L. A. R. Stein et al., 2011), and two with females only (Begun et al., 2011; M. D. Stein et al., 2010). In terms of study quality, within the reviews (de Andrade et al., 2018; Newbury-Birch et al., 2018) only one study was classified as having low risk of bias (M. D. Stein et al., 2010), four were classified as having moderate risk of bias (Begun et al., 2011; Owens & McCrady, 2016; Prendergast et al., 2017; L. A. R. Stein et al., 2011), and one study had high risk of bias (Davis et al., 2003).

The six relevant studies are reviewed below. First, a study with 245 female prisoners (M_{age} = 34.1, SD = 8.9; 71% Caucasian, mean AUDIT score = 20.2; SD = 10.1; 90% met diagnosis for lifetime alcohol dependence) examined BI compared with a control treatment (M. D. Stein et al., 2010). The intervention group consisted of two 30-45 minute MI sessions, one completed immediately following the baseline assessment, and the second completed upon release from prison. The BI resulted in more days abstinent from alcohol at 3 month (OR = 1.96, 95% CI 1.17, 3.30) but not 6 month follow up, relative to the control group. A second study also focused on female prisoners (n = 729), who were randomized to receive either a 60-90 minute MI interview or TAU control (Begun et al., 2011). All participants received an information folder with information about treatment and support services. The study found that BI resulted in greater mean reductions in AUDIT scores at 2 month follow up, compared to the control (F(1, 148) = 6.336, p =_ 0.01). Results are hampered by the low response rate for the follow-up interview (20.4%).

The remaining four studies found no differences in alcohol-related outcomes when comparing the BI to control (Davis et al., 2003; Owens & McCrady, 2016; Prendergast et al., 2017; L. A. R. Stein et al., 2011). One of these studies reported a within group effect of the BI on alcohol use (Owens & McCrady, 2016), finding significant increases in days abstinent (23% at pre- compared to 67% at post-treatment) at 1 month follow up.

One rapid review (Newbury-Birch et al., 2016) focused on evaluations of BIs within broader criminal justice settings between 2000 and 2014. Two unpublished studies within police custody settings were identified (Kennedy et al., 2012; McCracken,

McMurran, Winlow, Sassi, & McCarthy, 2012). Both had high risk of bias and only examined reoffending rates, finding no difference between the BI and matched control. One additional pilot cluster RCT was identified comparing screening only, brief advice (10mins) and brief advice plus 20 minutes of counselling (Addison et al., 2018). This pilot trial had high risk of bias with only 32% of those eligible for screening consenting to take part, and very low follow up rates for those enrolled (n = 205) at 6 months (29%) and 12 months (26%). No outcomes were reported.

Two studies in probation settings were identified in the rapid review (Newbury-Birch et al., 2016). One study with high risk of bias compared an unspecified BI to an information brochure control (Orr, McAuley, Graham, & McCoard, 2015). The second study, which had low risk of bias, compared two different BI treatment conditions and a simple feedback plus information brochure control (Newbury-Birch et al., 2014). One BI comprised feedback and brief advice (5mins), while the other comprised feedback, brief advice and a lifestyle counselling session (20mins). There was no difference in AUDIT scores at follow up when comparing the BIs to control. However, Newbury-Birch et al. (2014) found individuals in the two BI conditions were significantly less likely to reoffend compared to the control (36% and 38%, compared to 50%). All conditions had an increase in negative AUDIT screen status.

Should BIs be implemented in criminal justice settings?
The majority of BI studies conducted in criminal justice settings have focused on prisons, with a small number of trials in police custody and probation settings. The only BIs that have been found to be more effective than control interventions were conducted with female-only samples in prisons. In the remaining studies, BIs were not found to be more effective in reducing alcohol use in comparison in control conditions; however, BIs may reduce reoffending. More RCTs are needed with more rigorous design and higher follow-up rates.

Recommendation	Strength of recommendation
6.17 Brief interventions in prison settings may result in short- term reductions in alcohol use among females.	**B**

Who to target for BIs?
The effects of BIs on alcohol outcomes are likely to vary between different target groups. Several meta-analyses have conducted subgroup analyses or meta-regressions to identify which individual variables impact on the outcomes of BIs, including age, sex, ethnicity, help-seeking status, and the severity of alcohol use.

Do the effects of BIs for reducing alcohol consumption and related problems vary by age, sex or ethnic groups?
While individual studies have reported that results vary by age and sex, meta-analyses report age and sex have no impact on alcohol outcomes in adolescent, young adult or adult populations (Hettema et al., 2005; Huh et al., 2015; Lundahl et al., 2010; Tanner-

Smith & Lipsey, 2015; Wilk et al., 1997). However, females were found to have significantly better alcohol outcomes than males in a meta-analysis conducted in college students (Carey et al., 2007). Female-only studies of BIs in prison settings showed improved alcohol outcomes relative to control (Begun et al., 2011; M. D. Stein et al., 2010). Differential effects for BIs have been reported in some ethnic groups in meta-analyses of adolescents, younger and older adults (Huh et al., 2015; Lundahl et al., 2010; Tanner-Smith & Lipsey, 2015), but results are mixed as the majority of research has been conducted among Caucasians in first world countries (Foxcroft et al., 2016; Havard et al., 2008; Huh et al., 2015).

Do the effects of BIs vary according to help seeking status?
Only one meta-analysis examined whether the effects of a BI delivered in a range of settings varied by help seeking status. Vasilaki et al (2006) reported that brief MI was more effective than no treatment in both treatment seeking (5 studies) and non-treatment seeking (4 studies) samples of people with alcohol abuse/dependence. They also reported MI was more effective than active treatments in treatment seeking (1 study) than non-treatment seeking (6 studies) samples. However, these conclusions were based on a small number of studies and only a narrative review. More recent studies have not examined the influence of help seeking status on BIs, as help-seeking status tends to vary by the setting the BI is delivered in. More recent studies, have not examined the influence of help seeking status on MI outcomes, as help-seeking status tends to vary by the setting MI is delivered in.

Do the effects of BIs vary according to the severity of alcohol use?
There has been debate about whether BIs are effective among people with heavy alcohol use and dependence. While some early BI trials excluded people with dependence, more recent studies have typically not measured alcohol dependence or the severity of alcohol use, and have only used a minimum and no upper alcohol consumption threshold for study entry. This means people with alcohol dependence are likely included in these studies.

A number of meta-analyses have examined whether the severity of alcohol use impacts the effectiveness of BIs in adults. Burke et al. (2003) found no differences in the alcohol outcomes of MI compared to other active treatments, and superior results compared to no treatment; these results were not moderated by severity of alcohol or drug addiction (assessed by two independent raters). Similarly, the Hettema et al. (2005) meta-analysis found problem severity had no impact on outcomes in their moderation analysis of 72 studies examining multiple health outcomes. The Vasilaki et al. (2006) meta-analysis of 5 RCTs on the efficacy of MI for alcohol abuse and/or dependence found MI was more effective than no treatment at ≤ 3-month follow-up regardless of whether one study that included people with alcohol dependence was included or excluded from the analyses. Finally, the Kaner et al. (2018) Cochrane review of BI studies in primary care settings found significant reductions in the proportions of heavy drinkers among people who received BIs compared to no or minimal active treatment.

Two meta-analyses conducted in adolescents and young adults reported no evidence that the severity of baseline alcohol use or risk status (high risk vs all/low-risk) of young

people had any impact on the effect of MI on alcohol use or related problems compared to no or alternative treatments (Foxcroft et al., 2016; Huh et al., 2015).

Together these findings suggest the severity of alcohol use has little impact on MI outcomes compared to no treatment or alternative alcohol treatment in adults and young people. It should be noted that none of these meta-analyses excluded studies with people with alcohol dependence.

Clearly more evidence is needed, but existing results suggest that regardless of the severity of client alcohol use, MI may be more effective than no treatment for reducing alcohol use among young people and adults. Nevertheless, consistent with stepped care models more intensive treatment should be offered if this is clinically indicated (e.g. presence of alcohol withdrawal symptoms), if the individual requests more treatment or they do not respond. This model of healthcare could also help AOD services meet the unmet demand for treatment in Australia, and increase treatment access. Offering a BI first could also improve client outcomes by providing more flexible need-driven care.

Recommendation	Grade of recommendation
6.18 Brief motivational interviewing may be more effective than no treatment for young people and adults, regardless of the severity of their alcohol use, but more intensive treatment should be offered if this is clinically indicated (e.g. presence of alcohol withdrawal symptoms, or they do not respond to treatment).	**B**

What are the characteristics of effective BIs?
The key characteristics of BIs include the type of BI and its components, mechanisms of change targeted, length of intervention, and mode of delivery. Evidence on whether these characteristics may impact of alcohol outcomes is reviewed below.

Which type of BI is most effective?
A number of meta-analyses have compared the effects of different types of BIs. Lundahl et al. (2010) conducted moderation analyses to determine if intervention effects were moderated by the use of MI or MET, which combines MI with specific alcohol feedback. The use of basic MI versus MET, did not moderate effects in studies comparing BIs to strong comparison groups (active interventions). However, for studies comparing BIs with weak comparison groups (nonspecific TAU, waitlist controls or written materials), MET was found to result in significantly more positive changes in alcohol use ($g = 0.32$; 95% CI 0.23, 0.40; $p < 0.03$) than MI alone ($g = 0.19$; 95% CI 0.11, 0.27). The Smedslund et al. (2011) Cochrane review found MI had better substance use outcomes than assessment feedback at medium but not short-term follow-up. The Huh et al. (2015) individual participant-level data meta-analysis in college students found no post hoc differences in alcohol use outcomes following different types of BIs (MI versus MI + PF). The only exception was a small significant reduction in alcohol-related problems in the

MI + PF group relative to controls (Huh et al., 2015). It can be concluded that the combination of MI and assessment feedback has slightly better outcomes than MI alone, consistent with the majority of MI studies conducted in the past 5 to 10 years which use a combination of MI and personalised assessment feedback (Foxcroft et al., 2016; Kaner et al., 2018).

What are the mechanisms of change of BIs?
A growing number of process-based studies have examined the potential mechanisms of change for brief alcohol interventions in order to increase their effectiveness. Reid and Carey (2015) conducted a systematic review of 61 BI trials for college students to identify their mechanisms of change. Of the 22 mediators examined, only descriptive norms (perceptions of peer alcohol use) mediated normative feedback intervention efficacy (39 trials). Motivation to change consistently failed to mediate MI efficacy. Mediators with mixed but promising support included protective behavioural strategies, outcome expectancies, self-efficacy, changes in emotion constructs and coping motives. No or very limited support was found for changes in injunctive norms, cognitive dissonance, decisional balance, self-monitoring. There were too few studies on the remainder of mediators to make any meaningful conclusions. Magill et al. (2017) recently examined mediators of change in an RCT comparing MI and relaxation training in underage young adult heavy drinkers (n = 167). MI efficacy for reducing heavy drinking at 6 weeks follow up was mediated by cognitive change processes (increased motivation and self-efficacy, decreased drinking intentions). Heavy drinking outcomes at 3 months were mediated by increases in cognitive dissonance, and two behavioural strategies (increased avoidance of and alternatives to drinking contexts) at 6 weeks. Together these results indicate there is a limited understanding of the mechanisms of change for brief alcohol interventions, and there may be variations in those associated with initial versus longer term reductions in alcohol use.

Do the effects of BIs vary by the length of treatment?
A number of meta-analyses have conducted moderation analyses to identify whether the length of BIs impacts on alcohol outcomes. The duration of MI had no impact on results in adults (Hettema et al., 2005, mean = 2.24 hours, SD = 2.15; Wilk et al., 1997, < 1 hour total, < or < 1 session). Foxcroft (2016) found no relationship between the length of MI ($\leq$ 60 min in 57/84 studies) and its effectiveness in young adults. Similarly, Tanner-Smith and Lipsey (2015) reported the length of treatment (mean = 99.0 mins, SD = 80.3; or mean = 1.8 sessions, SD = 1.20) had no impact on the effect of MI or the sustainability of its effects in adolescents and young adults over 1 year. The length of treatment has also been found to have no impact on the outcomes of brief alcohol interventions delivered in ED settings (Havard et al., 2008, 5-60 mins; Schmidt et al., 2016, < 15 mins), primary care settings (Kaner et al., 2018, < 5 sessions and < 60 mins) and AOD specialist treatment services (Kramer Schmidt et al., 2018). Together, these results indicate that the length of BIs has no impact on outcomes. However, there was wide variability in the length of BIs/MIs in these studies.

Does the mode of delivery impact on BIs outcomes?
There is evidence from recent meta-analyses that mode of delivery (i.e. group versus individual delivery) of BIs can impact the effect of BIs on alcohol outcomes. Lundahl et al. (2010) found individual but not group-delivered MI was more effective than control

conditions in adults. Similarly, Huh et al. (2015) also found individual but not group MI had better alcohol outcomes compared to no or minimal treatment control conditions in college students (Huh et al., 2015). This suggests that mode of BI delivery is important for alcohol outcomes, and that group-delivered BIs may be more limited in their effectiveness relative to individually delivered BIs.

MI Training, Supervision and Fidelity Monitoring

Who can deliver BIs?

BI interventions have been delivered by a range of different health professionals and treatment providers with appropriate training, including mental health and AOD workers, psychologists, social workers, nurses, counsellors, psychiatrists, physicians, dieticians, pharmacists, probation officers, and behavioural health care providers (Barwick, Bennett, Johnson, McGowan, & Moore, 2012). There are few studies comparing the efficacy of interventions across different providers.

Platt et al. (2016) conducted a systematic review and meta-regression examining BIs for alcohol use, compared to no or minimal treatment (TAU, information only, assessment only). Only general population studies were included, with studies focused on specialist addiction or specialist health clinics excluded. A total of 52 studies (n = 29,891) were included. Service providers were grouped into counsellors (n = 22 studies), general practitioners (n = 11 studies); nurses (n = 9 studies); peer providers (n = 2 studies); different types of providers (n = 4 studies); and combined providers (GP plus other = 6 studies). The type of provider did not meaningfully explain heterogeneity in results; however, it appeared that interventions delivered by a range of different types of providers had the poorest alcohol outcomes, and those delivered at least in part by nurses had the best outcomes. A meta-analysis by Schmidt et al. (2016) of BIs delivered in ED settings found no difference in alcohol outcomes according to whether the BI was delivered by 'internal' ED staff or 'external' research professionals. Both of these reviews were conducted based on between-study comparisons, without comparing treatment providers directly within a single study context. Additionally, none of these analyses have examined the impact of training and support for providers on treatment outcomes.

Recommendation	Grade of recommendation
6.19 A range of providers (including counsellors, doctors, nurses, peers) with appropriate training, can effectively deliver brief interventions	**Overall B** **Level of evidence B** **Consistency B** **Clinical impact C** **Generalisability B** **Applicability B**

What are the most effective methods for training providers to deliver BIs?

Hettema et al. (2005) conducted a meta-analysis which found that counsellor training had no impact on the outcomes of MI for alcohol, tobacco, drugs, diet and exercise in moderation analyses across 72 studies. However, few of these studies detailed the

training that took place, provided documentation of fidelity assessments or included process measures to relate training to outcomes.

A systematic review of 22 studies (Barwick et al., 2012) examined key MI training strategies (12 RCT, 1 interrupted time series, 9 quasi-experimental studies). Overall study quality was low, with only four of the RCTs exceeding 50% in the Cochrane Effective Practice and Organisation of Care (EPOC) criteria. The gaps in quality across trials included lack of blinded assessment of primary outcomes, lack of protection against contamination, and lack of specificity in reporting of results. Many of the studies provided a comprehensive training approach, with dyadic training/ workshops, which included demonstrations, practice and role plays; as well as ongoing coaching, supervision and support; and manuals, handouts or background reading. The wide variety in training approaches made it difficult to identify one preferred training method. However, 17 of the 22 studies showed some improvement in at least one area of MI training. Most of the studies used objective methods of measurement including simulated patient scenarios or audio recordings of real patients, scored by a third party. It must be noted that none of the studies specifically examined how training impacted on client outcomes, which is an important metric when considering training efficacy.

One meta-analysis examined the impact of training on the sustainability of MI skills (Schwalbe, Oh, & Zweben, 2014). This review included 21 studies across substance use (n = 13 studies), health (n = 7 studies) and correctional settings (n = 1 study), examining the impact of standard training workshops (generally 12-15 hours over 1-2 days, consisting of face-to-face dyadic instruction and interactive exercises), compared to enhanced workshops (featuring a context tailored approach, feedback on audio-recordings, audio-recorded practice samples, computer based-technologies and/or train the trainer models). Training workshops alone were also compared to post-training inputs (i.e., feedback on audio-recordings and/or coaching). Only half the studies randomized providers to the training condition, with the remaining using case-control designs; 62% recorded interviews with actual clients to assess trainee skills; 13 studies included a "workshop only" training condition and 13 studies included post-workshop training inputs. Workshops generally lasted 12-15 hours and were conducted over 1-2 days, consisting of face-to-face dyadic instruction and interactive exercises. Across studies, training yielded gains in MI skills (d = 0.76, 95% CI 0.43, 1.10). There was no difference in skills gained when comparing a standard workshop to enhanced workshop models. Studies that had no post-workshop follow up reported eroding skills over a 6-month follow-up (d = −0.30), whereas when feedback/coaching was provided, post-workshop skills were sustained (d = -0.03). The authors recommended three to four feedback/ coaching sessions over a 6-month period to sustain skills among trainees.

Hallgren et al. (2018) conducted a study examining the extent to which MI adherence varies across sessions, providers, and intervention sites. The data were drawn from six MI studies. Most of the providers had at least Masters level training, and received either a two day MI workshop or five sessions of tailored 2-3 hour MI training. MI training included practice interviews and feedback with standardized clients and discussions of challenging situations. Independent raters coded 1,275 sessions delivered by 216 providers at 15 intervention sites. The largest variation in MI adherence (57-94%) was between sessions (i.e., within providers), with a smaller proportion of variance

attributed to the type of provider (3-26%) or intervention site (0.1% to 28%). MI adherence was typically lowest and most variable within contexts evaluating MI training (i.e., where MI was not protocol-guided and delivered by community treatment providers) and typically highest and least variable in contexts evaluating MI efficacy and effectiveness (i.e., where MI was highly protocolized and delivered by trained therapists). This study highlights the importance of ensuring MI training is accompanied by ongoing supervision and adherence monitoring to avoid therapist drift, particularly in community settings.

Recommendation	Grade of recommendation
6.20 Comprehensive 1-2+ day training workshops, which incorporate face-to-face dyadic instruction and interactive exercises, as well as 3-4 post-workshop feedback/ coaching sessions, are likely to be an effective means to train and sustain BI skills. Ongoing supervision is also recommended.	**B**

Does MI fidelity impact outcomes?
Four meta-analyses have examined whether MI treatment fidelity had an impact on outcomes. Lundahl et al. (2010) found MI fidelity (not assessed, assessed qualitatively only, assessed using standardised system) did not moderate the effects of MI compared to no, minimal or active treatment control conditions. Hettema et al. (2005) also found no relationship between outcomes and MI purity (number of MI-components reported). However, both of these meta-analyses included studies using a wide range of fidelity measures. The Smedslund et al. (2011) Cochrane review only included AOD studies with MI fidelity checks and found there was insufficient variability in the results of the meta-analyses to examine the impact of the type of fidelity check on outcomes.

In recent years, a growing number of MI process studies have examined how therapist behaviours influence client outcomes. Magill and colleagues (2018) recently conducted a meta-analysis of 36 MI process studies (n = 3,025) targeting multiple behaviours (AOD use, gambling, sexual risk behaviour, poor diet). Independent observational ratings of MI fidelity were used. Results indicated that the proportion of therapist MI-consistent skills (e.g., open questions, simple and complex reflections) to MI-inconsistent skills (e.g., confrontation, unsolicited advice) was related to a higher proportion of client change versus sustain talk ($r = 0.11$, $p = 0.004$). This in turn was related to larger reductions in risk behaviour at follow up ($r = -0.16$, 95% CI 0.03, 0.18, $p < 0.001$). MI therapist relational proficiency (average vs good empathy or MI spirit) had no impact on the proportion of client change versus sustain talk or client outcomes. However, there was only moderate variability in MI therapist relational proficiency, as most studies used highly trained and monitored clinical trial therapists. Together these findings highlight the importance of therapist MI-consistent skills for eliciting client change talk and behaviour change, although effect sizes are small.

Implementation Efforts

Historically, a 17-25 year gap has been identified from the time evidence is established for a psychological intervention to implementation of the intervention in clinical practice (Dougherty & Conway, 2008; Morris, Wooding, & Grant, 2011). Even when a mental health intervention is implemented in practice, program sustainability is difficult, with one study finding only 47% of services maintained fully implemented evidence-based interventions for 6 years (Bond et al., 2014). Therefore, it is necessary to consider whether BIs can feasibly be implemented as part of routine care. In determining the feasibility of BI implementation, it is important to consider barriers to and facilitators of implementation (Damschroder & Hagedorn, 2011).

A meta-analysis examining implementation strategies for delivering brief alcohol interventions in primary health care settings (Keurhorst et al., 2015) included 29 studies with moderate methodological quality. All the studies were either RCTs (86%) or controlled trials (14%) that compared groups who received implementation strategies to those who did not. Types of strategies examined included professional-orientated strategies (e.g., education meetings, outreach visits, audit and feedback); organizational only strategies (changing scope of service, changing service delivery to phone-based counselling, changing medical recording systems); patient-orientated strategies (educational material to the client); and financial-oriented strategies. These strategies were used in isolation (n = 15 studies) or in combination (n = 14 studies).

When examining AUDIT scores/ weekly alcohol consumption (n = 13 studies), a meta-analysis revealed no difference between the pooled implementation and control groups. However, a meta-regression revealed that combining professional-, organizational- and patient-orientated strategies was significantly more effective at decreasing patients' alcohol consumption than only using professional-orientated implementation strategies.

When examining the effects on screening (n = 10 studies), the implementation compared to control group increased screening delivery (SMD model = 0.53; 95% CI 0.28, 0.78). Studies with the strongest effects included physicians as well as other health professionals (e.g., nurses). in alcohol screening, compared to physicians alone. The meta-regression also revealed that studies using multiple types of implementation strategies were more effective than those that focused on a single implementation strategy.

A number of implementation strategies have been conducted nationally in different countries. From 2004 to 2010, several government-led initiatives were conducted across Sweden aimed at achieving widespread implementation of brief alcohol interventions in the health care system. In 2010, Nilsen et al. (2011) conducted a cross-sectional survey with a nationally representative sample of 5,981 individuals (54%, n = 3,200 completed the survey). Approximately 66% of responders had visited a health care provider in the past 12 months, and 20% had at least one conversation about their alcohol use with their health care provider. Those who were younger, male, unemployed, excessive drinkers, or who visited a health care provider more than once were most likely to have had a conversation about their alcohol use. The majority of responders (67%) said that the conversation about their alcohol use had no impact on their drinking.

Finland has also been making attempts to universally implement alcohol screening and BIs in health services. To evaluate the implementation of BIs, a random sample of Finns (n = 2,725; 74% response rate) were surveyed, with 76% (n = 2,062) having come in contact with a health care provider (Mäkelä, Havio, & Seppä, 2011). While over 90% of responders had positive attitudes about being asked about their drinking, only 33% of those who visited medical services were asked about their alcohol use. Only 50% of those identified as heavy drinkers received advice about their heavy drinking. Of those who were advised, 72% found the advice helpful. Similar to the Swedish study, individuals who were young, male, heavy drinkers and of low socio-economic status were the most likely to be asked about their drinking.

In 2003, the United States Substance Abuse and Mental Health Services Administration (SAMHSA) program launched the Screening, Brief Intervention and Referral to Treatment (SBIRT) grant program to increase the adoption of BIs in health-care settings (Vendetti et al., 2017). Following the conclusion of this grant funding, a comprehensive review was conducted to identify barriers and facilitators to the implementation using surveys with 102 SBIRT providers and interviews with 221 stakeholders and staff (Vendetti et al., 2017). Reviews of what was proposed versus what was actually implemented were conducted for seven programs that implemented SBIRT services. These programs included a range of delivery settings including EDs and trauma centres, in-patient hospital services and ambulatory clinics. While two programs initially proposed using a pre-screen triage prior to a full screen, five sites ultimately ended up implementing this procedure. Four programs proposed using in-house generalists for screening, however, only two programs adopted this model. All seven programs involved specialists for the BI and referral to treatment. Although all seven programs implemented their services in ambulatory settings, many suspended services for periods of time or ceased operation. Five of the seven programs initiated the service delivery pathway in emergency settings, and several later expanded services to additional hospitals within their state. Only two of the seven sites initially proposed to offer on-site or telephone-based counselling for medically impaired non-treatment seeking patients. However, six of the programs eventually adopted this model due to difficulties engaging clients in treatment.

Another study comprehensively examined screening rates and referrals across 10 primary care practices (Hargraves et al., 2017). These authors found that of the 22,360 patients eligible for screening, 57% (n = 12,697) completed a pre-screen and 33% (n = 7,361) completed a full screen Of those who completed a full screen, 25% screened positive for a moderate to high risk score on the AUDIT (n = 1,840). Of those who screened positive, 55% (n = 1,009) completed a BI and 21% (n = 209) were referred to treatment. Patient outcomes following the screen and brief intervention were not reported.

The two SBIRT studies (Hargraves et al., 2017; Vendetti et al., 2017) conducted comprehensive qualitative and quantitative reviews on the barriers and facilitators to the implementation. Other SBIRT studies that have similarly examined implementation strategies include a qualitative study by Rahm et al. (2015), which involved interviews with 48 staff from multiple disciplines working at the Kaiser Permanente Colorado (KPCO) integrated health care system; and a 10 year review of SBIRT interventions

(Nunes, Richmond, Marzano, Swenson, & Lockhart, 2017). There have also been reviews of national strategies in Sweden (Nilsen, Aalto, Bendtsen, & Seppä, 2006) and Scotland (Fitzgerald, Platt, Heywood, & McCambridge, 2015). Overall, these implementation studies indicated that the biggest barriers to the implementation of SBIRT include competing priorities at the service site, and lack of available time for conducting screens and interventions. One way to combat limited physician time in private practices was through the use of inter-disciplinary teams (e.g., medical assistants, nurses). Technology was seen as both a facilitator of SBIRT, and a possible barrier if it was perceived as burdensome. Other considerations included having an adequate start-up phase to the implementation, the physical space and privacy to conduct the screen and intervention, and individuals in specialist roles to conduct the SBIRT intervention on site. It was also considered important for people in these specialist roles to be still suited to and integrated with the broader team. Intra- and inter-organizational communication was also seen as important, particularly for facilitating referrals of high-risk clients between agencies, and providing a feedback loop to the referrer. The need to broaden providers' views on the value of focusing on the full spectrum of alcohol use, and not just heavy users, was also highlighted.

Modifications that increased implementation effectiveness included shortening the screening tool, which increased the number of screens being undertaken, and having onsite referral options (as opposed to external referral options), which increased the number of referrals made. Using telehealth services was also perceived as an effective way to increase the reach of the intervention.

Facilitators of effective implementation included having the screen occur as part of routine care for all clients, fully integrating the screen and intervention into practice workflows, having an SBIRT co-ordinator on site, involving the leadership and practice staff in the decision to take part in the program and in the early planning phases for the implementation, developing a sense of ownership for the screening and BI, conforming to the language normally used by service providers, having assistance available from SBIRT training staff, with ongoing site training to account for high staff turnover, and implementing organisational changes (e.g., a new medical record system) or incorporating the screening and intervention activities into existing electronic systems. In particular it was seen as important that the "champion" was somebody in a leadership position, respected by staff, who had charisma and delivered a strong and consistent message about the program. It was also seen as important that this role provided logistic coordination and problem-solving support. Having robust monitoring procedures, mandatory fields, adequate funding, and national targets for screening rates, were also identified as important motivators.

In summary, BIs have been implemented across a range of settings, with different countries adopting national strategies to support their implementation. Common barriers have been identified that impact screening rates and the effective delivery of BIs. To facilitate the efficient and effective implementation of Bis, it is necessary to consider and actively address these key facilitators and barriers.

Summary and limitations

Most alcohol-related harm in the community is caused by excessive drinkers whose consumption exceeds recommended drinking levels, rather than by drinkers with alcohol dependence. One way to reduce consumption levels in a community is to provide access to BIs comprising one to four sessions.

BIs containing MI are superior to no treatment for reducing alcohol consumption in adolescents, young and older adults and across multiple settings, but effects are small. Brief MI is not more effective than TAU, or alternative active treatments for reducing alcohol use in adolescents, young and older adults, but is likely to be more cost effective due to their brevity.

Evidence for the efficacy of BIs is strongest in studies conducted in primary care settings, which exclude people accessing treatment for alcohol related presentations. The majority of this evidence comes from studies in general practice settings. There is also evidence BIs are beneficial for excessive drinkers admitted to general medical inpatient wards for non-alcohol related presentations. While the benefits of brief MI for heavy alcohol users attending oral-maxillofacial hospital outpatient clinics has been demonstrated in two studies, there is otherwise no evidence for their effectiveness in other hospital outpatient clinics. In EDs, there is evidence BIs may be beneficial for excessive drinking adults, but little evidence in young people.

Relatively few studies have examined the efficacy of BIs in specialist outpatient AOD treatment settings. Research to date has compared one to four sessions of MI/MET with TAU or longer interventions. Two high quality RCTs have provided preliminary evidence that MET was more effective than standard counselling for reducing alcohol use. A 2002 meta-analysis and the large scale, high-quality UKATT study found 1-3 sessions of MET were no less effective than longer interventions at up to 12 months follow up (Moyer et al., 2002; United Kingdom Alcohol Treatment Trial Research, 2005). However, further research using non-inferiority trials is required to estabish whether MET has equivalent outcomes to longer psychosocial interventions in these settings, and if the severity of dependence impacts on results.

Indeed, there has been debate about whether BIs are effective among people with more severe alcohol use and dependence. While some early trials excluded people with dependence, more recent studies have typically not measured dependence and only used a minimum inclusion threshold for alcohol consumption with no upper exclusion threshold. This means people with alcohol dependence are likely included in these studies. As a result, it remains unclear if the impact of BIs differs among people with high levels of risky alcohol use and/or dependence. However, meta-analyses that have considered the impact of the severity of alcohol use on outcomes, have found MI is more effective than no treatment for reducing alcohol use among young people and adults, regardless of the severity of their alcohol use (Burke et al., 2003; Foxcroft et al., 2016; Hettema et al., 2005; Kaner et al., 2018; Vasilaki et al., 2006). Stepped care models of healthcare provide a potential solution to this issue, as they provide brief MIs to people with risky alcohol use first, followed by more intensive treatment if clinically indicated (e.g. withdrawal symptoms) if the individual requests more treatment or does not respond. This model of healthcare could also help AOD services meet the unmet

demand for treatment in Australia, and increase treatment access. Offering a BI first could also improve client outcomes by providing more flexible need-driven care. Further information on stepped care models of care is provided in Chapter 7.

In terms of other settings, there is evidence BIs are beneficial in higher education settings (universities/colleges) compared to no or minimal alcohol treatment, and while effect sizes are small, they are likely to be cost effective. Brief MI may also be used with adolescents in public secondary schools or alternative school settings, but there is insufficient evidence for them to be used as a sole intervention strategy. There is no evidence to indicate whether or not BIs are effective in community welfare settings, and some evidence they might be no more effective than information brochures alone in pharmacy and workplace settings. Finally, there is some evidence that BIs may be effective for females in prison, but few studies have been conducted in other criminal justice settings.

One key limitation of the evidence base for BIs are the small effects. For example, a mean reduction of 20 grams per week (2 standard drinks) was reported in the 2018 Cochrane review of BIs in primary care settings (Kaner et al., 2018). Even smaller effects were reported in the Foxcroft et al. (2016) Cochrane review in young adults (primarily college students). Such small effects likely indicate that many participants continue to drink at hazardous levels according to recommendations in most countries. However, Grant et al (2016) highlighted the need to consider minimal clinically important differences when interpreting the outcomes of meta-analyses, as any reduction at an individual level is likely to be beneficial given the number of disease conditions at least partly attributable to alcohol. In addition, the higher the baseline level of drinking, the stronger the effects of any given reduction in terms of all-cause mortality (Rehm & Roerecke, 2013). At a population level, any reduction is likely to have a significant impact on health, quality of life and healthcare resource use, given that between 5% and 12% of disability-adjusted life years in Australia is attributable to alcohol (Crosland et al., 2019).

Despite this, small effects mean clinicians may not often see beneficial results of the intervention, as the number needed to treat may be substantial in order to create a measurable effect in alcohol outcomes. In order to get one drinker to return within recommended limits, BIs needs to be delivered to 10 patients (i.e., the number needed to treat, or NNT; Beich et al. 2003a; Beich et al. 2003b; Vinson 2003). To identify those individuals, one must screen 100 (i.e., the number needed to screen). However, despite these seemingly high levels, this is only a quarter of the number (i.e., 400 people) needed to screen for high cholesterol before 1 person can benefit, which is a routine, expensive and invasive test (Vinson 2003; Shepherd et al. 1995).

It should be noted that the effect sizes of meta-analyses have reduced over time, as more recent BI trials have demonstrated less impact on alcohol consumption than older trials (Kaner et al., 2018). For example, Kaner et al., (2018) found the mean difference in alcohol consumption between the BI and control group decreased by 2.3 grams per week (95% CI 1.3, 3.4) for every one-year increase in the publication date. They identified several potential reasons for this. First, the definition of excessive drinking used in national guidelines has reduced over time, which has reduced the inclusion

criteria threshold for at risk drinking and the mean baseline consumption per week in more recent trials (Kaner et al., 2018). Consfequently, less change is required to reach a lower risk drinking level, reducing effect sizes. Second and third, assessment reactivity to the screening tools, as well as the increasing provision of alcohol-related information in more recent trials to the minimal or no treatment control conditions, might increase the control group's awareness of alcohol problems and decrease alcohol use (Kaner et al., 2018). Fourth, regression to the mean following an alcohol-related incident could also be occurring in some settings (e.g., EDs, college students) (Cunningham, Kypri, & McCambridge, 2011). Future research evaluating BIs using ultra-brief research assessments and masked research designs (e.g., lifestyle survey containing alcohol question, see McCambridge et al., 2013) is required to investigate these issues further.

There has been increasing recognition of the importance of MI training, supervision and fidelity monitoring in clinical trials. However, the majority of meta-analyses conducted to date have not considered the potential risk of bias associated with poor MI training and fidelity (Foxcroft et al., 2016; Huh et al., 2015; Kaner et al., 2018; J. McQueen et al., 2011). The results of a recent meta-analysis of 36 MI process research studies showed therapist MI-consistent skills were associated with better client outcomes (Magill et al., 2017). This finding highlights the importance MI fidelity monitoring in clinical trials, and consideration of the associated risk of bias in future meta-analyses. More research on how to best train, supervise and monitor MI therapists is also required.

The implementation of BIs into clinical practice remains a challenge. While progress has been made across different settings and countries, this research is in its infancy. A number of common barriers and facilitators to screening and the effective delivery of BIs have been identified, which need to be addressed to facilitate the efficient and effective implementation of BIs. The biggest barriers include competing priorities at the service site and lack of available time for conducting screens and interventions. Ways to facilitate implementation included having interdisciplinary teams conduct the screening; having a brief screening tool which is integrated in routine care and existing electronic systems; having onsite specialists, who are integrated with existing service teams, conducting brief interventions on site or over the phone to increase client engagement; as well as ensuring that there is a feedback loop post-intervention to the referrers. Having a start-up phase to the implementation and adopting multiple types of intervention strategies that focus on the professionals, organisations and clients/patients were also identified. Finally, having a clear monitoring system, clear targets, and a "champion" in a leadership position who provides logistical and problem-solving support, as well as charisma and strong consistent messaging.

Finally, it should be noted that the generalisability of the recommendations contained in this Chapter are limited to non-European first world countries (e.g. mainly North America) where the majority of studies were conducted. Although a meta-analysis comparing the effectiveness of BI studies conducted in European and non-European countries found no differences in alcohol consumption outcomes, these studies were all conducted in high income countries with primarily white middle-aged men (C. Elzerbi, Donoghue, & Drummond, 2015). Nevertheless, a recent systematic review of nine RCTs conducted in middle-income countries (e.g., India, Brazil, Thailand, South Africa) found BIs resulted in reductions in alcohol use in five trials in primary care settings (Joseph &

Basu, 2017). There is a clear need for more research on BIs with people from low and lower-middle income countries, and cultural minority groups worldwide.

These limitations highlight the need for further research on how to enhance the impact of BIs. Research examining the active ingredients of BIs is needed to identify the optimal content of BIs for different settings. The identification of the key characteristics of the individuals most likely to benefit from BIs would also help to refine and develop more personalised BIs. There is an urgent need for consensus on a core set of alcohol use outcome measures, such as the work of the Outcome Reporting in Brief Intervention Trials: Alcohol initiative (ORBITAL; Shorter et al., 2019). To facilitate future meta-analysis, this should include a core alcohol consumption measure in either units or grams of alcohol consumed; as well as valid and reliable self-report measures of alcohol-related problems. Longer follow-up times are also required to increase understanding of the duration of BIs effects.

Conclusion

There is strong evidence for the superiority of brief alcohol interventions compared to no treatment delivered across a range of treatment settings. Evidence for the effectiveness of BIs compared to TAU or active alcohol treatments is limited. While there is evidence for the cost effectiveness of BIs in some settings, their implementation remains remarkably low. The provision of BIs across a variety of settings has the potential to provide large numbers of people with access to brief and cost-effective alcohol treatment. While effects are small, at a population level BIs could make a significant contribution to reducing the impact of alcohol on the burden of disease and injury in Australia.

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Appendix A: Brief Intervention Frameworks

FLAGS

Feedback	**Provide individualised feedback about the risks associated with continued drinking, based on current drinking patterns, problem indicators, and health status.** **Discuss the potential health problems that can arise from risky alcohol use.**
Listen	**Listen to the patient's response.** **This should spark a discussion of the patient's consumption level and how it relates to general population consumption and any false beliefs held by the patient.**
Advice	**Give clear advice about the importance of changing current drinking patterns and a recommended level of consumption.** **A typical 5 to 10 minute BI should involve advice on reducing consumption in a persuasive but non-judgemental way.** **Advice can be supported by self-help materials, which provide information about the potential harms of risky alcohol consumption and can provide additional motivation to change.**
Goals	**Discuss the safe drinking limits and assist the patient to set specific goals for changing patterns of consumption.** **Instil optimism in the patient that his or her chosen goals can be achieved.** **It is in this step, in particular, that motivation-enhancing techniques are used to encourage patients to develop, implement and commit to plans to stop drinking.**
Strategies	**Ask the patient to suggest some strategies for achieving these goals.** **This approach emphasises the individual's choice to reduce drinking patterns and allows them to choose the approach best suited to their own situation.** **The individual might consider setting a specific limit on alcohol consumption, learning to recognise the antecedents of drinking, and developing skills to avoid drinking in high-risk situations, pacing one's drinking and learning to cope with everyday problems that lead to drinking.**

FRAMES

Feedback	**Provide feedback about the individual's AOD use and related-problems, and the risks associated with them, as well as general information about AOD related harm.** **Feedback can include a comparison between the individual's AOD use and population norms.**
Responsibility	**Acknowledge the individual is responsible for their own behaviour and that they can make choices about their AOD use.**
Advice	**Provide clear advice about the current and future potential harms associated with continued AOD use.**
Menu of alternative change options	**Provide the individual with a range of alternative strategies to choose from to help them cut down or cease AOD use. Examples include: AOD use monitoring, engaging in alternative activities instead of AOD use, identifying high risk situations and strategies to avoid them, providing other self-help resources**
Empathy	**Deliver the brief interventions using a warm, empathic and understanding approach.**
Self-efficacy	**Build the individuals' confidence in their ability to make a positive change in their AOD use.**

CHAPTER 7

BRIEF E-HEALTH INTERVENTIONS: A REVIEW OF THE EVIDENCE

Chapter 7. Brief e-health interventions: A review of the evidence

As reviewed in Chapter 6, Brief in-person Interventions are an effective and cost-effective way to reduce alcohol use problems. Despite this, most Australians who experience an alcohol use disorder will never receive treatment (Teesson, Baillie, Lynskey, Manor, & Degenhardt, 2006), and for those who do, the average delay from emergence of alcohol use disorder to first treatment contact is 18 years (Chapman, Slade, Hunt, & Teesson, 2015). A number of barriers may prevent the implementation of Brief Interventions for alcohol use problems, such as: time, access to health professionals trained in brief intervention, lack of resources, and cost (M. Johnson, Jackson, Guillaume, Meier, & Goyder, 2010; Rahm et al., 2015). An additional barrier is the patient themselves. Due to the stigma associated with problematic alcohol use, the negative perceptions of treatment, or a belief they can manage on their own, only some people with alcohol use disorders will seek treatment, or accept in-person brief intervention when offered (Cunningham, Sobell, Sobell, Agrawal, & Toneatto, 1993; Riper et al., 2018). Thus, intervention strategies that overcome these barriers may lead to more individuals receiving treatment for alcohol use problems.

Brief e-health interventions (interventions delivered via internet, mobile phone, or computer) reduce a number of barriers to treatment. Specifically, brief e-health interventions for alcohol use problems are typically one session, can be accessed at the user's discretion, are easy to implement without special training, are cheaper than in-person interventions, have demonstrated good acceptability among people with alcohol use problems, and may reduce some of the stigma associated with seeking treatment (Hunter et al., 2017; Kypri, Sitharthan, Cunningham, Kavanagh, & Dean, 2005; Riper et al., 2009; Winstock, 2019; C. J. Wright, Dietze, Crockett, & Lim, 2016). Indeed, among those who consumed alcohol in the past year, free online interventions are the preferred form of treatment for alcohol use (Winstock, 2019). In Australia, brief e-health interventions for alcohol use are a particularly exciting treatment option given that internet access (89%) and smartphone ownership (83%) is near ubiquitous (Authority, 2019). Thus, e-health interventions can be scaled up and may be a critical tool to reach non-treatment-seekers, hard to reach communities, and younger drinkers (who are the most likely to have access to mobile phones and the internet (Authority, 2019)).

What are brief e-health interventions for alcohol use problems?

In this chapter, we define e-health interventions as those that use the internet, mobile phones, or computers to deliver intervention materials.[7] Most take a similar approach to in-person Brief Interventions and include some form of screening and personalised feedback. Although some components of Brief Interventions are difficult to translate to a digital platform (e.g., empathy), brief e-health interventions contain similar behaviour change techniques ('active ingredients') and the most common techniques used are feedback about drinking, social comparisons to encourage changes in alcohol use in line with low-risk levels, feedback about consequences, and information about consequences of alcohol misuse (Black, Mullan, & Sharpe, 2016; Garnett et al., 2018; Kaner et al., 2017). To date, most brief e-health interventions for alcohol use problems

[7] this definition is similar to the World Health Organization's: "the use of information and communication technologies (ICT) for health"

have used online computer-based interventions and have been fully automated (i.e., no clinician input). In contrast, despite the promise of mobile applications (AKA apps), there is less evidence supporting their effectiveness (Bertholet, Daeppen, McNeely, Kushnir, & Cunningham, 2017; Bertholet, Godinho, & Cunningham, 2019; C. Wright et al., 2018; C. J. Wright et al., 2016).

Who to target for brief e-health interventions for alcohol use problems?

Brief e-health interventions are an exciting method for treatment because (1) they can be easily sent out to a large group of people to prevent or intervene early with little clinician engagement (e.g., to an incoming cohort of university students) (Riordan & Carey, 2019) and (2) they can be used to screen and treat a broad range of drinkers as the feedback can be tailored to different drinking levels. Although they are promising, it is important to note that e-health interventions may be more accessible to certain populations (e.g., those with mobile devices, younger people with greater digital literacy) and less accessible to others (e.g., homeless, elderly people with poorer digital literacy). Furthermore, certain drinking groups may show a greater preference for e-health interventions than others. For example, the Global Drug Survey recently found that individuals who scored lower on the AUDIT prefer e-health interventions compared to those who score higher (who preferred in-person support) (Davies, Maier, Winstock, & Ferris, 2019). However, this is ideal as while there is evidence that brief e-health interventions are effective for treating individuals who are drinking above recommended limits, those who are drinking hazardously, and heavy episodic drinkers (Kaner et al., 2017; Riper et al., 2018), there is less evidence to suggest that they may be an effective treatment option for individuals recovering from alcohol use disorders (Clapp, Johnson, Shillington, Lange, & Voas, 2008; Dedert et al., 2015; Nesvåg & McKay, 2018) and longer interventions are likely required to treat this additional level of severity of alcohol use problem (Kay-Lambkin, Baker, Lewin, & Carr, 2009).

Who can deliver brief e-health interventions for alcohol use and where can they be delivered?

Unlike in-person Brief Interventions, no specific training is required to deliver brief e-health interventions for alcohol use problems, and most are fully automated. Some evidence does exist, however, to suggest that larger improvements are associated with brief e-health interventions that incorporate some kind of personal support (e.g., emails or text messages from a clinician) and that come from a credible source (Garnett et al., 2018; Kaner et al., 2017; Riper et al., 2018). There is also some evidence to suggest that brief e-health interventions for alcohol use problems are effective across a number of different populations, including universities (Carey, Scott-Sheldon, Elliott, Garey, & Carey, 2012; Prosser, Gee, & Jones, 2018), healthcare settings (Wallace et al., 2017),[8] and other community settings (Kaner et al., 2017). However, the evidence base comparing these settings against each other is weak and this is seen as an area for future research (Riper et al., 2018).

Research questions this chapter will addresses

[8] Note that there has been mixed evidence in Emergency Department settings. Scoping review: (Biroscak, Pantalon, Dziura, Hersey, & Vaca, 2019) and a recent Australian RCT (N. A. Johnson et al., 2018)

In this review of the literature, we aim to provide evidence to answer three questions:

1) Are brief e-health interventions more effective than no intervention for reducing alcohol consumption?

2) Are brief e-health interventions more effective than in-person brief interventions for reducing alcohol consumption?

3) Which behaviour change techniques used by brief e-health interventions are the most effective for reducing alcohol consumption?

Research question 1) Are brief e-health interventions more effective than no intervention for reducing alcohol consumption and related problems?

The consensus from meta-analyses, an individual patient data meta-analyses, systematic reviews, and a systematic review of systematic reviews is that brief e-health intervention produce a small, but significant, reduction in alcohol use compared to no intervention. This has been observed in hazardous drinkers, harmful drinkers, heavy episodic drinkers ("binge drinkers"), and drinkers drinking outside of recommended guidelines. However, there is less evidence to suggest that brief e-health interventions are effective for more severe levels of alcohol use problems (e.g., for patients with an AUD) (Dedert et al., 2015; Nesvåg & McKay, 2018).

Meta-analyses

There have been several meta-analyses and systematic reviews focusing on the effectiveness of brief e-health interventions for alcohol use problems. The most rigorous, included 41 e-health intervention studies (participants = 19,241) (Kaner et al., 2017). Their primary goal was to determine whether brief e-health interventions reduced alcohol use for hazardous or harmful drinkers living in the community (i.e., participants recruited from primary care, emergency departments, workplaces, educational settings, or via the internet) when compared to a control or minimal intervention group (also delivered online). Overall, this meta-analysis demonstrated that those who used an e-health intervention for alcohol use problems consumed 2.3 (95% CI = 1.5, 3.0; *d* = 0.20) fewer Australian standard drinks per week compared to those in control groups. Only four studies reported that individuals assigned to brief e-health interventions drank more than those in a control condition.

Kaner et al. (2017) also reported the results in terms of a) drinking days per month, b) "binge" drinking sessions per month [(>4/6 single session drinks], and c) drinks per drinking occasion. Although fewer studies reported these outcomes, participants who used a brief e-health intervention, relative to controls; a) reported 1 fewer drinking day per month (-0.16 drinking days per week; 95% CI = -0.35,-0.13; analyses of 15 studies, *n* = 10,862), b) reported 0.46 fewer drinks per drinking occasion (95% CI = -0.80,-0.12; analyses of 15 studies, *n* = 3,587), and c) reported slightly fewer binge drinking session per month (-0.24 binge days per week; 95% CI = -0.35 lower to -0.13, analyses of 15 studies, *n* = 9,791). Although these effects are were small in an absolute sense, they were consistent across studies. Kaner et al. (2017) indicated that the evidence was of moderate quality for each outcome, suggesting that "we are moderately

confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different". The predominant source of bias from the studies included were the rates of attrition (36% of studies = high risk) and blinding of participant to condition (21% of studies = high risk).

Individual patient data Meta-analyses

Riper et al. (2018) used an individual patient data meta-analysis of 19 randomised-controlled trials (*n* = 14,198) testing brief e-health interventions delivered online (via computer or mobile phone). Riper et al's primary goal was to determine whether brief e-health interventions reduced weekly alcohol use consumption for adult drinkers and, secondarily whether those who received brief e-health interventions were more likely to drink within low risk guidelines (defined as 14/21 weekly standard drinks for women/men). They included research which recruited participants from community, healthcare, and work settings and excluded research with university students. The analysis demonstrated that those who used a brief e-health intervention for alcohol use problems consumed 5.0 (95% CI = 2.48, 7.57) fewer Australian standard drinks per week compared to those in a control group. A traditional meta-analysis of the studies included in the individual patient data meta-analysis also revealed a small but significant effect in support of this result (Hedges's *g* = 0.25; 95% CI = 0.17, 0.33). Riper et al. (2018) found that those who used a brief e-health intervention were 2.2 times more likely to drink under the 14/21 per week low-risk guidelines (95% CI = 1.63, 2.95). Reiper et al. estimate that the number needed to treat (e.g., the number needed to treat to reduce the risk of one person) was 4.15 (95% CI 3.06–6.62). Alternative analysis strategies (i.e., using a two-stage vs. one stage model, using intention to treat and multiple imputation) revealed similar results to the main analysis. Overall, the authors indicated that despite a high rate of attrition, the research was of high quality and we can be confident in the results from the analyses.

As a secondary outcome, Riper et al. (2018) also examined whether different drinking profiles responded differently to brief e-health interventions comparing outcomes for those who were (a) heavy drinkers (>35/50 weekly drinks for women/men) vs. non-heavy drinkers (14-35/21-50 weekly drinks for women/men) and (b) for those who slightly exceeded drinking limits (>14/21 weekly drinks for women/men) vs. "binge" only (>4/6 single session drinks but not 14/21 weekly drinks). Overall, they found that there were no differences between heavy vs. non-heavy drinkers in both number of weekly standard drinks (-1.5, 95% CI = -3.85, 0.36) or the likelihood of drinking under the 14/21 per week low-risk guidelines (OR = 0.94, 95% CI = 0.72, 1.23). Similarly, there were no differences for those who exceeded drinking limits vs. "binge" drinkers in number of weekly standard drinks (-0.99, 95% CI = -3.19, 1.21). Together, these results indicate that brief e-health interventions can be equally effective across a spectrum of alcohol consumption profiles. However, like Kaner et al. (2017) the predominant source of bias was the rate of attrition (dropout rate = 43%)

Other Systematic reviews and systematic review of systematic reviews

Several other systematic reviews have also been conducted which focus on the effectiveness of brief e-health interventions to reduce alcohol use and related harms. For example, Kaner et al. (2017) identified 19 other systematic reviews of brief e-health interventions for alcohol use (Balhara 2014; Bewick 2008a; Bhochhibhoya 2015; Black

2016; Carey 2009a; Carey 2012; Dedert 2015; Donoghue 2014; Dotson 2015; Elliott 2008; Khadjesari 2011; Nair 2015; Newman 2011; Riper 2011; Riper 2014; Rooke 2010; Vernon 2010; White 2010; Zisserson 2007) and we identified several additional systematic reviews published since their review (Beyer, Lynch, & Kaner, 2018; Choo & Burton, 2018; Cole, Prassel, & Carlson, 2018; Ferreri, Bourla, Mouchabac, & Karila, 2018; Prosser et al., 2018; Riper et al., 2018; Smedslund et al., 2018; Song, Qian, & Yu, 2019; Sundström, Blankers, & Khadjesari, 2017). Although these reviews all have slightly different focuses (e.g., university students only, mobile phones only), they report consistent findings: that brief e-health interventions can have a small but significant effect on alcohol use when compared to a control group. These conclusions are further corroborated by a systematic review of systematic reviews (Sundström et al., 2017). Encouragingly, research in this area is improving in quality over time, with older reviews (before 2011) reported small effects but noted that the evidence base was weak, and that this was not the case for more recent reviews. Furthermore, reviews which focused on mobile phone interventions alone reported more mixed results, but noted that this is an emerging area of research and the current evidence base is weak (Bastola, Locatis, Maisiak, & Fontelo, 2019; Berman, Gajecki, Sinadinovic, & Andersson, 2016; Choo & Burton, 2018; Song et al., 2019).

However, while these reviews typically focus on those who report "any drinking" or report hazardous drinking, there less research has focused explicitly on using brief e-health interventions on dependent drinkers (Field, Campbell, Hock, & Wong, 2019). Indeed, a recent systematic review and narrative synthesis focusing on the feasibility and effectiveness of e-health interventions for those with a substance use disorder (n=17 for AUD) were not "consistently effective" (though were feasible). The authors conclude that there were few studies and the interventions varied significantly in length and nature, making it difficult to determine overall effectiveness of e-Health interventions with AUD. However, they report that around half of the studies found positive results in the small-medium effect size range, but they included no quantitative synthesis. It is important to note that although Riper et al. (2018) did not focus specifically on AUDs, ~20% of participants included in their analysis did score over 20 on the AUDIT (indicating a risk of alcohol dependence). While they did not explicitly model the effectiveness of e-health interventions for dependent drinkers, they did find that brief e-health interventions were equally effective across a spectrum of alcohol consumption profiles when comparing heavy vs. non-heavy drinkers. While this is a limitation, Field et al. (2019) note in their rapid review that there are several study protocols for research targeting AUDs. It is imperative future research focus on e-health interventions with this group.

Clinical practice guidelines

Although recent well conducted systematic reviews and meta-analyses have found that brief e-health interventions can reduce alcohol use relative to a control, an important consideration is whether the small and statistical significant difference between brief e-health interventions and controls is clinically meaningful. Given the prevalence of alcohol-related (see chapter 2) problems), the cost effectiveness, and the ease of implementation and scalability of brief e-health interventions, we speculate that e-health interventions could have an important, immediate public health impact by reducing alcohol use and related problems.

A number of clinical guidelines have included recommendations for e-health interventions (Permanente, 2016; "Planning alcohol interventions using NIAAA's CollegeAIM (alcohol intervention matrix)," 2015; Sijborn, Luijkx, Boomsma, Larsen, & Burgers, 2015; Tansil et al., 2016). Across these guidelines, there is consensus that brief e-health interventions should be used outside of research trials. The Community Preventive Services Task Force for reducing excessive drinking recommend that e-health interventions should be used to complement effective population-level alcohol-policies (e.g., increase alcohol taxes, regulate alcohol density, maintain limits on hours and days alcohol can be sold).

Conclusion and recommendation

Overall, the consensus from the meta-analyses, systematic reviews, and the individual patient data meta-analysis is that the effect of brief e-health interventions is small (range 2-5 standard weekly drinks; number needed to treat = 4.4) but consistent across studies, settings, and platforms, and superior to control or minimal intervention alternatives. Although this difference is small, given the prevalence of alcohol-related problems and cost effectiveness and ease of implementation, e-health interventions could play an important role in reducing alcohol use and related problems if implemented at scale across a population, and as an adjunct to alcohol-policies.

Recommendation	Grade of recommendation
7.1 Brief e-health interventions are effective in reducing alcohol use in non-dependent drinkers and can be used to reduce drinking.	A
7.2 There is less evidence to suggest that brief e-health interventions are effective for more severe alcohol-related problems. At this stage, other strategies should be preferred.	B

Research question 2) Are brief e-health interventions more effective than in-person brief interventions for reducing alcohol consumption and related problems?

A number of reviews have focused specifically on the effectiveness of brief e-health interventions for alcohol use problems. Unfortunately, most of these studies have used an assessment only control group, rather than comparing the effectiveness of brief e-health interventions to in-person brief interventions. Providing evidence that brief e-health interventions are as effective as in-person brief interventions has clear implications for practice and policy. However, there is limited and poorer quality evidence examining this important issue.

Meta-analyses

The most recent and thorough evidence comes from the two recent Cochrane reviews on in-person brief interventions (Kaner et al., 2018) and brief e-health interventions (Kaner et al., 2017). Kaner et al. (2018) reported that participants who received a brief in-person intervention consumed 2.0 fewer weekly drinks at one year follow up than controls. Kaner et al. (2017) found that participants who received a brief e-health intervention consumed 2.3 fewer drinks per week than controls at the longest follow-up. Although these numbers appear similar, "overall pooled estimates can disguise a range of effect sizes depending on participant and intervention characteristics, nature of the control condition and follow-up time points" (Beyer et al., 2018, pp 267). Thus, to compare in-person and e-health interventions, Kaner et al. (2017) reported preliminary analyses from studies that had both e-health and in-person brief intervention conditions. Unfortunately, only five trials included both e-health and face-to-face interventions (n = 390) and found no difference in number of weekly drinks (0.05 drinks; 95% CI = -2.4, 2.6), frequency of drinking sessions per week (one study [n = 58], 0.05 days; 95% CI = -0.33, 0.43), or frequency of binge drinking sessions per month (three studies [n = 206], -0.04 days; 95% CI = -0.15, 0.22) between e-health and in-person brief interventions. These preliminary results suggest that brief e-health interventions may produce similar results as in-person interventions. However, Kaner et al. (2017) indicated that the evidence was of low quality, suggesting that "our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect".

In a meta-analysis focusing specifically on university students, Carey et al. (2012) compared 22 (n = 5,237) in-person brief interventions and 26 (n = 32,243) brief e-health interventions (published between 1998 and 2010). They found that compared to control groups, both participants who received in-person and e-health interventions consumed fewer drinks per-week (in-person d = 0.19 vs. e-health d = 0.14), drank less often (in-person d = 0.16 vs. e-health d = 0.13), and experienced fewer alcohol-related consequences (in-person d = 0.15 vs. e-health d = 0.11) over the short-term (~13 weeks). However, only participants who received an in-person intervention reduced their alcohol use per drinking day relative to controls at medium- (14-26 weeks; d = 0.23) and long-term follow ups (26+ weeks; d = 0.16). To examine these differences more closely, Carey et al. (2012) used a mixed-model approach to compute a between-groups-of-studies measure. The only observable difference between in-person and e-health brief interventions from this analysis was for intermediate-term peak BAC (Q_B = 6.74, p = 0.009), and long-term drinking frequency (Q_B = 6.65, p = 0.010) in favour of in-person brief interventions. Carey et al. (2012) only identified 8 studies that directly compared in-person and e-health intervention and these studies found that students in the in-person interventions drank fewer weekly drinks (d = 0.18) and fewer drinks per session (d = 0.20) at final follow-up session (Carey et al., 2012). Thus, it is likely that in-person interventions may have a longer-term effect (at least for university students) than brief e-health interventions. However, Carey et al. (2009) noted that more research is needed directly comparing brief e-health and in-person conditions.

Cadigan et al. (2015) focused specifically on alcohol interventions which included personalised feedback and included 14 interventions (9 from students) which used either in-person (n = 1,240) or e-health interventions (n = 1,201). Similar to Carey et al. (2012), they compared weighted means and found that there was no difference at short-term follow-up (>4 months) on overall drinks, "binge" sessions, drinks per week,

frequency of intoxication, frequency of drinking, or number of alcohol-related consequences experienced (Cadigan et al., 2015). However, there was a difference in overall number of drinks (*d* = .18) and weekly drinks (*d* = .19) at longer-term (4+ months), such that in-person interventions were more effective than e-health brief interventions. Thus, like Carey et al. (2012), Cadigan et al. suggest that in-person interventions may have longer term effectiveness.

Randomised controlled trials (RCTs)

A couple of recent RCTs published after the meta-analyses reviewed above have directly compared in-person and e-health brief interventions (Freyer-Adam et al., 2018; Hunter et al., 2017; Wallace et al., 2017). For example, Freyer-Adam et al. conducted a 3-armed RCT where 961 hospital patients who reported hazardous drinking (AUDIT-C >4/5; but not harmful drinking AUDIT > 20) were assigned to either an in-person brief intervention, an e-health brief intervention, or a control (assessment only, conducted in person). For participants in the brief intervention conditions, interventions were administered at baseline, 1-, and 3-months post-baseline, and all participants reported their weekly alcohol use at 6-, 12-, 18-, and 24-months follow up. The study found that those who received the e-health brief intervention drank less per week than controls at every time point (24-month IRR = 0.74; 95% CI =.57,.97), but those in the in-person brief intervention showed no difference at any time point to the controls (24-month IRR = .91, 95% CI = .69,1.20). However, there was no difference in weekly drinking between the in-person compared to the e-health brief intervention at any time point (24-month IRR = 1.23, 95% CI = .97, 1.56).

An additional recent non-inferiority RCT in primary care sought to determine whether a general practitioner assisted e-health intervention was similar to an in-person brief intervention (Wallace et al., 2017). The trial included 58 participating GPs, who screened an average of 150 patients each for inclusion in the study. Patients who scored 4/5 (women/men) on the AUDIT-C, indicative of hazardous drinking, were assigned to either a brief in-person intervention or a GP-assisted webpage (similar to https://www.downyourdrink.org.uk/). Of the 9,080 approached to take part, 3,841 completed screening and 763 who screened 'positive' for hazardous drinking were randomised into each condition. Participants reported their alcohol use on the full AUDIT at 3- and 12-months post randomization and the main outcome was the proportion of hazardous drinkers at each time point. The researchers found that the proportion of hazardous drinkers was lower for the GP-assisted e-health intervention at each timepoint (baseline 28% vs. 30%; 3-months 27% vs. 37%, 12-months 25% vs. 26%) and that those in the GP-assisted e-health condition were less likely to be hazardous drinkers at follow-up (OR = 0.63; 95% CI = 0.45, 0.89, *p* = 0.008). However, the authors highlight that it was not possible to draw conclusions from the study due to a number of limitations that may have affected their results. Namely, 1) they were underpowered, and 2) the final AUDIT item may have accounted for a lot of the difference between e-health and in-person conditions as it was endorsed by those in the in-person condition at 3-month follow-up ("has a relative, friend, doctor, or other health care or other health care worker been concerned about your drinking or suggested you cut down?"). When this item was dropped from the analysis, the difference between the two conditions was no longer observed.

Although we are hesitant to draw any strong conclusions from the Wallace et al. (2017) study, we benefit from the findings, as it permits a cost-effectiveness analysis of the e-health intervention compared to the in-person intervention (Hunter et al., 2017; Wallace et al., 2017). They found that it took eight minutes for a GP to administer an in-person brief intervention vs. five minutes to provide access to the brief e-health intervention. This extra three minutes is the equivalent of seeing an additional patient every three patients, and is thus cost effective.

Conclusion and recommendation

Overall, there appears to be no detectable difference between e-health and in-person interventions in the short-term (Beyer et al., 2018; Freyer-Adam et al., 2018; Kaner et al., 2017), but in-person brief interventions may be more effective over longer periods of time, i.e., beyond 14 weeks (Cadigan et al., 2015; Carey et al., 2012). However, the authors of these meta-analyses note that the research base is weak and additional research is needed (Wallace et al., 2017). Given that brief in-person interventions may have long-term impacts, we recommend that in-person brief interventions are offered if possible (i.e., the practitioner is trained and there is time) but that brief e-health interventions are offered when time is limited, with hard to reach populations, when another intervention will not be offered, or in conjunction with a brief in-person intervention.

Recommendation	Grade of recommendation
7.3 In-person brief interventions should be preferred to e-health interventions because they may have longer-term impacts than e-health interventions.	C
7.4 Brief e-health interventions should be offered when time is limited, as a first step in a longer intervention, with hard to reach populations, when another intervention will not be offered, or in conjunction with an in-person brief intervention	GPP

Research question 3) What behaviour change techniques used by brief e-health interventions are the most effective for reducing alcohol consumption and related problems?

One major concern for recommending specific brief e-health interventions is that they are not well translated from research to practice (Rogers, Lemmen, Kramer, Mann, & Chopra, 2017; C. Wright et al., 2018), and continue to cost developers money to keep active and available. Thus, several applications or brief interventions used in research studies with good evidence may no longer be available given the lag time between writing and publication of this Chapter. Rather than endorse specific e-health interventions, in this section we aim to identify the active ingredients of e-health

interventions to help practitioners make decisions about which brief e-health interventions, from the available pool, can be recommended. We also aim to determine whether including more behaviour change techniques within an intervention leads to better outcomes, as many interventions use several techniques (average behaviour change techniques = 9; Kaner et al., 2017). Finally, we aim to determine whether interventions that mention a specific theory of behaviour change lead to greater drinking reductions than those that do not.

Meta-analyses

In order to code the active ingredients of the 42 brief e-health interventions included in their Cochrane review, Kaner et al. (2017) used a taxonomy of 93 behaviour change theories (the BCTTv1) (Michie et al., 2013; Michie et al., 2015). Overall, brief e-health interventions used on average 9 behaviour change techniques and most interventions included: "feedback" (86%), "social comparison" (81%), "information about alcohol-related consequences" (71%), "feedback on outcomes of behaviours" (69%), "social support" (64%), "instructions on how to perform behaviour" (52%), "biofeedback" (i.e., BAC; 50%), and "salience of consequences" (50%). In their unadjusted model assessing whether specific behaviour change techniques were associated with a reduction in weekly drinking (i.e., a model including all behaviour change techniques), Kaner et al. (2017) found that "goal setting", "problem solving", "behaviour substitution", and whether the information came from a "credible source", were the only techniques associated with fewer weekly drinks. Specifically, participants in e-health interventions drank a) 4.4 drinks less when goal setting was used ("Set or agree on a goal defined in terms of the behaviour to be achieved"; 95% CI = .93, 7.9), b) 4.8 drinks less when problem solving was used ("Analyse, or prompt the person to analyse, factors influencing the behaviour and generate or select strategies that include overcoming barriers and/or increasing facilitators"; 95% CI = 1.8, 7.8), c) 7.4 drinks less when "information about antecedents" was used ("Provide information about antecedents (e.g. social and environmental situations and events, emotions, cognitions) that reliably predict performance of the behaviour"; 95% CI = 3.6, 11.8), d) 12.4 drinks less when behavioural substitution was used ("Prompt substitution of the unwanted behaviour with a wanted or neutral behaviour"; 95% CI = 6.2, 18.4), and e) 3.9 drinks less when the information came from a "credible source" ("Present verbal or visual communication from a credible source in favour of or against the behaviour"; 95% CI = 0.71, 7.3). In their adjusted model (including techniques with a $B > 23$) they found that problem solving, behaviour substitution, and credible source were all associated with fewer weekly drinks. Thus, "behavioural substitution" ("Prompt substitution of the unwanted behaviour with a wanted or neutral behaviour"), "problem solving" ("Analyse, or prompt the person to analyse, factors influencing the behaviour and generate or select strategies that include overcoming barriers and/or increasing facilitators"), and "credible source" ("Present verbal or visual communication from a credible source in favour of or against the behaviour") were the techniques associated with less alcohol use in both models.

Finally, Kaner et al. (2017) aimed to determine whether relying on a specific theory or including more behaviour change techniques would lead to greater effectiveness of the brief e-health intervention. They found that brief e-health interventions that used a theoretical framework or used more behaviour change

techniques were not associated with fewer weekly drinks. Furthermore, theory use was only mentioned by half of the studies describing brief e-health interventions. Of those that did, Motivational Interviewing (7/20), transtheoretical model (6/20), Social norms (6/20) were most popular, but this had no impact on alcohol use outcomes.

Additional meta-analyses

In a similar review, Black et al. (2016) also aimed to identify which behaviour change techniques or theories features in brief e-health interventions were associated with reduced alcohol use. Black et al.'s systematic review and meta-analysis included 93 studies which compared a brief e-health intervention to a control group. Unlike the Cochrane review, they included participants of all drinking backgrounds (i.e., "light" drinkers who did not screen positive for hazardous or harmful drinking on the AUDIT; the Cochrane-excluded studies where participants did not screen as hazardous or harmful; 27 trials were included in both). Similar to other meta-analyses and reviews described above, Black et al. also found that brief e-health interventions had a small but significantly greater effect on total alcohol use (e.g., weekly drinks; d = 0.15), average standard drinks per drinking day (d = 0.09), peak standard drinks during study period (d = 0.13), "binge" drinking frequency (d = 0.07), and frequency of any drinking (d = 0.12) over controls.

Similar to the Cochrane review, brief e-health interventions used several behaviour change techniques (median = 6; range = 1-22) and most used: feedback on behaviour (85%), social comparison (81%), and information about alcohol-related consequences (81%). However, Black et al.'s review differed to Kaner et al. (2017) on which behaviour change techniques were more effective, suggesting that the most effective techniques were "commitment" (prompt commitment to a goal from the individual), "social comparison" (presenting information comparing ones drinking to that of their peers), "feedback" (information about the individuals current level of alcohol use), and "review of goals" (prompting the individual to review their goals). Additionally, brief e-health interventions that provided some personal contact saw greater reductions in total standard drinks (d = 0.18), average standard drinks per drinking day (d = 0.15), and peak standard drinks during study period (d = 0.30). Black et al. (2016) also found that "providing information on the consequences of alcohol consumption" lead to poorer e-health intervention outcomes. Finally, regarding theories, the most common theory used was social norms (33%), theory of planned behaviour (14%), and social cognitive theory (10%). Unlike the Cochrane review, Black et al. suggested that e-health interventions that used social norms theory were the most effective.

Although Black et al. (2016) and Kaner et al. (2017) somewhat disagree on the most effective behaviour change techniques for e-health interventions, Garnett et al. (2018) offers some insight for this discrepancy. They suggest that Black et al (2016) and Kaner et al. (2017) may differ in the behaviour change theories identified because 1) Black et al. (2016) used a different taxonomy which included fewer items (42 vs. 93) and 2) Black et al. included participants who were required to take part (e.g., mandated students) who did not screen for hazardous drinking. Thus, Black et al.'s results may pertain to a more broader drinking group, while Kaner et al's results may be limited to hazardous and harmful drinkers. Indeed, both "behavioural substitution" and "problem solving" identified by Kaner et al. (2017) are strategies that may be more effective for

drinkers who are motivated to change (Garnett et al. 2018). Specifically, behavioural substitution aims to help the drinker identify alternative non-alcohol-related activities and problem solving aims to help the drinker develop plans to tackle situations where relapse or drinking may occur. For drinkers who are motivated to change, these strategies in combination with the source of the information being "credible" may be particularly effective. In contrast, for lighter drinkers, simply providing "feedback" and "social comparisons" (which are included in the majority of interventions; particularly those aimed at students) may be enough to be effective and these strategies may be more effective for young adults who have a high need for peer approval (Kuerbis, Muench, Lee, Pena, & Hail, 2016).

Black et al. (2016) also found that interventions which used social norms theory were more effective. Given that Black et al. (2016) included more studies with students, it is likely that social norms are more effective for younger populations who have a high need for peer approval (Kuerbis et al., 2016).

Other meta-analyses

A number of other meta-analyses have aimed to test moderators of brief e-health intervention effectiveness. For example, Riper et al.'s (2018) individual patient meta-analysis of 19 RCTs (described above), aimed to determine whether therapeutic orientation moderated treatment outcome and compared interventions which included personalised normative feedback alone with interventions with integrated strategies. They found that participants who received a brief e-health intervention that used personalised normative feedback alone were less likely to be low-risk drinkers at follow-up when compared to interventions based on integrative principles (OR = 0.52; 95% CI = 0.29,0.93). Although this finding differed from Black et al. (2016; who found that personalised normative feedback was more effective), Riper et al. (2018) did not include students and we speculate that feedback may be more effective for younger adults who place more stock in the opinion of their peers (Kuerbis et al., 2016). Furthermore, Riper et al. (2018) also found that some form of human-guidance (e.g., emails or text messages from a clinician or volunteer) appeared to be more effective and participants who received human-supported interventions consumed fewer drinks (-6.8 drinks; 95% CI = -12.11,-1.45) and were more likely to drink at low risk (OR = 2.23; 95% CI = 1.22, 4.08) than fully automated brief e-health interventions. Human support can be delivered online or by text message and could be delivered by clinicians or trained volunteers (Riper et al., 2014; Riper et al., 2018), however, in the present review, most studies had trained therapists provide human support. Additionally, the authors suggest that the use of waitlist controls in these studies may "inflate these outcomes".

Prosser et al. (2019) conducted a meta-analysis of 23 (n = 7,614) brief e-health interventions for university student populations and aimed to determine whether these interventions were effective and more effective than other types of intervention. Most of the studies included personalised feedback (74%). They found that overall there was a small but significant effect of e-health interventions on standard drinks per week (Z = 4.80, p <.001, SMD = -.15) and the effect size was stronger for web-based personalized feedback interventions vs. other interventions (x^2 (1) = 5.30, p = .02).

Finally, the systematic review of 14 e-health systematic reviews suggested that the evidence base was weak for determining whether "therapeutic orientation" was

associated with alcohol use (Sundström et al., 2017). They identified 11 reviews which measure the link between therapeutic orientation and alcohol use (only 4 quantitatively). In short, one highlighted that brief e-health interventions that did not provide feedback on consequences were more effective at reducing heavy drinking (Carey et al., 2009; consistent with Black et al., 2016), one found no difference between e-health interventions with normative feedback and those without (Rooke et al. 2010), one found no difference between personalised normative feedback with multiple component interventions (Leeman et al., 2015), and one reported no difference between personalised normative feedback alone when compared to integrated strategies (Riper et al., 2009; in contrast to Riper et al., 2018).

Randomised controlled trials (RCTs)

Randomised controlled trials have also begun to focus on comparing different active ingredients on brief e-health interventions for alcohol use problems (Crane, Garnett, Michie, West, & Brown, 2018; Suffoletto, Kirisci, Clark, & Chung, 2019). For example, Crane et al. (2018) aimed to determine which intervention components were the most effective at reducing alcohol use within a mobile phone application (Drink Less) using a 5^2 factorial trail. Drink Less, consists of five different modules with different behaviour change techniques "Normative Feedback; Cognitive Bias Re-training; Self-monitoring and Feedback; Action Planning, and Identity Change". For this study, 672 participants who scored 8 or higher on the AUDIT were assigned to trial the application and received either the enhanced or minimal (control) version of the application. The enhanced version included 'active ingredients', while the minimal version included some support without the active ingredients. Overall, there was no main difference in weekly drinks between the enhanced group compared to the controls. There was, however, a significant interaction between enhanced normative feedback and enhanced cognitive bias training, suggesting that normative feedback was effective when used in conjunction with cognitive bias training at reducing weekly alcohol use. But future research is needed to further elucidate which aspects of an intervention and which combination of behaviour change techniques are most effective. Promisingly, this appears to be an emerging area (Suffoletto et al., 2019).

Conclusion and recommendation

The data from the reviews and RCTs overviewed above offer conflicting evidence for specific behaviour change techniques or use of theory as a moderating factor in changing the efficacy of brief e-health interventions (Kaner et al., 2017; Sundström et al., 2017). Most brief e-health interventions included used some form of "feedback" or "social comparison" (>80%), multiple behaviour change techniques (6-9). For non-hazardous drinkers (and possibly students (Reid & Carey, 2015)), personalised feedback appears to be most effective, but interventions for heavier drinkers may be more effective if they include "behavioural substitution" and "problem solving" that are from a "credible source" (Kaner et al., 2017). The main strategy that appeared to be effective in most was to include some form of contact to supplement the e-health intervention we recommend that the intervention have some form of guided component if possible (e.g., email or text message contact with a clinician or volunteer). Finally, there was very conflicting evidence for which theories lead to greater reductions in drinking.

Recommendation	Grade of recommendation
7.5 E-health interventions which include some human assistance (face-to-face, or via text message or email) may be more effective than fully automated interventions, notwithstanding the resource and scalability limitations of doing so.	B

What are the limitations of brief e-health interventions for alcohol use problems?

There are a number of limitations to e-health interventions. First, e-health interventions tend to have a small effect, and this may discourage some clinicians from using them as a tool. However, as we highlight above, e-health interventions are very cheap and cost effective and even small reductions may be meaningful. Second, the majority of e-health interventions are fully automated and self-directed. Thus, they rely on the user to be engaged and motivated to use the interventions. Finally, the main concern for e-health interventions is selecting and determining which interventions are effective. Unfortunately, most e-health interventions with evidence from research do not end up being made available non-research populations (Rogers et al., 2017) as researchers may not have the opportunity or resources to make evidence-based e-health intervention available after the trial. This concern is compounded by the fact that the most alcohol-related applications focus a) on facilitating dinking (instead of reducing it (Crane, Garnett, Brown, West, & Michie, 2015; Weaver, Horyniak, Jenkinson, Dietze, & Lim, 2013)), b) use fewer active ingredients than research applications (3 vs 6-9), and c) are unlikely to be guided by any specific theory. Given that the specific apps we endorse may no longer be supported at the time of publication and given that there is conflicting information regarding which specific behaviour change techniques work, we include a section with websites run by researchers and experts who rate e-health interventions based on their effectiveness.

Summary

Most alcohol-related harm in the community is caused by people whose consumption exceeds low-risk drinking levels, rather than those with severe alcohol use disorders. One way to reduce consumption levels is to provide a brief in-person intervention in primary care and various other community settings (see chapter 6). However, there are several barriers to implementing brief interventions in practice, and thus brief e-health interventions may be an effective alternative when it is not feasible to use a brief intervention. Indeed, as overviewed in this chapter, e-health interventions have a small but significant effect on alcohol use, may have similar short-term benefits to in-person interventions, and are very cost effective.

Additional key resources for clinicians

Given that the specific brief e-health interventions we endorse may no longer exist at the time of publication and that there is conflicting information regarding which specific behaviour change techniques are optimal, we include a section with websites

run by researchers and experts who rate e-health interventions based on their effectiveness.

Recommendation	Strength of recommendation
7.6 E-health interventions with an evidence base should be preferred, given that non-evidence-based resources may be inaccurate or less effective. We recommend using resources like Beacon to identify effective e-health tools.	GPP

1. Beacon: https://beacon.anu.edu.au/service/website/browse/23/Alcohol

Beacon uses a panel of health experts to categorise, review, and rate websites and mobile applications e-health tools (applications and websites) used for health behaviours. Beacon publishes these reviews on their website along with information about the intervention and the link to the intervention website. The rating system is very easy to use for both clinicians and consumers, and evidence is ranked from "there is no evidence currently", "the evidence suggests the site doesn't work" up to "sign up".

At the time of publication, Beacon only strongly endorses one website ("sign up": Check Your Drinking which is available for free at http://www.alcoholhelpcenter.net/), but also suggests there is "good evidence" for two interventions (THRIVE and Unit check), there is "some evidence" or limited evidence for 13 interventions, and no current evidence for 5 interventions.

2. Psyberguide: https://psyberguide.org/apps/

Psyberguide uses a similar process to Beacon. However, they currently do not support alcohol use applications but may include them soon. The Credibility Score represents the strength of the scientific research support for the app itself, and the therapeutic interventions the app provides.

3. Head to health https://headtohealth.gov.au/search-resources

Head to health focuses more on resources and does not rate specific e-health interventions. They break down resources into 1) head to health information pages, 2) external websites, 3) apps and programs (specific resources), 4) forums for peer support, and 5) phone chat and email options. However, they do not currently provide a rating of the -health interventions hosted on the website.

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CHAPTER 8

ALCOHOL WITHDRAWAL: A REVIEW OF THE EVIDENCE

Chapter 8. Alcohol Withdrawal: A review of the evidence

At the time of undertaking a review of the evidence for the National *Guidelines for the Treatment of alcohol problems*, a concurrent project was underway by the Sax Institute for the *NSW Alcohol and Other Drug Withdrawal Clinical Guidelines* to develop a review of the evidence (Evidence Check).

As the authors of the National Guidelines chapter were also involved in the NSW Guidelines alcohol withdrawal section, a decision was made to minimise duplication of resources and to proceed with one review of the evidence to be utlised across both Guidelines.

To view or obtain a copy of the Sax Institute Evidence Check, including the Alcohol Withdrawal section, visit: https://www.saxinstitute.org.au/wp-content/uploads/20.08_Evidence-Check_Management-of-withdrawal-from-alcohol-and-other-drugs.pdf#page=60

Alternatively, refer to the Contact Us section on the *Guidelines for the Treatment of alcohol problems* website (https://alcoholtreatmentguidelines.com.au/) for a copy of the Sax Institute Evidence Check.

CHAPTER 9

PSYCHOSOCIAL INTERVENTIONS: A REVIEW OF THE EVIDENCE

Chapter 9 Psychosocial Interventions: A review of the evidence

Overview of Psychosocial Interventions

Psychosocial treatment encompasses a wide range of non-pharmacological approaches commonly used to treat alcohol and other drug use disorders (Raistrick and Tober 2004; Carroll and Onken 2005; Raistrick et al. 2006; Bottlender et al. 2006). These interventions generally focus on the individual (their beliefs, emotions and behaviour), their social context, including family, community and cultural factors and the interaction between these domains.

Psychosocial interventions encompass *treatment content* (that is, the skills, strategies and the theoretical orientation of treatment) and *treatment process* (that is, the interaction between the clinician and patient which includes the strength of engagement, interpersonal processes and ability to work on shared treatment goals (Marsh and Dale 2006).

The effectiveness of treatment depends not only on the treatment itself but also who delivers it and how it is delivered (Raistrick et al. 2006; Wallhed Finn et al. 2018). The process of natural change also has a part to play, as most people (estimated 70-80%) experience major changes in their substance use without any formal help or treatment. However, the evidence shows that people who receive treatment for alcohol dependence do better than those who do not (Connor et al. 2016; Raistrick and Tober 2004).

The most widely used psychosocial approaches that have received consistent empirical support are brief interventions (discussed in Chapter 5), motivational interviewing, and cognitive behaviour therapy (CBT; (Magill and Ray 2009; Smedslund et al. 2011; Moyer et al. 2002). Psychosocial interventions can be combined with adjunctive pharmacotherapy (see Chapter 9). This usually improves outcome above psychosocial treatment alone, particularly for more severely dependent patients or patients that report high alcohol craving.

When to Use Psychosocial Interventions

Psychosocial interventions are used to engage a person's interest and commitment to change and to teach the requisite skills to maintain that change. It is the preferred treatment modality for problem drinking by heavy drinkers and those with alcohol dependence (Andréasson et al. 2013; Davies et al. 2019; McHugh et al. 2013). Psychosocial interventions can be delivered by a range of health practitioners in a variety of treatment settings, but over 50% of drinkers prefer to seek psychosocial/pharmacological treatment from psychiatric or addiction specialist treatment settings (Andréasson et al. 2013). Australian data on service utilisation by individuals with substance use disorder also indicate greater engagement with specialist mental health services than General Practitioners (GPs; Reavley et al. 2010; Harris et al. 2015). Specialist services can also produce better drinking outcomes. Psychosocial and/or pharmacological interventions delivered in outpatient addiction specialist settings produce better outcomes for patients with severe alcohol dependence

compared to primary care settings (Wallhed Finn et al. 2018).

Psychosocial interventions can be implemented individually or in groups. Some health practitioners prefer to use motivational strategies in the early stages of therapy, to increase preparation for change, supplementing with more cognitive-behavioural or other specialised therapy as appropriate. Clinicians who use these approaches must be appropriately trained and competent in their application.
Psychosocial interventions vary in intensity, from brief to intensive and specialised (for example, cognitive behavioural therapy, couples therapy). Brief interventions are most suited for non-dependent drinkers (see Chapter 5). More intensive psychosocial interventions, described in this chapter, are appropriate for people with more established alcohol problems for whom brief interventions are not sufficient (i.e., alcohol dependence). Studies involving patients with alcohol dependence (or moderate-severe alcohol use disorder) were given priority on this Chapter.

In general, low intensity psychosocial interventions are indicated for people with less severe dependence (e.g., motivational interviewing), increasing the level of intensity for those with more severe dependence. Models of care to help clinicians make decisions about appropriate interventions is presented in Chapter 4.

Decisions concerning choice of psychosocial treatment should be guided by the principles of patient-centred care (Bradley and Kivlahan 2014). While much research effort has gone into trying to understand how best to match patients to particular psychosocial treatments, no clear evidence has emerged to offer specific guidance. Recommendations rest largely on the strength of accumulated evidence for different psychosocial interventions. However, **there is clear evidence that patients with an alcohol abstinence goal tend to have better treatment outcomes**, regardless of the specific form of treatment (psychotherapy or medication; (Bujarski et al. 2013; Berglund et al. 2019); see Chapter 3 for a detailed discussion of goal setting in treatment planning). Studies that have examined the additive efficacy of alcohol pharmacotherapy also indicate that outcomes are improved when psychosocial intervention is combined with medication (Magill and Ray 2009; Anton et al. 2006). A brief diagrammatic summary of the evidence for different psychosocial interventions is provided in Figure 1.

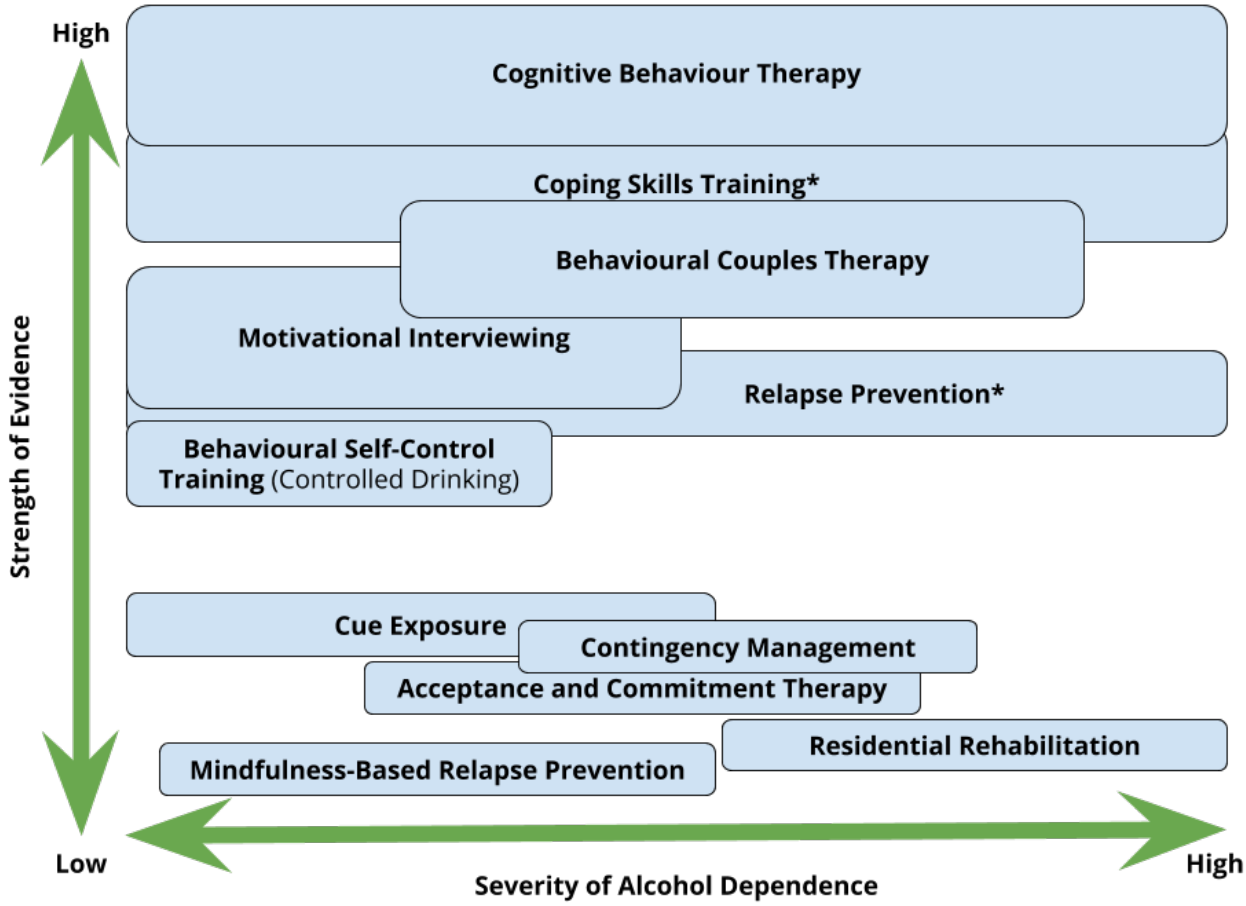

Figure 1. Diagrammatic summary of evidence for psychosocial interventions.
Note. Box height reflects number of studies with alcohol-dependent populations.
**Intervention is a core component of Cognitive Behavior Therapy*.

Motivational Interviewing

Motivational interviewing, introduced by Miller and Rollnick in 1991, is an interviewing style which employs empathic counselling skills to assist the patient alter their views of the implications of continued, unhealthy alcohol use. As defined by Miller and Rollnick (2002, p. 41), motivational interviewing is a "client-centred, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence".

One of the key elements of motivation for change is *self-efficacy*. Self-efficacy refers to a person's belief in their ability to carry out and succeed with a specific task, and is a robust predictor of change (Bandura 1986; Miller and Rollnick 2002; Project MATCH Research Group 1998b).

Motivational interviewing is a core component of many *Brief Interventions* that address unhealthy drinking (reviewed in Chapter 5). However, studies evaluating brief interventions typically exclude patients with alcohol dependence (69%; Moyer et al. 2002). When alcohol-dependent patients are included, brief interventions are not

found to be effective (Moyer et al. 2002; Saitz 2010). As a result, brief interventions are not recommended as a standalone treatment for alcohol dependence. To reduce overlap with Chapter 5, this section will focus on the evidence for motivational interviewing in alcohol dependence.

Motivational Interviewing: Meta-analyses

A meta-analysis by Smedslund et al. (2011) pooled effects from 57 RCTs and 2 quasi-RCTs of individuals with substance abuse, dependence, or addiction, but not misuse (excluding nicotine; totalling 13,342 participants). Of these, 29 (49%) focused on alcohol. Only studies that delivered individual, face-to-face motivational interviewing, and included treatment fidelity checks (rated audio/video recordings) were included. There were no differences in outcomes according to substance treated, so the results were pooled across substances. Similarly, there were no differences in findings across the outcomes of quantity, frequency, and proportion abstinent, and these, too, were pooled. Overall, motivational interviewing was found to produce significant benefit over no treatment at post-treatment (SMD 0.79, CI 95% 0.48 to 1.09; 4 studies), 1-6 months (SMD 0.17, CI 95% 0.09 to 0.26; 15 studies), and 7-12 months follow-up (SMD 0.15, CI 95% 0.04 to 0.25; 12 studies). The only study assessing effects beyond 12 months was on 363 college drinkers and it found no effect (SMD 0.06, CI 95% -0.16 to 0.28). Motivational interviewing was not more effective than assessment and feedback at 1-6 months follow-up (SMD 0.12, CI 95% -0.01 to 0.24; 7 studies). Two studies (n = 265) found significant effects at 7-12 months follow-up, but these were on cannabis use (SMD 0.38, CI 95% 0.10 to 0.66). Compared to treatment as usual, motivational interviewing did not provide any significant benefit at post-treatment (SMD 0.01, CI 95% -0.09 to 0.11; 9 studies), 1-6 months (SMD 0.01, CI 95% -0.08 to 0.10; 10 studies), or at 7-12 months follow-up (SMD 0.08, CI 95% -0.05 to 0.21; 5 studies). Motivational interviewing was not more effective than other active interventions at post-treatment (SMD -0.07, CI 95% -0.37 to 0.23; 2 studies), 1-6 months (SMD 0.02, CI 95% -0.07 to 0.12; 12 studies), 7-12 months (SMD -0.02, CI 95% -0.16 to 0.13; 6 studies), or >12 months follow-up (SMD -0.03, CI 95% -0.21 to 0.14; 2 studies). The quality of the available evidence on motivational interviewing was judged to be mostly "low" using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach (Balshem et al. 2011). However, evidence on short-term effects of motivational interviewing compared to no treatment (up to 6 months) and short/medium-term effects compared to active interventions (1-12 months) were judged to be of "moderate" quality.

The findings of Smedslund et al. (2011) are consistent with other meta-analyses of alcohol studies. Sayegh et al. (2017) meta-analysed five alcohol RCTs that compared motivational interviewing to non-active control groups and included biochemical verification of drinking status (only 1 of 5 studies included patients with alcohol abuse or dependence). They found motivational interviewing had significant benefit at 3-6 month follow-up (d = 0.30, CI 95% 0.03 to 0.57). There were insufficient studies for other time periods. It should be noted that the only study that included patients with alcohol abuse/dependence (Dieperink et al. 2014) also had hepatitis C, limiting generalisabilty of findings to alcohol-dependent patients.

Vasilaki et al. (2006) conducted a meta-analysis of 15 RCTs of motivational interviewing for "excessive" drinking. Only 36% (996 individuals) of the pooled sample comprised alcohol-dependent drinkers. Of these, 7 studies were judged to have "excellent" methodology using the Methodological Quality Rating Scale (MQRS; Miller et al. 2001). Overall, motivational interviewing was found to be significantly better than no treatment up to 3-month follow-up (d = 0.60, CI 95% 0.36 to 0.83; 5 studies), but effects faded and were no longer significant by 6-month follow-up (d = 0.06, CI 95% -0.06 to 0.18; 4 studies). Motivational interviewing was more beneficial than alternative brief interventions, which mostly comprised brief advice, treatment as usual, education, or directive counselling (d = 0.43, CI 95% 0.17, 0.70). Vasilaki et al. noted that effect sizes tended to be smaller in alcohol-dependent samples and, as a result, findings may not generalise to moderate or severe alcohol dependence. However, this was not comprehensively investigated. In sum, the conclusions of Sayegh et al. (2017) and Vasilaki et al. (2006) are consistent with Smedslund et al.'s (2011) meta-analysis of patients with substance abuse/dependence, but more clearly highlight the weaker effects of motivational interviewing when it is delivered to patients with more severe alcohol problems. As a stand-alone treatment to reduce drinking, motivational interviewing is effective in the short-term and in patients with less severe dependence.

Motivational Interviewing: Randomised controlled trials

The largest randomised controlled trial of psychosocial interventions for alcohol use disorders was the Project MATCH study (Project MATCH Research Group 1993; 1997; 1998a; 1998b). The aim was to assess benefits of matching of patients with DSM-III-R alcohol dependence (with at least 3 months of active drinking prior to entrance into the study) to three types of psychosocial treatment. It compared four sessions of motivational enhancement therapy (a manual-guided version of motivational interviewing) delivered over a 12-week period to 12 weekly sessions of either cognitive behavioural therapy (CBT) or twelve-step facilitation. Twelve-step facilitation is an individual therapy designed to prepare individuals to understand, accept, and engage in Alcoholics Anonymous (AA). There were two groups of patients, one from outpatient clinics (n = 952) and the other involving patients receiving aftercare following inpatient treatment (n = 774). In all treatments, efforts were made by the therapists to include a significant other in up to two sessions (Mattson et al. 1993). The results from Project MATCH were included in Smedslund et al.'s (2011) meta-analysis (discussed above), but will be reviewed in detail below.

Patients in all Project MATCH treatments showed significant improvements on all drinking measures with no large differences between groups. Overall, in the first year there was an increase in days abstinent from 20-30% to 80-90% at 12-month follow-up and the amount of alcohol consumed on a drinking day fell from 12-20 to 1-4 standard drinks (Project MATCH Research Group 1997). During the treatment phase, small but statistically significant differences among treatments were found only in the outpatient arm on measures of alcohol consumption and alcohol-related negative consequences, with these slight advantages favoring twelve-step facilitation. At 15

months post-treatment, abstinence rates were higher for twelve-step facilitation (35.6%) than for motivational enhancement therapy (30.3%) or CBT (24.7%). However, when looking at patients who achieved abstinence *or* moderate alcohol consumption (i.e., drinking without alcohol-related consequences), differences were smaller: 45% for outpatients receiving twelve-step facilitation, 44% for motivational enhancement therapy, and 39% for CBT (Project MATCH Research Group 1997). No such differences were observed in aftercare patients. For them, abstinence or moderate alcohol consumption was reported by 54% receiving twelve-step facilitation, 51% receiving motivational enhancement therapy, and 55% receiving CBT. At 3-year follow-up, the reductions in alcohol consumption observed in the first year after treatment were sustained. Almost 30% of patients were totally abstinent. Those who continued drinking reported abstinence on an average of two-thirds of the days in the last 3 months. There were no significant differences between the treatment groups (Project MATCH Research Group 1998b).

Few of the original matching hypotheses were supported and it was concluded that the three treatments did not differ in effectiveness. However, in the outpatient setting there appeared to be a temporary advantage to assigning individuals to CBT or twelve-step facilitation rather than motivational enhancement therapy. Patients with a social network supportive of drinking had better 3-year drinking outcomes in twelve-step facilitation than motivational enhancement therapy (Project MATCH Research Group 1998b). Stout et al. (2003) estimated that correctly matching patients on this variable produced a 7% better success rate than mismatching at 3 years, or 3% better than those unmatched. Outpatients who evidenced more anger had better post-treatment and 3-year drinking outcomes after motivational enhancement therapy than after CBT, and outpatients who were low in anger had worse outcomes after motivational enhancement therapy than after CBT or twelve-step facilitation. Correctly matching patients on anger produced a 10% better success rate than mismatching (Stout et al. 2003).

Secondary analysis of Project MATCH outcomes using more modern analytic techniques have found further support for hypothesised matching effects. Witkiewitz et al. (2007) used growth mixture modeling to find evidence supporting the matching hypothesis that patients with low self-efficacy would experience better outcomes with CBT. Outpatients with low self-efficacy allocated to CBT drank far less frequently than those with low self-efficacy allocated to motivational enhancement therapy at 12-month follow-up. Witkiewitz et al. (2010) reexamined the motivation matching hypothesis with growth mixture modeling and found that outpatients low in motivation to change their drinking responded better to motivational enhancement therapy than CBT at 12-month follow-up. A different pattern was observed in aftercare patients, who were far more likely to transition back to heavy drinking post-treatment, particularly if they had severe dependence (Witkiewitz 2008). Severely dependent aftercare patients who were low in motivation to change their drinking responded better to CBT than motivational enhancement therapy (especially male patients). Together, these studies suggest that motivational interviewing may be preferable for patients with low motivation, but not if they are severely dependent and/or have low self-efficacy. However, care should be taken in interpreting these findings until replicated.

Motivation and anger matching effects were not found in the UK Alcohol Treatment Trial (UKATT), another large study of psychosocial treatment for alcohol-dependent patients (UKATT Research Team 2005a). UKATT was a pragmatic randomised controlled trial that compared motivational enhancement therapy with a socially-based treatment, *social behaviour and network therapy*. It was carried out in 7 UK sites with 742 patients. Social behaviour and network therapy comprised 8 x 50-minute sessions over 8 to 12 weeks that focused on cognitive and behavioural strategies to help clients build social networks supportive of change. The motivational enhancement therapy comprised 3 x 50-minute sessions over 8 to 12 weeks. It combined counselling in the motivational style with structured feedback from the initial assessment. Findings showed that both groups reported substantial reductions in alcohol consumption, dependence and problems at 12 months. The two therapies did not significantly differ in effectiveness. Participants in both groups reported that the number of abstinence days increased from 29% to 43% at 3 months and to 46% at 12 months. Alcohol consumption reported by patients continuing to drink fell from 27 drinks per drinking day to 18 drinks at 3 months and to 19 drinks at 12 months (mean adjusted values). Therefore, total alcohol consumption decreased by 48% at 3 months and by 45% at 12 months. Despite these positive outcomes, it is important to note that, as with Project MATCH, the absence of a control group limits the conclusions that can be drawn about the effectiveness of each treatment.

Motivational Interviewing: Summary

Motivational interviewing is an effective psychosocial treatment approach. It is less effective in patients with more severe alcohol dependence. As a standalone treatment, there is good evidence for short-term benefit (i.e., up to 6 months). However, effects fade in the longer-term. In dependent patients, it is not more effective than treatment as usual or assessment and feedback.

Motivational interviewing is commonly employed as a prelude to treatment for alcohol dependence to strengthen motivation to change, because of its brief duration and short-term effectiveness. For alcohol dependent patients, it can be employed as an adjunct to more comprehensive psychosocial interventions, such as cognitive behavioural therapy (CBT).

Recommendation	**Grading of recommendation**
9.1 Motivational interviewing should be used as a first-line treatment to address patient ambivalence toward drinking reduction, or as an adjunct to other treatment modalities for alcohol dependence. As a stand-alone treatment to reduce drinking, it is effective in the short-term and in patients with less severe dependence.	A

Cognitive Behaviour Therapy

Cognitive Behaviour Therapy (CBT) for alcohol dependence is based on social learning theory and Marlatt and Gordon's (1985) model of relapse prevention. CBT addresses cognitive, affective, and situational triggers for drinking and usually involves ~12 weekly individual sessions (Magill and Ray 2009). CBT aims to increase drinking refusal self-efficacy through the development of more effective coping strategies. Typically, CBT includes strategies to (1) identify and modify dysfunctional cognitions (*cognitive restructuring*), especially expectations about the consequences of drinking (*alcohol expectancies*); (2) identify and manage high-risk situations for drinking; (3) improve coping skills, including problem-solving and relaxation; (4) increase non-drinking related activities (Magill and Ray 2009; Connor et al. 2016).

Cognitive Behaviour Therapy: Meta-analyses

A meta-analysis by Magill and Ray (2009) included 53 randomised controlled trials (RCTs). The majority of studies (80.1%) enrolled only patients with a diagnosis of alcohol/drug dependence and were methodologically rigorous. Twenty-three studies (43%) were alcohol only studies. Most studies compared CBT to an active control group (17 RCTs) or treatment as usual (32 RCTs), with few studies comparing it to a no-treatment or waitlist control group (6 RCTs). Attrition rates were acceptable (M = 19.3%, SD = 12.9%) and the majority of studies employed manualised treatment delivery (98%) and biological validation of outcomes (75%).

Overall, Magill and Ray (2009) found CBT was an effective treatment for substance dependence generally (g = 0.15, 95% CI 0.07 to 0.24; 53 RCTs), with a similar pooled effect size when only examining alcohol studies (g = 0.14, $p < .05$; 18 RCTs). There were few differences in outcomes according to substance treated, so the results were pooled across substances for most analyses. Irrespective of substance, significant benefits remained at 6-9 months post-treatment (g = 0.12, $p < .005$; 23 RCTs) that diminished somewhat at 12 months (g = 0.10, $p < .05$; 9 RCTs). CBT was significantly more effective than other active treatments (e.g., interpersonal therapy; g = 0.13, 95% CI 0.04 to 0.22; 17 RCTs), treatment as usual (g = 0.12, 95% CI 0.05 to 0.18; 32 RCTs), and no treatment (g = 0.80, 95% CI 0.45 to 1.14; 6 RCTs). Magill and Ray estimated that 58% of patients receiving CBT had better outcomes than patients in a comparison condition, as calculated by the U_3 index (Rosenthal and Rubin 1982).

CBT is more effective when combined with other treatment approaches. Magill and Ray (2009) found it was significantly more effective when combined with pharmacological treatment (g = 0.21, 95% CI 0.07 to 0.35; 13 RCTs) or another psychosocial intervention (e.g., motivational interviewing; g = 0.31, 95% CI 0.12 to 0.49; 19 RCTs). There were no differences in outcome when delivered in individual compared to group format ($\beta = .02$, $p = .87$). There was also some evidence that a shorter course of CBT (<20 sessions) was more effective than longer treatment ($\beta = -.31$, $p = .003$), and that female patients may respond better than men ($\beta = .25$, $p = .008$). However, Magill and Ray cautioned that these effects may be artefacts resulting from

the design of studies that included more male patients and longer CBT treatment (e.g., tended to have larger samples and stronger comparison groups).

Cognitive Behaviour Therapy: Randomised Controlled Trials

The Project MATCH (see above section, *Motivational Interviewing*, for more detail) aimed to assess benefits of matching alcohol-dependent patients to three types of psychosocial treatments: CBT, motivational enhancement therapy, and twelve-step facilitation (Project MATCH Research Group 1997; 1998a; 1998b). As stated above, CBT was as effective as motivational enhancement therapy and twelve-step facilitation in reducing alcohol consumption in patients. With regard to patient-treatment matching, for CBT it was found that: a) patients with a low degree of anger were more likely to benefit from CBT (or twelve-step facilitation) than motivational enhancement therapy; b) patients low in self-efficacy were more likely to benefit from CBT; c) patients low in motivation were more likely to benefit from motivational enhancement therapy, unless they were severely dependent, in which case CBT was more likely beneficial.

The COMBINE study (Anton et al. 2006) evaluated the efficacy of pharmacotherapy, psychosocial therapy, and their combination in the treatment of alcohol dependence. It also sought to determine the role of the placebo effect in treatment. This large RCT involved 1,383 patients with a diagnosis of DSM-IV alcohol dependence. The pharmacotherapy treatments included naltrexone and acamprosate (alone or together) or placebo (single or double to match). Pharmacotherapy was provided with or without a combined behavioural intervention (CBI). The CBI comprised cognitive behaviour therapy, motivational interviewing and twelve-step facilitation, delivered in up to 20 sessions of 50 mins duration by trained behavioural health specialists (i.e., minimum Master's degree in psychology, social work, or counseling). All the above groups additionally received 9 medical management sessions of approximately 20 mins each (first session was 90 mins). One group (n = 157) received CBI only with no pills (incl. no placebo) or medical management. In total, there were nine treatment groups of 148-157 patients each. Drinking outcomes were assessed at post-treatment (16 weeks) and at 1-year follow-up.

The COMBINE study found that by the end of the treatment period (16 weeks), participants in all nine study groups showed reductions in drinking, including the placebo+medical management group. At post-treatment, the only significant effect on percent days abstinent was a naltrexone x CBI interaction ($p = .009$). This showed that patients receiving neither naltrexone nor CBI had the fewest abstinent days, whereas those receiving either naltrexone or CBI showed the greatest abstinence. The same pattern was found on the secondary outcomes of drinks per drinking day ($p = .03$), drinks per day ($p = .03$), and heavy drinking days per month ($p = .006$). However, the naltrexone x CBI interaction was no longer significant at 1-year follow-up, but there was a trend ($p = .08$) for CBI-treated patients to have higher percent days abstinent ($M_{adj} = 66.9\%$, $SD = 31.84$) than those treated with medical management, irrespective of pharmacotherapy group ($M_{adj} = 63.8\%$, $SD = 31.63$). For time to first heavy drinking day, only naltrexone produced a significant beneficial at post-treatment (HR = 0.72, CI

97.5% 0.53 to 0.98). The benefit of naltrexone persisted to 1-year post-treatment, reducing the number of patients reporting 1+ heavy drinking days over the follow-up period (HR = 0.77, CI 97.5% 0.58 to 1.02; p = .04). The naltrexone x CBI interaction was also the only significant predictor of a composite "good clinical outcome" (p = .02; abstinence or moderate drinking without problems). At post-treatment, there was a good clinical outcome for 58% of patients receiving placebo+medical management, 74% for those receiving naltrexone+medical management, 71% for those receiving CBI+placebo+medical management group, and 74% for those receiving CBI+naltrexone+medical management. The Numbers Needed to Treat (NNT) for good clinical outcome were 7 for CBI, 6 for naltrexone, and 7 for CBI+naltrexone. However, group differences were no longer significant at 1-year follow-up, but the placebo+medical management group had the least number of patients with a good clinical outcome (37.7% vs 50.4% for CBI+naltrexone).

The COMBINE study's investigation of post-treatment placebo effects also provides valuable insights into the efficacy of CBI against a strong control. When comparing only the placebo and CBI groups, while patients receiving CBI-only had lower percent days abstinent (66.6%) than those receiving pill placebo+medical management (73.8%; p = .03), the addition of CBI to pill placebo+medical management produced the highest abstinence rates of the non-pharmacotherapy groups(79.8%; p = .04). CBI alone was no different to pill placebo+medical management in relapse to heavy drinking (79.0% vs 75.2%, respectively) or good clinical outcome (60.6% vs 58.2%). One-year comparisons of the non-pharmacotherapy groups were not reported.

In summary, the large COMBINE study found that patients had better drinking outcomes when receiving CBI or naltrexone across several drinking measures, with each helping in the absence of the other. The combination of the two did not further improve treatment outcomes for alcohol dependence. At 1-year post-treatment, a trend for CBI effects on abstinence remained (but not naltrexone), while naltrexone continued to reduce heavy drinking days (but not CBI). The authors noted that the numbers needed to treat for good clinical outcome with naltrexone or CBI under medical management (NNT = 6-7) were comparable to other chronic health conditions such as chronic depression, chronic obstructive pulmonary disease, and type-2 diabetes.

Cognitive Behaviour Therapy: Summary

Cognitive Behaviour Therapy (CBT) is the most extensively evaluated psychosocial treatment for substance use disorders. There is good evidence for its effectiveness as a standalone psychosocial intervention for alcohol dependence against various comparison conditions, including standard care and other active treatments. The therapeutic benefit of CBT is enhanced when combined with pharmacotherapy and when delivered in combination with other psychosocial interventions. In modern practice, CBT for alcohol dependence typically begins with a comprehensive assessment combined with motivational interviewing to resolve ambivalence about change prior to skills training (Anton et al. 2006; Gullo et al. 2015). CBT should be utilised as a first-line psychosocial intervention for alcohol dependence, and for

patients who have not responded to lower-intensity intervention.

Recommendation	Grading of recommendation
9.2 Cognitive Behavioural Therapy (CBT) is an effective treatment for alcohol dependence. It should be used as a first-line psychosocial intervention for all dependent patients. Clinical benefit is enhanced when CBT is combined with alcohol pharmacotherapy or another psychosocial intervention (e.g., motivational interviewing).	A

Specific cognitive-behavioural interventions

Despite core similarities among cognitive-behavioural interventions, they differ in duration, modality, content and treatment setting (Kadden, 1994). This section discusses the effectiveness of specific cognitive-behavioural interventions, including coping skills training, relapse prevention, behavioural self-control training (controlled drinking), cue exposure and behavioural couples therapy.

Coping Skills Training (Social Skills Training)

Based on Bandura's (1969, 1997) Social Learning Theory, coping skills training assumes that developing effective coping skills can help individuals deal with situations that may lead to drinking (Dobson 2002). Most applications of cognitive behavior therapy for alcohol dependence include coping skills training.

Coping skills training is based on the premise that drinking has become a way of coping with interpersonal stress (Kadden et al. 1992; Monti et al. 1994). Skills training provides alternative strategies to cope with social skills deficits and teach patients to deal with interpersonal stress without drinking.

Examples of coping skills training include communication skills, listening techniques, assertiveness, problem solving, drinking refusal skills, coping with urges to drink, relaxation, anger management and stress management skills training. Skills training is usually delivered in conjunction with other interventions, including relapse prevention and cognitive restructuring as part of cognitive behaviour therapy (CBT, see above).

Coping Skills Training: Reviews

A number of narrative reviews have concluded that there is consistent evidence that coping skills training is effective in reducing alcohol consumption among alcohol-dependent patients (Mattick and Jarvis 1993; Monti et al. 1994; Miller et al. 1995; Shand et al. 2003; Raistick et al. 2006). It has been suggested that skills training is more effective than other approaches when included as a component of a more comprehensive treatment (e.g., CBT, see above), but not when delivered as a stand-alone treatment or as aftercare (Longabaugh and Morgenstern 1999). Coping skills

training was identified as the second best-supported treatment for clinical populations in the Mesa Grande review, an evaluation of 361 controlled studies of psychosocial and pharmacological treatments for alcohol use disorder (Miller and Wilbourne 2002). There are no recent reviews or meta-analyses of coping skills training specifically, but it was included as part of Magill and Ray's (2009) meta-analysis of CBT as it typically forms a core component of this approach, reported above.

Coping Skills Training: Randomised controlled trials

The CBT intervention evaluated in Project MATCH (Project MATCH Research Group 1997) included large components of coping skills training. As discussed above, this approach was generally as effective as motivational enhancement therapy and twelve-step facilitation, with some evidence suggesting it may be more effective for patients with low self-efficacy, low anger, and more severely-dependent patients experiencing low motivation.

Litt et al. (2003) evaluated the effectiveness of 26 weeks of group coping skills training (n = 69) compared to interactional group therapy (n = 59) for alcohol dependence. Interactional group therapy seeks to foster healthier interpersonal functioning by exploring interpersonal relationships and pathology as manifested in interactions within the group. They hypothesized that coping skills training would be more effective at increasing patient use of coping skills. There was no difference between treatments in drinking outcomes at post-treatment or 18-month follow-up, with abstinence rates for both groups ranging from 28% to 35%. Both treatments significantly increased patient use of coping skills ($d = 0.81$, $p < .01$), but coping skills training was not more effective in achieving this than interactional group therapy. Approximately 53% of patients showed increased use of coping skills from pre- to post-treatment and the size of the increase predicted percentage of days abstinent, proportion of heavy drinking days, time to relapse, and total abstinence during follow-up. Increases in coping skill use were only predicted by pre-treatment abstinence self-efficacy ($\beta = .28$, $p < .05$) and motivation to change ($\beta = .24$, $p < .05$). Pre-treatment self-efficacy also directly predicted greater post-treatment proportion of days abstinent over-and-above the effect of coping change ($\beta = .32$, $p < .05$).

In a later study, Litt et al. (2009) investigated whether coping skills training could be enhanced with the inclusion of more intensive, individualized assessment. One-hundred and ten alcohol-dependent patients were randomised to 12 weekly sessions of coping skills training (n = 53) or an individualised coping skills training program (n = 57). Individualised coping skills training involved a two-week pre-treatment experience sampling assessment period whereby patients were called on their mobile phone eight times per day to record their thoughts, feelings and behaviours, especially those associated with drinking. This included urges to drink, situational context (e.g., at work), coping actions, and drinking since the last recording. Patients in both treatment groups completed these daily assessments to control for the effects of assessment. For individualised coping skills patients only, this assessment information was summarised in a functional analysis for the treating therapist to view prior to treatment, and provided the focus for the coping skills training sessions. Results showed that both treatments led to significant

increases in percentage of days abstinent at post-treatment (d = 2.86, p < .001). Individualised coping skills training produced significantly higher percentage of days abstinent than standard coping skills training (d = 0.40, p < .05). There was a similar trend for drinking-related consequences favouring individualised coping skills training (d = 0.31, p < .07), but no differences in proportion of heavy drinking days or total abstinence (30% vs 17%, favouring individualised coping skills training). There was no post-treatment follow-up assessment.

As predicted, individualised coping skills training yielded significantly greater use of coping skills than standard training (Litt et al. 2009). At post-treatment, individualised coping skills training patients reported 5.8 adaptive coping responses per temptation episode compared to 4.2 responses for patients who received standard coping skills training (d = 0.50, p < .05), up from the pre-treatment mean of 2.3 (SD = 2.2) coping responses. Each coping response resulted in a 30% reduction in the risk of drinking at that moment. While treatment assignment predicted increased coping skill use, and increased coping skill use was significantly associated with post-treatment percentage of days abstinent, a formal mediation analysis failed to reach statistical significance (indirect effect 95% CI -0.42 to 3.46, p < .07). In summary, coping skills training based on a thorough, individualised assessment produced significantly (if modestly) more days abstinent at post-treatment compared to standard training, but equivalent outcomes for heavy drinking and drinking-related consequences.

Coping Skills Training: Summary

Coping skills training is one of the best-established and empirically supported interventions. It is frequently included as part of cognitive behavior therapy (CBT) for alcohol dependence. While coping skills training has been evaluated in numerous randomised controlled trials, it should be noted that studies evaluating it in isolation have not been subjected to meta-analysis. However, these studies were included in Magill and Ray's (2009) meta-analysis of cognitive behavior therapy (CBT), reported above.

While there is good evidence that increasing patient coping skills will lead to better drinking outcomes (Roos et al. 2017; Witkiewitz et al. 2018; Litt et al. 2003; Roos and Witkiewitz 2016), coping skills training does not appear to be more effective at achieving this than alternative treatments that do not have an explicit skills focus. Few large scale studies or meta-analyses have been published over the past two decades, meaning the bulk of current evidence is based on aging data.

Recommendation	**Grading of recommendation**
9.3 Coping skills training is an effective psychosocial intervention. It is recommended for use with all alcohol-dependent patients.	A

Relapse Prevention

Relapse prevention in modern-day practice is not so much a specific intervention but rather a set of strategies that aim to help the patient maintain treatment gains (Jarvis et al. 2005). Most applications of cognitive behavior therapy for alcohol dependence include relapse prevention (see *Cognitive Behavioural Therapy* section, above) as a core component and it tends not to be evaluated in isolation anymore. Cognitive-behavioural relapse prevention is based on the work of Marlatt and Gordon (1985). It conceptualises alcohol dependence as the result of maladaptive behaviour patterns with common cognitive, behavioural and affective mechanisms underlying relapse after the patient achieves abstinence. Relapse prevention techniques include identification of high-risk situations for relapse (incl. craving), teaching coping strategies to manage high-risk situations and for dealing with lapses, self-monitoring and behavioural analysis of drinking, and general skills in problem-solving and maintaining a balanced lifestyle.

However, relapse prevention was systematically evaluated in a meta-analysis published by Irvin and colleagues in 1999. Irvin et al. (1999) conducted a meta-analysis of 26 studies (10 alcohol) conducted between 1978 and 1995 involving a total 9,504 participants evaluating relapse prevention. Studies involving treatment approaches that used more general cognitive-behavioural techniques or delivered relapse prevention within a larger, broader treatment program were excluded. Four studies did not measure substance use outcomes. Of the 10 alcohol studies, 9 involved patients with alcohol dependence and 6 were RCTs. Overall, relapse prevention was found to significantly reduce substance use (r = .14, 95% CI .10 to .17; 22 studies). The effectiveness of relapse prevention for alcohol use (r = .37, 95% CI .28 to .45; 10 studies) was significantly larger than for tobacco smoking (contrast = .29, 95% CI .19 to .38), but not cocaine or polysubstance use (contrast = .10, 95% CI -.04 to .25, p = .16). Relapse prevention was significantly more effective than wait-list control or no additional treatment control (r =.11, 95% CI .06 to .15; 4 of 7 studies on alcohol) and a "discussion" control (r = .17, 95% CI .08 to .26; 2 of 6 studies on alcohol studies), but less effective than other active interventions (r = -.19, 95% CI -.34 to -.03; 1 of 4 studies on alcohol). The authors speculate that this negative effect may be due to the higher proportion of smoking and cocaine studies (1 and 2 studies, respectively) included in the pooled effect size, as relapse prevention appears to be less effective for these substances. However, the one alcohol study included in the comparison to other active interventions (Ito et al. 1988) reported no differences between aftercare relapse prevention (n = 20) and interpersonal process therapy (n = 19) in drinking outcomes.

Irvin et al. (1999) found significant benefit from relapse prevention at post-treatment (r = .27, 95% CI .23 to .32; 10 studies), 1-month follow-up (r = .20, 95% CI .04 to .34; 2 studies), 3-month follow-up (r = .19, 95% CI .02 to .35; 3 studies), 6-month follow-up (r = .19, 95% CI .11 to .26; 13 studies), and 1-year follow-up (r = .09, 95% CI .05 to .13; 11 studies). The authors noted that long-term outcomes did not appear to differ across substances, but this was not formally tested. Relapse prevention was significantly more effective when delivered in combination with pharmacotherapy (r = .48, 95% CI .38 to .56; 3 of 4 studies on alcohol) than without pharmacotherapy (r = .09; contrast = -.40, 95% CI -.50 to -.30). The effectiveness of relapse prevention did not differ when delivered in an inpatient versus outpatient setting (contrast = -.04, 95% CI -.11 to .03),

or in an individual versus group format (contrast = -.06, 95% CI -.13 to .01). There was no systematic evaluation of the quality of studies included in the meta-analysis. As noted above, only 6 of the 10 alcohol studies were RCTs, but no analysis was conducted to determine if this methodological feature was related to effect size. Randomised controlled trials typically report smaller effects than studies with non-randomised designs. The authors also noted that most studies administered relapse prevention immediately following another primary intervention (i.e., as aftercare), which may have inflated the observed effects (especially if an RCT design was not used). It should be noted that high-quality studies (e.g., RCTs) included in Irvin et al. (1999) were also included in Magill and Ray's (2009) meta-analysis of cognitive behaviour therapy (CBT), reported above in the *Cognitive Behavioural Therapy* section.

In summary, relapse prevention techniques based on Marlatt and Gordon's (1985) model are a core component of cognitive behavior therapy for alcohol dependence. It is rarely delivered in isolation because it is usually administered after another primary intervention (i.e., as aftercare; Irvin et al. 1999) or as part of cognitive behavior therapy (CBT; Magill and Ray 2009). The available evidence of its unique therapeutic effects, while dated, indicates that it is effective as a psychosocial intervention for alcohol dependence. However, it is no more effective than other active interventions, and may even be less effective. Effects do not differ when administered in inpatient versus outpatient settings, nor when delivered in individual compared to group format. Effectiveness is enhanced when delivered in combination with pharmacotherapy or as part of cognitive behaviour therapy. Contemporary data from good quality RCTS are required.

Recommendation	**Grading of recommendation**
9.4 Psychosocial relapse prevention is an effective intervention. It may be less effective than other active psychosocial interventions when delivered in isolation. It is recommended for use with all alcohol-dependent patients as part of a broader cognitive behaviour therapy (CBT) intervention.	B

Behavioural self-control / self-management training (controlled drinking)

Behavioural self-control training teaches skills which aim to reduce alcohol consumption (i.e., controlled drinking). It is not suitable for patients that are clinically contraindicated or willing to pursue an abstinence goal (see Chapter 3). It is most suitable for individuals at the less severe end of the alcohol dependence spectrum (Ambrogne 2002; Edwards et al. 2003; (Witkiewitz 2008)).
The components of behavioural self-control training include: goal setting, self-monitoring of daily drinking, controlling the rate of drinking, and identifying problematic drinking situations and triggers to drinking (Heather, 1995).

Behavioural self-control training: Meta-analyses

A meta-analysis by Walters (2000) included 17 randomised controlled trials (RCTs) investigating the effect of behavioural self-control training on problem drinking and showed that this treatment modality was effective (d = 0.33, 95% CI 0.17, 0.49), with strongest effects in the period six-months post-treatment completion. The treatment was just as effective for alcohol-dependent patients (d = 0.32, 95% CI 0.05, 0.09, 7 RCTs) as it was for non-dependent problem drinkers (d = 0.34, 95% CI 0.12, 0.56, 10 RCTs), with no significant difference in outcomes between patient groups, $F(1, 15) = 0.18$, $p > .10$. Behavioural self-control training was significantly more effective than other non-abstinence-based active control groups, which typically involved "standard care", counseling, or education (d = 0.20, 95% CI 0.01, 0.39, 11 RCTs). However, it was not more effective than abstinence-oriented control interventions (d = 0.28, 95% CI -0.03, 0.59, 6 RCTs). While short-term treatment outcomes (<12 months) were almost twice as large (d = 0.45, 95% CI 0.25, 0.65, 11 RCTs) as long-term outcomes (12+ months), they were still significant (d = 0.21, 95% CI 0.01, 0.41, 11 RCTs) and not reliably smaller, $F(1, 20) = 2.54$, $p > .10$. However, it should be noted that long-term outcomes (12+ months) in alcohol-dependent patients were not analysed separate to problem drinkers and may have been smaller or non-significant. An additional consideration is that the majority of the studies included in the meta-analysis had small sample sizes (in 12 of 17 studies, $n < 30$ received behavioural self-control training).

Behavioural self-control training: Randomised controlled trials

In the longest reported RCT, Foy et al. (1984) cluster-randomised consecutively admitted groups of male veterans inpatients with severe alcohol dependence to behavioural self-control training plus treatment as usual (n = 30) or treatment as usual only (n = 32). Behavioural self-control training included a total of 15 hours of training over a 26-day inpatient stay that included functional analysis and responsible drinking skills such as increasing time between sips, avoiding straight spirits, restricting the total amount of time spent drinking and amount consumed per occasion (<4 U.S. standard drinks). Treatment as usual involved case management, group therapy, marital therapy, alcohol education, and cognitive-behavioural strategies such as drinking refusal skills training, alternative reward scheduling, and problem-solving high-risk alcohol situations. All patients received 11 aftercare sessions during the first 12 months post-discharge.

At 6-month follow-up, patients receiving behavioural self-control training reported poorer outcomes than treatment as usual, including significantly fewer alcohol abstinent days ($F[1,60] = 4.64$, $p = .04$) and significantly more heavy drinking days ($F[1,60] = 4.88$, $p = .03$). At 12 months follow-up, group differences were no longer statistically significant for both abstinent days ($F[1,57] = 3.79$, $p = .06$) or heavy drinking days ($F[1,57] = 3.25$, $p = .08$). At 5-6 years post-treatment, there remained no group differences in abstinent days or heavy drinking days, and no differences between groups on average amount of alcohol consumed per day in the preceding 6 months (d = 0.13, CI 95% -0.46, 0.89, n = 43; Rychtarik et al. 1987; Walters 2000).

Behavioural self-control training: Summary

Behavioural self-control training is an effective treatment modality in reducing alcohol consumption in patients with alcohol dependence. There is, however, reason to believe that studies failing to find a benefit for behavioural self-control training were conducted mainly on patients with more severe alcohol problems. This treatment modality is currently recommended for patients with no or low-level alcohol dependence and those considered suitable for a moderation goal by their health practitioner (Berglund et al. 2003; Raistrick et al. 2006; Witkiewitz 2008).

Recommendation	**Grading of recommendation**
9.5 Behavioural self-control training is more effective than no treatment and alternative non-abstinence-focused treatments for problem drinking. It can be recommended for patients with less severe alcohol dependence when both patient and clinician agree that moderation is an appropriate treatment goal.	B

Cue Exposure

Cue exposure is a technique that can be incorporated into cognitive behaviour therapy. The primary difference between cue exposure therapy and standard CBT is the *in vivo* exposure to alcohol-related stimuli as part of treatment. Cue exposure therapy is based on the associative learning principle (Gossop et al. 2002), which assumes that people, places and events that regularly precede drinking (or drug-taking, for example) become associated with the pleasant effects of alcohol or drugs, and consumption becomes a conditioned response to these cues; the Pavlovian effect (Pavlov 1927).

Repeated exposure to these stimuli (typically the sight and smell of alcohol) with instructions to resist craving and without subsequent reinforcement in a laboratory/clinic setting, eventually leads to extinction of some of the conditioned responses in real life and increased self-efficacy. Treatment aims to achieve reduced craving, a longer time to first relapse, and reduced alcohol consumption. However, some conditioned responses are more difficult to extinguish and the effect is of a variable duration. There are earlier reports of spontaneous and rapid reinstatement of previously extinguished conditioned responses after a priming dose of alcohol (Drummond et al. 1990). Later studies incorporated priming doses before patients attempted to resist drinking (Sitharthan et al. 1997; Dawe et al. 2002). Negative affective states have been shown to trigger relapse. Adding negative emotional cues to cue exposure therapy is a useful approach, but it does not seem to add to the effectiveness of this therapy compared to standard CBT (Kavanagh et al. 2006).

Cue exposure therapy usually consists of 6-12 sessions, each of 50-90min duration. Sessions can be run on a daily basis or less frequently (Conklin and Tiffany 2002).

Cue Exposure: Meta-analyses

Mellentin et al. (2017) conducted a meta-analysis of 7 controlled trials (5 RCTs) investigating the effectiveness of cue exposure therapy in alcohol use disorder (totalling 447 individuals). They found cue exposure therapy showed no effects on drinking after 3 months, but small effects at 6 months on number of drinking days (g = -0.21) and at 12 months on drinks per day (g = -0.22) and heavy drinking days (g = -0.22) at 12-month follow-up. The 12-month findings were based on a single RCT. Cue exposure therapy effects were stronger when combined with urge-specific coping skills training and compared to control group treatment other than CBT (relaxation training or daily contact with assessment). Treatment setting (inpatient vs outpatient), treatment goal (abstinence vs moderation), and population (clinical vs subclinical) did not influence the effects of cue exposure therapy. Mellentin et al. (2017) judged the quality of the available evidence on cue exposure therapy to be "very low" using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach (Balshem et al. 2011). Included studies were rated as having "a high risk of bias, inconsistency, imprecision and suspected publication bias" (p. 199, Mellentin et al., 2017).

Mellentin et al.'s (2017) meta-analytic findings were more favourable than those previously reported by Conklin and Tiffany (2002) in their combined meta-analysis of cue exposure therapy across all substance use disorders. Conklin and Tiffany (2002) found no consistent evidence for the efficacy of cue exposure therapy. However, individual study effect sizes for alcohol use disorder tended to be significant and Conklin and Tiffany (2002) did not disentangle effects according to drug of abuse. Additional alcohol treatment studies have since been published and were included in Mellentin et al.'s (2017) analysis.

Cue Exposure: Randomised controlled trials

Rohsenow et al. (2001) randomly allocated 129 alcohol-dependent patients to receive individual cue exposure therapy plus urge-specific coping skills training or a meditation-relaxation control. Exposure involved holding, looking at, and smelling patient's preferred beverage. Patients were also randomised to receive additional group therapy in the form of communication skills training or an educational discussion control. While there were no treatment differences in total abstinence rates or alcohol-related problems, there were fewer heavy drinking days in cue exposure therapy than meditation-relaxation control (f = 0.27, medium effect) at 6 months and, for those who lapsed (n = 46), also at 12 months (f = 0.40, large effect). There was also a reduction in the quantity of alcohol consumed at 12 months for patients receiving the combination of cue exposure therapy and group communication skills training (f = 0.33, medium effect). Cue exposure therapy also produced greater reductions in alcohol cue reactivity and urge to drink in a simulated high-risk environment, and greater use of coping strategies during follow-up that were associated with reduced drinking.

Heather et al. (2000) conducted a randomised controlled trial comparing Moderation-Oriented Cue Exposure (MOCE) to Behavioural Self-Control Training (BSCT). Patients with low severity of dependence (N = 91) were randomised to receive either MOCE or BSCT and had weekly sessions with trained therapists for 16 weeks. MOCE involves formal cue exposure in the clinic using a priming dose of alcohol and cues associated with the patient's preferred beverage. At six-month follow-up, both MOCE and BSCT were effective in reducing alcohol consumption from 18.88 drinks per drinking day (on average) to 11.14 drinks (F [1] = 16.14, p < .001). Percent days abstinent also increased in both treatments from 19.83% to 37.13% (z = 4.89, p < .001). From the results, it is unclear whether MOCE and BSCT are both effective cognitive-behavioural interventions, or whether treatment itself, regardless of type, is effective in reducing consumption.

Using the same interventions as Heather et al. (2000), Dawe et al. (2002) compared the effectiveness of moderation-oriented cue exposure (following a priming alcohol dose) with behavioural self-control training in a community sample of dependent drinkers. Participants (n = 100) were randomly assigned to one of the two treatments and received a mean of 5.84 sessions. At eight-month follow-up, there were significant decreases in alcohol consumption (η^2 = .42), severity of dependence (η^2 = .78), impaired control (η^2 = .54), and alcohol-related problems (η^2 = .54) in both groups compared to pre-treatment levels. There was a significantly greater reduction in alcohol

dependence severity in behavioural self-control training than cue exposure (η^2 = .08). Both treatments were effective for the 80 patients assessed at follow-up, with no difference in clinical outcome between those with a mild-to-moderate level of dependence (n = 60) and those with severe dependence (n = 20; $\boldsymbol{X}^2$ = 0.003, p > .05).

In a study examining cue exposure therapy for 52 non-dependent problem drinkers with a moderation goal, Sitharthan et al. (1997) compared cue exposure involving priming doses of alcohol without concurrent urge-specific coping skills training to standard cognitive behaviour therapy. Both interventions were delivered in six 90-minute group sessions. Cue exposure (n = 22) produced significantly greater reductions than standard cognitive behavioural therapy (n = 20) in participant reports of drinking frequency (η^2 = .14) and consumption (η^2 = .09) at 6-month follow-up. There were no differences in self-report alcohol dependence, impaired control over drinking, or self-efficacy.

Negative affective states have been shown to increase the risk of relapse. Kavanagh et al. (2006) explored the effect of negative emotional states as an additional cue of the cue exposure therapy. The study looked at the addition of two variants of cue exposure to cognitive-behaviour therapy for alcohol use disorder. This was conducted with 163 outpatients of treatment centres in Brisbane and Sydney. The selection criteria included reports of an increased desire to drink when dysphoric. Eight weekly 75-minute sessions were given to all participants. One group received CBT and a moderation-oriented cue exposure (priming dose of alcohol) and another received CBT and an emotional cue exposure (with negative cue induction). The groups were compared to CBT alone. The CBT sessions focused on developing skills in self-control of alcohol use. Average improvements were significant for reduction of alcohol consumption (η^2 = .31), severity of dependence (η^2 = .13), alcohol expectancies (η^2 = .14), depression (η^2 = .26) and increase in self-efficacy (η^2 = .24), with an acceptable level of maintenance of all effects at 12 months. However, CBT-alone showed significantly larger reductions in alcohol consumption compared to the other groups (η^2 = .04), and better retention (76% CBT-alone, 60% CBT+Alcohol Cue Exposure, 46% CBT+Emotional Cue Exposure, $\boldsymbol{X}^2$ [2] = 8.77, p < .02). The authors concluded that the addition of either version of cue exposure to CBT did not improve outcomes.

Cue Exposure: Summary

There is some evidence that cue exposure is effective in the treatment of alcohol dependence. However, most evaluations of cue exposure included some form of coping skills or behavioural self-control training (see Sections above), making it difficult to isolate the effect of cue exposure itself. While no studies have compared cue exposure plus coping skills training to conventional CBT, Kavanagh et al. (2006) found the addition of cue exposure did not enhance the effect of CBT in dysphoric drinkers. A few studies suggest cue exposure therapy and standard CBT may each be better suited to certain types of patients (e.g., Kavanagh et al. 2006; Loeber et al. 2006), but more research is required before specific recommendations could be made.

Recommendation	Grading of recommendation
9.6 Cue exposure in conjunction with coping skills training may reduce drinking in the longer-term, but may be ineffective in the short-term. There is no evidence that adding cue exposure to an established treatment (e.g., CBT) increases effectiveness.	C

Behavioural couples therapy (BCT)

Behavioural Couples Therapy (BCT) is based on an assumption that problematic alcohol use affects relationship functioning, and relationship quality affects alcohol use. Excessive alcohol use causes deterioration of relationships in a family unit that often results in further increases in drinking. However, functional relationships can help patients to achieve abstinence or low-risk drinking, and reduce the risk of relapse (O'Farrell and Fals-Stewart 2000; O'Farrell et al. 1993). In BCT, patients and their spouse/partner are seen together typically for 12-20 couple sessions usually lasting 90 minutes. Generally, couples are married or have been cohabiting for at least 1 year and only one member of the couple has an alcohol use disorder (O'Farrell and Fals-Stewart 2000).

Behavioural Couples Therapy: Meta-analyses

Evidence from a meta-analysis of randomised controlled trials (RCTs) conducted by Powers et al. (2008) found support for BCT. Their meta-analysis of 12 randomised controlled trials (N = 754; 8 trials of alcohol use disorders, published in 1985-2008) found a clear overall advantage of BCT compared to active control or information placebo conditions (Cohen's effect size, d = 0.54). Immediately post-treatment, BCT showed an advantage only in relationship satisfaction. However, by as early as 3 months post-treatment and continuing through later follow-up assessments, there was a significant advantage across all 3 outcome domains analysed: frequency of substance use (d = 0.45), negative consequences of use (d = 0.50), and relationship satisfaction (d = 0.51). Effect sizes were similar when alcohol studies (g = 0.55; 8 of 12 RCTs) were examined separately to other drugs (g = 0.56; 4 of 12 RCTs). Of note, 10 of the 12 studies compared BCT as an adjunct to treatment rather than as a standalone intervention, which may impact effect size estimates, ie., adjunctive BCT Hedge's g = 0.61, standalone BCT Hedge's g = 0.42. While BCT+individual CBT was found to be superior to individual CBT alone when combining all outcome measures (d = 0.44), the sole study comparing standalone BCT (n = 30) to individual CBT (n = 34) found no differences in drinking outcomes at post-treatment or 6-month follow-up (Vedel et al. 2008). BCT did show superior relationship satisfaction than CBT immediately post treatment (p < .05); CBT resulted in a trend for improvement in drinking refusal self-efficacy (p = .06). Neither of these differences were present at 6-month follow-up.

Similar findings were reported by the most recent BCT meta-analysis on substance use

disorders by Meis et al. (2013). This study pooled effects from 11 United States-based RCTs published in 1996-2011 and concluded that BCT was an *efficacious and specific treatment* using the criteria of Chambless and Hollon (1998) with significant effects at post-treatment (Hedges' *g* = 0.27, 95% CI 0.13, 0.41), up to 6 months post-treatment (*g* = 0.46, 95% CI 0.32, 0.61), and beyond 6 months post-treatment (*g* = 0.47, 95% CI 0.34, 0.61). Quality of the evidence was assessed as *Moderate*, according to Owens et al.'s (2010) criteria. This was because 8 of the 11 RCTs were conducted by a single laboratory (Dr Fals-Stewart). For this reason, Meis et al. conducted a sensitivity analysis using the 3 studies conducted outside this laboratory. BCT was still found to be significantly more effective than individual treatment alone in reducing substance use at post-treatment (*g* = 0.52, 95% CI 0.06, 0.99), 6-month follow-up (*g* = 0.38, 95% CI 0.08, 0.68), and 12-month follow-up (*g* = 0.38, 95% CI 0.05, 0.71). As with the prior meta-analysis (Powers et al., 2008), only 3 of the 11 trials were considered a standalone BCT intervention for alcohol use.

Behavioural Couples Therapy: Summary

Behavioural Couples Therapy (BCT) is an effective treatment for alcohol dependence with the majority of research evidence coming from studies evaluating it as an adjunct to individual treatment. The quality of evidence supporting its additive efficacy has been assessed as *Moderate* (Meis et al. 2013). Of note, many BCT research trials excluded patients whose partner/spouse had a substance use disorder, and its efficacy in couples where both members have alcohol dependence is unclear (Meis et al. 2013). Feasibility issues are important to consider. BCT is a more costly intervention, because it is typically delivered in addition to individual psychosocial treatment and sessions last almost twice as long as individual CBT sessions (Vedel et al. 2008). Most BCT studies have a substantial refusal rate (as high as 75-84%), because the patient does not want their partner involved in treatment, the partner is reluctant to be involved, and/or scheduling challenges (O'Farrell et al. 2016; McCrady et al. 2016; Schünemann et al. 2018). This introduces considerable selection biases in the published studies. Schunemann et al. (2018, *N* = 1,843) found refusal of adjunct BCT to be more likely among female patients (*OR* = 0.47), younger patients, and those with comorbid mental disorders. Recent efforts have been made to increase the feasibility of BCT delivery, including a group-based format (O'Farrell et al. 2016), which was found to be worse than standard BCT, and blended CBT/BCT for women (McCrady et al. 2016), which showed promise in a small trial. Combining the two published meta-analyses (Powers et al., 2008; Meis et al., 2013), 5 of the 15 alcohol studies that met minimum study quality criteria applied BCT as a standalone intervention. Combining other evidence-based psychological approaches to alcohol use disorders is likely to inflate the effect sizes of BCT studies.

Recommendation	**Grading of recommendation**
9.7 Behavioural Couples Therapy, as an adjunct to individual psychosocial treatment, can reduce drinking and should be offered to married/cohabiting patients whose partner does not have a substance	B

use disorder.	

Mindfulness-Based Relapse Prevention

Mindfulness-Based Relapse Prevention (MBRP) is a recent adaptation of CBT-based Relapse Prevention (see above) that incorporates mindfulness-based meditation techniques (Zgierska et al. 2019; Bowen et al. 2010). The mindfulness-based components are primarily drawn from Buddhism and designed to increase present-moment awareness of cognitive and emotional experiences, including exposure to them. The addition of mindfulness skills are proposed to help prevent relapse by increasing awareness of relapse triggers and tolerance for difficult affective states like craving or stress (Bowen et al. 2014).

Mindfulness-Based Relapse Prevention: Meta-analyses

A meta-analysis by Grant et al. (2017) studied 9 randomised controlled trials (RCT) comprising 901 adult patients diagnosed with a substance use disorder. Only one included study recruited alcohol-dependent patients exclusively (unpublished) and most did not restrict participants based on primary substance of abuse. Overall, there was no evidence that MBRP had beneficial effects beyond comparison interventions, which comprised mostly treatment as usual (*n* = 291), but also Relapse Prevention (*n* = 138), health education (*n* = 32), and CBT (*n* = 15). There was no significant difference between MBRP and any comparator for relapse (OR 0.72, 95% CI 0.46 to 1.13; 7 RCTs), frequency of use (SMD 0.02, 95% CI -0.40 to 0.44; 5 RCTs), or quantity of use (SMD 0.26, 95% CI -0.13 to 0.64; 1 RCT). However, there was a small clinical effect for negative consequences of substance use (SMD -0.23, 95% CI -0.39 to -0.07; 4 RCTs). Grant et al. (2017) judged the quality of the available evidence on MBRP to be "low" using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach (Balshem et al. 2011). The authors commented that most of the included RCTs contained small sample sizes and resembled pilot efficacy trials rather than pragmatic effectiveness trials.

Mindfulness-Based Relapse Prevention: Randomised Controlled Trials

Zgierska et al. (2019) is the first published RCT of MBRP for alcohol dependence. In this trial, 123 outpatients were randomised to adjunctive MBRP or treatment as usual only. The MBRP intervention involved 8 weekly, 2-hour group therapy sessions. There were no significant differences between MBRP and treatment as usual in drinking outcomes at post-intervention and 6-month follow-up. At 6-month follow-up, only 3 (5.3%) MBRP patients had relapsed compared to 0 patients in treatment as usual (defined as 3 consecutive heavy drinking days). At 6-month follow-up, MBRP patients reported consuming alcohol on 11.5 (22.5%) of the past 28 days, compared to 5.9 (11.6%) in treatment as usual. Percentage of heavy drinking days also did not differ between groups at 26.9% for MBRP and 24.5% for treatment as usual. Past-month

drinking-related consequences also did not differ. Consistent with the findings of the Grant et al. (2017) meta-analysis, this study suggests that in patients with alcohol dependence, MBRP does not provide any benefit compared to usual care alone. It should be noted that unpublished post-treatment and 4-month follow-up outcomes from Zgierska et al. (2019) were included in the meta-analysis by Grant et al. (2017, see above), and the study was judged to have low risk of bias according to the GRADE approach.

While not focused on alcohol-dependent patients, Bowen et al. (2014) reported a well-designed RCT that compared group-based MBRP, RP, and treatment as usual in 286 polysubstance users receiving aftercare (Byrne et al. 2019; Miller et al. 2003). This study was also included in the Grant et al. (2017) meta-analysis. After receiving 28-day inpatient (60.3%) or 90-day intensive outpatient (39.7%) treatment, patients were randomised to one of the three interventions. MBRP was composed of 8 weekly, 2-hour group therapy sessions. The RP intervention was matched to MBRP in time, format, size, location, and scope of assigned homework. Treatment as usual was process-oriented and based on the Alcoholics/Narcotics Anonymous 12-step program. While there were no significant group differences on drinking outcomes at 3-month follow-up, MBRP and RP patients were significantly less likely to engage in heavy drinking at 6 months compared to treatment as usual, with those who drank doing so on 31% fewer days. There were no significant differences between MBRP and RP at 6-month follow-up. However, at 12-months, MBRP patients were significantly more likely to not engage in heavy drinking compared to RP ($OR = 1.51$, $p < .05$). Over the entire study period, the MBRP and RP groups showed a 59% decreased risk of relapse to heavy drinking compared to treatment as usual, but did not differ from each other in time to first heavy drinking day. When interpreting these findings, it should be noted that the number of patients with alcohol dependence in this study could not be determined and descriptive data on primary substance of abuse was not reported. The majority of patients were polysubstance users, with only 16 (15.5%) MBRP and 9 (10.2%) RP patients reporting alcohol use only. Therefore, it cannot be determined the extent to which observed effects reflect changes in drinking among alcohol-dependent patients as opposed to drinking in patients seeking treatment for another substance use disorder.

Mindfulness-Based Relapse Prevention: Summary

Overall, there is limited and mostly low quality evidence that does not support the use of mindfulness-based relapse prevention (MBRP) for treating alcohol dependence. A recent meta-analysis of randomised controlled trials for substance use disorder found no evidence of beneficial effects compared to comparison interventions (mostly treatment as usual). The only published RCT conducted in an alcohol-dependent population found the addition of MBRP provided no benefit over usual care in outpatient treatment. The most rigorous evaluation of MBRP was as an aftercare intervention in polysubstance users (82% of sample) and suggested beneficial effects on heavy drinking may emerge only at later follow-up points in this population (6-12 months post-intervention). More high quality studies are required to demonstrate efficacy and/or non-inferiority to alternative 'active' psychosocial treatments

supported by Level I evidence.

Recommendation	Grading of recommendation
9.8 Mindfulness-Based Relapse Prevention should not be offered as a first-line psychosocial intervention for alcohol dependence.	B

Acceptance and Commitment Therapy

Acceptance and Commitment Therapy (ACT) is another therapeutic approach that aims to reduce experiential avoidance in a way that does not seek to actively change or control cognition. According to ACT, the abuse of substances like alcohol is a form of experiential avoidance, in that, drinking is often motivated by a desire to regulate unwanted private experiences (e.g., negative affect, craving, withdrawal symptoms; Hayes et al. 2004). While ACT often includes mindfulness components, it also includes examination of life values and commitment to a valued life direction. The goal of ACT is to foster acceptance of undesirable cognition and affect, and facilitate action tendencies that will lead to improvement in life circumstances.

Acceptance and Commitment Therapy: Randomised Controlled Trials

Byrne et al.'s (2019) systematic review of ACT for alcohol use disorder identified six studies. Only one of these studies was a randomised controlled trial (RCT) involving patients with an alcohol use disorder. Stappenbeck et al. (2015) randomised adults diagnosed with alcohol dependence and post-traumatic stress disorder (PTSD) to brief ACT (n = 29), brief CBT (n = 31), or an attention placebo control (n = 20). Interventions involved a single in-person session and four weekly coaching telephone calls. The brief ACT intervention focused on experiential acceptance, teaching patients to identify how they may be avoiding or trying to change thoughts and feelings (particularly alcohol craving and trauma memories), and instead accept them as passing events, without judgment. It included urge surfing (Marlatt and Donovan 2005), mindful breathing meditation, and teaching compassion and kindness for oneself. Brief CBT focused on cognitive restructuring, in which patients were taught how to identify and evaluate the evidence for distorted cognitions that lead to negative affect and alcohol use, then identify more constructive self-statements to replace them. Over the 5-week follow-up period, patients receiving brief ACT (d = 0.60) and brief CBT (d = 0.78) showed significant increases in percentage of days abstinent compared to controls. Both treatments also produced significant reductions in alcohol use on a given day, with brief CBT producing greater reductions in drinking than brief ACT (*IRR* = 0.71, 95% CI: 0.59, 0.85). There were no effects on PTSD symptoms.

Acceptance and Commitment Therapy: Non-Randomised Controlled Trials

Byrne et al.'s (2019) systematic review identified one published non-randomised controlled trial evaluating the effects of ACT on drinking outcomes in alcohol use disorder (Thekiso et al. 2015). In this study, 26 alcohol-dependent inpatients with comorbid major depression or bipolar disorder received intensive ACT group therapy in addition to treatment as usual (TAU) over a 4-week period. The 26 matched historical control patients received TAU only. The ACT intervention involved 5 sessions per week (totalling 5.5 hours/week) focused on alcohol dependence, anxiety, and mood and targeted the experiential avoidance underlying each process. Techniques included acceptance, cognitive defusion, being present, self as context, values, and committed action. Treatment as usual involved psycheducation, relapse prevention, individual interpersonal supportive therapy, plus attendance at Alcoholics Anonymous and Dual Recovery group sessions (totalling 18 hours/week). Results showed no difference in total alcohol abstinence rates between ACT+TAU and TAU at 3-month (*phi* = .238, *p* = .17) or 6-month (*phi* = .199, *p* = .27) follow-up. However, there was a greater percentage of days abstinent in ACT+TAU at both 3-month (η_p^2 = .107, *p* = .022) and 6-month (η_p^2 = .122, *p* = .014) follow-up. Patients receiving ACT+TAU also reported significantly lower depression and anxiety symptoms at both follow-up intervals.

Acceptance and Commitment Therapy: Summary

Overall, there have been very few studies evaluating ACT for alcohol dependence and insufficient evidence to support its use as a standalone treatment. There is Level III-3 evidence supporting intensive ACT when used as an adjunct to usual care, and one RCT for short-term benefits of brief ACT compared to attention placebo. However, this same study found brief ACT to be less effective than brief CBT, at least in the short-term. These conclusions are based on only two published studies of different treatment intensity and small samples (*n* = 29 RCT; *n* = 26 non-RCT). There have been no studies that have recruited patients with a non-comorbid alcohol dependence diagnosis. Both available studies include dually-diagnosed patients, limiting the generalisability of findings. Larger, high quality studies with longer follow-up are required to demonstrate efficacy and/or non-inferiority of ACT as a standalone treatment to alternative 'active' psychosocial treatments supported by Level I evidence.

Recommendation	**Grading of recommendation**
9.9 Acceptance and Commitment Therapy should not be offered as a first-line psychosocial intervention for alcohol dependence.	B

Contingency Management

Contingency management is based on operant conditioning theory, which proposes that behaviour is controlled and shaped by its consequences. It is a therapeutic approach that uses positive reinforcement, or rewards, to improve treatment outcomes by providing cash or prize-based incentives to encourage behaviour change. In the therapeutic application of contingency management to substance dependence, rewards are typically contingent on abstinence. Biological samples (e.g., urine) are usually collected periodically for verification of self-report. The reward provided is often monetary, with the magnitude of the reinforcer increasing with sustained periods of abstinence. It has been utilised in both inpatient and outpatient settings.

Contingency Management: Randomised Controlled Trials

Sayegh et al.'s (2017) meta-analysis of motivational interviewing and contingency management found no alcohol studies that met their inclusion criteria: randomised controlled trial involving comparison to non-active control group with follow-up assessment, and included biochemical verification of drinking status. Previous meta-analyses of contingency management, which find significant benefit, have included only a single randomised controlled trial (RCT) involving alcohol-dependent patients (Petry et al. 2000) (Prendergast et al. 2006; Benishek et al. 2014; Lussier et al. 2006). The lack of contingency management studies for alcohol, compared to other drugs, may be due in large part to the short timeframe within which alcohol can be detected with biochemical measures.

In one of the first RCTs of contingency management for alcohol dependence, Petry et al. (2000) allocated 42 male veterans to 4 weeks of intensive outpatient treatment, followed by aftercare, with (n = 19) or without (n = 23) contingency management. Patients had chronic alcohol dependence (M = 22-25 years duration, SE = 2 years) and over half reported a history of cocaine dependence. During the intensive outpatient program, participants attended the clinic 5 days/week for 5 hrs/day for 12-step-oriented meetings, life skills training, relapse prevention, coping skills training, AIDS education, and social-recreational training. Aftercare involved 1-3 visits/week for 12-step-oriented meetings, relapse-prevention groups, and social-recreational training. All participants were assessed at 8 weeks (i.e., 4 weeks after completion of outpatient treatment). In the contingency management group, alcohol abstinence and completion of treatment-related activities (e.g., attend three off-site Alcoholics Anonymous meetings) were reinforced with a chance to draw from a bowl and win prizes ranging from USD$1 to $100 in value. Reinforcement increased with consecutive negative breath alcohol concentration (BAC) readings (<0.003 g/dl), e.g., five negative BACs on 5 consecutive days resulted in an extra 5 bonus draws. The reinforcement schedule was designed to provide, on average, one medium (USD$20) prize per week. Breathalyser tests were conducted once per clinic visit during outpatient treatment, and once per week in aftercare on a randomly selected clinic visit. The addition of contingency management significantly increased outpatient treatment retention (84% versus 22%, $\boldsymbol{X}^2$ = 16.24, p < .001). Contingency management did not significantly improve self-reported alcohol abstinence rates at the end of outpatient treatment (69% versus 39%, $\boldsymbol{X}^2$ = 3.58, p = .06), but did significantly increase self-reported time to first drink ($\boldsymbol{X}^2$ = 4.50, p < .05). Self-reported relapse rates (5+ U.S. standard drinks on a

single occasion) were lower in the contingency management group (26% versus 61%, X^2 = 5.02, p < .05), as was time to first relapse (X^2 = 5.15, p < .05). Effects on completion of treatment-related activities were not reported. While promising, these initial findings were limited by the reliance on self-report and infrequent breathalyser assessment for corroboration, as well as a lack of follow-up assessment after ceasing contingency management. It is also unclear what effect the intensive outpatient treatment may have had on the effectiveness of contingency management.

A recent study by Koffarnus et al. (2018) addressed some of these limitations. They randomly allocated alcohol-dependent patients to 21 days of contingency management (n = 20) or non-contingent assessment (n = 20) of equal frequency and duration. Unlike Petry et al.'s (2000) RCT, there was no additional treatment offered as part of the study and participants did not have to attend the research site for breathalyser assessment. All participants completed a remote breathalyser test 3 times per day that transmitted results for immediate reinforcement. Breathalysers were provided to all participants and the unit took a photo of the patient as the sample was being provided for auto-verification. The contingency management group received USD$5 for each day in which all three assessments contained a reading of <0.02% breath alcohol concentration. The USD$5 amount increased by $1 per day of continuous abstinence up to a maximum of $25 per day if no alcohol was registered for all 21 days. A bonus USD$5 was provided for every third consecutive day of negative readings. Participants who never recorded a positive sample and never missed an assessment earned USD$350 over the 21 days. Missed samples were recorded as positive for drinking, but the overall sample collection rate was high (95.6%). Payments were delivered instantly upon verification to a prepaid debit card provided by the research team (according to behavioural theory, immediate reinforcement should be more effective). Both groups received USD$1 for each assessment provided. The control group received non-contingent payments linked to a contingency management participant in order to ensure equal overall payment.

During the 21-day treatment phase, percent days abstinent (breathalyser) were significantly higher in the contingency management group (85%) compared to the control group (38%; *OR* = 9.4, 95% CI 4.0 to 22.2). Self-report outcomes also showed a significant treatment effect persisting to 1-month post-intervention follow-up (X^2 = 14.24, p < .001, d = 1.49). Patients receiving contingency management reported consuming ~2 drinks per day (on average) at post-treatment, compared to ~5.5 drinks per day in the control group (p < .05). While still significant, the gap narrowed at 1-month follow-up, with control patients further reducing their drinking to ~4 drinks per day (on average) compared to contingency management patients holding steady at ~2 drinks per day (p < .05). The authors noted that patients receiving contingency management did self-report consumption of alcohol that was not detected by breathalyser assessments. It should also be noted that only participants who were compliant with assessment requests during an initial 7-day pre-treatment testing phase were randomised for the trial, possibly affecting generalisability. The Soberlink breathalyser system used in the study was also only able to auto-verify 68% (SD = 20%) of photos taken, with the remainder requiring manual confirmation by research staff, increasing time to reinforcement. This has implications for feasibility of use in routine practice.

Litt et al. (2007; 2009) investigated the additive efficacy of contingency management to a network support treatment for alcohol dependence, adapted from twelve-step facilitation. A sample of 210 alcohol-dependent patients were randomly allocated to 12 weekly sessions of network support (n = 69), network support +contingency management (n = 71), or a case management control group (n = 70). Network support therapy was a modification of twelve-step facilitation, as used in Project MATCH (see *Motivational Interviewing* section, above), bur placed less emphasis on Alcoholic Anonymous (AA) philosophy and focus on a higher power, and more emphasis on AA attendance as a way to avoid drinking, make new non-drinking acquaintances, and engage in activities other than drinking. Contingency management was not applied to abstinence, but was employed to encourage completion of homework assignments in network support therapy (e.g., coffee with a friend), verified by receipts or provision of contact details of individuals who could corroborate. Successful homework completion was reinforced with the drawing of a paper slip from a fish bowl containing 500 paper slips. Half of the slips contained no reward, 199 could be exchanged for small prizes (USD$1 value), 50 were prizes worth $20, and 1 slip could be exchanged for a $100 prize or 5 x $20 prizes. Completion of consecutive homework tasks increased the number of draws per task completed (two slips per activity in week 2, three in week 3 etc.). Prize draws were not contingent on drinking outcomes. Patients earned, on average, 56 draws and redeemed USD$250 worth of prizes over the 12-week treatment period. Results showed that network support therapy led to higher percent days abstinent than case management at 12 months post-treatment ($d = 0.41$, $p < .05$) and both other treatments at 24 months ($d = 0.10$, $p = .02$). Contingency management had no additive effect on percent days abstinent at 12 months, but significantly reduced the effectiveness of network support therapy at 24-month follow-up ($d = -0.28$). There were no group differences on continuous abstinence or negative consequences from drinking at 12- or 24-month follow-up. The addition of contingency management also did not increase completion of homework assignments during treatment ($Z = 1.17$, $p > .25$). The authors offered two possible explanations for the negative effect of contingency management: 1.) that it was not applied to abstinence compliance, as in other studies; and/or, 2.) it may have undermined abstinence self-efficacy gains in network therapy. Self-efficacy was a strong predictor of follow-up outcomes in the trial. At post-treatment, all treatments showed similar increases in abstinence self-efficacy, but by 12- and 24-month follow-up, network support without contingency management produced the greatest self-efficacy. It may be that patients receiving network support without external reinforcers were more likely to attribute their accomplishments to their own efforts, which is critical to self-efficacy (Bandura 1986).

Contingency Management: Summary

Overall, few studies have evaluated contingency management for alcohol dependence compared to other substances. There is some evidence that contingency management is effective in the short-term as a standalone intervention (one small RCT) and as an adjunct to intensive outpatient treatment (one small RCT). However, long-term effectiveness after contingencies have been discontinued is unclear. A medium-sized RCT by Litt and colleagues (2007; 2009) found contingency management applied to

completion of treatment-related activities did not enhance the effectiveness of a network support treatment at 12 months and, at 24-month follow-up, may have undermined its impact.

Most studies of contingency management focus on the treatment of illicit drug dependence, providing a stronger evidence base. However, this research has not been routinely translated into clinical practice either in the USA, UK (Petry et al. 2000b) or in Australia (Cameron and Ritter 2007). This is largely due to perceived high costs of provision of such interventions, including the costs of reinforcers, equipment for biochemical verification, and additional staff involvement (Helmus et al. 2003). However, implementing contingency management for alcohol use disorders has additional difficulties. Unlike with many other drugs, it has been difficult to reliably detect recent alcohol use as neither blood nor breath tests can detect alcohol use that occurred more than 12 hours previously (Kadden 2001), adding further barriers to clinical research that will also apply to implementation in practice (Rash et al. 2017; Petry 2010). Developments in mobile and internet technologies have begun to lower the burden of implementing contingency management for the treatment of alcohol dependence (e.g., remote breathalyser systems with identity verification, transdermal sensors). These may lead to larger, high quality studies with longer follow-up to strengthen the evidence base for alcohol dependence, and improve feasibility in clinical practice.

Recommendation	**Grading of recommendation**
9.10 Contingency management for alcohol dependence may be effective in the short-term as an adjunct to standard care when used to reinforce biologically-verified abstinence that is assessed frequently (i.e., daily or more).	C

Other Counselling Strategies

A number of other approaches have been used in counselling settings, including for patients with alcohol problems. Examples include: solution-focused therapy, psychodynamic therapy, narrative therapy.

Solution-focused therapy focuses on patient strengths and successes rather than weaknesses and is aimed at helping the patient to look for exceptions to the problem patterns and to find new solutions.

Psychodynamic therapy focuses not only on the present problem but also on the patient's life history and encourages them to look for unconscious drivers for their motivation and behaviour patterns. Interpersonal therapy is a variation of this approach.

Narrative therapy encourages patients to talk about their problems in terms of personal life stories that define the meaning of their lives and relationships, assess the impact of these on the current behaviour and assists patients in the process of "re-authoring" or re-writing these stories in a way that would help overcome presenting problems.

These psychosocial approaches are not supported by a strong evidence base, particularly in the treatment of alcohol dependence, and so are not recommended.

Residential Rehabilitation Programs

Residential rehabilitation programs (sometimes called therapeutic communities) are usually long-term programs where people live and work in a community of other substance users, ex-users and professional staff. Programs can last anywhere between 1 and 24 months (or more). The aim of residential rehabilitation programs is to help people develop the skills and attitudes to make long-term changes towards an alcohol- and drug-free lifestyle. Interventions available to residents in these programs tend to vary depending on the length of program and model in use. They generally include alcohol and other drug withdrawal or maintenance management, individual or group psychological support, peer self-help, and assistance with re-integration into the community. Programs usually include activities such as employment, education and skills training, life skills training (such as budgeting and cooking), counselling, group work, relapse prevention, and a 're-entry' phase where people are helped to return to their community.

Residential Rehabilitation: Meta-analyses

Effectiveness data are sparse. Smith et al. (2006) reported insufficient primary studies for a meta-analysis, and instead conducted a systematic review of seven randomised controlled trials (RCTs) investigating the effectiveness of therapeutic communities for substance related disorders, including alcohol. Overall, there was little evidence that certain residential rehabilitation programs are more effective than others in terms of treatment completion or drug use-related outcomes or that one type of therapeutic community is better than another. Prison-based therapeutic communities are effective in preventing re-incarceration, criminal activity and alcohol and drug offences in the 12-month period after release from prison. No comparison could be made with other treatment modalities. The authors concluded that the use of therapeutic communities for treatment of alcohol and drug use disorders is not based on sound evidence.

A more recent systematic review by Malivert et al. (2012) identified 12 studies meeting inclusion criteria, but heterogeneity in their design precluded meta-analysis. All but two studies were conducted in the North or South America, and 9 of the 12 had a prospective design with follow-up ranging from 2 months to 5 years post-discharge. Cocaine was the primary drug of concern in the majority of studies and most studies reported low treatment completion rates. While all studies showed a reduction in substance use during treatment and after discharge, at follow-up 21–100% of patients had used substances or relapsed. Importantly, no data related to the substance of relapse were reported, so it could not be determined whether patients relapsed to their main primary drug of concern. The authors concluded that, due to the

methodological limitations of included studies, effectiveness of therapeutic communities remains unknown. de Andrade et al. (2019) reviewed the most recent studies in the field (2013–2018). Only three of the 23 studies were RCTs and, of these, only adjunctive components of the residential rehabilitation programs were considered. These suggested that some components can reduce substance use, but methodological problems prevent firm conclusions about effectiveness.

Residential Rehabilitation: Summary

Few studies have examined the effectiveness of residential rehabilitation for alcohol dependence. While there is evidence that substance use reduces during the residential rehabilitation program, a number of systematic reviews have concluded that its long-term effectiveness as a treatment remains unknown due to the significant methodological limitations of included studies.

Recommendation	**Grading of recommendation**
9.11 Residential rehabilitation programs may be of benefit for patients with moderate-to-severe alcohol dependence and need a structured residential treatment setting.	D

Summary

In summary, there is strong support for the efficacy of cognitive behaviour therapy (CBT) as a standalone treatment. It should be employed as a first-line psychosocial intervention for alcohol dependence. There is also support for motivational interviewing in the short-term and in less severe dependence. Because of its brief duration, motivational interviewing is commonly employed as a prelude to CBT to resolve ambivalence about abstinence and strengthen motivation to change. Individual cognitive-behavioural interventions, when delivered in isolation, vary in their effectiveness and outcomes tend to be better when delivered in combination (e.g., coping skills training combined with relapse prevention). For patients unwilling to pursue abstinence, behavioural self-control training (controlled drinking) is more effective than no treatment and can be offered for patients considered suitable for a moderation goal by their health practitioner.

Effective CBT involves developing a comprehensive case formulation to guide treatment. This formulation details the cognitive, affective, and situational triggers for drinking as well as related clinical issues faced by the patient (e.g., insomnia, depression, anxiety; see Chapters 18 and 19). CBT encompasses a large collection of therapeutic strategies. Choice of therapeutic strategy is informed by the case formulation. For example, sleep hygiene alone may be effective for insomnia in some alcohol-dependent patients, but not for insomnia caused by an underlying anxiety disorder.

There is less evidence for contingency management and residential rehabilitation

programs, and insufficient evidence for mindfulness-based relapse prevention, acceptance and commitment therapy, solution-focused approaches, psychodynamic therapy, narrative therapy or other counselling techniques for alcohol dependence.

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CHAPTER 10

PHARMACOTHERAPIES EVIDENCE REVIEW

Chapter 10. Pharmacotherapies Evidence review

The evidence base has significantly developed for pharmacotherapies over the past 30 years. Despite this, and the efficacy of several medications, alcohol pharmacotherapies are substantially under-utilised (Morley et al., 2017). For patients who are motivated to take the medication, it can be a potential tools for reducing the core symptoms of AUD. In Australia, there is a requirement for pharmacotherapies to be part of a comprehensive treatment program to gain Pharmaceutical Benefits Scheme (PBS) subsidy. Trials of pharmacotherapies have typically included some form of psychosocial support. Thus, it is recommended that pharmacotherapy should be considered for all patients with moderate to severe AUD, and in association with psychosocial supports as part of an after-care treatment plan.

Recommendation	Grade of recommendation
10.1 Pharmacotherapy should be considered for patients with moderate to severe AUD (i.e. alcohol dependence), and in association with psychosocial supports.	GPP

Neuropharmacology

Potential targets for pharmacotherapy are guided by our increasing understanding of the neuropharmacological consequences of chronic alcohol consumption and also the neurobiological mechanisms of alcohol-seeking behaviour and reward (H.R. Kranzler & Soyka, 2018). Dopamine release mediates the pleasurable and rewarding effects of alcohol in the mesolimbic dopamine pathway, projecting to frontal brain regions involved in impulse control (Koob & Volkow, 2016). Alcohol also modulates a range of neurotransmitter systems including glutamate, gamma-aminobutyric acid (GABA) and endogenous opioids. These neurotransmitter systems interact indirectly with the mesolimbic dopamine pathway but also have direct effects on neural processes involved in addiction such as, for example with glutamate, excitation and alcohol cue responsiveness.

Overview of pharmacotherapies

Four medications: acamprosate, naltrexone, disulfiram and nalmefene have been approved for use in Australia as part of a comprehensive treatment plan for alcohol use disorder (AUD). Nalmefene is currently unavailable. Acamprosate and naltrexone have been shown to improve treatment outcomes, typically when combined with a psychosocial intervention (Jonas et al., 2014). The evidence for disulfiram is weaker, but the drug remains an option for relapse prevention in certain circumstances and can be effective as part of a comprehensive treatment approach (Skinner, Lahmek, Pham, & Aubin, 2014). Several off-label pharmacotherapies also exist with varying levels of evidence for effectiveness.

TGA-approved medications for alcohol use disorder

a. Acamprosate

Working mechanism

Acamprosate is thought to reduce drinking by modulating brain GABA (gamma-aminobutyric acid) and glutamate function which is implicated in withdrawal symptoms. The drug only reaches desired levels in the brain after one to two weeks (Mann, Kiefer, Spanagel, & Littleton, 2008; T. M. Wright & Myrick, 2006).

Effectiveness (meta-analyses)

Several recent meta-analyses have assessed the effectiveness of acamprosate in the treatment of AUD (Rosner, Hackl-Herrwerth, Leucht, Lehert, et al., 2010) (Jonas et al., 2014). One Cochrane review assessed the effectiveness and tolerability of acamprosate in comparison to placebo and other pharmacological agents including 24 RCT's and 6915 participants with alcohol dependence (DSM IV or ICD-10 criteria) (Rosner, Hackl-Herrwerth, Leucht, Lehert, et al., 2010). Acamprosate, compared to placebo, significantly reduced the risk of any drinking (Risk Ratio (RR): 0.86 (95%CI 0.81 to 0.91) with a number needed to treat (NNT) of 9.09 (95%CI: 6.66 to 14.28). Additionally, acamprosate, compared to placebo was shown to significantly increase the cumulative abstinence duration (Mean difference (MD): 10.94 (95% CI: 5.08 to

16.81) days). No statistical significance was reached for reduction of risk to heavy drinking (relapse). The side effect reported the most frequently in the acamprosate group was diarrhoea.

A systematic review by Jonas et al., 2014 is the most comprehensive comparative pharmacotherapy meta-analysis in patients with moderate to severe AUD (DSM-V criteria) (Jonas et al., 2014). 27 studies assessing acamprosate with a minimum of 12 weeks of treatment (n=7519) were included. Acamprosate significantly reduced the risk of returning to any drinking (Risk difference (RD): −0.09 (95%CI: −0.14 to −0.04); moderate strength of evidence) with a NNT of 12. Acamprosate was not associated with improving heavy drinking (relapse) nor percentage heavy drinking days. Similarly, a systematic review by Palpacuer and colleagues that looking at pharmacologically controlled drinking in the treatment of AUD was not able to show any benefit of acamprosate in reducing total alcohol consumption (TAC) or the number of drinking days (Palpacuer et al., 2018). However, only one study with acamprosate was included in this data synthesis (Mason, Goodman, Chabac, & Lehert, 2006).

- ➔ **In conclusion:** acamprosate reduces the risk of any drinking and increases the cumulative abstinence duration. Acamprosate does not seem to reduce risk of heavy drinking nor does it reduce the percentage heavy drinking days.

Recommendation	**Grade of recommendation**
10.2 Acamprosate is recommended to help maintain abstinence from alcohol in patients with moderate to severe AUD	A

<u>Indications</u>

Based on available evidence, acamprosate is a suitable treatment option for patients with AUD (usually moderate to severe), who are medically stable and are willing to comply with the dosing regimen (Reid, Teesson, Sannibale, Matsuda, & Haber, 2005).

Acamprosate has been suggested to be more effective for patients with an abstinence goal rather than preventing excessive drinking in non-abstinent

patients, however this remains to be ascertained as it may be due to a lack of studies evaluating these specific outcomes (Palpacuer et al., 2018; Rosner, Hackl-Herrwerth, Leucht, Lehert, et al., 2010).

Contra-indications

Acamprosate is contraindicated in patients with a known hypersensitivity to the drug, renal insufficiency or severe hepatic failure (Childs Pugh classification C) (MIMS 2008).

There is a paucity of published literature on the safety of acamprosate in pregnancy or lactation. A recent Australian retrospective cohort study examined maternal health and neonatal outcomes in pregnant females and neonates exposed to acamprosate for more than 30 days *in utero*, respectively (Kelty et al., 2019). Acamprosate-exposed neonates were not significantly different from an alcohol comparison group or a community comparison group in terms of birth weight or proportion of small-for-gestational-age neonates or incidence of congenital abnormalities (including FAS). Nonetheless, there is an absence of well controlled studies and therefore it should not be administered to women who are pregnant or breastfeeding (MIMS 2008).

Interactions with other drugs

A recent review looking at drug-drug interactions in AUD treatment concludes that acamprosate is a safe medicine with regards to pharmacological interactions (Guerzoni, Pellesi, Pini, & Caputo, 2018). The literature reports that it has been administered in association with tricyclic antidepressants, selective serotonin reuptake inhibitors (SSRI), anxiolytics, sedative-hypnotic drugs, and non-opiate analgesics. Acamprosate does not interact with alcohol. Tetracyclines may be rendered inactive by the calcium component in acamprosate.

Starting treatment

Acamprosate dosing is recommended to begin 3-7 days after the patient's last drink, and after resolution of any acute withdrawal symptoms.

Starting acamprosate at the beginning of detoxification versus after completion

of detoxification has not been shown to improve treatment outcomes (Kampman et al., 2009). However, starting acamprosate after the resolution of withdrawal symptoms may prevent the possibility of worsening of withdrawal symptoms and to distinguish between side-effects and withdrawal symptoms. Notwithstanding, acamprosate can still be safely initiated during alcohol withdrawal (Gual & Lehert, 2001) and the potential for a neuroprotective effect may be useful early in withdrawal (Koob, Mason, De Witte, Littleton, & Siggins, 2002).

Medical history should be taken, as per Chapter 3: *Screening and assessment*. Physical examination may include assessment for signs of chronic liver disease and hepatic failure. Investigations may include tests of kidney function (urea and electrolytes), since 90 percent of acamprosate is excreted through the kidney, and liver function tests.

Recommendation	**Grade of recommendation**
10.3 Acamprosate should be started as soon as possible after completion of withdrawal (usually 3 to 7 days after last drink).	GPP

Dosage

Acamprosate is formulated in tablets of 333 mg, with the recommended dose for adults being 1998mg with meals (six tablets/day, orally in three doses: 2; 2; 2). Adults under 60kg should take 1332 mg/day (four tablets/day in three doses: 2; 1; 1).
In individuals with moderate renal dysfunction (creatinine clearance 30 to 50 ml/min) an initial dose of 333mg three times daily is recommended by the manufacturer.

Form of preparation (tablet, injection, etc).

Acamprosate is available in tablets. It is subsidised by the Pharmaceutical Benefit Scheme.

Treatment duration

The usual treatment period is 3-6 months (Mann, Lehert, & Morgan, 2004) (Rosner, Hackl-Herrwerth, Leucht, Lehert, et al., 2010) with some trials showing safety and

efficacy after 12 months of treatment (Sass, Soyka, Mann, & Zieglgansberger, 1996). However, the decision on the duration of treatment should be made on a case-by-case basis between the patient and doctor, based on side effects, history of relapse, social and family circumstances and other individual factors.

Recommendation	Grade of recommendation
10.4 Acamprosate is usually taken for at least 3 to 6 months. Treatment thereafter is assessed for each patient.	A

Adverse effects and their management

Acamprosate is usually well tolerated. Its predominantly gastrointestinal adverse effects, commonly diarrhoea, usually resolve spontaneously within days. Mild abdominal pain, rash or isolated pruritus, parasthesiae, altered libido and confusion have been reported at low frequencies (Wilde & Wagstaff, 1997). One Cochrane review (Rosner, Hackl-Herrwerth, Leucht, Lehert, et al., 2010) noted that only diarrhea was more frequently reported under acamprosate than placebo ((Risk Difference of 0.11 (95%CI 0.10 to 0.13)) with a number needed to harm [NNTH] of 9.09 (95% CI: 7.69 to 11.11).

The following strategies are recommended:

1) Patient education about expected side effects and duration.
2) Distinguishing between prolonged alcohol withdrawal symptoms and side effects of acamprosate by beginning treatment once more pronounced features of withdrawal have subsided (after first 3-5 days).

Clinical considerations during treatment (e.g. LFT check-ups etc)

Treatment should continue even if the patient lapses; psychosocial relapse prevention techniques should be used to deal with the lapse or relapse (see Chapter 6a: Psychosocial interventions) (Mann et al., 2004).

Some clinicians do not prescribe acamprosate during continued drinking. However, this is not because of drug interactions but due to the belief that medication is of most use for patients that possess a goal for abstinence.

Regular monitoring and attending to physical, mental health and social issues is necessary.
Some patients will have difficulty adhering to a medication regime that involves taking tablets three times a day for prolonged periods (Reid et al., 2005).

Ending treatment

There is no evidence of a withdrawal syndrome following the use of acamprosate or developing dependence. Psychosocial relapse prevention interventions should continue beyond the end of pharmacotherapy.

Naltrexone

Working mechanism

Naltrexone is an opioid receptor antagonist. By blocking mu- opioid receptors, naltrexone reduces levels of dopamine (the major reward neurotransmitter in the brain) and reduces alcohol intake (Gonzales & Weiss, 1998).

Effectiveness (meta-analyses)

The effectiveness of naltrexone has been well documented in literature. Numerous meta-analyses with naltrexone for the treatment of AUD exist. One Cochrane review included 50 naltrexone studies with a total 7793 patients with alcohol dependence (DSM-IV or ICD-10 criteria) (Rosner, Hackl-Herrwerth, Leucht, Vecchi, et al., 2010). The authors reported that naltrexone, compared to placebo, reduced the risk of heavy drinking ((RR 0.83 (95% CI 0.76 to 0.90)). Number needed to treat was not calculated. This systematic review was not able to demonstrate significant risk reduction of any drinking by naltrexone compared to placebo (RR: 0.96 (95%CI: 0.92-1.00).
A meta-analysis by Jonas et al., 2014 included a total of 53 oral naltrexone (50 mg) studies with participants with moderate to severe AUD (DSM-V) treated for a minimum of 12 weeks (n=9140) (Jonas et al., 2014). For return to any drinking (16 studies and 2347 patients), a significant improvement was detected (Risk Difference (RD) of -0.05 (95% CI: -0.10 to -0.002)) with a NNT of 20 ((95% CI: 11-500); moderate level of evidence). For return to heavy drinking (19 studies and 2875 patients), a significant improvement was detected ((Risk Difference (RD): -0.09 (95% CI: -0.13 to -0.04)) with a NNT of 12 ((95% CI: 8 to 26); moderate level of evidence). Oral

naltrexone also significantly decreased percentage drinking days, percentage heavy drinking days and drinks per drinking day (Weighted mean difference (WMD): -5.4 (95% CI -7.5; -3.2); WMD: -4.1 (95% CI -7.6; -0.61); WMD: -0.49 (-0.93; -0.06), respectively). Meta-analyses consistently report significant benefits of naltrexone on drinking outcomes, although somewhat modest in magnitude (H.R. Kranzler & Soyka, 2018).

➔ **In conclusion:** naltrexone has been studied in many patients. Naltrexone reduces both the risk of heavy drinking and risk of any drinking.

Recommendation	**Grade of recommendation**
10.5. Naltrexone is recommended for prevention of relapse to heavy drinking in patients with moderate to severe AUD	A

Indications

Patients with a moderate to severe AUD and who are medically stable are suitable for naltrexone.

Naltrexone may be more effective for preventing relapse to heavy drinking than for maintaining abstinence (Rosner, Hackl-Herrwerth, Leucht, Vecchi, et al., 2010); (Jonas et al., 2014), however this remains to be confirmed (see below).

Contra-indications:

Patients currently using opioids or who require opiate-based pain relief are not suitable (Anton, 2008). Due to its antagonist properties at the mu-opioid receptor, naltrexone will precipitate acute opioid withdrawal in patients currently using opioids. For the same reason, being on naltrexone will render opioid analgesia ineffective.

Naltrexone is contraindicated in patients with a history of sensitivity to naltrexone.

TGA recommends caution when naltrexone is administered in patients with renal impairment as naltrexone and its primary metabolite are excreted in the urine.

While hepatotoxicity has not emerged as a wide-spread problem (Croop, Faulkner, & Labriola, 1997), naltrexone is contraindicated for people with acute

hepatitis or severe liver failure. The largest comparative study of naltrexone and acamprosate at present (COMBINE study) reported reversible elevated LFTs in patients treated with naltrexone (Anton et al., 2006).
There are no well controlled studies of the safety of naltrexone during pregnancy or lactation (Heberlein, Leggio, Stichtenoth, & Hillemacher, 2012).

Recommendation	**Grade of recommendation**
10.6. Naltrexone is not suitable for people who are opioid dependent or who have pain disorders needing opioid analgesia.	GPP

<u>Interaction with other drugs</u>
Naltrexone is a mu-opioid receptor antagonist and induces precipitated opiate withdrawal in patients who are currently opiate dependent. It is contraindicated in patients with current or recent use of opioid medication (e.g. codeine, morphine, oxycodone, methadone).

Naltrexone is a long-acting drug and will block the effects of opioids when they are used after commencement of naltrexone treatment. Naltrexone should be discontinued 48-72 hours prior to any situation where opioid analgesia may be required (e.g. in patients undergoing elective surgery).
Naltrexone does not appear to alter the absorption or metabolism of alcohol; however some patients have reported nausea after drinking alcohol while taking naltrexone.
The interaction of naltrexone and most other medications has not been tested. However, caution should be exercised when combining naltrexone with other drugs known to have hepatotoxicity (e.g. disulfiram).

While there may be potential risk of lengthening the QT interval to the electrocardiogram and possible cardiac arrhythmias with antidepressants, neuroleptic and benzodiazepines, no cardiovascular events have been reported in the literature (Guerzoni et al., 2018). Indeed, an RCT combining sertraline and naltrexone for treating co-occurring depression and alcohol dependence found that the rate of

serious adverse events was 25.9%, with the most frequent being inpatient detoxification and/or rehabilitation. The serious adverse event rate was significantly lower for sertraline + naltrexone patients (11.9%) than the other groups combined ($\chi 2 = 5.7$, df=1, $p < 0.02$; naltrexone=26.5%, sertraline=37.5%, placebo=28.2%). No deaths or serious medical conditions occurred (Pettinati et al., 2010).

Starting treatment

Naltrexone dosing is recommended to begin 3-7 days after the patient's last drink and after resolution of acute withdrawal symptoms. In most randomised controlled studies investigating effectiveness of naltrexone, treatment was initiated within one week of completing managed withdrawal (Rosner, Hackl-Herrwerth, Leucht, Vecchi, et al., 2010). Starting naltrexone after the resolution of withdrawal symptoms may prevent the possibility of worsening of withdrawal symptoms (eg nausea/vomiting) and also to aid distinguish between side-effects and withdrawal symptoms.

It is not known whether patients with a diagnosis of AUD achieve better outcomes if abstinent before taking naltrexone. However, some period of abstinence (at least 3 days) was the requirement of most clinical trials investigating the effectiveness of naltrexone. The patient's ability to achieve abstinence in this period is a good indication of their motivation to adhere to a course of naltrexone. It has been suggested that such abstinence is the most judicious approach (Anton, 2008).

Recommendation	**Grade of recommendation**
10.7 Naltrexone should be started as soon as possible after completion of withdrawal (usually 3 to 7 days after last drink).	GPP

Due to hepatotoxicity and potential rise of liver enzymes, it is pivotal that liver function tests are close to or under the upper limit of normal before commencement of naltrexone. The use of naltrexone is not advised in patients who have alanine aminotransferase concentrations greater than 3–5 times the normal limit (Antonelli et al., 2018). Additionally, patient with acute hepatitis and/or liver failure should not receive naltrexone treatment (Antonelli et al., 2018).

The Therapeutics Goods administration (TGA) states that naltrexone does not appear to be hepatoxic at the recommended doses but that there is a margin separation

between the apparently safe dose and the dose causing hepatic injury (only five-fold or less the normal dose). Therefore, patients should be warned of the risk of hepatic injury and advised to stop the use and seek medical attention if they experience symptoms of acute hepatitis.

Dosage

Naltrexone is formulated in tablets of 50mg, with the recommended dose being 50mg (1 tablet/day orally) with meals. It may be preferable to commence with ½ tablet (25mg/day) for several days and increase to 50mg after any adverse effects have subsided.

The meta-analysis by Jonas et al. 2014 mostly included studies that used naltrexone 50 mg/day. (Jonas et al., 2014). Only 3 studies were included that used 100 mg/day orally of which most pooled results were not significant; and the strength of evidence for 100 mg/day was graded as low to insufficient.

Form of preparation (tablet, injection, etc)

In Australia, naltrexone is only available in tablets. Naltrexone is subsidised by the pharmaceutical benefit scheme (PBS).

Treatment duration

The most appropriate duration of treatment continuation in a patient with moderate to severe AUD is not yet known. The usual treatment period used in the majority of controlled studies as well as in clinical practice is 3-6 months and in some cases up to 12 months (Rosner, Hackl-Herrwerth, Leucht, Vecchi, et al., 2010).

The systematic review by Maisel 2013 did not find many differences between shorter and longer prescribed administration of naltrexone, although limited by statistical power (Maisel, Blodgett, Wilbourne, Humphreys, & Finney, 2013).

However, the decision on the treatment duration should be made on a case-by-case basis between the patient and doctor, based on side effects, history of relapse, social and family circumstances, and other individual factors.

Recommendation	Grade of recommendation
10.8. Naltrexone is usually taken for at least 3 to 6 months.	A
10.9 Treatment thereafter needs to be assessed per individual patient	GPP

Adverse effects and their management

Naltrexone is usually well tolerated. Common adverse effects include nausea, headache, dizziness, fatigue, nervousness, insomnia, vomiting, and anxiety in about 10 percent of patients. These generally subside with time (usually days) (Rosner, Hackl-Herrwerth, Leucht, Vecchi, et al., 2010).

Based on clinical practice, the following strategies may help reduce the impact of potential side effects on treatment outcome:

i) patient education about expected side effects and duration; ii) timing of doses: establish a routine; ideally taken in the morning with food or splitting the dosage between the morning and evening; iii) gradual introduction of medication (25mg for 1-2 days); iv) dose reduction (half tablets at 25mg/day), v) slow titration; and vi) stopping the medication for three to four days before reintroducing it at a lower dose.

In addition, beginning treatment once the major features of alcohol withdrawal have subsided (generally 3-5 days after drinking cessation) may help to distinguish between prolonged alcohol withdrawal symptoms and side effects of naltrexone.

Clinical considerations during treatment (e.g. LFT check-ups etc)

Due to hepatotoxicity and potential rise of liver enzymes, it is important to perform liver function tests periodically.

Treatment should continue even if the patient lapses. Psychosocial relapse prevention techniques should be used to deal with the lapse or relapse (see Chapter 6a: Psychosocial interventions).

Monitoring and attending to physical and mental health is important. Depression and dysphoria have been reported as side effects of naltrexone (Farren & O'Malley, 1999); (Mendelson, Ellingboe, Keuhnle, & Mello, 1978), (Rosner, Hackl-Herrwerth, Leucht, Vecchi, et al., 2010)

Ending treatment

There is no evidence of a withdrawal syndrome or development of dependence following the use of naltrexone. Psychosocial relapse prevention should continue beyond the end of pharmacotherapy.

Disulfiram

Working mechanism

Disulfiram primarily works by inhibiting the action of an enzyme (aldehyde dehydrogenase) involved in the second step in the metabolism of alcohol, namely the conversion of acetaldehyde to acetate. This leads to the accumulation of acetaldehyde following consumption of alcohol while on disulfiram. The resulting symptoms are unpleasant including flushing, dizziness, nausea and vomiting, irregular heartbeat, breathlessness and headaches. Disulfiram acts as a deterrent to drinking because the patient expects to experience these negative consequences (Heather, 1989).

Effectiveness (Meta-analysis, RCT)

A meta-analysis conducted by Jonas and colleagues (Jonas et al., 2014) of disulfiram studies (RCTs = 2, n=492 patients) reported no significant difference compared to placebo. However, it was noted that the disulfiram effect is likely to be underestimated due to a high rate of non-compliance, therefore underestimating the actual effect of disulfiram. Another meta-analysis distinguishing between blind and open-label studies (22 RCTs, n=2414 patients) (Skinner et al., 2014). The authors hypothesised that blinded studies would show no difference between disulfiram and control because the deterring threat of unpleasant symptoms would be evenly spread. This meta-analysis demonstrated disulfiram was associated with higher success rate than control conditions only in the open-label studies (Hedges g = 0.70; 95% CI: 0.46-0.93). There

was no statistically significant difference in the blinded studies (Hedges g = 0.01; 95% CI: 0.29-0.32). Similarly, the supervised intake of disulfiram to ensure treatment adherence was associated with greater success (Hedges g = 0.82; 95% CI: 0.59-1.05) than unsupervised treatment (Hedges g = 0.26; 95% CI: −0.02 to 0.53).

Recommendation	**Grade of recommendation**
10.10 Disulfiram with closely supervised dosing is recommended only in moderate-severe AUD patients motivated for abstinence, provided there are no contraindications.	A

Form of preparation (tablet, injection, etc)

Disulfiram is available in tablets. It is not subsidised by the Pharmaceutical Benefit Scheme (PBS).

Indications

Based on the results of the recent studies discussed above and previous clinical experience, disulfiram is an appropriate medication for patients who are motivated to abstain from alcohol. It should not be prescribed for patients who have a goal of reduced alcohol intake. It is beneficial for patients that accept a need for an external control on their drinking and are prepared to be supervised in the daily dosing of the medication (Chick et al., 1992; Hughes & Cook, 1997). Since it is most effective with supervised administration, willingness of patient's spouse, family member or a friend is an important factor.

Disulfiram can cause significant toxicity if relapse occurs. It should only be prescribed to patients that display no medical or psychosocial contraindications as described below.

Contra-indication (suitability/ precautions)

The intensity of the disulfiram-alcohol reaction varies amongst patients and in rare cases may result in cardiovascular collapse, myocardial infarction, respiratory depression, convulsion and death. Accordingly, treatment is contraindicated for patients with significant cardiovascular, hepatic or pulmonary disease. Several of the

patients most suited to disulfiram in other terms may suffer from these problems. A risk-benefit analysis of the treatment should therefore be undertaken by the treating clinician. It is worth noting that the death rate due to the disulfiram-alcohol reaction is only 1 in 15,000 patients treated. Death is thus uncommon, whereas of that 15,000, a substantial proportion would be expected to experience premature mortality and/or reduced quality of life if their alcohol dependence went untreated.

Disulfiram is contra-indicated in patients with liver disease, in particular because of the production of toxic drug metabolites, which lead to hepatotoxicity (Berlin, 1989; Forns et al., 1994) and liver failure (Antonelli et al., 2018; Eneanya, Bianchine, Duran, & Andresen, 1981).

Careful monitoring of cardiac and liver condition is recommended if disulfiram treatment is started.
There are no well controlled studies of the safety of disulfiram during pregnancy or lactation. Case reports have documented that disulfiram increases the risk of fetal malformations during the first trimester (Helmbrecht & Hoskins, 1993; Nora, Nora, & Blu, 1977).

The enzyme, dopamine beta-hydroxylase, metabolizes dopamine into norepinephrine and epinephrine is inhibited by disulfiram, which may result in an exacerbation of psychosis. Nonetheless, a trial in a psychotic population did not reveal significant problems (I. L. Petrakis, Nich, & Ralevski, 2006).

Recommendation	**Grade of recommendation**
10.11 Disulfiram is contra-indicated in pregnancy and advanced liver disease	GPP

<u>Interaction with other drugs</u>

The most relevant interaction with other drugs concerns medicinal product containing alcohol (e.g. drop formulations) as this can trigger the disulfiram-ethanol reaction.

Disulfiram increases the blood concentration of benzodiazepines, caffeine, phenytoin, the active ingredient in marijuana, isoniazid, barbiturates, anticoagulants, tricyclic agents and paraldehyde (MIMS 2008). Disulfiram should not be given concomitantly with paraldehyde because paraldehyde is metabolized to acetaldehyde in the liver. Moreover, Disulfiram reinforces the action of coumarinic anticoagulants thus increasing the international normalised ratio (INR). Disulfiram augments warfarin hypoprothombinemia by chelating the metal cations necessary for the synthesis of active prothrombin. This combination is usually avoided (O'Reilly, 1981).

Starting treatment

Treatment should begin after detoxification, approximately 24-48 hours after drinking cessation. Medical history should be taken. It is important to discuss the effects of the drug when alcohol is taken, including potential severe, life threatening reaction. The patient's anticipation of its effects will greatly enhance the drug's effectiveness as a deterrent against drinking. Disulfiram should be seen as an aid that does not detract from the patient's own responsibility in maintaining abstinence.

Supervision:

Based on the outcomes of the studies discussed above, disulfiram treatment is best suited to individuals with social supports (e.g. family) who will help supervise medication adherence (Chick et al., 1992; Hughes & Cook, 1997; Laaksonen, Koski-Jannes, Salaspuro, Ahtinen, & Alho, 2008). Supervision has a marked effect on adherence and may greatly improve the effectiveness of this intervention.

A spouse/partner is an obvious choice for married/de facto patients. It is important to stress that the spouse cannot be expected to control the other person's drinking. A written 'disulfiram contract' should be considered between a carer and patient. This contract should include an outline of the likely effects of drinking and products that may need to be avoided (e.g. facial products), the recognition that the patient will allow the medication to be supervised, that the carer will be the supervisor and that the supervisory role includes contacting the health professional if medication compliance becomes a problem.

Dosage

Disulfiram is formulated in tablets of 200mg, with the recommended dose being 200-400mg (1-2 tablets/day orally). Some patients can continue to drink on 200-400 mg without significant aversive effects, and the dose should be increased. The maintenance dosage should generally not exceed 600 mg a day. In many patients, two or three doses per week may be sufficient, and this approach may be more practical and easier to schedule with supervision.

Treatment duration

Disulfiram is likely to be a useful treatment for the first 3-6 months of treatment. After that the benefits of continuing use are less clear and the patient should be encouraged to maintain abstinence without disulfiram.

Recommendation	**Grade of recommendation**
10.12 Disulfiram is usually taken for 3 to 6 months.	C

Adverse effects and their management

Some of the common adverse effects of disulfiram include drowsiness, nausea, headache and fatigue. Some patients may report taste disturbance (metallic or garlic-like). Rarely, jaundice, hepatitis (sometimes fatal), peripheral neuropathy, psychosis, confusion, optic neuritis, blood dyscrasias and rash may occur. These are more common when doses exceed 400mg daily.

Clinicians should educate patients about expected side effects and duration; and should distinguish between prolonged alcohol withdrawal symptoms and side effects of disulfiram by beginning treatment once the more pronounced features of withdrawal have subsided (after the first 3 to 5 days). Patients should be advised to stop taking disulfiram at once and tell their doctor if they notice yellowing of their eyes or skin, dark urine.

Even very small amounts of alcohol may cause unpleasant effects. Clinicians should advise patients to avoid using alcohol in cooking and choose skin and oral hygiene products (such as perfumes, body lotions, mouth washes) that do not contain alcohol. Some medicines contain alcohol and should also be avoided. However, the strength of the alcohol–disulfiram interaction varies between individuals. Some patients react to very small amounts of alcohol, others have little reaction when consuming large quantities of alcohol.

Potentially fatal hepatoxicity can occur with disulfiram, although rare. The hepatoxicity is usually reversible if disulfiram is stopped before clinically evident liver disease is present. Therefore, monitoring of liver function is crucial. As the onset can be very rapid, it is important to inform patients of the risks and symptoms. If adverse symptoms are noted, disulfiram should be stopped (Fuller & Gordis, 2004).

Clinical considerations during treatment (e.g. LFT check-ups etc)

As per above, it is crucial to closely monitor liver functions tests (transaminases and glutamyl transferase) due to the hepatotoxic effects (Chick, 2004), especially in patients with pre-existing elevated liver function tests prior to commencement of disulfiram treatment (Antonelli et al., 2018). The mortality for disulfiram-related hepatotoxicity; in particular acute liver decompensation and fulminant liver failure, has been reported to range from 16% (Bjornsson, Nordlinder, & Olsson, 2006) to 28% (Neuman, Monteiro, & Rehm, 2006). In the first three months of therapy, liver function tests should be performed twice per month and thereafter liver function should monitored every three to six months (C. t. Wright, Vafier, & Lake, 1988).

Treatment should be suspended if the patient lapses; psychosocial relapse prevention techniques should be used to deal with the lapse or relapse (see Chapter 6). Disulfiram may be recommenced after 48 hours abstinence.

Ending treatment

Alcohol metabolism returns to normal between 7 and 10 days (sometimes three weeks) after stopping disulfiram, as new enzymes must be synthesised. Patients may

experience adverse reaction if they drink alcohol within 7 days after stopping treatment. Psychosocial relapse prevention interventions should continue beyond the end of pharmacotherapy.

TGA approved but not available in Australia

Nalmefene

Nalmefene was included in the Australian register of therapeutics Goods on 17 June 2015. Even though nalmefene has been approved by TGA for the treatment of AUD in specific indications, it did not get approval for subsidy by the pharmaceutical benefit scheme (PBS). Nalmefene is currently not available in Australia.

Working mechanism

Nalmefene is an opioid receptor antagonist that has a comparable chemical structure to naltrexone (Rosner, Hackl-Herrwerth, Leucht, Vecchi, et al., 2010). Nalmefene is a selective opioid receptor ligand with antagonist activity at the μ and δ receptors and also has partial agonist activity at the κ receptor. (Rosner, Hackl-Herrwerth, Leucht, Vecchi, et al., 2010).

Effectiveness

Nalmefene is the first pharmacotherapy for the management of AUD that has been approved by the Therapeutic Goods Administration (TGA) specifically for pharmacologically controlled drinking.

One meta-analysis (5 RCTs) evaluated the risks and benefits of nalmefene in the treatment of AUD (Palpacuer et al., 2015). No evidence was found for efficacy on health outcomes. Nalmefene was slightly superior to placebo in some outcome measures such as reducing the number of monthly heavy drinking days at 6 months (MD = −1.65, 95% CI [−2.41; −0.89]) and at 1 year (MD = −1.60, 95% CI [−2.85; −0.35]) and total alcohol consumption at 6 months (SMD = −0.20, 95% CI [−0.30; −0.10]). Additionally, there was no difference in quality of life and mortality at 6 months and 1 year. The authors concluded that the value for nalmefene in the treatment of AUD is not established with limited efficacy in reducing alcohol consumption. Another meta-analysis examining the same trials concluded that there was an association with fewer

heavy drinking days per months ((WMD: −2.0; 95% CI, −3.0 to −1.0; 2 trial; n=806) and fewer drinks per drinking day (WMD: −1.02; 95% CI, −1.77 to −0.28; 3 trial n=608) (Jonas et al., 2014). They also concluded that patients treated with nalmefene had a higher risk of withdrawal from trials due to adverse events (Number needed to harm (NNH): 12 95% CI, 7 to 50; 5 trials, n = 2054).

The most recent (network) meta-analysis by Palpacuer and colleagues (Palpacuer et al., 2018) evaluated several pharmacotherapies for the indication of pharmacologically controlled drinking, which is considered the main indication for nalmefene. The meta-analysis included 9 studies of which 2 were still unpublished with participants that were actively drinking prior to enrolment in the RCTs. Nalmefene significantly reduced total alcohol consumption (7 studies): Standardized mean difference (SMD) -0.19 (95% CI -0.29, -0.10) and significantly reduced heavy drinking days (7 studies): SMD -0.22 (95% CI -0.32, -0.12) and drinks per drinking day (3 studies) SMD: -0.26 (95% CI -0.48, -0.05) compared to placebo. No differences were found for abstinent days. They concluded that nalmefene showed superiority over placebo for the primary outcome (total alcohol consumption). However, indirect comparisons showed superiority of topiramate over nalmefene for this indication.

It is relevant to note that the evidence supporting the registration of nalmefene has been criticised due to it being derived only from one subgroup of patients and outcomes defined retrospectively (Fitzgerald, Angus, Elders, & al, 2016). **We thus believe more research is needed until we make a recommendation in line with TGA approval regarding the use of nalmefene for the management of controlled drinking.**

Recommendation	**Grade of recommendation**
10.13. Nalmefene appears promising to reduce heavy drinking in adult AUD patients but the evidence remains lower than first-line medications	C
10.14 Nalmefene is approved by the TGA for the management of management aimed at controlled drinking for AUD. However, more research is still required before recommendation as first-line treatment for this indication.	D

Indications (suitability)

Nalmefene is approved by the TGA for the reduction of alcohol consumption in adult patients with AUD who have an average daily consumption of alcohol of more than 60 g (6 standard drinks) for men and more than 40 g (4 standard drinks) for women. Nalmefene should be prescribed in conjunction with continuing psychosocial support focused on treatment adherence and reducing alcohol consumption. Nalmefene is not suitable for patients with physical withdrawal syndrome or who require immediate detoxification.

Contra-indication

Nalmefene acts as a μ and δ receptor antagonist and a partial k receptor agonist. Therefore, it induces precipitated opiate withdrawal in patients who are currently opiate dependent. It is contraindicated in patients with current or recent use of opioid medication.

Nalmefene is a long-acting drug and will block the effects of opioids when they are used after commencement of nalmefene treatment. The TGA recommends that nalmefene should be discontinued 1 week prior to any situation where opioid analgesia may be required (e.g. in patients undergoing elective surgery).

Nalmefene is contraindicated in patients with a known hypersensitivity to the drug, renal insufficiency. Insufficient data are available to assess the effect of renal impairment on the pharmacokinetics of nalmefene. Older study data suggest renal impairment delays clearance and it increases the plasma AUC (area under the curve) of nalmefene and its metabolites (the metabolites do not have a pharmacological effect) (Guerzoni et al) (Guerzoni et al., 2018).
Despite the high liver metabolism, Nalmefene is not a hepatotoxin, therefore it doesn't compromise liver function or alter the laboratory values, even for prolonged periods of time. However, use of nalmefene in patients with severe hepatic impairment is contra-indicated by the pharmaceutical company (TGA-info) Child-Pugh class C.

The use of nalmefene is contra-indicated in pregnant women and during lactation. There are limited data form the use of nalmefene in pregnant women.

Interaction with other drugs

Nalmefene should be discontinued 1 week prior to any situation where opioid analgesia may be required (e.g. in patients undergoing elective surgery). In an emergency situation when opioids must be administered to a patient taking nalmefene, the amount of opioid required to obtain the desired effect may be greater than usual.

Starting treatment

Nalmefene is the first pharmacotherapy in the management of AUD whose indication is pharmacologically controlled drinking, thus it is indicated that treatment starts when patients are still actively drinking and with concomitant psychotherapy.

Dosage

The starting and recommended dose for nalmefene is one tablet (18 mg) per day. Nalmefene is to be taken as needed: on each day the patient perceives a risk of drinking alcohol; one tablet should be taken, preferably 1-2 hours prior to the anticipated time of drinking. If the patient has started drinking alcohol without taking nalmefene, the patient should take one tablet as soon as possible.

The included studies in the most recent meta-analysis by Palpacuer and colleagues (Palpacuer et al., 2018) had doses of nalmefene between 10 to 40 g/day. Some of the studies had a regular dosing schedule. Some studies had a nalmefene as needed protocol in which patients only took the medication when they thought they would likely drink or when they were already drinking.

Treatment duration

The most appropriate duration of treatment continuation in patients with moderate to severe AUD is not yet known. The median study durations of the RCTs included in the meta-analysis by Palpacuer and colleagues was 24 weeks (interquartile range (IQR) = 12–28) (Palpacuer et al., 2018).

However, the decision regarding treatment duration should be made on a case-by-case basis between the patient and doctor. This will be based on side effects, history of relapse, social and family circumstances, and other individual factors but caution is advised if prescribed for more than 24 weeks (TGA).

Adverse effects and their management

The systematic reviews with nalmefene concluded that patients had a higher risk of withdrawal from studies due to adverse events. Common side effects reported were a higher risk of dizziness (NNH: 7; 95%CI: 5 to 10; 4 trials, n = 1944), headache (NNH: 26; 95% CI: 15 to 143; 3 trials, n = 1401), insomnia (NNH: 10; 95% CI: 8 to 17; 5 trials, n = 2049), nausea (NNH: 7; 95% CI: 5 to 11; 5 trials, n = 2049), and vomiting (NNH: 17; 95% CI: 11 to 48; 3 trials, n = 1679).

Off-label medication for other indications

Off-label medications are pharmacotherapies that are not licensed as an approved treatment of AUD (no TGA-approval). They should be a second-line pharmacotherapy in patients who have not responded to approved pharmacotherapies for this indication. However, if first-line medications are contra-indicated in patients (e.g. naltrexone/ disulfiram in patients with advanced liver disease), off-label pharmacotherapy may be considered as a first line treatment.

Emerging evidence of effectiveness for the treatment of AUD

Baclofen

Working mechanism

Baclofen is a γ-aminobutyric-acid (GABA)B receptor agonist is approved for the treatment of central spasticity. Baclofen is mostly excreted through the kidneys and therefore can be a potential pharmacotherapy for AUD patients with liver disease. There is some evidence for baclofen treatment to be associated with abstinence, however, reductions in heavy drinking has not been demonstrated.

Effectiveness (Meta-analysis, RCT)

Rose et al, 2018 included 12 RCTs in a meta-analyses (Rose & Jones, 2018). Primary outcome measures were: heavy drinking days, abstinent days, abstinence rates. Using intention-to-treat analysis, baclofen significantly increased abstinence rates (OR: 2.67, 95%CI 1.03-6.93; Z=2.01, P=0.04) with a NNT of 8. However, heterogeneity among studies was substantial (I2=76%). Bschor et al, 2018 also conducted a meta-analysis including 14 RCTs, which similarly observed substantial heterogeneity (I2 = 75%) but that baclofen did not show a significant superiority over placebo (SMD=0.22 (95%CI = - 0.03; 0.47; P=0.09) (Bschor, Henssler, Muller, & Baethge, 2018). Pierce et al., 2018 conducted a meta-analysis and a meta-regression for baclofen in the treatment of AUD including 13 RCTs (Pierce, Sutterland, Beraha, Morley, & van den Brink, 2018). They assessed the effect of baclofen on the primary outcome measures; time to lapse, percentage days abstinent, and percentage of patients abstinent at end point and they evaluated the moderating effects of baclofen dosage (low dose: 30-60 mg/day versus high dose >60 mg/day) and drinking levels prior to inclusion of the studies. Baclofen was superior in increasing time to lapse (SMD=0.42; 95%CI 0.19–0.64) and increasing the percentage of patients abstinent at endpoint (OR=1.93; 95% CI 1.17–3.17). Meta-regression analysis showed that the effects of baclofen were stronger when daily alcohol intake before inclusion was higher. High dose baclofen was not more effective than low dose baclofen. Additionally, tolerability of high dose of baclofen was less.
In November 2018 the 'Baclofen for the treatment of alcohol use disorder: the Cagliari statement' was published (Agabio et al., 2018). This is a consensus statement on the use of baclofen in the management of AUD, developed by an international expert panel (physicians, psychologist, researchers and a consultant nurse). They concluded, based on evidence from clinical practice and research of baclofen in patients, that baclofen remains a promising pharmacotherapy for AUD. However, superiority over placebo has not been well established and the strength of the evidence for treatment efficacy is, at this point, lower than that of approved medications for the treatment of AUD.

Adverse effects and their management

Baclofen is also associated with adverse effects, including sedation even at low doses (eg 30-75 mg/day) (K. C. Morley et al., 2018) and safety concerns have been reported (Jamshidi, Morley, Cairns, Dawson, & Haber, 2019). A cochrane review (Minozzi,

Saulle, & Rosner, 2018) looked at specific adverse events and found that baclofen increased vertigo (RR 2.16, 95% CI 1.24 to 3.74; 7 studies, 858 participants), somnolence/sedation (RR: 1.48, 95% CI: 1.11 to 1.96; 8 studies, 946 participants), paraesthesia (RR; 4.28, 95% CI: 2.11 to 8.67; 4 studies, 593 participants), and muscle spasms/rigidity (RR: 1.94, 95% CI: 1.08 to 3.48; 3 studies, 551 participants). Many side-effects tend to be dose-dependent, although the contribution of other factors to the onset and/or severity of side-effects cannot be ruled out (Agabio et al., 2018). Renal function needs to be evaluated before baclofen treatment given its renal excretion and contraindication in patients with kidney failure (Agabio et al., 2018). Baclofen should be started at a low dose (5-10 mg three times per day) and slowly titrated upwards with extreme caution due to the risks of sedation and overdose (e.g. 5-10 mg/day, every three days) (Agabio et al., 2018). Treatment with baclofen should be not abruptly interrupted to avoid the risk of withdrawal symptoms. The daily dose should be slowly reduced (e.g. 5-10 mg/day). Prescribing only small amounts per occasion should be considered (eg weekly dispenses).

Recommendation	**Grade of recommendation**
10.15 Baclofen may assist in achieving abstinence from alcohol but evidence remains lower than first-line medications.	C
10.16 Safety concerns with baclofen treatment include risk of overdose, dose escalation and seizures. Overdose risk increases with a history of self-harm or unstable mood. Baclofen is not recommended as first-line treatment and should be prescribed with caution.	B
10.17 Baclofen may be considered in specialist settings as a second-line treatment for selected patients contraindicated for first-line medications, such as alcohol-related liver disease.	C

Topiramate:

Topiramate is an anti-epileptic medication that is hypothesised to induce its effect by antagonizing glutamate activity at glutamate receptors (AMPA and kainate receptors) (Angehagen & Ronnback L, 2005) and inhibiting dopamine release (Olmsted & Kockler, 2008).

Several meta-analyses show medium effects of topiramate. A meta analysis by Jonas and colleagues included three topiramate RCT's in the data synthesis, concluding that there was evidence to support an association with topiramate and less percentage drinking days (Weighted mean difference [WMD]: -6.5%: 95%CI: -12.0 % to -1.0 % [2 trials-n =541]), less percentage heavy drinking days (WMD: -9.0%; 95%CI: -15.3% to -2.7% [3 trials – n=691]) and fewer drinks per drinking day (WMD: -1.0; 95%CI: -1.6 to -0.48 [3 trials – n=691]) (Jonas et al., 2014). Another meta-analysis by Blodgett and colleagues (7 RCTs , N = 1125 patients) (Blodgett, Del Re, Maisel, & Finney, 2014) reported that topiramate had a small to medium effect on abstinent days (Hedges g = 0.468, p<0.01), heavy drinking days (Hedges g = 0.406, p<0.01) and reduced GGT levels (g=0.324, =0.02). Topirmate has also been included in a network meta-analysis by Palpacuer and colleagues examining AUD pharmacotherapy for pharmacologically controlled drinking (n=349) (Palpacuer et al., 2018). Topiramate showed superiority over placebo on total alcohol consumption (TAC) (SMD = 0.77, 95% CI =-1.12, –0.42; I2 = 0%). Indirect comparisons suggested that topiramate was superior to nalmefene, naltrexone and acamprosate on TAC.

Recommendation	**Grade of recommendation**
10.18 Topiramate has some evidence for reducing heavy drinking. Topiramate has a complex side effect profile and further research is needed before it can be recommended as first-line treatment.	B

Minimal evidence of effectiveness for the treatment of AUD

<u>Serotonergic agents</u>

Serotonin reuptake inhibitor class medication, are widely prescribed for depression and anxiety. Many different serotonin reuptake inhibitors exist (fluoxetine, sertraline,

citalopram, etc). No meta-analysis exists that specifically evaluates the efficacy of serotonin reuptake inhibitors in the management of AUD. However, some serotonergic pharmacotherapies were included in a meta-analysis by Jonas and colleagues (Jonas et al., 2014). Medications with similar mechanism or in the same drug class were not combined. However, multiple studies with fluoxetine, sertraline and citalopram were included in the analyses. In regards to fluvoxamine and paroxetine, only one study was included in the meta-analysis. The strength of the evidence included was graded as low or insufficient, with only a slim number of included studies. Fluoxetine had a small effect on return to any drinking and percentage heavy drinking days. No effect was found on percentage drinking days and drinks per drinking day. No significant effects were found for paroxetine and fluvoxamine on any of the outcome measures. 3 studies were included in the data synthesis of sertraline, however no significant beneficial effects were found regarding the outcome measures of interest. One significant result was found for percentage heavy drinking days, however this was in favour of placebo. No data on the outcome measures were included for citalopram. There have been several studies of ondansetron, a selective 5-HT_3 receptor antagonist, to reduce alcohol consumption, with some early positive results in some subgroups such as those with 'early-onset alcoholism' (Johnson et al., 2000). However, there remains a paucity of double-blind RCTs to guide recommendations for this medication.

Anti-convulsants: Gabapentin

Gabapentin is approved in many countries for the management of epileptic seizures and post-herpetic (neurogenic) pain. It has been endorsed by the American Psychiatric Association, though as yet it does not have FDA approval. There has been one meta-analysis of the efficacy of gabapentin for treating AUD (H. R. Kranzler, Feinn, Morris, & Hartwell, 2019) including 7 RCTs with dosage varying from 300 to 3600 mg/day. Trial duration differed considerably (from 3 to 26 weeks). Two different drug formulation are available (gabapentin enacarbil which is a pro-drug formulation and an immediate-release formulation). The effective dose of gabapentin at 1200 mg/day was treated as the equivalent of 1080 mg/day of the immediate release formulation. Only one of the included studies used the enacarbil pro-drug formulation (Falk et al., 2019). The effect estimates were in the direction that favoured gabapentin over placebo, for all outcome

measures. However, only percentage heavy drinking days yielded a statistically significant result (g=-0.64, 95% CI =01.22 to -0.06) and this effect was not upheld when correcting for non-independent comparisons with placebo (Mason et al., 2006).

Antipsychotics

There has been one meta-analysis (13 RCT's, 1593 patients) examining antipsychotic medications in the treatment of AUD (Kishi, Sevy, Chekuri, & Correll, 2013). Among the medications included were; amisulpride, aripiprazole, flupenthixol decanoate, olanzapine, quetiapine, tiapride. Neither pooled nor individual antipsychotics outperformed placebo. Results suggested that the use of antipsychotics in patients with AUD is not associated with decrease in relapse rate, heavy drinking days, or craving and is also not associated with an increase in abstinence nor time till lapse.

Other medications: Varenicline, GHB, prazosin

The smoking cessation agent varenicline, which is a partial $\alpha 4\beta 2$ nicotinic acetylcholine agonist has been examined to reduce alcohol consumption. While there have been promising results in AUD patients with both smokers and non-smokers (Litten et al., 2013), there is a paucity of double-blind RCTs and more research is needed.

Sodium oxybate is the sodium salt of γ-hydroxybutyric acid (GHB), a short-chain fatty acid that occurs naturally in the human brain. It acts on GABA(B) receptors and extrasynaptic GABA(A) receptors resulting in alcohol-mimetic effects (Bay, Eghorn, Klein, & Wellendorph, 2014). One systematic review evaluated the use of GHB in the management of alcohol withdrawal syndrome and for relapse prevention (Leone, Vigna-Taglianti, Avanzi, Brambilla, & Faggiano, 2010). Due to insufficient randomised trials, it was impossible to conclude with certainty whether GHB was more effective than placebo or other pharmacological treatment specifically for relapse prevention in AUD. An expert group of European alcohol researchers and clinicians (2018) summarised the data for GHB in the treatment of AUD, concluding that secondary analyses indicate GHB is effective in alcohol dependent patients with very high risk drinking (van den Brink et al., 2018). Nonetheless, these analyses were post hoc and

only a small number of patients were included with a study duration ranging from 3 to 12 months.

Finally, there have been several studies evaluating the α-1 adrenergic receptor antagonist prazosin to reduce alcohol consumption. While there have been promising results in reducing alcohol consumption in AUD patients with or without PTSD (Simpson et al., 2018), however there remains a paucity of double-blind RCTs and more research is needed.

Benzodiazepines

Benzodiazepines are not recommended for use beyond the withdrawal management period (See Chapter 5.

Recommendation	**Grade of recommendation**
10.19 Other medications may appear promising agents in the management of AUD. However, further research is required and they are not recommended at this stage.	B
10.20 Benzodiazepines are contraindicated as relapse prevention agents in the treatment of AUD	GPP
10.21 There is little evidence that antidepressants can be recommended as relapse prevention agents in the treatment of AUD	B

Comparative effectiveness

Evidence is stronger for naltrexone and acamprosate, but disulfiram remains an option for some patients. Comparing acamprosate versus naltrexone, meta-analyses of trials comparing acamprosate to naltrexone found no statistically significant difference between them for return to any drinking or heavy drinking. When directly compared with one another, no significant differences were found between acamprosate and naltrexone for controlling alcohol consumption (Jonas et al., 2014). Comparing the NNT for different drinking outcomes, a meta-analysis observed that for a return to any drinking for acamprosate and naltrexone was 12 and 20 respectively, and for a return to heavy drinking it was 12 for naltrexone.

Combination of pharmacotherapies

A systematic review (16 studies) evaluated whether combining pharmacotherapy for the treatment of AUD in patients was more effective compared to single agent trials (Naglich, Lin, Wakhlu, & Adinoff, 2018). Due to heterogeneity of drug combinations and outcome measures, performing a meta-analysis was not possible. The majority of the included trials combine naltrexone with one of the following medications; acamprosate, gabapentin, GHB, sertraline, quetiapine, or escitalopram plus GHB. The authors concluded that drug combination effect sizes were comparable to those observed in single-agent trials, therefore no significant benefit was observed. However, they also note that the combination of pharmacological treatment in the treatment of AUD is a relatively untouched area of research which may still prove beneficial to advancing the current understanding of AUD treatment.

Concurrent psychosocial interventions

The majority of effectiveness trials of the pharmacotherapies involved some type of psychosocial interventions or structured medical management. Studies have included a wide range of psychosocial treatments. Although combining psychosocial and pharmacologic treatments for AUD could be more efficacious than either treatment alone, few studies have examined the effect of varying the intensity of the psychosocial treatment. Therefore, definitive recommendations on the optimal combinations are not possible.

Increasing medication adherence

Pharmacotherapy adherence rates of AUD patients are generally low in Australia (K. C. Morley, Logge, Pearson, Baillie, & Haber, 2016). Poor medication adherence may be due to: adverse side effects; stigma attached to taking medication for an AUD; no immediate reward for complying with these pharmacotherapies; fears about the safety and side effects of the medication (Teesson et al., 2003). Adherence to pharmacotherapies may be assisted by the following (Teesson et al., 2003) :

i. Eliciting the patient's thoughts and concerns about taking medication and using cognitive restructuring techniques to help them change unhelpful or maladaptive thoughts about

taking medication

ii. Providing the patient with a realistic view of the way in which the medication can help, its side effects, and any risks associated with its use

iii. Using motivational interviewing techniques to help the patient to identify their personal costs and benefits of taking the medication

iv. Providing the patient with some take-home reading material about the medication

v. Following up patients who miss appointments.

Adherence may also be a problem in patients that suffer cognitive impairment from chronic drinking. Aids to enhance adherence in such instances include: family supervision, medication calendars, special containers, dispensing systems, reminders and follow-up monitoring from health professionals.

Recommendation	Grade of recommendation
10.22 Medication compliance can be improved with use of adherence enhancing strategies.	B

Personalised pharmacotherapy: selecting medications for individual patients

Available evidence does not enable clear recommendations as to which front-line medication is best suited to different patients. This is due, in part, to the majority of the data relating to predictors of treatment response are derived from retrospective secondary analyses of treatment trials.

a. Individual patient characteristics

A secondary analysis of the COMBINE study (Anton et al., 2006) suggested that acamprosate may be beneficial for patients with fewer days abstinent prior to treatment (Gueorguieva et al., 2015). Other work has reported that beneficial treatment response to acamprosate is predicted by greater baseline severity of

dependence (K. C. Morley, Teesson, Sannibale, Baillie, & Haber, 2010). However, a pooled study (Verheul, Lehert, Geerlings, Koeter, & van den Brink, 2005) of 7 European trials and 1485 patients could not identify subgroups of patients responding favourably, observing that acamprosate was potentially effective for all patients with AUD. Despite the large sample size and sufficient statistical power to detect any variations, no differences were detected for any of the predictor variables (craving, study, and treatment). One meta-analysis reported longer detoxification before treatment with acamprosate was associated with a larger effect (Maisel et al., 2013).

With regards to naltrexone, the μ-Opioid receptor (OPRM1) genotype has been linked to greater treatment response (Anton et al., 2008; Oslin et al., 2003), though not all studies have been able to replicate this outcome (Coller et al., 2011) and the most recent prospective trial failed to replicate this result (Oslin et al., 2015). Previous studies looking at other characteristics exist, although with inconsistent results. A higher craving score at baseline has been linked to better response to naltrexone treatment (Monterosso et al., 2001). Additionally, efficacy of naltrexone treatment has been associated with male gender, pre-treatment drinking and family history of AUD (Garbutt et al., 2014). Finally, there have been several secondary analyses of previous trials whereby naltrexone has been found to be particularly efficacious among those that drink alcohol for the rewarding effect of alcohol whereas this has not been found for acamprosate (Mann et al., 2018; Witkiewitz, Roos, Mann, & Kranzler, 2019).

Selecting pharmacotherapy based on the treatment goal of the patient has received some attention in the literature. Some meta-analyses suggest that acamprosate and disulfiram appear better suited to those seeking to achieve complete abstinence from alcohol, whereas naltrexone seems better directed at treatments where reduced or controlled drinking is the goal. However, a secondary analysis of the COMBINE-study did not find evidence that abstinence goal is a moderator of acamprosate effect whereby the goal of total abstinence was associated with better outcome regardless of the treatment given (Gueorguieva et al., 2015). One network meta-analysis assessed the

effectiveness of acamprosate for controlled drinking, including patients who were still actively drinking at commencement of treatment, yet observed no benefit of acamprosate for this indication (Palpacuer et al., 2018). Only one study with acamprosate was included in the data synthesis. One meta-analysis comparing naltrexone and acamprosate (Maisel et al., 2013) has reinforced the idea that naltrexone should be considered for patients who want to reduce heavy drinking whereas acamprosate is better for those who seek abstinence. However, it is important to note that neither benefit is large or consistent enough to direct a clinical recommendation, particularly given that the majority of acamprosate trials did not include heavy drinking measures as an outcome.

b. Specific clinical populations

AUD patients often present for treatment with multiple comorbidities. We briefly address the evidence relating to alcohol pharmacotherapies in comorbid clinical populations below. However, more details on management approaches for AUD and comorbid physical disorders can be found in Chapter 22 and comorbid mental disorders can be found in Chapter 21.

Regarding physical comorbidities, as documented in earlier sections of this chapter, for patients with liver failure, acute hepatitis or renal impairment, treatment with naltrexone or disulfiram is not recommended. Acamprosate is also not recommended for patients with severe hepatic failure (Childs Pugh C) or renal impairment. For patients with cardio-vascular disease and pulmonary disease, disulfiram is not recommended. Pharmacotherapy trials specifically targeting patients with alcoholic liver disease have found baclofen to be safe on the liver and effective in reducing abstinence (K. C. Morley et al., 2018), however, as documented above, baclofen should be prescribed with caution given risk of overdose (Jamshidi et al., 2019).

There are no established treatments for reducing alcohol consumption in co-occurring AUD and mental disorders. Relatively few high quality RCTs evaluating naltrexone, acamprosate and disulfiram have directly examined the efficacy and safety of these pharmacotherapies to reduce alcohol consumption in the context

of comorbid mental illness and the evidence-case is inconclusive. Several trials of naltrexone and acamprosate have included AUD patients with comorbid depression and anxiety (including PTSD), and these medications appears to safe (Krystal et al., 2008; K. C. Morley, Baillie, et al., 2016; K.C. Morley et al., 2006; I. Petrakis et al., 2007; I. L. Petrakis, Poling, et al., 2006), although efficacy in these populations is unclear. Secondary analyses have reported that treatment response to naltrexone was predicted by depression at baseline, although the direction of this association is still unclear as it has been reported that both low and high levels of depression at baseline predict a beneficial treatment outcome (Kiefer et al., 2005; K. C. Morley et al., 2010). In AUD patients with psychosis, there is a limited evidence base, but one meta-analysis concluded that use of naltrexone is safe and potentially effective in reducing alcohol consumption (Sawicka & Tracy, 2017). Direct trials in comorbid populations have reported that acamprosate was safe in AUD and comorbid bipolar (Tolliver, Desantis, Brown, Prisciandaro, & Brady, 2012), anxiety and depression. Disulfiram treatment has been reported to be safe in patients with depression (I. Petrakis et al., 2007) but for patients with personal or familial risk of psychosis, use may be cautioned following several case studies reporting disulfiram-induced psychosis (de Melo, Lopes, & Alves, 2014; Mohapatra & Rath, 2017). Careful monitoring is required for emerging psychotic symptoms in vulnerable patients.

With regards to comorbid substance use disorders, for opioid dependent individuals naltrexone is contraindicated (see above). Among smokers, naltrexone has been found to be more effective in lowering alcohol consumption (Anton et al., 2018; Fucito et al., 2012), although results were modest and non-smokers and smokers differed at baseline in drinking severity.

Conclusion

The majority of studies that have examined predictors of treatment response have been retrospective analyses. There is still little scientific consensus with which to direct a personalised approach with confidence. Clinical decision making can nonetheless still be guided by several factors (depicted in Table 1).

These include i) individual patient factors: such as side effects, prior experience, treatment goals, capacity to adhere to treatment regime, concomitant physical and medical conditions and ii) resource factors: social supports and the cost of some medications will be prohibitive for some patients.

Summary

There is evidence of effectiveness for naltrexone (50 mg/d), acamprosate and disulfiram in reducing alcohol consumption in patients with AUD. Evidence is stronger for naltrexone and acamprosate, but disulfiram remains an option for some patients. Trials comparing the acamprsoate and naltrexone have not established a difference in outcomes between them. Promising off-medications such as topiramate and baclofen exist but are not yet recommended as front-line options. Pharmacotherapy should be considered for all moderate to severe AUD patients following management of withdrawal and best used in association with psychosocial support or structured medical management as part of an after-care treatment plan.

Table 1. Currently available first-line medications for managing relapse prevention in AUD

Medication	**Costs**	**Indication(s)**	**Contra-indication(s) and/or precautions**
Naltrexone	PBS funded ~$40,- / month	• Patients with moderate-severe AUD • Possibly more effective in reducing heavy drinking	• Use of opioids (precipitated withdrawal) • Liver failure/ hepatitis (hepatotoxicity) • Liver function test (ALAT) 3-5 times above the normal limit • Pregnancy/ lactation • Renal impairment
Acamprosate	PBS funded ~$40,- / month	• Patients with moderate-severe AUD • Possibly more effective for abstinence • Capacity to adhere to	• Pregnancy/ lactation • Renal impairment • Severe liver failure (Childs Pugh classification C).

		medication regime	
Disulfiram	Not PBS funded ~$80-90,- / month	• Patients with moderate-severe AUD • Patients with goal of abstinence (disulfiram-ethanol reaction) • Willingness to be supervised in the daily dosing of medication (e.g. family, pharmacy)	• Cardio-vascular disease • Pulmonary disease • Liver failure/ hepatitis (hepatotoxicity) • Renal impairment • Psychosis (monitor psychotic symptoms in patients with risk of psychosis)

Reference

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CHAPTER 11

PEER SUPPORT PROGRAMS: A REVIEW OF THE EVIDENCE

Chapter 11. Peer support programs: A review of the evidence

This chapter discusses the role of peer support for both patients and families experiencing alcohol problems. Specifically, it examines the evidence in relation to Alcoholics Anonymous (AA), Self-Management and Recovery Training (SMART) Recovery®, and online peer support groups. It should be noted that most of the evidence for the effectiveness of peer support programs is generated outside Australia. However, throughout this chapter, Australian evidence is highlighted where it is available.

Peer support involves the sharing of experiences, knowledge, support, and practical help among people with a lived experience of similar issues or circumstances. It has a long history as part of treatment and recovery[9] approaches for people experiencing problems with alcohol, and is critically important as people experiencing alcohol use disorders often experience disconnection from their family, the community and other sources of social support. Social isolation can have negative impacts on wellbeing, reducing opportunities for engaging in meaningful activity and support in maintaining behaviour change. Without social contacts that are supportive of change, people may find that they continue to engage in social groups and hold onto identities that revolve around drinking alcohol, which may increase the chances of relapse and further marginalisation (David Best, Beckwith, et al., 2016). Indeed, it has been proposed that 'recovery' involves "moving away from the using social network and actively engaging with an alternative social network that includes other people in recovery", who provide support for recovery, model recovery norms (such as abstinence) and exert social control (Best et al., 2016, p. 115). With depleted levels of recovery capital – the strengths and resources that people can draw upon to initiate and maintain recovery (Cloud & Granfield, 2008) - marginalisation and social isolation can also exclude people from opportunities for work, education, volunteering and other activities that contribute to society. In this context, peer support groups can provide alternate sources of support, identity and recovery capital for people trying to change the role and impact of alcohol in their lives (David Best, Beckwith, et al., 2016; Buckingham, Frings, & Albery, 2013; Frings, Collins, Long, Pinto, & Albery, 2016).

The oldest and most widely used peer support program is AA, which was founded in the United States in 1935 and has since grown to encompass over 125,000 groups worldwide, with approximately 2.1 million members in over 180 countries (Alcoholics Anonymous 2016). AA was the first 12-step program in which recovery is guided by a set of principles that emphasises abstinence, powerlessness over addiction, and the need to relinquish control to a higher power. Models of Twelve Step Facilitation (TSF)

[9] Recovery has been defined as 'voluntarily sustained control over substance use, which maximises health and wellbeing and participation in the rights, roles and responsibilities of society' (Best & Lubman, The recovery paradigm: A model of hope and change for alcohol and drug addiction. Australian Family Physician: 2012 41: 593-597).

have been developed alongside the growth in AA, typically involving clinicians and/or AA group members actively encouraging patients to attend AA. More recently, alternatives to 12-step programs have emerged that vary the key principles of AA, often placing less emphasis on spirituality and complete abstinence, and greater focus on personal responsibility and self-reliance. One of the most popular non-12-step programs is SMART Recovery®, which was founded in 1994 and now offers meetings in 23 countries, including Australia. Both 12-step and non-12 step programs are widely available online, and can address barriers that may prevent attendance at face-to-face meetings, including inaccessibility as well as concerns about stigma or embarrassment.

Alcoholic Anonymous (AA)

What is AA?

AA is a free and widely available abstinence-oriented peer-to-peer support organisation for people with alcohol problems. AA aims to improve well-being, interpersonal connectedness, coping skills, and the transition to a life without alcohol (John Francis Kelly, Magill, & Stout, 2009). In Australia, there are an estimated 20,000 members of AA and about 1,800 groups (https://aa.org.au/members/helpful-links/membership).

AA is founded on the assumption that shared experience and mutual support are necessary for recovery from addiction (Alcoholics Anonymous 2001), and that sobriety is only possible after first acknowledging one's inability to control one's drinking, committing to a comprehensive overhaul of one's identity and lifestyle, and assisting new members in their recovery process (Alcoholics Anonymous 2001). AA is the prototype for many self-help groups, with its core program based on the 12-steps (see Table 8.1) and AA's original main text ('the Big Book', 1939). The 12-steps are a set of principles that guide a course of action considered necessary for recovery. The 12-steps promote increased self-awareness and a heightened sense of meaning in life, based on the recovery success of its early members.

AA peer support is delivered in the form of group meetings held in the community (e.g., rented accommodation, churches, community centres, colleges) as well as in treatment services (e.g., hospitals and addiction treatment services). Groups typically run for around 60-90 minutes, during which members share personal stories of their struggles with alcohol and recovery journeys, and support each other in applying the principles underpinning the 12-step program. Meetings are initiated by a chairperson (themselves in recovery), and newcomers (first-timers) are welcomed and encouraged to introduce themselves to the group. Members are supported by a sponsor (an existing member who has been abstinent for a long period).

Whilst it has previously been difficult to study AA because of the lack of standardisation in the way meetings are run, and its anonymity and confidentiality, there have been increasingly rigorous examinations of the effectiveness of AA using high quality experimental designs over the past decade. These studies have helped elucidate the various mechanisms through which AA benefits individuals with alcohol use disorders.

Table 8.1: The 12 steps of Alcoholics Anonymous

1. We admitted we were powerless over alcohol - that our lives had become unmanageable.
2. Came to believe that a Power greater than ourselves could restore us to sanity.
3. Made a decision to turn our will and our lives over to the care of God as we understood Him.
4. Made a searching and fearless moral inventory of ourselves.
5. Admitted to God, to ourselves and to another human being the exact nature of our wrongs.
6. Were entirely ready to have God remove all these defects of character.
7. Humbly asked Him to remove our shortcomings.
8. Made a list of all persons we had harmed, and became willing to make amends to them all.
9. Made direct amends to such people wherever possible, except when to do so would injure them or others.
10. Continued to take personal inventory and when we were wrong promptly admitted it.
11. Sought through prayer and meditation to improve our conscious contact with God as we understood Him, praying only for knowledge of His will for us and the power to carry that out.
12. Having had a spiritual awakening as the result of these steps, we tried to carry this message to alcoholics and to practice these principles in all our affairs.

Evidence for the effectiveness of AA

There have been two Cochrane reviews of the effectiveness of AA. However, both examined the evidence of effectiveness of AA participation together with the evidence for TSF. Whilst AA participation is about attending meetings and actively engaging in peer support, TSF is designed to work synergistically with AA and other forms of 12-step programs (Humphreys, 1999). It adopts many of the principles and techniques of AA, and incorporates brief interventions that aim to link people to 12-step groups, with encouragement to maintain a journal. In some studies, TSF includes reading the 'Big Book', the basic text underpinning AA which documents how people recover, other AA/NA literature and accepting the identity of an 'alcoholic'. TSF has additional active ingredients, such as the support of a peer and health professional who encourage attendance, which is likely to increase motivation/commitment to AA. People who attend AA without TSF may not have a supportive health professional or may not have sought help for treatment before, so might be a different population group. As such, care needs to be taken in interpreting the findings of the two Cochrane reviews.

The first Cochrane review (Ferri, Amato, & Davoli, 2006) concluded that there were too few experimental studies to demonstrate the effectiveness of AA/TSF, and that most had methodological limitations, such as self-selection and a heavy focus on attendance rather than outcomes. However, in recent years more sophisticated studies have emerged, including randomized controlled trials (RCTs) and quasi-randomised controlled trials examining AA/TSF attendance and drinking outcomes. Accordingly, a second Cochrane review was undertaken in 2019, which pooled the effect sizes of 26 studies (*n*=10,080 participants) evaluating the impact of AA/TSF on drinking outcomes (John F Kelly, Humphreys, & Ferri, 2019). These included both

abstinence-related outcomes and non-abstinence-related outcomes (e.g., drinking intensity; alcohol-related consequences). Length of follow-up ranged from immediately post-treatment to five years post-treatment. Most studies were conducted in the Unites States, with one from the United Kingdom (Victoria Manning et al., 2012) and one from Norway (Vederhus, Timko, Kristensen, Hjemdahl, & Clausen, 2014). While the quality of evidence was variable overall, most was provided by methodologically high-quality studies. In total, 20 of the 26 studies included were RCTs/quasi-RCTs (John F Kelly et al., 2019).

The review concluded that AA/TSF interventions were superior in promoting continuous abstinence compared to comparison treatments, such as cognitive and behavioural therapy (CBT). The magnitude of this difference was often large; for example, an evaluation of Project MATCH (1997), a large multisite US clinical trial of TSF, CBT and motivational enhancement therapy (MET), found 24% of participants in the TSF condition were continuously abstinent for 12 months, while rates in the CBT and MET groups were substantially lower, at 15% and 14% respectively. AA/TSF was also found to be as effective as other interventions in relation to non-abstinence-related outcomes Moreover, when there was a difference between conditions, this typically favoured AA/TSF; for example, out of eight studies that examined alcohol-related consequences, five found AA/TSF performed as well as other treatments (Humphreys & Moos, 1996; Mark D Litt, Kadden, Kabela-Cormier, & Petry, 2007; Kimberly S Walitzer, Deffenbacher, & Shyhalla, 2015; Kimberly S. Walitzer, Dermen, & Barrick, 2009; Zemore, Lui, Mericle, Hemberg, & Kaskutas, 2018), and the remaining three found AA/TSF was associated with better outcomes (Group, 1997; John F Kelly et al., 2017; Mark D Litt, Kadden, Tennen, & Kabela-Cormier, 2016).

Another review evaluated research on the effectiveness of AA in relation to abstinence outcomes according to six criteria for establishing causation: (1) magnitude of effect; (2) dose response effect; (3) consistent effect; (4) temporally accurate effects; (5) specific effects; (6) plausibility (Mausner & Bahn, 1974). The review aimed to present representative studies that evaluated AA effectiveness according to these criteria, rather than conducting an exhaustive review of the literature. The evidence for criteria 1, 2, 3, 4 and 6 was found to be very strong, however experimental evidence establishing the specificity of an effect for AA (i.e., that abstinence is a direct result of AA attendance rather than some other cause; criteria 5) was somewhat more mixed (Kaskutas, 2009).

To date, there has been limited research (and no randomised controlled trials) examining the effectiveness of AA within Australia. One large study examining patient outcomes following alcohol and other drug treatment found that for participants with alcohol as their primary drug of concern, attending mutual aid (mostly AA) increased the odds of achieving a successful treatment outcome by 2.5. In addition, the rates of treatment success (abstinence or a reliable reduction in alcohol use) increased with the frequency of attendance at mutual aid meetings (Victoria Manning et al., 2017).

Longitudinal studies have typically measured outcomes within a 12-month follow-up period, although there is also evidence to support the effectiveness of AA/TSF over a longer time-frame (e.g., 2-3 years; (Group, 1998; Mark D. Litt, Kadden, Kabela-

Cormier, & Petry, 2009; Mark D Litt et al., 2016). Of note, a 16-year longitudinal study, Moos and Moos (2006a; see also Moos and Moos, 2005 and 2006b) showed that both professional treatment and AA affiliation in the first year of recovery were associated with better 16 year abstinence rates, compared to no treatment, but that improvements gained by professional treatment were mediated by AA attendance. Furthermore, continued involvement in AA (years 2-8) was associated with a higher likelihood of remission at each follow up point.

It is important to note that while studies examining the effectiveness of AA have typically examined the outcomes of attendance following or alongside specialist or formal treatment, they have often matched groups or statistically controlled for the effects of formal treatment (e.g., (Mark D Litt et al., 2016; Zemore et al., 2018). These studies suggest that AA/TSF can be effective as a stand-alone approach as well as when combined with formal alcohol use disorder treatment.

How it works

Whilst acknowledging that the majority of research examining the mechanisms of AA is based on US samples (which may differ from Australian samples), a recent review suggests AA works as a result of social, cognitive and affective mechanisms (John F Kelly, 2017). AA facilitates changes in the composition of an individual's social network, specifically by increasing the number of pro-abstinence peers supportive of recovery. Research has indicated that the addition of at least one non-drinking member to an individual's social network increases the likelihood of treatment success at 12-months by 27% (Mark D Litt et al., 2007). By providing a new social network supportive of abstinence, individuals are able to practice and maintain sobriety in social situations previously associated with drinking alcohol. AA is now more commonly thought to facilitate recovery by mobilizing adaptive changes in the social networks of individuals (John F Kelly, Stout, Magill, & Tonigan, 2011). In terms of cognitive mechanisms, AA is thought to increase self-efficacy, improve coping skills, motivation, and perceptions of self-efficacy (John Francis Kelly et al., 2009). AA also appears to improve members' ability to cope with negative emotions without drinking (John F Kelly, 2017). Whilst some research suggests a positive correlation between meeting attendance and improved outcomes (Kaskutas, 2009), other research suggests that the degree to which people get involved in AA is more important (Montgomery et al., 1995). Involvement can include progression through the steps, AA affiliation, reading literature, considering oneself a member, and doing service as well as sponsorship.

Recommendation	**Grade of recommendation**
11.1 Participation in AA is an effective strategy for maintaining abstinence from alcohol (and improving other alcohol-related outcomes), as a standalone or adjunctive approach to formal treatment.	A

For whom is AA appropriate?

There are no restrictions on who can attend AA: based on the 12 traditions adopted by AA's organisational body, the only requirement for membership is a desire to stop drinking. AA members are diverse in regard to their religion, ethnicity, age, gender, sexual identification, and other characteristics (Anonymous, 2015; Borden, 2014).

A common misconception is that members need to be religious to benefit from the program. It is important to note that the concept of God or a 'higher power' in the 12-steps refers to anything of a transpersonal nature that can be drawn on for strength, including the AA group itself (Browne, 1994). Research suggests that positive outcomes can be achieved following AA irrespective of religion or spiritual belief systems (John Francis Kelly et al., 2009; Winzelberg & Humphreys, 1999). Earlier research with individuals attending inpatient detoxification services has shown that the 12-steps themselves can be a barrier to attending, but that the steps can be interpreted as those relating to personal responsibility (which encourage acceptance, self-examination and reparation; steps 1, 4, 8, 9, 10 and 12) and higher power (spirituality; steps 2, 3, 5, 6, 7 and 11) (DW Best et al., 2001). Indeed research suggests quasi-religious/spiritual means ('spiritual awakening') is the primary mechanism underlying AA's effectiveness for a minority of participants with high addiction severity (John F Kelly, 2017). As such, clinicians should highlight the spiritual components to the 12-step program, emphasizing that a belief in 'God' is not a requirement despite references to 'God' and a 'higher power' in several of the steps. This may be particularly important for people from non-monotheistic faiths and atheists. Nevertheless, it is important to acknowledge that the principles inherent to AA may not always align with people's goals, desires, and beliefs (Elms et al., 2018). For example, some people may object to the idea of admitting powerlessness over their drinking, as this contrasts with perspectives on recovery that emphasize self-empowerment or self-efficacy.

Another common misperception, and potential barrier to attending, is that members of AA must not be using any psychoactive substances, including prescribed medications for mental health disorders. In contrast, the official position of the AA program is that it is wrong to deprive anyone from medication that alleviates or controls other disabling physical and/or emotional problems. This means that individuals with alcohol and comorbid mental health issues are able to attend, and it has been shown that AA is effective for patients with alcohol use disorders and co-occurring mental health issues. A recent systematic review found that for these patients, AA attendance was associated with higher rates of alcohol abstinence (Tonigan, Pearson, Magill, & Hagler, 2018).

In recognising that people with co-occurring mental health problems can feel stigmatised when attending mutual aid groups (e.g., when discussing psychiatric symptoms or medications) (Jordan, Davidson, Herman, & BootsMiller, 2002; Matusow & Rosenblum, 2013), specialised mutual aid groups were set up for people with co-occurring disorders in the US called 'Double Trouble in Recovery' (DTR or Double Trouble). A narrative review of the literature on Double Trouble concluded that it helps increase rates of abstinence and adherence to medication, self-efficacy for recovery and improves quality of life (Magura, 2008). Rosenblum and colleagues (2014) were the first (and to date, only study) to publish a randomised controlled trial (RCT) testing the efficacy of DTR. They found that, at 6-month follow-up, DRT

participants used alcohol (p = .03) and drugs (p = .02) on significantly fewer days, and were more likely to rate themselves as experiencing better mental health (p = .001) compared to matched waitlist controls. There was no improvement in medication adherence. More empirical research is necessary to fully determine the effectiveness of DTR, however it is currently not available in Australia.

Referring to AA

People can engage in AA through a number of pathways (including self-referral, referral by clinicians, as well as via meetings held within the criminal justice system), however the extent to which clinicians refer is highly variable. Researchers have shown that the extent to which a treatment-seeker participates in AA is influenced by how intensively they are referred by professionals (Timko, DeBenedetti, & Billow, 2006; Timko, Sutkowi, Cronkite, Makin-Byrd, & Moos, 2011). Research from the UK has demonstrated that even clinicians working in the addiction field are often ambivalent towards mutual aid, with one study showing that less than half would refer patients to mutual aid groups (Day, Gaston, Furlong, Murali, & Copello, 2005), and another that negative clinician attitudes towards mutual aid can influence patient attitudes, engagement, and attendance (Gaston et al., 2010). In Australia, low knowledge of AA and barriers to referring patients to AA were also identified among clinicians working in the addiction field, despite broadly positive attitudes (David Best, Savic, Mugavin, Manning, & Lubman, 2016). However, among the same sample, mutual aid awareness training led to short-term improvement in attitudes to mutual aid (and 12-step specifically) and a greater openness to referring patients, with a modest increase in actual referrals reported at 1-month follow-up (David Best, Savic, et al., 2016). Improving attitudes among clinicians is important as research suggests that clinicians can play a pivotal role in assertively linking patients to AA.

A common method used by clinicians is Twelve-Step Facilitation (TSF) therapy, which aims to deepen their patients' commitment to the use of AA as part of an extended care plan, resulting in improved abstinence rates, more active involvement and greater treatment retention (Bogenschutz et al., 2014; Mark D. Litt et al., 2009; Nowinski, Baker, & Carroll, 1995; Timko & DeBenedetti, 2007; Timko et al., 2006; Kimberly S. Walitzer et al., 2009). The clinician works through the core features of the AA ideology (e.g., acceptance of the inability to control the drinking) with the patient over multiple sessions. If adopted as part of an extended care plan following inpatient treatment, TSF and AA attendance can assist in helping the patient through the initial 3 month 'danger period'. Intensive referral practices can also be used as a means of removing barriers to aftercare participation, reducing the likelihood of treatment dropout, and increasing the level of AA involvement. Common strategies for promoting the uptake of AA include the provision of meeting schedules, public transport timetables, organising for AA volunteers to accompany the patient to their first meeting, use of a 'meeting journal,' which is signed off by the AA meeting convener to record attendance, and organising for temporary sponsors. As each AA group is different in terms of its overall atmosphere, it is also recommended that clinicians attend several meetings across different groups to assist in matching the patient to a suitable situation (Passetti & Godley, 2008; Ries, Galanter, & Tonigan, 2008).

As noted by Kelly and colleagues (2019), there is now sufficient evidence to conclude that AA/TSF interventions can be effective in the promotion of both abstinence and non-abstinence-related outcomes. Indeed, of the 26 studies included in their review, 19 evaluated TSF interventions, including 17 RCTs/quasi-RCTs. The impacts of TSF interventions, which are relatively brief, are thought to be due primarily to their ability to connect individuals to long-term AA participation. This conclusion has been supported by research demonstrating that the effect of TSF on alcohol outcomes is mediated by AA attendance (Mark D. Litt et al., 2009). The results of the Cochrane review also suggest that there may be advantages associated with more intensive TSF procedures compared to less intensive TSF procedures, but no improvement in abstinence outcomes by integrating other interventions or therapies with TSF.

A number of RCTs or quasi-RCTs have examined the effectiveness of TSF in different settings or delivered by different people in different roles. Brief assertive referral intervention delivered by a peer in recovery (in addition to referral from a doctor) has been found to increase both attendance and 6-month abstinence rates among patients admitted to a general hospital for alcohol-related injuries (Blondell et al., 2001). Volunteer peer counseling during hospitalisation for the management AOD withdrawal has also been found to result in significantly higher rates of self-help group meeting attendance and abstinence 7-10 days post-discharge (Blondell, Behrens, Smith, Greene, & Servoss, 2008).

In a later study, Blondell and colleagues (2011) compared treatment as usual, MET, and a peer-delivered TSF intervention in a sample of 150 patients undergoing detoxification. At one-month follow-up, no differences in the uptake of self-help or drinking-related outcomes were found between groups, but MET led to higher uptake and completion of subsequent treatment. Following this, in the UK, Manning and colleagues (2012) demonstrated that assertive referral delivered by a peer led to increased attendance at AA/NA post-inpatient withdrawal, relative to a doctor-delivered referral intervention and no-intervention control. However, rates of abstinence from alcohol and other drugs did not differ between groups (i.e., assertive referral by a peer, doctor-delivered referral, and no-intervention control) at 3-month follow-up.

Timko and colleagues (2006) randomly assigned 345 outpatients with substance use disorders to a standard referral where counselors provided participants with an AA/NA schedule and were encouraged to attend, or intensive referral (standard plus linking them to a peer in recovery, agreeing on a meeting for them to attend, providing sponsor information, and following up with patients in future sessions). Those in the intensive referral condition had greater involvement with 12-Step groups during the 6-month follow-up and better alcohol and drug use outcomes. In Norway, Verdehus and colleagues (2014) compared motivational intervention (MI) focused on increasing involvement in 12-Step groups versus brief advice to attend groups in an inpatient withdrawal sample, and found that the MI intervention led to significantly higher 12-step affiliation (involvement and attendance), significantly fewer days of alcohol and other drug use, but not rates of abstinence 6-months post-discharge.

Timko and colleagues (2011) found that the intensive referral intervention increased

participation in both dual-focussed mutual health groups (for patients with substance use and psychiatric disorders) and substance-focussed groups, and was associated with better six-month outcomes (less drug use and better psychiatric outcomes). In a study of veterans with substance use disorders, Grant and colleagues (2018) found that groups receiving standard and rural-adaptive intensive referral both reported significant improvement in participation, substance use, addiction severity, and posttraumatic stress symptoms at 6-months, but there were no significant differences between groups. This study compared two active referral conditions with no control group.

Given the evidence in support of TSF, services should encourage clinicians to refer patients to peer support groups both during and after treatment. In addition, they should engage peer workers in supporting assertive linkage wherever possible. It is advisable to search online for group schedules for specific types of peer support groups (e.g. www.aa.org.au). A useful resource currently only available in Victoria, is DirectLine's Peer Support Finder (https://www.directline.org.au/peer-support/search), which enables clinicians, family members, and service users to search for local/suitable peer support groups based on preferences (e.g., tailored groups, location, meeting format). In 2019, there were more than 700 peer support/mutual aid groups held weekly in Victoria.

Recommendation	**Grade of recommendation**
11.2 Assertive referral practices can increase rates of AA attendance and improve alcohol-related outcomes, including abstinence.	A

SMART Recovery®

An alternative to the AA approach is Self Management and Recovery Training (SMART Recovery®), a not-for-profit mutual-aid group aimed at facilitating recovery from any addictive behaviour. SMART Recovery® Australia is committed to the philosophy and practice of harm minimisation, recognizing that individuals seeking to change their behaviour are likely to have greater success when they set realistic and achievable goals. This can include adopting and maintaining behaviours that reduce the likelihood or impact of harm arising from alcohol. In practice, this means that members of SMART Recovery® Australia may not set out with the goal of achieving abstinence, but may focus instead on reducing their alcohol consumption and/or minimising negative outcomes that arise from drinking.

SMART Recovery® (originally the non-profit Rational Recovery Self-Help Network) officially began in the US in 1994 and has since been adapted from the original program. There are now over 3000 SMART Recovery® meetings held over 23 countries (www.smartrecovery.org/), with over 245 groups operating across Australia (www.smartrecoveryaustralia.com.au/). SMART Recovery® draws on Cognitive

Behavioural Therapy (CBT) and Motivational Interviewing (MI) frameworks. Unlike the 12-step approach of AA, SMART Recovery® does not focus on spirituality or a 'higher power' and is not substance-specific (Li, Feifer, & Strohm, 2000). Instead, it aims to tackle addiction through using a four-point recovery program designed to enhance members' motivation and teach techniques that help to manage lifestyle and behavioural difficulties (Horvath, 2000) (see also www.smartrecovery.org/intro/index.htm). Skills training includes exposure to cost–benefit analyses, identifying and rectifying irrational thoughts, and role-playing. SMART Recovery® meetings are facilitated by trained peers and professionals. During meetings, which last for about 90 minutes, participants set goals and develop plans and strategies for achieving these. It is important to note that the SMART Recovery® program may involve shorter-term participation relative to AA, which emphasizes lifelong commitment (Beck et al., 2017). This difference may influence the availability and impact of ongoing supportive social networks.

Although SMART Recovery® is based on an empirically supported theoretical framework, few studies have assessed its efficacy. A recent systematic review (Beck et al., 2017) identified a small number of studies that looked at various aspects of SMART Recovery, highly variable in methodological quality, with only one receiving a high-quality rating and considered at low risk of bias (Hester, Lenberg, Campbell, & Delaney, 2013). This study is the only randomized controlled trial that has investigated the effectiveness of the SMART Recovery® program to date, and compared the effectiveness of 'overcoming addictions' (a web-delivered SMART Recovery® program) to face-to-face SMART Recovery®. The authors found participants in both groups significantly increased their percentage of days abstinent, and that those participants who were not abstinent significantly decreased their average drinks per day.

Evidence for the effectiveness of SMART Recovery® has also been provided by a study comparing alcohol recovery outcomes across different mutual aid groups (SMART Recovery®, Women for Sobriety and LifeRing), which found that mutual help group involvement offered equivalent benefits to 12-step groups (Zemore et al., 2018). Among people experiencing co-occuring substance use and mental health issues, both SMART Recovery® and 12-step participation have been associated with decreases in alcohol use and improvements in life satisfaction, although the magnitude of change was greater in the 12-step group (Brooks & Penn, 2003). Beck and colleagues (2017) identified several additional studies comparing SMART Recovery® to other forms of mutual aid (most commonly AA), however these were largely unpublished dissertations. Consequently, they concluded that while there is some evidence for positive effects, more research is required before conclusions can be made regarding efficacy. No Australian trials of SMART Recovery® have been conducted to date.

SMART Recovery® may be an effective peer-support alternative to Alcoholics Anonymous for reducing alcohol consumption.

Recommendation	Grade of recommendation
11.3 SMART Recovery® may be an effective peer support alternative to AA for reducing alcohol consumption.	C

Other Forms of Peer Support

People in treatment for alcohol use disorders may be able to access other (less established) forms of peer support. This can include support from peer workers, who are people with lived experience, employed by alcohol and other drug services to deliver support to others. This typically entails the provision of non-clinical assistance, drawing on personal experiences to promote understanding and foster connection, but can also include education, information and referrals.

There are a small number of peer support groups operating independently of treatment services in Australia that are not affiliated with established 12-step or other mutual aid groups (e.g., SMART Recovery). While some evaluations of these support groups have been conducted, they have typically focused on participants' satisfaction and perception of benefits, rather than their impact on alcohol-related outcomes. For example, in Victoria, peer support groups are offered by the Self-Help Addiction Resource Centre (SHARC), established as part of a Peer Support Capacity Building Project in metro and regional Victoria. An evaluation of the program found that the vast majority (93%) felt that attending the group was beneficial, agreeing that the groups made them feel less isolated/alone, more aware of resources/services available, more hopeful, and gave them a sense of purpose (VC Manning, Savic, & Thorn, 2016).

Independent peer support is also emerging in the online environment through forums, Facebook groups, or other social media platforms where support can be delivered by a person (or people) with lived experience of alcohol or drug problems. Counselling Online is Australia's national online counselling service for people concerned about their own or a loved one's alcohol or drug use, and operates an online peer support community (https://forum.counsellingonline.org.au/index.php). Although there have been few evaluations of online non-12 step or SMART peer support for alcohol use disorders, some studies have highlighted the potential accessibility and usefulness of these (Ashford, Bergman, Kelly, & Curtis, 2019; Bliuc, Best, Iqbal, & Upton, 2017; Chambers, Canvin, Baldwin, & Sinclair, 2017; Sinclair, E. Chambers, & C. Manson, 2016).

Hello Sunday Morning (https://www.hellosundaymorning.org) is an online community that aims to help people change their drinking habits. It allows members to set ongoing goals, post blogs, and share photographs, as well as running offline events (e.g., Sunday morning dance parties). Research suggests that members tend to be female, younger (i.e., <40 years of age), and risky drinkers (Carah, Meurk, & Hall, 2015). While there has been no rigorous studies examining its effectiveness, users report improvements in physical health and self-perception as well as reductions in alcohol consumption (Pennay, Rankin, & MacLean, 2015), and there is preliminary evidence that participation in the Hello Sunday Morning's blog platform is associated with reductions

in alcohol consumption, particularly among heavier drinkers (Kirkman, Leo, & Moore, 2018).

As well as interactive online peer support groups, apps and websites where alcohol problems are discussed may also be useful (Graham, Irving, Cano, & Edwards, 2018; Quanbeck, Chih, Isham, Johnson, & Gustafson, 2014; Savic, Best, Rodda, & Lubman, 2013). One Australian example is the Lives Of Substance website (https://www.livesofsubstance.org), which is a repository of life stories of 60 people of various ages, backgrounds, and alcohol and drug issues living in cities and regional areas of Victoria and New South Wales. Evaluation findings suggest that this website may be a useful resource for addressing stigma and providing holistic understandings of addiction (Treloar, Pienaar, Dilkes-Frayne, & Fraser, 2019).

Independent forms of peer support available (i.e., those not affiliated with 12-step/SMART) such as peer workers, online forums and communities should be explored as they may help patients reduce their alcohol use.

Recommendation	**Grade of recommendation**
11.4 Non-12-step/SMART online peer support may help patients reduce their alcohol consumption.	GPP

Self-Help for Families and Significant Others

It is estimated that alcohol costs Australian society $36 billion per annum if harm to others is included (Laslett et al., 2010), with almost three-quarters of all adults in Australia negatively affected by another person's drinking. It is therefore unsurprising that demand for help and support among affected others has increased in recent years. While family members can attend some alcohol treatment services to access support in their own right (e.g., for coping skills, stress management, and linkage to referral and resources), support for this population has been almost exclusively delivered through self-help/mutual aid.

The most well-established and widely available form of peer support for family members is Al-Anon, which is a mutual-aid recovery program adapted from Alcoholics Anonymous and based on the 12 steps. It focuses on helping friends and family members develop their coping skills, manage emotional distress and recover from the impact of living with someone whose drinking is a problem through a group therapy program. The group encourages members to recognise the potential to become co-dependent in that they can become consumed by the need to control the other person's alcohol use and related consequences. Emphasis is placed on attributing alcohol problems to the 'disease' rather than themselves, and accepting they have been adversely affected (Timko, Young, & Moos, 2012). Al-Anon is available Australia-wide, and is located in more than 115 countries internationally. While there has been limited research into the effectiveness of Al-Anon, a US study found that ongoing attendance

can enhance problem-solving skills, increase wellbeing and functioning, and improve relationships with affected family members (Timko, Laudet, & Moos, 2016).

BeSMART, a relatively new group run by SMART recovery, is an eight-week long family support program designed to help people affected by the addictive behaviours of someone close to them by increasing self-care and adopting helpful strategies for managing difficult and stressful circumstances, and promoting healthier relationships with the person using alcohol or drugs. Specifically, the program includes a focus on motivation to change, self-care and self-rewards, assertive communication, safety and support, problem solving and coping with lapses. As well as face-to-face meetings, meetings are held online, which could be beneficial for families living in regional and remote areas. There are currently no studies evaluating the effectiveness of BeSMART.

Other independent forms of family support groups exist, such as Family Drug Help, run by Self Help Addiction Resource Centre (SHARC) https://www.sharc.org.au/family-drug-help/. Family Drug Support Australia offers family drug support online (see https://www.fds.org.au/)These groups run in NSW, QLD, SA, and VIC and are generally facilitated by trained volunteers and supported by group coordinators. Their role is to help foster a group interaction that encourages group members to support one another by sharing their experiences and helpful techniques (Mackenzie, Best, Savic, & Hunter, 2015). A mixed-methods evaluation of such groups found them to be useful, although the study was relatively small and focused on one state (Mackenzie et al., 2015).

People affected by someone else's drinking may benefit from attending 12-step, SMART or other groups specifically for family members/affected others.

Recommendation	**Grade of recommendation**
11.5 Peer support groups for families may improve outcomes for family members/ significant others	GPP

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CHAPTER 12

YOUNG ADULTS: A REVIEW OF THE EVIDENCE

Chapter 12. Young adults: A review of the evidence

This chapter reviews the literature management of alcohol problems in adolescents and youth.

Adolescents and Youth

Recommendation	Grade of recommendation
12.1 National Health and Medical Research Council (NHMRC) guidelines recommend to reduce the risk of injury and other harms to health, children and young people under 18 years of age should not drink alcohol.	**A**

The adolescent years are a period for experimentation and socialization with peers, which may include engaging in high-risk behaviours including risky alcohol and other substance use. Young people under the age of 18 years are at greater risk of harm from drinking than adults. They have lower alcohol tolerance thanadults, greater propensity for risky behaviour, and are at high risk of alcohol-related injury in this age group given the effect of alcohol on developingbrains. Neurodevelopment, especially in regions linked to regulation of behaviour and emotion, is not complete until well into adulthood. Regular, heavy alcohol or other drug use can inhibit adolescent development, especially impairing cognitive maturation and reducing educational achievement (Hermens et al., 2013). Excessive alcohol use in adolescence is also associated with a wide range of other co-existing problems, including difficulty with relationships (especially parents), poor school performance, low employment prospects and homelessness (Rehm, Shield, Joharchi, & Shuper, 2012; Viner & Taylor, 2007)

Associations between age of onset of alcohol consumption and alcohol problems in later adulthood continues to be explored. Longitudinal studies indicate that early alcohol use (defined as less than 18 years of age) increases the likelihood of heavy drinking and associated problems in young adulthood and later. The National Longitudinal Study of Adolescents' Health in the United States (Add Health), followed 2316 participants from 11 years of age to 29 years of age (wave 1 in 1994) (Liang & Chikritzhs, 2015). Logistic regression modelling adjusted for the following confounders - gender, race, household income, diploma or degree, and ever smoked tobacco. Age of onset of alcohol consumption in this study was mainly measured as consuming alcohol that was more than a sip without parents' knowledge. Heavy drinking was defined as five or more drinks per occasion. Younger age of onset of alcohol consumption (<18 years) was associated with higher risk of heavy alcohol at follow up at 18 years and 29 years of age. Age older than 21 years at onset of alcohol was associated with lower risk of heavy alcohol consumption at follow up at 18 years and 29 years of age. The authors noted that parental attitudes and behaviours can be important risk (or protective) factors. A systematic review of prospective cohort studies (Maimaris & McCambridge, 2014) explored age of first drink and later alcohol problems, not just heavy drinking, in studies from the general population. Studies

needed to include age at first drink, defined as more than a few sips, and the measurement of age at first drink needed to be separated by at least three years from adult alcohol outcomes. It was found that there were few eligible studies with only five fitting the inclusion criteria. Three reports were based on two American cohorts and there were two cohorts from Norway. Sample sizes varied between 450 and 1100. Alcohol problems were broadly defined and included heavy consumption (five or more drinks or ten or more episodes of intoxication), harmful use was defined as an Alcohol Use Disorders Identification Test (AUDIT) score greater than eight, or fulfillment of criteria in DSM-IV or ICD-10 for alcohol dependence. The review found that adult drinking and related problems were associated with a younger age of first drink but not strongly, particularly after confounding variables (recall bias, peer factors, school factors, behavioural factors, substance misuse) were taken into account. It is possible that the pattern of alcohol consumption in adolescence rather than the specific age of onset may be more important in influencing later alcohol problems. Findings from the Victorian Adolescent Health Cohort Study, a general population prospective cohort study over twenty years, found that frequent alcohol consumption in adolescence was associated with alcohol problems in young adulthood (OR 8.1, 95% CI 4.2, 16). (Bonomo, Bowes, Coffey, Carlin, & Patton, 2004). Subsequent waves of this cohort have shown that recurrent binge drinking during adolescence was also associated with at least double the risk of alcohol use disorder in the participants' twenties (Olsson et al., 2016). Notwithstanding the ongoing speculation regarding the mechanism by which age of onset of alcohol consumption impacts on later alcohol use disorders, delaying onset of alcohol consumption is considered safest for young people under the age of 18 years.

Recommendation	Grade of recommendation
12.2 Parental provision of alcohol is a risk factor for earlier onset of alcohol consumption, more frequent alcohol consumption and/or alcohol related problems	**A**

Identifying modifiable parenting approaches that are associated with earlier adolescent alcohol initiation, binge drinking, alcohol related harm, and the development of alcohol use disorders, should enable easier interventions and effective public health messaging. Yet there is considerable confusion regarding the efficacy of varying parenting methods to reduce alcohol related harms. Yap and colleagues (2017) performed a systematic review including 131 prospective studies grouping strategies in to twelve separate alcohol and general parenting factors. Of all these factors, the parental provision of alcohol was the single strongest predictor for both alcohol initiation (accounting for 4% of variance) and alcohol related misuse (accounting for 7% of variance). The authors commented that this research base is particularly consistent in cultures, including Australia, where binge drinking is generally tolerated. This conclusion was supported by a prospective cohort study (Mattick et al., 2018) which recruited almost 2000 adolescents aged 12 from Sydney, Perth and Hobart, and followed them for 5 years. They compared alcohol related outcomes between those who had no supply, parental supply of alcohol only, outside supply of alcohol only or

both. Compared to no supply, those who reported having parental supply only at baseline had an elevated odds ratio for binge drinking (OR 2.58 95% CI [1.96-3.41]) alcohol related harms (OR 2.53 95% CI [1.99-3.24]) and having ≥2 DSM-5 alcohol use disorder criteria (OR 2.51 95% CI [1.46-4.29]. Overall, the provision of alcohol to adolescents by their parents in the Australian context is associated with quantifiable increases in a range of alcohol related harms with no evidence of benefit or of reduction in outside supply.

Recommendation	Grade of recommendation
12.3 Screening and brief intervention for health risk behaviours (including alcohol and drug use) and mental health disorders may improve health outcomes of young people	**B**

Peak bodies recommend that a broad medical and psychosocial history that screens for health risk behaviours and mental health disorders is needed to work effectively with young people (American Academy of Paediatrics, 2008; Department of Health, 2011; RACGP, 2012).

A systematic review examining evidence for whether such screening actually translates into better health outcomes for young people suggests and number of measurable improvements, however, high quality evidence is still needed. (Webb, Kauer, Ozer, Haller, & Sanci, 2016). Criteria for inclusion in the review were that the studies needed to have occurred in the primary care setting, subjects screened were less than 25 years old, and the screening tool used needed to assess more than one health domain. Screening could be face-to-face, using paper and pen questionnaire sent to the home, or it could be computer-based screening completed while in the clinic waiting room. Interventions included behavioural counselling using Motivational Interviewing (MI) or other intervention, delivered by a nurse or other clinician, or computer assisted goal setting. A measure of health outcome, alcohol related or other was also required. The alcohol related outcomes included in the review were alcohol consumption, drink driving, and alcohol related violence.

Nine studies were included in the review. These included RCTs where clusters of general practices were randomized to the intervention. One longitudinal study was also included, which followed paediatric clinic patients using the 5A framework (Ask, Assess, Advise/Agree, Assist, Arrange). Limitations in the included studies were small sample sizes, sample bias (frequently self-selecting), high rates of dropout, potentially unreliable self-report measures and insufficient length of follow up. Notwithstanding this, overall, the review found an improvement in health outcomes in young people. Multiple, diverse health outcomes (e.g. substance use, risky sexual behaviour, helmet use, exercise etc) were measured, not all showing improvements. For alcohol related outcomes, no change was found in alcohol use nor in alcohol related violence, however some improvement in drink driving was found as well as some improvement in reduction of alcohol use before sexual activity.

Psychosocial history. In clinical practice, formal questionnaires as described above are not commonplace. Instead, a comprehensive medical and psychosocial history is taken, including information about the social, cultural, educational and vocational background of the adolescent. There are different acronyms that provide a framework for taking a broad psychosocial history from adolescents; one example is HEEADDSSS that (Goldenring & Rosen, 2004).

Polysubstance use is common among young people and it is therefore important to include in the medical and psychosocial screen the use of tobacco and other drugs in addition to alcohol. In Australia, fewer adolescents and young adults are taking up smoking and the average age at which a full cigarette was first smoked is now around 16.3 years in 2016 (from 14.2 years in 2001). Daily smoking has also at least halved between 2001 and 2016 in both males and females (Australian Institute of Health and Welfare, 2017). Currently, use of electronic cigarettes is relatively low in Australia, but younger people are more likely to have tried e-cigarettes and there are concerns about the implications of this for public health (McKee, Daube, & Chapman, 2016). Young adults in their twenties are the most likely age group to use cannabis, and the average age of first cannabis use is around 18.7 years (Australian Institute of Health and Welfare, 2017). This group also continues to be the most likely to have used illicit drugs in the past year (28% in 2016) but this has declined from 35% in 2001 (Australian Institute of Health and Welfare, 2017).

DSM 5 criteria for alcohol use disorders have limitations when used with adolescents, including the nature of 'tolerance' and the interpretation of 'cravings', both of which can be expected to change over a developmental period as young people's social interaction, and hence alcohol consumption, increases. In addition, there is the relative infrequency of withdrawal symptoms in heavy drinking adolescents occurring only in approximately 10% of adolescents. (Winter, Martin, & Chung, 2011).

Recommendation	Grade of recommendation
12.4 Engagement and therapeutic relationships require an understanding of adolescent development and a cognitively and developmentally appropriate approach.	**GPP**

Working effectively with young people experiencing difficulties with alcohol requires the establishment of good rapport. Barriers to effective consultation with adolescents have been extensively described in the past two decades and can be classified into four broad categories: availability, accessibility, acceptability, and equity of health services (Tylee, Haller, Graham, Churchill, & Scani, 2007; Webb, Kauer, Ozer, Haller, & Scani, 2016). Concerns about confidentiality and privacy have been identified to be a particularly important barrier to seeking professional assistance among young people, who cite embarrassment, shame, uncertainty about access to a health professional without an adult as well as cost, as barriers to care. (Van Dyke, Maddern, Walker, & Reibel, 2014).

Engagement and therapeutic relationships require an understanding of adolescent development and a cognitively and developmentally appropriate approach. Young people are generally influenced by the 'here and now' rather than future benefits of changing current drinking patterns. It is also important for health professionals to remember that young people are more interested in achieving the goals of adolescence rather than focusing on improving their health. Given this, treatment goals need to be framed as 'relevant' to young people. Approaches include examination of how alcohol affects their appearance and behaviour (e.g. at a party with peers), peer-reputation, ability to socialize, recreational, educational employment or sporting achievements, or impact on finances. These discussions need to be delivered by the health professional at a level that is developmentally and cognitively appropriate. Working with the young person to develop concrete short-term goals (weeks to months) is recommended and encouraging the young person to participate in negotiation of treatment plans facilitates engagement in treatment and empowers change (Wilson, 2017). In some cases, disengagement with family may have occurred as a result of heavy drinking and other drug use. Families are an integral part of the adolescent's world and it is therefore important to try to assist the young person to re-build the connection. Depending on the individual circumstance this may be through mediation by the health professional or more formally with family counsellors.
In cases where adolescents are not engaging well with alcohol or drug services, specific outreaching and proactive services that cater appropriately for their developmental stage and incorporate a consideration of their cultural background, lifestyle and in many cases their family are required.

Recommendation	Grade of recommendation
12.5 Motivational interviewing, cognitive behavioural and family therapies are of benefit in reducing alcohol use in adolescents.	**B**

Preventing adolescent alcohol consumption
An overview of systematic reviews examining interventions to prevent adolescent alcohol and substance use (Das, Salam, Arshad, Finkelstein, & Bhutta, 2016) found eight reviews that focused on interventions for alcohol and young people, four of which were school-based interventions. School based interventions that explore alcohol expectancies and risky situations and work on goal setting appear to be effective, especially in the form of brief interventions that are individually delivered.

Interventions for adolescent alcohol consumption
There remains a paucity of evidence for interventions specifically addressing adolescent alcohol use disorders and specifically in the clinical context.

In a meta-analysis of 24 studies (Tanner-Smith, Wilson, & Lipsey, 2013), adolescents who received brief alcohol interventions reported significantly lower levels of alcohol consumption ($\bar{g}$ = 0.27, 95% CI [0.16, 0.38]) and significantly lower levels of alcohol related problems ($\bar{g}$ = 0.19, 95% CI [0.06, 0.31]) than controls. This effect size

translated to a reduction in average number of drinking days per month from 6.2 to 4.9, and an 8 percentile improvement in alcohol related problems compared to controls. Of note, these interventions were primarily administered in an educational setting (82%), consisting mostly of motivational enhancement therapy (MET), psycho-education therapy (PET), or a combination of cognitive behavioural therapy (CBT/MET) (42%, 36% and 12% respectively). Effect sizes across different intervention modalities were similar with the exception of MET/CBT which showed no evidence of significant beneficial effect. These effects lasted up to one year post intervention. The authors concluded that brief interventions can deliver persisting beneficial effects for non-treatment seeking adolescents. Based on the results of their meta-analysis these authors propose that the most effective intervention for adolescents would use MET in a single session of greater than 15 minutes and would include decisional balance, goal setting and norm referencing as therapeutic components (Tanner-Smith et al., 2013).

Most studies of interventions for adolescents explore illicit drug use, and do not always include alcohol use (Hogue, Henderson, Becker, & Knight, 2018). Notwithstanding this, overall, family interventions, motivational interviewing, and cognitive behavioural therapies, both individual and group-focused, do appear to have a place for adolescent substance use disorders (Hogue et al., 2018; Tanner-Smith et al., 2013; Tripodi, Bender, Litschge, & Vaughn, 2010; Winters et al., 2011), although effect sizes are small and appear to diminish over time (Tripodi et al., 2010).

Integrated models are those that contain a combination of evidence based approaches such as MET, CBT, family based therapy - ecological (FBT-E), family based therapy – behavioural (FBT-B), and contingency management (CM). Hogue and colleagues (2017) conducted an extensive review of the evidence base for integrated treatments. Well established integrated treatments include MET/CBT and MET/CBT+FBT-B. Integrated treatments which are probably efficacious include FBT-E+CM, MET/CBT+CM and MET/CBT+FBT-B+CM.

Adolescent relapse rates of between 55-66% at 6 months have been reported (Cornelius et al., 2003; Williams & Chang, 2000). There is some indication of a differential effect of treatment depending on the substance at issue. Alcohol (as well as other drugs such as heroin and cocaine), for example, appears to be less responsive to treatment than cannabis (Tanner-Smith et al., 2013).

Parenting interventions

Parents have an important influence on adolescent alcohol use (Yap et al., 2017). These parental influences can be generic such as supportive, involved parent-adolescent relationships or they may be specifically alcohol-related such as parental modelling of alcohol-related behaviour or parental provision of alcohol. It is increasingly evident that parental provision of alcohol does not protect young people from alcohol related harm (Mattick et al., 2018; 3). Family based interventions are one of the most thoroughly investigated interventions for AOD disorders (Deas, 2008). Parenting, or family, interventions that strengthen parenting skills such as parental nurturing and support for young people, setting boundaries and monitoring appear to improve

adolescent alcohol related behaviours (Allen et al., 2016). There are few studies that explore strengthening parenting skills in the clinical context (e.g. community health centres, primary care, and other health contexts), most interventions report on programs occurring in school or home contexts. In a 2013 meta-analysis, family therapy showed relatively large positive effects relative to other treatment interventions (Tanner-Smith et al., 2013) ($\bar{g}$ = 0.64, 95% CI [0.49, 0.78]).

Using technology in treatment approaches

Computer delivered interventions for young people appear to have efficacy with a small reduction in quantity of alcohol consumed, number of drinking days and alcohol related problems when compared to control groups, but broader dissemination of such interventions at present does not strongly support their effectiveness (Carey et al., 2009). The use of text messaging as a medium through which to reduce alcohol and other drug use behaviours has had mixed results. A systematic review and meta-analysis (Mason et al., 2015) found that studies focusing on alcohol have not yet shown benefit. In contrast, Gonzales and colleagues (2014) found participants (aged 14 to 26 years) in a mobile texting aftercare intervention were significantly less likely to relapse to their primary drug and more likely to report increased participation in 12-step meetings, extracurricular recovery activities and abstinence self-efficacy/confidence compared to those who received aftercare-as-usual.

Peer led interventions

Gaining some attention in the alcohol and drug use sphere is the role of peer led interventions to prevent adolescent alcohol problems. This derives from the theory that young people learn from each other, create positive role models and that peers have credibility among other young people. A systematic review and meta-analysis of peer-led interventions aiming to prevent alcohol, tobacco or other drug use among young people (MacArthur et al., 2016) found relatively few studies to date (N=17, six of which addressed alcohol use), limited by selection bias and other methodological issues and that these were quite heterogeneous in nature. Studies included age range 11–21 years and randomized controlled trials. Exclusion criteria included interventions targeting young people with a clinical substance use disorder, those not specifically targeting young people but another population group (e.g. parents), studies with multi-component interventions, brief interventions, clinical interventions; and studies with less than 6 weeks of follow-up. Pilot RCTs and feasibility studies were also not included. There was no limit on the setting of the intervention. There were six studies that examined impact on alcohol that could be included in the quantitative analysis. The duration and intensity of the interventions ranged from 2 x 2hr group sessions to 12 sessions over 3-4 weeks. Little information described how peers were selected and/or the nature of their training for the peer role. The total sample size was 1699 young people in 66 schools and one university, four in the United States and two in Norway and Poland. Overall, however, the meta-analysis provided weak evidence of an association between the peer led interventions lowering the odds of alcohol use compared to control groups (OR = 0.80, 95% CI = 0.65–0.99, P = 0.036; I^2 = 14.5%, χ^2 = 5.85, P = 0.321;). Further research is needed to clarify whether there is a role for this form of intervention for adolescent alcohol problems. Of concern is the finding that in

one of the six studies participants reported increased substance use post intervention. The authors highlight the impact of peer norms on substance use behaviours which are particularly pervasive in adolescence.

Recommendation	Grade of recommendation
12.6 Mental health disorders, including depression, suicidal ideation, anxiety and antisocial behaviour and a past history of sexual or other abuse or other trauma are common in young people with alcohol and other drug problems and should be considered where relevant in assessment and treatment planning.	**GPP**

Pharmacotherapies for alcohol problems

Extrapolating adolescent treatment guidelines from adult substance use disorder pharmacotherapy trials is not viable because adolescents differ from adults in a number of ways. These include neurobiological and physiological responses to treatment such as pharmacokinetic and pharmacodynamic differences in young people. Age-related changes in the body fat, extracellular water, and hepatic and renal function alter the bioavailability, metabolism, and clearance of drugs, leading to different pharmacokinetic profiles by age. Neurotransmitter systems, including dopaminergic, serotonergic, noradrenergic, gamma-aminobutyric acid (GABA)ergic, and glutamatergic systems, mature across adolescence. These developmental changes affect biochemical and physiologic effects of medications, which may explain age-related differences in therapeutic response and medication side effect profiles. There are also psychological differences between adults and young people, such as medication adherence (Deas et al.,2000).

Recommendation	Grade of recommendation
12.7 Limited evidence exists for the role of pharmacotherapies for alcohol use disorder in adolescents	**B**

Alcohol withdrawal management.

Alcohol withdrawal symptoms are uncommon in adolescents reported by less than 10% of young people (Winter et al., 2011). No trials have examined the use of benzodiazepines in adolescent alcohol withdrawal, nevertheless when these symptoms do occur, benzodiazepines should be used (Clark, 2012). There have not

been controlled studies examining alternative pharmacotherapies for alcohol withdrawal in adolescents.

The evidence base for pharmacotherapy (naltrexone, acamprosate and disulfiram) for alcohol use disorders in young people remains, limited, as few controlled trials in adolescents have been conducted. However, preliminary studies do indicate that naltrexone, disulfiram, and ondansetron, and topiramate appear safe and well-tolerated and show some promise as adjunctive treatment for adolescents with alcohol use disorders. Larger studies, and especially randomized controlled trials, are needed.

A review (Hammond & Gray, 2016) focused on randomized, controlled trials (RCTs) using medications in combination with psychosocial interventions to treat substance use disorders (SUDs) in individuals aged 13 to 25 years. Inclusion criteria included age range 12-25 years and original research exploring pharmacotherapies targeting any substance use disorder in relevant age group. Pharmacotherapies could include those targeting comorbid psychiatric disorders and substance use disorders if they reported on substance related health outcomes. RCTs examining the short-term efficacy of maintenance pharmacotherapy for adolescent AUDs have explored oral naltrexone and disulfiram. There have also been some small open-label and randomized pilot studies for ondansetron and topiramate. Collectively, these studies include 5 small trials, and a total of 78 subjects, few of which have been published in recent years.

Naltrexone appears to reduce alcohol craving and drinking days. One study (Deas et al., 2005) was an open label trial of naltrexone with flexible dosing (25-50mg/d) as an outpatient treatment for six weeks for DSM IV alcohol dependence. Average drinks per day and alcohol-related obsessions and compulsions decreased significantly and naltrexone was well-tolerated in all subjects. Miranda and colleagues (2014) conducted a double blind placebo-controlled crossover condition trial in which they examined 28 non-treatment seeking adolescent (15-19yo) heavy drinkers (>twice a week alcohol in past 30 days) randomized to naltrexone (50mg) and placebo groups for 8-10 days with a washout period (4-10dd) between conditions (10 days placebo+10 days washout+10 days treatment). Naltrexone blunted cravings (measured using VAS/Visual Analog Scale) and was associated with decreased likelihood of drinking and of drinking heavily (OR 0.5 $p<0.003$).

Disulfiram also reduces drinking days. A study was conducted in 26 adolescents (16-19 y) with DSM IV alcohol use disorder (no psychiatric comorbidities) in a 90 day double-blind placebo-controlled trial in an inpatient setting for alcohol detoxification (Niederhofer & Staffen 2003). Adolescents were randomised to receive disulfiram 200mg/day or placebo (n=13 in each group) after they had undergone alcohol withdrawal and had had five days of abstinence. Alcohol outcomes assessed were self-report and psychiatric interview. The disulfiram was well tolerated, with no adverse events reported. At the end of treatment (90 days), seven in the disulfiram group and two in the placebo group had been abstinent continuously ($p = 0.0063$). The disulfiram group had significantly more participants who remained abstinent at 90 days (7 vs. 2). Mean cumulative abstinence duration was significantly greater in the disulfiram group than in the placebo group [69 (SD 37.5) vs. 30 (19.0) days; $p = 0.012$].

A comparison of naltrexone versus disulfiram (De Sousa & De Sousa, 2008) showed that adolescents in the disulfiram group took longer to relapse (84 days disulfiram vs. 51 days ntx group $p<0.05$)).

No RCTs of ondansetron have been done, only a small (n=12) 8-week open-label pilot study in adolescents with alcohol use disorder who also received weekly individual motivational interviewing (MI) and cognitive–behavioural therapy (Dawes et al., 2005). The ondansetron group tolerated the medication well, with only mild transient side effects of fatigue, nausea, and reduced appetite. Only half the group completed the study. Given this, the open-label design and the lack of a comparison group, it is not known whether ondansetron contributed to the reported reduction in drinks per day or whether the reduction was due to the MI with CBT and psychosocial intervention alone.

Monti and colleagues (Neuropharmacology 2010; 35: S164) reported a small, 5-week, randomized double-blind placebo-controlled pilot study comparing topiramate (escalating dose up to 200 mg/d) with placebo in non–treatment-seeking adolescent and young adult heavy drinkers (ages 14–24 years). Topiramate was also well-tolerated. Over 5 weeks, the topiramate group reported an average reduction of two drinks per week (range, 3.8–2.0) compared with the placebo group in whom drinking did not decrease from baseline levels.

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CHAPTER 13

GENDER-SPECIFIC ISSUES: A REVIEW OF THE EVIDENCE

Chapter 13. Gender-specific issues: A review of the evidence

Overview

This chapter provides an overview of the evidence about different facets of screening, diagnosing and managing alcohol use for men and women. Specifically, the chapter is focused on the gender-specific aspects that clinicians should consider when screening for alcohol problems or when someone presents with an alcohol problem. In this chapter, 'gender' refers to the binary categories of men and women. The body of research includes almost exclusively those people whose gender aligns with the sex they were assigned at birth. Guidelines for transgender, intersex and non-binary gender people is provided in Chapter 17.

As in many areas of health and medicine, much of the research has focused on men and then generalised to women. There is, however, a body of research which has considered gender-specific aspects of substance use issues, including alcohol use disorder (AUD) for women, but there is far less on the gender-specific aspects for men.

Epidemiology

Overall, men consume more alcohol than women, both in Australia (Australian Institute of Health and Welfare, 2017) and globally (GBD 2016 Alcohol Collaborators, 2018). In Australia, men are twice as likely as women to drink daily and more than 2.5 times more likely to drink at levels which increase both single use and lifetime risk of harms (Australian Institute of Health and Welfare, 2017). Globally, it is estimated that 39% of men are current drinkers compared to 25% of women (GBD 2016 Alcohol Collaborators, 2018). Alcohol-related deaths and the disability adjusted life years (DALYs) lost attributable to alcohol for men are more than double that of women (GBD 2016 Alcohol Collaborators, 2018). However, alcohol-related harms increase for women as they age, and alcohol-attributable deaths, predominantly cancers in those aged 50 years or older, are higher in women (27.1%) than in men (18.9%) (GBD 2016 Alcohol Collaborators, 2018).

These data should be considered in light of the recent evidence of gender convergence in alcohol consumption among cohorts born in the latter half of the 20th Century, especially for those born in the 1980s through 1990s (Slade et al., 2016). This effect is most notable in higher income countries, where men and women's volumes of consumption are more similar than different (GBD 2016 Alcohol Collaborators, 2018). More recently, however, this has been challenged with Australian data indicating this cohort effect diminishes when age-effects are taken into account, with the exception of 50-69 year-olds (Livingston, Callinan, Dietze, Stanesby, & Kuntsche, 2018).

Biological differences

There are both biological and psychosocial differences in alcohol-related harms. Women experience higher blood alcohol concentrations and therefore have lower intoxication thresholds, even with equivalent doses. This is due to lower levels of alcohol dehydrogenase and body water and, generally, smaller blood volume and liver size (R.K. McHugh, V.R. Votaw, D.E. Sugarman, & S.F. Greenfield, 2018). This point

notwithstanding, the National Health Medical Research Council (NHMRC) guidelines for drinking do not differentiate between men and women in the amounts recommended to reduce alcohol-related health risks (National Health and Medical Research Council, 2009) because the absolute difference is small at lower levels, but increases with higher levels. The notable exception is in the context of pregnancy and breastfeeding, where no safe limit has been identified and abstinence is therefore recommended; further guidance on these issues are covered in Chapter 14.

Men tend to be greater risk takers and therefore more likely, along of social norms and expectations, to consume alcohol and to do so at higher levels. The propensity for higher risk taking is complex (Mata, Josef, & Hertwig, 2016), but testosterone is considered to play a key role (Mehta & Prasad, 2015).

Psychosocial differences

There are multiple and often complex psychosocial differences in alcohol related harms for women and men. Sociocultural expectations have led to women's traditional gender role as carer and homemaker generally being a protective factor at the population level, with the gender gap in alcohol use disorders wider in countries where traditional gender roles have been more enduring (R.K. McHugh et al., 2018). The traditional gender role, however, brings with it another set of complications such as greater stigmatisation and increased risk of social harms for women and their families. Alcohol use among women generates greater parenting scrutiny (Reid & Day, 2015; Schmidt, 2014) in a way that is less commonly applied to male parents.

Treatment seeking

Men and women display different treatment seeking behaviours. There is some debate as to whether women present for treatment later than men, with data largely from the US, using different sampling strategies and therefore divergent results (Gilbert, Pro, Zemore, Mulia, & Brown, 2019; Lewis & Nixon, 2014). Australian data suggests that men are more likely than women to have an alcohol problem managed in a general practice encounter (Degenahrdt, Knox, Barker, Britt, & Shakeshaft, 2005) and screening for alcohol problems is also more common in men than women.

Women tend to experience more barriers to treatment than men due to childcare responsibilities, fear of judgement, stigma and, for those with children, fear of social interventions and losing their children (Fowler, Rossiter, Sherwood, & Day, 2015; Otiniano Verissimo & Grella, 2017; Schmidt, 2014; Swift & Copeland, 1996). There has been very limited research on barriers to treatment for women in Australia in the last 10 years and much of what is known tends to relate largely to illicit drug users (e.g., Fowler et al., 2015). US data suggests that women tend to utilise non-specialist services, including primary care, more than specialised services or groups (Gilbert et al., 2019). There is evidence to suggest that Australian women over 55 may have better treatment outcomes than younger women, however further research among nationally representative samples is required to understand age-related clinical characteristics and better inform treatment approaches across the lifespan (Al-Otaiba, Epstein, McCrady, & Cook, 2012; Epstein, Fischer-Elber, & Al-Otaiba, 2007) .

Key gender-specific issues for clinicians

When considering screening and treatment of people with alcohol use disorders, there are some key gender-specific issues which clinicians should consider. For women, this includes contraception, given that alcohol is a teratogen (O'Leary et al., 2010); domestic violence, given the higher prevalence among women with substance use histories (WHO, 2013); and parenting and child protection issues, including the possible need for gender-specific treatment. Whilst relevant for men, parenting is a particularly important issue for women as they are much more likely to be the sole or primary caregiver of young children, which may also serve as both deterrent and barrier to accessing treatment. For men the issues are centred around violence, both as perpetrators and victims of alcohol-related violence and as perpetrators of domestic violence (Morgan & McAtamney, 2009; WHO, 2013).

Domestic violence

The definition of domestic violence varies by jurisdiction and is often used interchangeably with "family violence" and "intimate partner violence," however for the purpose of this guide "domestic violence" refers to any violence that occurs between intimate partners and or family members, though women and children are predominately affected (Australian Institute of Family Studies, 2015; Australian Institute of Health and Welfare, 2019). Domestic violence encompasses any physical violence, sexual abuse, emotional abuse, verbal abuse and intimidation, economic and social deprivation, damage of personal property and abuse of power (Australian Bureau of Statistics, 2013).

Unsolicited disclosure of domestic violence tends to be low. Evidence from a Cochrane review found that screening in healthcare settings does increase identification, but found insufficient evidence that it improves outcomes, including referrals (O'Doherty et al., 2015). Where screening is undertaken, the use of a screening tool has been found to be more effective although no specific tool has been identified as superior in this population (Nelson, Bougatsos, & Blazina, 2012; O'Reilly, Beale, & Gillies, 2010). Commonly used scales which assess family conflict such as the Conflict Tactics Scale are better suited to research rather clinical environments given their length and other issues with reliability (Jones, Browne, & Chou, 2017). A domestic violence screening program was implemented in NSW for all women entering public drug and alcohol services between 2001-2004 and appears to have increased screening and identification rates (Spanago, Zwi, & Poulos, 2010), although exact specificity and sensitivity has not been determined. All domestic violence screening should be delivered with contextual and environmental factors in mind and be trauma-informed (Nicholas, White, Roche, Gruenert, & Lee, 2012).

Men in heterosexual relationships are more likely to be the perpetrators than victims of domestic violence and should be screened for domestic violence. Brief tools for use in the clinical setting have been developed and trialled in substance treatment settings (Kraanen, Vedel, Scholing, & Emmelkamp, 2013), but have not yet been widely adopted and their overall effectiveness has not been established. There is no data on the impact of such screening.

Within the usual clinical setting, referral to social work or specific community and non-government services may be necessary to ascertain safety and need for child protection or police involvement. George et al. (2011) found that the use of fluoxetine reduced irritability scores in men with a history of intimate partner violence compared to placebo at 12-weeks. The randomised controlled trial included 60 men randomised to either fluoxetine (40 milligrams per day) with cognitive behavioural therapy (CBT) and an alcohol program, or placebo with CBT and an alcohol program.

Other violence

Alcohol-related violence outside of the domestic setting is more prevalent in males than females and this should be explored through social history taking, especially among young men where it is more prevalent (Morgan & McAtamney, 2009). Alcohol-related violence, especially where there have been law enforcement interventions, may be a catalyst for engagement in alcohol treatment.

Recommendation	Grade of recommendation
13.1 Women should be screened for domestic violence (victimisation and perpetration) and referred to specialist services, where appropriate.	**C**
13.2 Men should be screened for domestic violence (victimisation and perpetration) and referred to specialist services, where appropriate.	**D**

Parenting

People with alcohol use disorders may be the carers of young children and thus parenting considerations are important when managing people with AUD (Trifonoff, Duraisingam, Roche, & Pidd, 2010). Women, more than men, are likely to be either the primary or sole carer (or both). Screening for family violence should be undertaken to assess child protection needs. Outside of the possibility of violence, a child protection assessment should be considered for anyone who is living with children and being treated for an AUD and it is critical to ask, rather than assume, whether an individual is caring for or living with children. Childcare responsibilities should be considered throughout treatment planning. Most Australian treatment agencies are supportive of family-sensitive treatment, but there is likely to be wide variation across services in terms of what support can be practically provided (Trifonoff et al., 2010).

Treatment options for parents

Previous research has shown improvements in outcomes for children whose mothers receive treatment for substance use disorders where parenting programs are integrated although the evidence is limited by mixed and inconsistent study designs and program models (Moreland & McRae-Clark, 2018). There are only a small number of services that permit children to reside with their mothers and the age range for the children varies, although most, if not all, of these services prioritise women with children. More detail about appropriate choices in the context of parenting is provided

under treatment. It should also be noted that many of these programs are not substance specific. There is good emerging evidence of substance specific parenting programs delivered within a woman's home (Dawe & Harnett, 2007; Dawe, Harnett, Rendalls, & Staiger, 2003) but more replication of findings is needed. Similarly a number of substance using mothers' groups have been established (Fowler, Reid, Minnis, & Day, 2014) but these lack a robust evidence base.

Ecologically Based Family Therapy (EBFT) is a 12-session family systems therapy approach which targets improvement of social interactions, emotional connectedness and problem-solving skills among family members and has been trialled with mothers and children aged 8-16 years (Slesnick & Erdem, 2013). Mothers seeking outpatient treatment for substance use were randomised to home-based EBFT (n=56), office based EBFT (n=48) or women's health education (n=28). Results showed women in the intervention groups decreased their frequency of alcohol at a faster rate than the comparison group (Slesnick & Erdem, 2013).

Men are much less likely to be the primary carer of children, but parenting responsibilities should nevertheless be reviewed. There are few, if any, residential services for men with children. There is also scant literature informing the evidence-base for parenting programs for men with alcohol use disorders (McMahon & Rounsaville, 2002), although improving parenting and parenting engagement may be protective factor for men with substance use disorders (Parke, 2002).

Recommendation	Grade of recommendation
13.3 Where residential treatment is appropriate, parents, especially mothers, should be referred to facilities with integrated parenting and substance use programs	**C**
13.4 Parents should be referred to outpatient programs when feasible	**GPC**

Contraception

All women of childbearing age should be reviewed for contraception. Alcohol is a teratogen with no identified safe level, and therefore it is important that women of childbearing age consuming alcohol who are heterosexually active are using reliable contraceptives, irrespective of the level of consumption or whether they have an AUD (see also Chapter 14). It should be noted that sexual activity can be fluid and therefore the potential need for contraception should be discussed with the woman. Evidence supports the long acting reversible contraception (LARC) such as intra-uterine devices and hormonal implants as these are not user dependent (Trussell & Guthrie, 2014) and as such these approaches should be recommended.

There have been a small number of studies investigating integrated contraceptive clinics in drug and alcohol treatment services, and whether this improves contraception uptake. These studies, however, have tended to focus on opioid or illicit drug using women (Edelman, Patel, Glasper, & Bogen-Johnston, 2013; Elko & Jansson, 2011; Heil et al., 2016; White, Reid, Haber, Day, & Black, 2015), are small in scale and the findings are mixed (Black & Day, 2016). Only one study utilised an RCT design targeting women with opioid use disorder rather AUD and tested a contingency management model of care (Heil et al., 2016). Whilst the provision of contraception for heterosexual women in their childbearing years is a good practice point, much more work is needed to determine the best approach.

Contraception will also be an important discussion for men in heterosexual relationships, although as described above, reliable methods are those that are not user dependent, of which there are currently no male options. Evidence for male initiated contraception in the context of AUD was not found.

Recommendation	Grade of recommendation
13.5 Women in their child-bearing years who use alcohol should be counselled about contraception use and, where possible, prescribed or referred for LARC	**B**

Treatment options

Pharmacotherapy

There is currently no clear evidence for sex-specific pharmacotherapy in AUD treatment (R.K. McHugh et al., 2018). This may reflect under-representation of women in some of the research. The safety of pharmacotherapies used for AUD in pregnancy has not been established for most pharmacotherapies (see chapter 14).

Treatment programs

Some gender-specific treatment options may be necessary. These are predominantly available in residential settings, which may include detoxification services, residential rehabilitation therapeutic communities. Some non-residential gender-specific services are also available. Gender-specific options should be considered when there are: i) practical considerations (e.g. women with children, or where an individual has a history of sexual assault or other trauma); ii) programmatic considerations (e.g. domestic violence or parenting). Clinicians should consider each of the above aspects to inform their recommendation. The evidence base for gender-specific programs is mixed, and though much of the literature has focused on substance use disorders, this has typically included alcohol use disorders, but little is specific to alcohol.

Whilst limited, the evidence for gender-specific substance use treatment in general suggests that some women may have better outcomes in women-only treatment than women in mixed-gender treatment, possibly due to the increased likelihood of these services meeting women's distinct psychosocial needs (Grella & Greenwell, 2004; R.

Kathryn McHugh, Victoria R. Votaw, Dawn E. Sugarman, & Shelly F. Greenfield, 2018; Niv & Hser, 2007). A small number of studies have demonstrated that women-only inpatient and outpatient treatments have the potential to improve substance use outcomes, length of stay in treatment; continuity of care and decrease drug-related arrests (Claus et al., 2007; Hser, Evans, Huang, & Messina, 2011; Niv & Hser, 2007). Several pilot randomised controlled trials and level III-IV studies have been conducted in women-specific outpatient substance use treatment settings with promising results. A women-focused recovery group (WRG, n=16) was compared with a mixed-gender drug counselling group (GDG, n=17) found that women with AUD in the WRG had significantly greater continued reductions in average drinks per drinking day at 6-months follow-up than women with AUD in the GDG ($p < .03$, effect size = 0.81), suggesting that women-specific, women-focused treatment for AUD may lead to greater long-term improvements (Greenfield, Trucco, McHugh, Lincoln, & Gallop, 2007). Women-specific cognitive behavioural therapy (FS-CBT) for AUD has also been investigated in both individual and group outpatient settings and has yielded positive outcomes: FS-CBT in a group outpatient setting was found to be at least as effective as mixed-gender CBT, leading to high engagement and significant reductions in drinking quantities and frequency (20.02 pp decrease of percentage drinking days (PDD) and 11.01 pp decrease of percentage heavy drinking days (PHD) over the first 8-weeks and maintained at 12 months follow-up)(Epstein, McCrady, Hallgren, Cook, et al., 2018), whilst FS-CBT trialled in individual (n=73) versus group (n=65) settings has also demonstrated significant reductions in PDD and PHD within the first 6-weeks of treatment in both settings, maintained at 12-months follow-up (Epstein, McCrady, Hallgren, Gaba, et al., 2018).

The prevalence of comorbid psychiatric disorders in people with AUD is high (Marel et al., 2016) and there is some evidence to suggest that the occurrence of affective and post-traumatic disorders is higher among women (Karpyak et al., 2019; L. M. Najavits, Weiss, & Shaw, 1997), however this may be because women are more likely to seek treatment than men. Some women-specific treatment programs have been developed for women with coexisting psychiatric conditions and trialled in various populations, with mixed results. Holzhauer et al (2017) compared two RCTs for women-specific CBT and found that women with higher depression or anxiety and low confidence in abstaining from alcohol whilst in a negative mood state were more likely to experience a sudden decrease in drinking after completing sessions addressing these issues ($p = 0.02$). Cohen & Hien (2006) also found that short-term CBT for women with complex trauma and AUD significantly reduced post-traumatic stress disorder (PTSD) and AUD symptoms at 3-months post-baseline. Similarly, a manual-based cognitive behavioural group psychotherapy treatment for comorbid PTSD and SUD has been trialled in a range of women's treatment populations, however, results are mixed and do not specifically target alcohol use (D. Hien et al., 2009; D. A. Hien, Cohen, Miele, Litt, & Capstick, 2004; Lynch, Heath, Mathews, & Cepeda, 2012; Lisa Najavits, Gallop, & Weiss, 2006; L. Najavits, Weiss, Shaw, & Muenz, 1998; Patitz, Anderson, & Najavits, 2015). More recently, mindful awareness in body-oriented therapy (MABT) has also been trialled in women with SUD in an outpatient setting and shows promise as an

effective tool to improve interoception (awareness of internal body sensations), and in turn improve emotion regulation, mindfulness and coping skills in the long-term: a recent longitudinal study compared MABT (n=74) with women's health education (WHE, n=46) and treatment as usual (TAU, n=67) in women with SUD and reported significant improvements in days abstinent at 12 months for MABT only (adjusted mean difference of 22.4 days) and maintenance of these improvements from 3 to 12 months in the MABT group only (Price, Thompson, Crowell, & Pike, 2019).

Historically, much of the alcohol use disorder treatment literature has focused on men, although research examining male-specific programs is scant. At present, there is very little evidence for male-specific treatment. However, the level of support in abstinence from alcohol in social networks of men and women seeking treatment for AUD should be taken in to consideration, as this can influence whether individual versus couple, group or peer support approaches are most likely to lead to optimal treatment outcomes (Manuel, McCrady, Epstein, Cook, & Tonigan, 2007).

Recommendation	Grade of recommendation
13.6 Gender-specific inpatient treatment should be considered for women with alcohol use disorders, where inpatient treatment is warranted	C
Gender-specific outpatient treatment should be considered for women with alcohol use disorders, where outpatient treatment is warranted	D
13.7 Gender-specific inpatient treatment may be considered for men with alcohol use disorders	GPP

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CHAPTER 14

PREGNANT AND BREASTFEEDING WOMEN, EVIDENCE REVIEW

14. Pregnant and breastfeeding women, Evidence Review

Introduction – alcohol use in pregnancy and when breastfeeding

The negative effects of alcohol on the developing foetus were described about 40 years ago, with the first articles published in the 1970's (Jones and Smith 1973; Ouellette et al. 1977; Cooper 1978). Jones was the first to coin the term foetal alcohol syndrome (FAS). More recently, the designation foetal alcohol spectrum disorder (FASD) has emerged, which characterises a spectrum of neurodevelopmental and behavioural problems associated with alcohol use (Sokol et al. 2003; Garrison et al, 2019). Characteristics include unusual facial features and poor physical, cognitive and behavioural outcomes. In addition, alcohol exposure is a strong predictor of premature or preterm birth and low birth weight for gestational age. Whilst frequent heavy drinking is associated with FASD, the cut-off for harm has not been established. Given the exact cut-off for harm has not yet been established, and most probably will never be defined with precision, it is most prudent to advise all pregnant women, and women planning a pregnancy, that the safest option is to avoid drinking alcohol (NHMRC guidelines, 2009).

A considerable number of women in Australia consume small amounts of alcohol prior to pregnancy awareness or during pregnancy (e.g., McCormack et al, 2018; Muggli et al). These women may be reassured that there is no consistent evidence this is harmful to the unborn child and that any impacts are likely to be minimal (e.g., Mamluk et al, 2017; O'Keeffee et al, 2014). A precautionary approach however remains warranted.

Breastfeeding women should also be advised of NHMRC guidelines recommending that not drinking alcohol is the safest option (NHMRC, 2009). In particular, women should avoid alcohol in the first month after delivery until breastfeeding is well established. After that, the guidelines recommend that alcohol intake should be limited to no more than two standard drinks a day and that women should avoid drinking immediately before breastfeeding.

For the average woman it takes approximately two to three hours to metabolise one standard drink of alcohol such that alcohol content in breastmilk returns to zero. However, this can vary depending on a range of factors such as body weight, metabolism, and food and water intake (Hutchinson et al, in press).

The Department of Health has recently developed a national plan for FASD (2018-2028) that aims to provide a clear pathway of priorities and opportunities to improve the prevention, diagnosis, support and management of FASD in Australia. Then aims of the plan are to reduce the prevalence of FASD; reduce the associated impact of FASD; and improve the quality of life for people living with FASD.

Recommendation	Grade of Recommendation
14.1 Women who are or who may become pregnant should be advised of current NHMRC guidelines that recommend abstinence. Clinicians who provide advice to pregnant women should familiarise themselves with the risk analysis described in those guidelines. The risk of harm to the foetus is highest when there is high, frequent, maternal alcohol intake.	**B**
14.2 Women may be reassured that the risk of harm to the foetus is likely to be low if a woman has consumed only small amounts of alcohol before she knew she was pregnant or during pregnancy.	**B**
14.3 Breastfeeding women should be advised of current NHMRC guidelines that recommend abstinence. If a woman wishes to drink, it is recommended that she breastfeeds before drinking. Otherwise, wait until the blood alcohol returns to zero (approximately two hours per standard drink consumed) before resuming breastfeeding. It is not necessary to express or discard milk before this time.	**B**
14.4 Brief interventions (including motivational enhancement therapy (MET) are recommended for use during pregnancy, including the partner, where relevant.	**A**
14. 5 If a woman presents intoxicated during pregnancy, hospital admission may be recommended to assess foetal safety, maternal safety, and for comprehensive assessment and care planning	**GPP**
14.6 Alcohol withdrawal during pregnancy should be managed in a general hospital, ideally in a high-risk maternity unit in consultation with a specialist drugs-in- pregnancy team. Diazepam may be given as needed to control withdrawal. Nutritional intervention should be initiated, including parenteral thiamine, folate replacement and assessment for other supplementation.	**GPP**

14. 7Women who present during pregnancy with serious alcohol (and/or other drug) problems should be admitted to an appropriate hospital unit for stabilisation, comprehensive assessment and care planning.	**GPP**
14.8 Assertive follow-up is recommended for antenatal and postpartum care, substance misuse treatment, and welfare support and child protection.	**GPP**

Pharmacotherapy in pregnancy

There are no trials of pharmacotherapies for alcohol use disorder in pregnancy and very little clinical experience. One recent review (DeVido 2015) recommended an individualized risk assessment in these terms: "*when deciding whether to use a medication to assist in the treatment of an AUD in a pregnant woman, the risks posed by the use of alcohol itself must be carefully weighed against the risks of the medications themselves.*"

The three listed drugs for alcohol use disorder and their classification according to the Australian categorisation system for prescribing medicines in pregnancy are in the table below. All three fall within Category B, meaning Drugs which have been taken by only a limited number of pregnant women and women of childbearing age, without an increase in the frequency of malformation or other direct or indirect harmful effects on the human foetus having been observed (TGA website):

Drug	Category	Explanation
Acamprosate	B2	Studies in animals are inadequate or may be lacking, but available data show no evidence of an increased occurrence of foetal damage.
Naltrexone	B3	Studies in animals have shown evidence of an increased occurrence of foetal damage, the significance of which is considered uncertain in humans.
Disulfiram	B2	Studies in animals are inadequate or may be lacking, but available data show no evidence of an increased occurrence of foetal damage.

Recommendation	Grade of Recommendation
14. 9 Pharmacotherapy to maintain abstinence from alcohol cannot be routinely recommended during pregnancy due to insufficient safety data	**D**
14.10 It is recommended that management of infants with neonatal alcohol withdrawal be undertaken in consultation with a specialist unit.	**GPP**
14. 11 It is recommended that infants born to women who have consumed alcohol regularly during pregnancy be carefully assessed for foetal alcohol spectrum disorders by a paediatrician aware of the maternal history, with further management directed by the appropriate experts.	**GPP**

Brief interventions in pregnancy

Brief interventions are recommended for use during pregnancy, including the woman's partner where relevant. Brief interventions are patient centred and focus on increasing the woman's motivation to reduce/cease drinking. They may be embedded in more comprehensive interventions that encompass, for example, other drug use and risk factors for mental health problems and family violence. Follow-up evaluation of response to the intervention is important. Given the proliferation of social media and digital technology, these platforms should also be incorporated where feasible.

Randomised controlled trials for alcohol use in pregnancy

Project TrEAT (Trial for Early Alcohol Treatment), is a randomized controlled trial of brief physician advice for the treatment of problem drinking in the US. Four hundred eighty-two men and 292 women, aged 18–65 years, were randomly assigned to a control (*n*= 382) or intervention (*n*= 392) group. The intervention consisted of two physician visits and two nurse follow-up phone calls. Intervention components included a review of normative drinking, patient-specific alcohol effects, a worksheet on drinking cues, drinking diary cards, and a drinking agreement in the form of a prescription.

A subanalysis of data from Project TrEAT (Fleming et al, 2002) was carried out to evaluate the results of the intervention in the 205 women at 48-month follow-up (Manwell et al. 2000). A significant treatment effect was found in reducing both 7-day alcohol use ($p = 0.0039$), and binge drinking episodes ($p = 0.0021$), over the 48-month follow-up period. Importantly, women in the experimental group who became pregnant during the follow-up period had the most dramatic decreases in alcohol use.

Another US trial of a brief intervention with 304 pregnant women studied the effect of including the woman's partner in a single intervention session, given by a nurse practitioner or the doctor (Chang et al. 2005). The brief intervention incorporated the following: 1) knowledge assessment with feedback; 2) contracting and goal setting; 3) behavioral modification; and, 4) an intervention summary. Participating women screened positive on the T-ACE questionnaire. Fewer than 20% of participants (median 11.5 weeks of gestation) were abstinent at study enrolment, averaging more than 1.5 drinks per drinking episode. Nearly 30% had 2 or more drinks at a time while pregnant.

Intervention results indicated that prenatal alcohol use declined in both the treatment and control groups, based on a 95% follow-up rate. Intervention was most strongly associated with reduced subsequent consumption in the women with the highest baseline consumption ($p<0.01$). The effects of the brief intervention were also significantly enhanced when the partner participated ($p< 0.05$). Factors associated with increased prenatal alcohol use after randomisation included educational attainment, extent of previous alcohol consumption, and temptation to drink in social situations.

A further study of 255 participants in the US examined the efficacy of a brief intervention workbook aimed at reducing alcohol consumption given by a nutritionist. Newborn outcomes were also assessed (O'Connor and Whaley 2007). The workbook consisted of traditional brief intervention techniques, including education and feedback, cognitive-behavioral procedures, goal setting, and contracting. Women in the intervention group were five times more likely to report abstinence compared with women in the assessment-only (with no intervention) condition. Newborns whose mothers received a brief intervention had higher birth-weights and birth lengths, and foetal mortality rates were three times lower (0.9%), compared with newborns in the assessment-only (2.9%) group.

A larger US trial, Project Choices, used a brief motivational intervention delivered to 830 nonpregnant women at risk (defined as drinking more than 5 drinks per day, and not currently using contraception). They were randomised to receive four motivational counselling sessions in addition to one contraception consultation, or information only (Floyd et al. 2007), with the aim of preventing alcohol-affected pregnancies. Follow-up was at 3, 6, and 9 months. Results indicated reduced risk of an alcohol-affected pregnancy in the intervention group. Factors that predicted successful change in high risk drinking included greater confidence, lower temptation and greater use of the experiential and behavioral processes of change (DiClemente CC, Velasquez MM et al 2018)

Another secondary data analysis study (Winhusen et al 2008) examined the efficacy of motivational enhancement therapy (MET) in decreasing alcohol use in pregnant women attending substance use treatment relative to treatment as usual. The study included the 41 women (n=27 MET and n=14 TAU) in four US cites who reported alcohol use in the 28 days, prior to randomization. Alcohol and illicit-drug use days

were assessed with self-report. All measures were obtained weekly for the 4 week active study phase and at 1 and 3 month follow-ups. Significant treatment-by-time interaction effects were found for alcohol use during the follow-up phase, reflecting a beneficial effect for MET, relative to TAU. These findings suggest that MET may be effective in decreasing alcohol and illicit-drug use in pregnant substance users reporting alcohol use. (Osterman et al 2017)

Brief interventions to reduce alcohol exposed pregnancies delivered in the context of reducing risk lifestyles have also been shown to be effective. A two-group, randomized controlled trial of 50 pregnant women was conducted at a prenatal clinic in a large inner-city US hospital. The primary aim was to reduce risk of STI but alcohol and marijuana use were also targeted. Recruitment took place between 2015 and 2016. A computer-delivered, single-session brief motivational intervention plus booster session was administered addressing both substance use and STI risk. The control group received a computer session but the content was brief segments of popular television shows. There were very high ratings of acceptability of the intervention, ranging between 6.3 and 6.8 on a 1-7 scale. At the 4-month follow-up, participants in the intervention arm reported a significantly larger reduction (54%) in any marijuana or alcohol use compared with participants in the control group (16%).

With increased access to social media this method is an option for the delivery of brief interventions to reduce the risk of alcohol exposed pregnancies. A study tested the efficacy of a self-administered, electronic Screening and Brief Intervention (e-SBI) in English and Spanish, "DrinkWise," for reducing drinking among nonpregnant women of childbearing age. A parallel design, phase 1 trial included 185 nonpregnant women reporting risky drinking (8 or more drinks in a week or 3 or more drinks in a day), recruited from two publicly funded Nutritional Assistance for Women, Infants and Children (WIC) program sites in the United States from 2016 to 2017. Participants were randomized to receive (intervention condition, n = 99) or not receive intervention (control condition, no intervention, n = 86), and were followed at 3 and 6 months. Women receiving DrinkWise had greater reductions in the odds of self-reported weekly alcohol use and heavy alcohol use at 6-month follow-up compared to controls, with no group differences at 3-month follow-up. Compared with heavy drinking controls, heavy drinkers receiving the intervention showed a trend for greater reductions in drink (pour) size from 3- to 6-month follow-up. (Nayak et al 2019).

In summary, there is growing evidence for the effectiveness of brief intervention for alcohol use in pregnancy with emerging evidence for programs delivered via new technologies. Interventions appear to be most effective in those at greatest risk of alcohol use and when there is additional partner engagement. Cultural and social factors should be incorporated to ensure the appropriateness of services.

Recommendation	**Grade of Recommendation**

14. 12 Assessment of the family unit is an essential aspect of managing substance use in women. Intervention should be directed to the whole family unit to reduce consumption of alcohol.	**GPP**
14.13 Aboriginal and Torres Strait Islander women should be offered referral to culturally appropriate clinical services.	**GPP**
14.14 Women from culturally diverse backgrounds should be offered referral to culturally appropriate clinical services.	**GPP**
14. 15 Substance use, mental health and family violence screening, referral and appropriate follow-up are essential components of an integrated care plan for all pregnant women.	**GPP**

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CHAPTER 15

ABORIGINAL AND TORRES STRAIT ISLANDER AUSTRALIANS: A REVIEW OF THE EVIDENCE

Chapter 15. Aboriginal and Torres Strait Islander Australians: a review of the evidence

Introduction

Overview of available evidence

Past consultations with Aboriginal and Torres Strait Islander health professionals and communities have provided information on what has seen to be successful and acceptable to, and what are the needs of communities. This has been recorded in a variety of sources, including publications of the National Indigenous Drug and Alcohol Committee (NIDAC), e.g. (Dennis Gray, Stearne, Wilson, & Doyle, 2010)).

There is a range of literature in scientific journals on detection and treatment of unhealthy alcohol use (hazardous drinking, harmful drinking or dependence). However most published research in Australia has focused on how alcohol screening y can be implemented, or assessing acceptability of adapted mainstream screening or treatment approaches. We were unable to identify any published controlled trial on the effectiveness of treatments for unhealthy alcohol use (including alcohol use disorders) among Aboriginal and Torres Strait Islander Australians.

Guidelines have been developed for the management of alcohol problems in Aboriginal and Torres Strait Islander primary care settings (Australian Government Department of Health and Ageing, 2007) but have not been updated since 2007.

Demographics of Aboriginal and Torres Strait Islander Australians

There is great diversity among Aboriginal and Torres Strait Islander Australian communities (Dreise, 2018). These communities range from urban to remote, and from those speaking only English to those who primarily speak their traditional language and who may have limited skills in English.

The number of people who identified as Aboriginal and/or Torres Strait Islander in the 2016 Census was 649,200. Of these, 91% identified as Aboriginal (Australian Bureau of Statistics, 2017). Just over half (53%) of Aboriginal and Torres Strait Islander Australians were under 25 years of age and around 35% of Indigenous Australians were living in capital cities (Australian Bureau of Statistics, 2017). It is hard to be sure of the accuracy of census figures, as some Aboriginal and Torres Strait Islander people may have been not been successfully recruited, for example those in more remote areas or not in stable housing, and the proportion of people who self-identify in a census as Aboriginal Torres Strait Islander Australian may vary (e.g. if there are fears over confidentiality of the information obtained).

Drinking characteristics

Aboriginal and Torres Strait Islander Australians are less likely to drink alcohol than their non-Indigenous counterparts (Australian Institute of Health and Welfare, 2017a). Those who report that they do drink, also report drinking less frequently than non-Indigenous Australians (Australian Institute of Health and Welfare, 2017a). However, a greater proportion of Aboriginal and Torres Strait Islander drinkers consume alcohol at risky levels compared to non-Indigenous drinkers (Australian Institute of Health and Welfare, 2011b)., The 2009 NHMRC guidelines on alcohol consumption suggest that to avoid an alcohol-related injury, a person should drink no more than 4 standard drinks per occasion. While there are concerns about the sample size of Aboriginal and Torres Strait Islander Australians in the National Drug Strategy Household Survey, in 2016 that survey reported that 35 % of Aboriginal and Torres Strait Islander Australians were drinking at levels that put them at short-term risk of harms at least monthly (compared with 25% non-Indigenous). Earlier reports have indicated that Aboriginal and Torres Strait Islander Australians were up to eight times more likely to be hospitalised with an alcohol-related diagnoses and five times more likely to die from an alcohol-related cause than non-Indigenous Australians (Australian Institute of Health and Welfare, 2011a). Younger people are more likely to suffer acute alcohol related harm and Aboriginal and Torres Strait Islander Australians are a younger population. Age-adjusted figures still suggest a four-fold rate of alcohol-related hospitalisation for Aboriginal and Torres Strait Islander Australians and a five-fold risk of alcohol-related deaths compared to non-Indigenous Australians (D Gray et al., 2018). .

For Aboriginal and Torres Strait Islander Australians, unhealthy alcohol use occurs within a context of social and economic disadvantage, often associated with personal experience of trauma, grief and stress. Trauma may be transgenerational. Ongoing impacts of colonization, including impacts of child removal policies and ongoing racism, are risk factors for poor mental health and/or unhealthy drinking (Dudgeon, Milroy, & Walker, 2014; Wilson, Stearne, Gray, & Saggers, 2010). Poverty, poor housing, lower educational attainment, over-incarceration and challenges in finding employment all can add to stress (Boffa, Tilton, & Ah Chee, 2018). There there is international evidence that lower socio-economic status and Indigenous peoples' experiences of colonisation (and often continued oppression) results in poorer health (Laurence J Kirmayer, 2015; L. J. Kirmayer, Brass, & Tait, 2000). Accordingly, efforts to address these inequalities is likely to support efforts at individual treatment.

In some Aboriginal and Torres Strait Islander communities, drinking has also become an accepted way to relax and connect with friends or family (Maggie Brady, 1993; M. Brady, 1995). However, whatever the reason for drinking, consumption typically occurs in the context of complex medical and sometimes mental health issues.

Drinking patterns vary between and within communities, and the prevalence of drinking in a community may be influenced by history, geography and social context.

Some Aboriginal and Torres Strait Islander Australian communities have a low prevalence of any drinking (Clough et al., 2006). Other communities have a high prevalence of drinking to intoxication and/or of alcohol dependence. For example, one group of remote communities with a high prevalence of exposure to traumatic events had an estimated 33.5% prevalence of alcohol dependence (it is unclear if the authors were referring to lifetime or past 12-months dependence) (Nadew, 2012). Most (90%) individuals with PTSD symptoms in those communities, also met criteria for alcohol dependence.

Communities with a high prevalence of unhealthy drinking can sometimes also have a high prevalence of fetal alcohol spectrum disorder (FASD). For example, in one study of selected remote WA communities, 194 per 1000 children were found to be affected by FASD (95% CI 130-280) (J. Fitzpatrick et al., 2015). That community has since taken significant action to reduce the risk of future FASD, including action to reduce sale of takeaway alcohol (J. P. Fitzpatrick et al., 2017). In some remote communities with a high prevalence of unhealthy drinking, there can be a high prevalence of fetal alcohol spectrum disorder (FASD). For example, in one study of a cluster of remote communities, 194 per 1000 children were found to be affected by FASD (95% CI 130-280) (J. Fitzpatrick et al., 2015). That community has since taken significant action to reduce the harms from alcohol, including reducing sales of takeaway alcohol and community education on FASD (J. P. Fitzpatrick et al., 2017).

There are few data on the prevalence of alcohol dependence among Aboriginal and Torres Strait Islander communities. Such data would be useful to better determine the type of treatment services needed. One study reported a prevalence of 33.5% of alcohol dependence in a remote region with a high prevalence of trauma (Nadew, 2012), that was mentioned above. That study used international screening and assessment tools for detecting dependence but the assessment tool itself has not been validated among Aboriginal and Torres Strait Islander Australians. Also the sample was in a discrete remote region so the results cannot be generalised. Anecdotally, prevalence of drinking and related harms has since decreased in those communities.

Better data on the prevalence of alcohol dependence among Aboriginal and Torres Strait Islander communities could help inform the type of treatment services needed.

In the high risk population of prison inmates in Queensland, 45% of Aboriginal and Torres Strait Islander inmates were classed as having probable dependence based on an AUDIT score of more than 20 (compared with 22% non-Indigenous) (Kinner, Dietze, Gouillou, & Alati, 2012). However in NSW, only 22% of Aboriginal and Torres Strait Islander prison inmates met the same criteria (and the prevalence was similar to that among non-Indigenous inmates in NSW) (Doyle et al., 2015).

Culturally appropriate and accessible healthcare services

There is a need for better access to the full range of alcohol treatment services and increased accessibility and cultural appropriateness for Aboriginal and Torres Strait Islander Australians (Behrendt, 1995; Dreise, 2018; Dudgeon et al., 2014; National Indigenous Drug and Alcohol Committee, 2014).

Consultation suggests that there are many barriers to Aboriginal and Torres Strait Islander Australians accessing mainstream alcohol treatment services. These include lack of cultural appropriateness of service delivery, and (particularly in remote regions) language barriers (Dudgeon et al., 2014; National Indigenous Drug and Alcohol Committee, 2014). Even in urban areas, there are many barriers including concerns about confidentiality, lack of transport and lack of childcare (Katherine Conigrave et al., 2012). From consultation, many services also exclude clients with significant mental or physical health comorbidities, or those who are on opioid treatment programs. There is a shortage of services that can take pregnant women or women with babies, or families (Dennis Gray et al., 2015). By observation and professional consultation, fear of stigma or discrimination or of child removal can also be major barriers to treatment access (KS Lee, Harrison, Mills, & Conigrave, 2014). Community members may not be aware of non-residential treatment options such as home detoxification or relapse prevention medicines, where these are available (Katherine Conigrave et al., 2012).

Respectful and non-judgemental, continuous and integrated care are required (consultation). Care should be founded on an understanding of the Aboriginal and Torres Strait Islander perspective of wellbeing, which includes the individual in the context of family, community and country (WA Drug and Alcohol Office, 2011). Included in this, care should consider mental and physical health, and socio-economic needs such as housing.

Care should be both trauma-informed and culture-informed (Dudgeon, Watson, & Holland, 2017; Purkey, Patel, & Phillips, 2018; Reeves & Stewart, 2015). There should be a strengths-based approach to healing and addressing alcohol use disorders (WA Drug and Alcohol Office, 2011). An example of such an approach is the 'Strong Spirit Strong Mind Inner Spirit Model'. This allows clients to reflect on how their inner spirit and connections to family, community and country have been affected by their alcohol use (WA Drug and Alcohol Office, 2011). Treatment approaches can also draw on the strengths of communities, including support of families, and sometimes Elders (Dudgeon et al., 2014).

There are a number of family-friendly Aboriginal therapeutic communities or residential rehabilitation services (e.g. the Council for Aboriginal Alcohol Program Services (CAAPS) in the NT and Yaandina – Turner River in Western Australia (see https://www.caaps.org.au/ and http://yaandina.org.au/our-services/drug-alcohol-services/ respectively).

Aboriginal Community-Controlled Health Services (ACCHSs) offer culturally acceptable, accessible and comprehensive healthcare to local communities (Campbell, Hunt, Scrimgeour, Davey, & Jones, 2018) (WA Drug and Alcohol Office, 2011). This

also includes population health programs, on-site pharmaceutical dispensing, support with finding accommodation (in some services), family and child support, and chronic disease care programs. Some ACCHSs have specific alcohol and drug programs. For a number of health conditions ACCHSs have been shown to improve access to care and health outcomes for Aboriginal and Torres Strait Islander Australians broadly (Campbell et al., 2018). Accordingly, ACCHSs have great potential to provide alcohol screening and brief intervention (SBI) and onsite treatment for alcohol use disorders. However, the complexity of mental and physical health needs places additional pressures on staff and clients.

Even in mainstream primary care services, referral to an outside specialist service may not be taken up by clients (Glass et al., 2015). So having onsite counselling and other alcohol treatment within ACCHSs is advantageous. Funding models for ACCHSs currently do not always provide for this (Dennis Gray et al., 2015). Funding models also may target certain conditions (e.g. ears, diabetes or renal health) rather than support holistic care (consultation).

Aboriginal and Torres Strait Islander Australians with alcohol or drug use disorders have repeatedly stated a desire to have Aboriginal or Torres Strait Islander staff at substance use treatment services (Dance et al., 2004; Dowsett et al., 2019; Teasdale et al., 2008). Such staff play an important role in increasing treatment accessibility and appropriateness (Ella, 2013; K Lee et al., 2017; Roche, Duraisingam, Trifonoff, & Tovell, 2013). While research has not quantified the extent to which availability of Aboriginal or Torres Strait Islander staff improves health outcomes in the treatment of substance use disorders, we have seen that such staffing improves healthcare delivery for diabetes (Si, Bailie, Togni, d'Abbs, & Robinson, 2006) and can improve engagement of cardiac patients with treatment (K. P. Taylor, Thompson, Wood, Ali, & Dimer, 2009). Aboriginal peer workers also may increase accessibility of care for viral hepatitis among injecting drug users (Treloar et al., 2018).

While many Aboriginal and Torres Strait Islander individuals prefer community controlled health services if they develop a substance use disorder, some prefer the anonymity of a non-Indigenous specific service where they are less likely to ‘bump into’ family or friends (Dowsett et al., 2019; Teasdale et al., 2008). Accordingly having choices available is important. Partnerships between mainstream services and ACCHSs can help ensure the best possible care (National Indigenous Drug and Alcohol Committee, 2014; Teasdale et al., 2008).

Capacity building

Cultural training and resources are available to enhance non-Indigenous staff’s ability to work in a culturally appropriate way (for example (Australian Indigenous Health Infonet, 2019; WA Drug and Alcohol Office, 2011)). There are also checklists available to assess service or clinician cultural competence e.g. in Western Australia (Ferris, 2012). Mainstream services can also work in partnership with ACCHSs to assess and

improve the way they (the mainstream services) work (Teasdale et al., 2008). However these partnerships need sufficient time and funding to mature (K. Taylor, Bessarab, Hunter, & Thompson, 2013). Consultation suggests that arrangements such as MOU's for shared care between services can provide clarity in roles.

There are many pressures on Aboriginal and Torres Strait Islander alcohol and drug workers (Ella, 2013; Roche et al., 2013) and there is a need for support and ongoing training opportunities for them (Ella, 2013; Roche et al., 2013). Recognised and quality training programs should support the development of a skilled Aboriginal and Torres Strait Islander workforce to respond better to the needs of Aboriginal and Torres Strait Islander individuals, their families and their communities experiencing AOD and social and emotional wellbeing related harms (K. K. Lee, Harrison, et al., 2019; Mental Health Commission of Western Australia, 2019). In some states, support networks are in place for Aboriginal and Torres Strait Islander alcohol and drug workers (K Lee et al., 2017). Consultation also suggests the need for security of funding for Aboriginal and Torres Strait Islander Australian health staff, to prevent loss of skilled workers, and for a peak body for Aboriginal and Torres Strait Islander alcohol and drug workers (NIDAC, 2013).

Engagement, screening, and assessment in primary care

Engagement

There can be sensitivities around discussing alcohol use (K S Kylie Lee et al., 2018), particularly if the person perceives or fears discrimination; or is ashamed of harms from drinking. An unrushed and conversational approach can help the client feel comfortable, and more willing to share information (Kate Conigrave, Lee, & Freeburn, 2015). Ideally screening should be preceded by informal conversation to build a respectful and genuine relationship between clinician and client. Asking the person "Who's your mob?" and "Where's your country?" (Lovett, Dance, Guthrie, Brown, & Tongs, 2014) may help build trust and rapport with Aboriginal and Torres Strait Islander clients and show respect. This may also help place the healthcare needs of the client in the cultural context of their relationships to country and family (Lovett et al., 2014).

If the client is uncomfortable in a face-to-face clinical setting interview, sitting alongside the person, rather than in front of them, and having a less clinical environment (e.g. with art on the wall, or outdoors) may help. For clients from or in more remote communities, the clinician should be alert to cultural protocols, including around interactions with the other gender, and about asking direct questions (Kate Conigrave et al., 2015; Kylie Lee et al., 2012).

Screening

There can be difficulties in quantifying the amount of alcohol consumed. Converting drinking into 'standard drinks' can be challenging for the client, especially when drinking is from non-standard containers which might be shared. There is a lack of familiarity (as in the general community) with the size of a 'standard drink'. If the individual has not had access to quality schooling or where English is a second language and so is less comfortable with numeracy this challenge may be even greater. Asking the type, size and fullness of drink containers that clients consume, is likely to improve accuracy of screening. Visual aids or computer-administered screening tools can be used to help work out how much the client is drinking, or to teach the client how much a safer level of drinking (K. K. Lee, Conigrave, Callinan, et al., 2019; N. E. Noble et al., 2014).

Asking about the context of the drinking (K. S. K. Lee et al., 2014) (e.g. presence of other drinkers, risks to self or others) can help to assess risk and assists with considering options for changing unhealthy drinking (i.e. drinking above recommended limits, whether or not there is an alcohol use disorder). Both screening and assessment should consider sharing of alcohol, as some clients may report on how much the group drank, rather than their own drinking (Katherine Conigrave et al., 2012; Kowalyszyn & Kelly, 2003).

Lastly, AUDIT questions (or other screening tools) may need to be rephrased in consultation with local Aboriginal and Torres Strait Islander Australians into either local English or traditional language, as the understanding of the questions can differ in different locations (M Brady, Sibthorpe, Bailie, Ball, & Sumnerdodd, 2002; Katherine Conigrave et al., 2012). It is important to ask about the timing of drinking, such as asking when the weekend starts and ends for that client.

One screening tool that has been developed specifically for use in the Aboriginal and Torres Strait Islander setting is the Indigenous Risk Impact Screen (IRIS) (Schlesinger, Ober, McCarthy, Watson, & Seinen, 2007). It screens for alcohol and other drug use disorders at the same time as screening mental health issues. However, the substance use questions relate to dependence, rather than consumption levels, which may make it less able to detect hazardous or harmful drinking (drinking that is over recommended NHMRC guidelines but not associated with dependence). IRIS has been found acceptable and culturally appropriate due to its holistic approach to health (M Mofizul Islam et al., 2018). It has also been found valid in comparison with AUDIT, Leeds Dependence Questionnaire (LDQ) and Depression, Anxiety and Stress Scale (DASS-21), amongst other mental health and drug dependence scales.

In some communities, intermittent or episodic drinking may be common. Clients may have long "dry patches" from drinking, where they may go months without drinking until there is a specific event (e.g. sorry business, football grand final, or left prison). Accordingly, the quantity-frequency method of asking about alcohol consumption may pose challenges (K. S. Kylie Lee et al., 2010). For example, if asked about their usual drinking pattern, a person may answer they are a non-drinker. However, if asked when

they last had a drink, and how much it was, it may reveal a high-risk drinking occasion (e.g. 20 standard drinks) within the past year.

The full 10-item AUDIT has found to be acceptable in an Aboriginal and Torres Strait Islander community setting, but some Aboriginal and Torres Strait Islander health workers felt it was too long for primary care and was 'intrusive' (M Brady et al., 2002). The AUDIT questionnaire's three consumption questions (AUDIT-C) use quantity-frequency items that implicitly assume a "usual" drinking pattern (Figure 1). Existing research suggests that the 3-item AUDIT-C, and a modified form of its third question (alone), AUDIT-3m are valid in comparison with the full-AUDIT and a one-week retrospective drinking diary among Aboriginal and Torres Strait Islander Australians (B. Calabria, Clifford, Shakeshaft, et al., 2014; N. Noble et al., 2015). Such short 1-3 item forms of AUDIT, focusing on consumption patterns, are preferred in primary care settings and have been found to be acceptable in several ACCHSs (M. M. Islam et al., 2018). AUDIT-C screening rate is currently one of the current national key performance indicators for ACCHSs (Australian Institute of Health and Welfare, 2017b)

The World Health Organization's ASSIST (Alcohol, Smoking and Substance Involvement Screening Test) has reportedly been used and found acceptable amongst Aboriginal respondents to assess alcohol and other substance use (e.g. (Holmwood, Marriott, & Humeniuk, 2008)). Its shorter version ASSIST-lite (Ali, Meena, Eastwood, Richards, & Marsden, 2013) has also anecdotally been successfully used with Aboriginal clients.

It should be noted that new or existing screening tools have typically been validated against other internationally published screening tools. However, that 'gold standard' itself has typically not been tested or validated in an Aboriginal and Torres Strait Islander context.

One study compared an alternative screen for unhealthy drinking against assessment of drinking by an Aboriginal and Torres Strait Islander health professional. The tablet computer-administered screen asked about the quantity of alcohol consumed on the last drinking occasion and the timing of the last 2-4 drinking occasions (K. K. Lee, Conigrave, Callinan, et al., 2019). This approach was found valid in comparison to the clinical assessment of drinking.

Touch screen technology offers potential as a way to facilitate screening and assessment (K. K. Lee, Conigrave, Al Ansari, et al., 2019; K S Kylie Lee et al., 2018). Computer-administered screening or assessment tools have been successfully used in primary healthcare settings (N. E. Noble et al., 2014). Visual images and pre-recorded translation delivered via the computer can assist with accurate communication (Doessel, Travers, & Hunter, 2007; Hunter, Travers, Gibson, & Campion, 2007; K. K. Lee, Conigrave, Callinan, et al., 2019).

Implementation of screening and brief intervention in ACCHS

Several studies have documented the challenges in implementing screening and brief intervention (SBI) in an ACCHS (M Brady et al., 2002; A. Clifford, Shakeshaft, & Deans, 2013). ACCHS staff training workshops have been used to assist implementation of SBI (A. Clifford et al., 2013). However the authors in that study noted that further support is needed to address barriers to universal alcohol and other drug screening and that there is a lack of follow-up support available for clients (A. Clifford, Shakeshaft, & Deans, 2012). Implementation research internationally suggests that support for implementation of screening and brief intervention should target several levels, including client level (so individuals expect conversations around alcohol), clinical, service organisational and broader funding environment (Anderson, Laurant, Kaner, Wensing, & Grol, 2004; Keurhorst, Glind, Bitarello Do. Amaral-Sabadini, et al., 2015).

Comprehensive assessment

If a person has evidence of unhealthy drinking, fuller assessment is needed. As with screening, this should consider sharing of drinks and use of non-standard drinking containers, intermittent drinking, and experience of withdrawal symptoms. Without consideration of these factors, overestimation of an individual's drinking may lead to over-sedation in treatment of withdrawal; or underestimation may result in under-treatment of a potentially risky withdrawal. Some Aboriginal and Torres Strait Islander Australians who drink a relatively high amount per occasion may not experience withdrawal symptoms when they stop drinking (Margolis, Ypinazar, Clough, & Hunter, 2008). This may be due to an episodic pattern of drinking (Margolis et al., 2008).

Assessment of drinking patterns can be assisted by asking about consumption at key timepoints: e.g. the weekend (and check what days the 'weekend' begins and ends for that person), football grand finals, sorry business (K S Kylie Lee et al., 2018).

Assessment of harms can be done in a way that helps the client reflect on the impacts of alcohol and other drugs on a number of areas of the client's life (e.g. including on family, community or culture). One culturally secure example of assessing alcohol and other drug related harms is using the seven area's (or 'Seven L's) model' (liver, lover, livelihood, law, Aboriginal law, legal and land [ie. traditional law and values]) (Casey, Keen, & Western Australia, 2005; WA Drug and Alcohol Office, 2011). Reflective listening during an assessment (i.e. summarising what the person has said), can allow the assessment to seamlessly flow on to a brief intervention or brief motivational interviewing session (Resnicow & McMaster, 2012). This improves mutual understanding between the client and clinician and also provides an opportunity for the client to self-reflect on their current circumstances.

Assessment should reveal the client's readiness to change, and the person's context, including both strengths and challenges in the family and community. This can then assist with tailoring the conversation around alcohol and with treatment planning.

For non-Indigenous health professionals, working in partnership with an Aboriginal and Torres Strait Islander health professional (where available, and where the client is willing) can increase understanding of the client's drinking and social context (K. K. Lee, Conigrave, Callinan, et al., 2019). This is a holistic, strengths-based approach that provides culturally secure support for clients.

Brief intervention

Brief interventions (BI; or brief 'yarn' on alcohol) can be offered to support Aboriginal clients for unhealthy alcohol use. It is important to have this conversation when unhealthy drinking emerges, given the many barriers to accessing specialised treatment services (K. M. Conigrave, Teasdale, Freeburn, Kiel, & Becker, 2006; Teasdale et al., 2008). Having an unrushed interview is necessary to build a relationship with the client and enables a productive discussion of the contributors and impacts of alcohol on the individual, families and communities (Downes, Brennan, Williams, & Dean, 2016; Panaretto, 2010)

There has been no published controlled trials on the effectiveness of brief interventions in Aboriginal and Torres Strait Islander-specific health care settings (Sibthorpe et al., 2002) or with Aboriginal and Torres Strait Islander populations. However, anecdotally in a range of settings Aboriginal and Torres Strait Islander Health Workers and other health professionals have delivered opportunistic brief interventions and found these acceptable to the client (Katherine Conigrave et al., 2012)

Brief intervention principles and resources have also been used in an Aboriginal and Torres Strait Islander community group context in one study (Katherine Conigrave et al., 2012). This study used confidential individual screening with AUDIT and feedback of results. This was followed by an interactive group discussion of drinking, incorporating visual aids (Alcohol Awareness, which is a visual adaptation of the World Health Organisation-derived 'Drink-less kit') (The University of Sydney, 2012). This approach appeared well accepted and prompted group discussion on drinking (Katherine Conigrave et al., 2012).

Within the ACCHS setting, there are a number of challenges to conducting screening and brief interventions, including a lack of time due to the many competing health and socio-economic and cultural priorities for the client.

Optimal implementation of brief interventions into primary healthcare services is likely to require collaborative and supportive strategies, tailored to the needs of the health care practitioners and clients (A. S. Clifford, Anthony, 2011; A. S. Clifford, Anthony; Deans, Catherine, 2012; Keurhorst, Glind, Bitarello do. Amaral-Sabadini, et

al., 2015). Continuing quality improvement has shown value on implementation of other evidence-based practices in ACCHSs and can potentially allow monitoring of screening and action for alcohol(Bailie, Si, Oˈdonoghue, & Dowden, 2007).

Touch screen computers have also been used to provide individualised feedback on alcohol use to Aboriginal and Torres Strait Islander Australians, however the effectiveness of this feedback in changing alcohol use has not yet been measured (K. K. Lee, Conigrave, Al Ansari, et al., 2019).

Brief interventions, and other 'talking therapies' for alcohol, should be focused on client priorities. For Aboriginal and Torres Strait Islander Australians consideration of their priorities in relationships with family or community is likely to be important (Behrendt, 1995; Dreise, 2018).

Brief interventions may be sufficient for the individual who is not dependent on alcohol. Those with dependence are likely to require ongoing treatment and support (see below). Sometimes the primary care practitioner will have the skills and confidence to treat alcohol dependence. However sometimes alcohol dependence is more severe, comorbidities more complex, or the practitioner does not have the skills or confidence and referral is necessary. Given the many barriers to service access, particularly if the referral to an external service, support can be required to help the client feel comfortable to attend the appointment and meet the new staff. Similarly, if clients need referral to social support services, support ,au reduce barriers to service access.

Treatment of alcohol dependent

There have been several descriptive studies of models of treatment for alcohol in ACCHSs (d'Abbs, Togni, Rosewarne, & Boffa, 2013; National Indigenous Drug and Alcohol Committee, 2014). There have also been studies describing or assessing acceptability of other treatment approaches but we were unable to identify any completed trials of effectiveness. However there is evidence from mainstream studies of treatment of alcohol dependence that is likely to be relevant. There is also evidence on treatment of other morbidities within Aboriginal and Torres Strait islander populations that can provide useful evidence, for example on the importance of culturally appropriate care and treatment.

Treatment in the context of family and community

Mainstream medical approaches are often based on one-on-one interactions between a clinician and the client. However Aboriginal and Torres Strait Islander culture places a great importance on the individual as part of the family and community (Behrendt,

1995; Dreise, 2018). Because of this, relationship to community and also to land can be very important.

An individual may have the support of family members or Elders in the community in their efforts to change their drinking (consultation).

Many ACCHS and other organisations state the importance of outreach work to engage potential clients, to support existing clients, and to provide alternative and meaningful activities, and connectedness, for those trying to stop drinking; and to provide harm reduction to those who are not ready to stop drinking, or cannot stop (consultation).

From mainstream primary care services (Keurhorst, Glind, Bitarello Do. Amaral-Sabadini, et al., 2015) there is evidence that it is easier to provide screening, brief intervention and treatment if there are also efforts to engage with clients in the clinic (e.g. by posters or written communication) or in the community, and raise awareness of alcohol as a health issue.

Role of culture as treatment or in treatment

Culture is seen as important in recovery in alcohol dependence (M. Brady, 1995; McCormick, 2000). Even young urban Aboriginal and Torres Strait Islander Australians with hazardous alcohol use or drug use see culture as an important element of health service delivery (Dowsett et al., 2019). A wide range of cultural approaches have been used by Aboriginal and Torres Strait Islander agencies or communities, including returning to country, cultural enhancement, and men's or women's groups (Kim San Kylie Lee, Dawson, & Conigrave, 2013; Preuss & Napanangka Brown, 2006). Anecdotally these approaches can be successful.

Activities that are meaningful and promote connectedness to community and family may be appropriate ways to reduce alcohol problems, as it may provide social connection and identity that is not linked to the drinking circle. As family and community relationships are core to the lives of many Aboriginal and Torres Strait Islander people, involving family and community can help in treatment (T. Nagel, Robinson, Condon, & Trauer, 2009), and family may need assistance or support for themselves as well.

Participants of an urban Aboriginal and Torres Strait Islander women's group held within an outpatient alcohol or drug treatment service reported that they found the group useful (Kim San Kylie Lee et al., 2013). The group was seen as building upon an appropriate social and cultural context. Key aspects of the group also included socialization in a supportive atmosphere between women undergoing similar challenges, practical support and building of new skills to help increase self-esteem and sense of identity, and early identification of issues and providing a pathway to treatment (Kim San Kylie Lee et al., 2013)

Across the country, different types of treatment approaches may be needed to cater towards different individual needs, including cultural needs and community contexts (Dale et al., 2019)

Case management

As alcohol dependence can behave like a chronic relapsing condition, active follow-up support is important to reduce risk of relapse or manage any relapse that does occur (McLellan, 2002). One alcohol treatment program in an ACCHS, the "Grog Mob" program, described a case management model with three streams of care: medical, psychological (particularly CBT) and social/cultural. The social and cultural stream integrated employment services, accommodation services and helped clients explore their cultural roots and issues of Aboriginal and Torres Strait Islander identity (d'Abbs et al., 2013). Implementing this treatment program was feasible but staffing issues were encountered and some reluctance to prescribe relapse prevention pharmacotherapies among general practitioners.

Individual psychosocial interventions

CRA There is limited research evidence on one-on-one relapse prevention counselling in the management of alcohol use disorders in Aboriginal and Torres Strait Islander settings. Counselling approaches, such as Cognitive Behaviour Therapy (CBT), Dialectical Behavioural Therapy (DBT), Community Reinforcement Approach (CRA) and motivational interviewing, are widely used in the general population, and are reported to be used among Aboriginal and Torres Strait Islander Australians (B. C. Calabria, A.; Rose, M.; Shakeshaft, A. P., 2014; d'Abbs et al., 2013). There is some evidence about how to adapt such approaches to an Aboriginal and Torres Strait Islander population in the context of alcohol and other drug treatment, including for CRA (B. Calabria, Clifford, Rose, & Shakeshaft, 2014), motivational interviewing (T. M. Nagel & Thompson, 2010). CBT has been successfully used, including for mental health disorders (Bennett-Levy et al., 2014), among Aboriginal and Torres Strait Islander Australians.

One study found that CRA is acceptable in Aboriginal and Torres Strait Islander populations, especially for individuals after the withdrawal stage (B. Calabria et al., 2013). This same study also found that Community Reinforcement and Family Training (CRAFT) was acceptable for people who wanted practical skills to help a friend or a relative start alcohol treatment. CRA and CRAFT may be adapted to improve its appropriateness for Aboriginal and Torres Strait Islander Australians by changing from technical language to plain language, inclusion of Aboriginal and Torres Strait Islander-specific scenarios and reducing the number of individual treatment sessions (B. Calabria, Clifford, Rose, et al., 2014). Many participants emphasized the need for follow-up support.

Withdrawal management

Careful assessment can help predict the need for withdrawal management (see above).

The barriers that people face in accessing withdrawal management ('detox') services have been mentioned above. Moreover, inpatient alcohol detox services are in high demand and have limited beds and often long waiting lists (Dennis Gray et al., 2010). As a result, clients may disengage from treatment, even when wanting to change their drinking (Brett et al., 2017).

At the date of writing, to our knowledge there are no residential withdrawal management programs specifically for Aboriginal and Torres Strait Islander individuals, but some ACCHSs and mainstream services provide outpatient detoxification services as needed (Brett, Lawrence, Ivers, & Conigrave, 2014).

One pilot study has demonstrated the potential for ACCHSs to provide ambulatory withdrawal treatment or 'home detox' (Brett et al., 2017). This model of treatment was found acceptable and feasible for carefully selected clients (Brett et al., 2017). Participants highlighted the desirable fit between outpatient detox and focusing on keeping family together and on the community for recovery (Brett et al., 2014). Consultation suggests that, clients often can identify supportive family members who do not drink and who could potentially support them during the withdrawal phase or afterwards. However careful screening for comorbidities which could increase the risk of withdrawal was necessary.

Relapse prevention medicines

For pharmacotherapies there is no biological reason to believe that the same chemicals would have a different effect in an Aboriginal and Torres Strait Islander Australians compared to non-Indigenous Australians, but we lack evidence on effectiveness in this population, or on the best way to provide these treatments.

Both naltrexone and disulfiram have been used in North American First Nations settings but there is still insufficient evidence for their effectiveness (Ferguson, 1970; O'Malley, 2008; Savard, 1968). Anecdotally they have been used and found acceptable in ACCHS settings but access to such pharmacotherapies to treat alcohol dependence is poor, and there may be low awareness both among potential prescribers and community (Brett, Ivers, Doyle, Lawrence, & Conigrave, 2015)

There have been suggestions that naltrexone would be an useful medication to reduce the intensity of drinking episodes in heavy episodic drinking (Brett et al., 2015). It may be more manageable for clients with busy lives, due to its once-daily dosing, and it can potentially be started while the person is still drinking. In general populations, naltrexone has also been used to provide protection during high risk periods (e.g. when expecting to be exposed to alcohol, or when craving is likely to be high).

Acamprosate on the other hand requires dosing three times a day, which may be hard to adhere to for a person with a complex life with many socio-cultural demands.

Disulfiram is not subsidised in Australia, so is expensive to the client, and so has limited accessibility. It can reportedly be beneficial in individuals who are highly motivated to stop drinking but have severe dependence. However, many physical comorbidities preclude its use, such as severe liver disease, unstable diabetes or cardiovascular disease (Brett et al., 2015).

Residential services

Mainstream residential rehabilitation programs can be challenging for some Aboriginal and Torres Strait Islander Australians due to their inflexibility and formal group activities (K Taylor, Thompson, & Davis, 2010). As Aboriginal and Torres Strait Islander Australians may have different patterns and contexts of drinking, it is valuable to offer the choice of alternative residential rehabilitation approaches. For example, clients may have different perspectives on family involvement. Some clients would *not* like their family to be involved in their treatment, while others see family and their responsibilities towards them as strong motivators for change (K Taylor et al., 2010).

Aboriginal and Torres Strait Islander drug and alcohol residential rehabilitation services can provide a broad range of treatment, including life skills, cultural education and counselling, which is often based around a 12-step Alcoholics Anonymous framework (James, Shakeshaft, Munro, & Courtney, 2017). These facilities vary in location, program length and services provided. However, core to them is the integration of traditional values and Aboriginal and Torres Strait Islander concepts of health into their model of care (James et al., 2017). Current research on Aboriginal and Torres Strait Islander residential rehabilitation services is sparse, mostly descriptive and varies in methodology. Further evaluation is needed of positive factors for recovery and of the different therapeutic approaches to help develop the most effective model possible for residential treatment.

Community and health professional consultation supports the need for seamless transition between alcohol withdrawal management ('detox') and into rehabilitation. After-care and support are then needed when re-entering the community.

Mutual support groups

A variety of mutual support groups that were originally developed for non-Indigenous Australians have been adapted for Aboriginal and Torres Strait Islander Australians. Typical adaptations include making them more culturally appropriate, trauma-informed or linguistically inclusive (Dale et al., 2019). However, there is a limited

research on mutual support groups such as AA and SMART among Aboriginal and Torres Strait Islander Australians (Dale et al., 2019).

There is also a range of groups specifically developed by and for Aboriginal and Torres Strait Islander peoples (see below). Anecdotally these are highly beneficial, but there is not yet research on effectiveness.

Peer support

Peer support has shown promising results in increasing access to Hepatitis C treatment and treatment adherence among Aboriginal and Torres Strait Islander individuals (Treloar et al., 2018). In this context, a peer is a person with a comparable cultural background to the client group and typically with lived experience of the disorder in question but who is not trained or employed as a health care professional. Peer workers are generally paid roles within health care settings and are increasingly available with high levels of acceptance by clients of the services. Peer support has also been used in mental health and alcohol and other drug addiction treatment settings internationally (Markoulakis et al., 2018). There has not yet been published research that evaluates the role of a peer support approach works in increasing access to alcohol treatment within the Aboriginal and Torres Strait Islander community.

Comorbidities

Trauma, grief and mental health

Health professionals should be mindful of trauma and grief, including transgenerational trauma, as well as ongoing stress, and how alcohol use may interact with these (Dudgeon et al., 2014). Trauma-informed care will guide treatment to be more holistic, focusing not only on the individual but also on the family and community (Dudgeon et al., 2014).

If a client has recently ceased alcohol use, pre-existing stress can be heightened by the withdrawal. Hence it is likely to be appropriate to defer active treatment for psychological trauma until a time when the person is more stable. Instead, supportive care may be the most appropriate in the short term. One RCT in a mainstream population has found that a stepped care model (where first alcohol was managed, then mental health) was more effective compared to usual counselling care in terms of measures of alcohol consumption, for individuals with alcohol dependence and comorbid anxiety or depression (Morley et al., 2015).

There are many challenges in accessing services for individuals with substance use disorders (like alcohol) and concurrent mental health issues (K. Lee et al., 2014). Such clients, as well as their families, are likely to require a variety of treatment options, and integrated care.

Physical health conditions

An alcohol use disorder can interfere with a person's ability to manage their other health conditions, such as diabetes. There is also a complex relationship between alcohol and diabetes, where alcohol on an empty stomach in a person on medication for diabetes diabetes can cause hypoglycaemia, but chronic heavy use of alcohol can increase insulin resistance (Pietraszek, Gregersen, & Hermansen, 2010).

Acute episodic drinking can increase the risk of cardiac events (such as atrial fibrillation [AF] and heart attacks) (Ries, Fiellin, & Miller, 2015). Alcohol consumption can also have additive and severe effects on the liver in combination with chronic Hepatitis C or B virus infection. Hazardous alcohol use increases the risk of unprotected sex, and hence risk of acquiring or spreading some STIs (Miller, Law, Torzillo, & Kaldor, 2001). Alcohol use also tends to be associated with increased smoking, which further increases risk of vascular disease.

For women of childbearing age, it is important to check awareness of the risk of alcohol to an unborn child. Contraception should be available to women who want to drink alcohol to reduce the risk of FASD (consultation). If a woman is currently breastfeeding, it is important to check that she is aware of the risks of breastfeeding after drinking and of ways to minimise these risks (consultation).

Harm reduction

Harm reduction measures for drinkers who are unable or unwilling to change their drinking should be tailored according to client and community needs and strengths. While many different harm reduction initiatives have been initiated by Aboriginal or Torres Strait Islander communities (e.g. night patrols (Blagg & Valuri, 2004), breakfast programs) there has been only descriptive research on these. To date there has not been any published research on ways to increase access to supplementary thiamine among Aboriginal and Torres Strait Islander drinkers, including those who are accessing treatment services, those at home or homeless. Through individual support, or support of family, it may be possible to reduce risk to children, family and community members or on the roads (Kylie Lee et al., 2012)

Research needs

Much of the available research in Australia involves attempts to adapt and implement mainstream approaches into an Aboriginal and Torres Strait Islander setting, or descriptions of Aboriginal and Torres Strait Islander approaches currently being taken in treatment of alcohol dependence. There is a need for studies of effectiveness of current or new approaches for treatment unhealthy drinking (including alcohol dependence).

Consultation reveals the importance of culture in healing, as prevention and part of treatment of alcohol use disorders (National Indigenous Drug and Alcohol Committee, 2014). Further research could include a focus on this and on strengths available within individuals, families and communities to support individuals or groups to change unhealthy drinking.

There can be challenges in implementing randomised controlled trials in Aboriginal and Torres Strait Islander settings to test the effectiveness of treatment or to study ways to improve implementation of treatments within services (M Brady et al., 2002; Sibthorpe et al., 2002). However other scientific approaches (e.g. cluster randomization or step-wedge designs) are available that provide acceptable alternatives.

There is a need for Aboriginal and Torres Strait Islander leadership or key partnership in this research to ensure the questions and research approaches are appropriate (NHMRC, 2018).

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CHAPTER 16

CULTURALLY AND LINGUISTICALLY DIVERSE GROUPS. REVIEW OF THE EVIDENCE

16. Culturally and Linguistically Diverse Groups. Review of the Evidence

Introduction

In Australia, one in three people are born overseas, and one in five households speak languages other than English. After English, the next most common languages spoken at home were Mandarin, Arabic, Cantonese, Vietnamese, Italian and Greek at the 2016 Census (Australian Bureau of Statistics, 2016).

Culturally diverse populations are less likely to drink alcohol in general, compared to non-CALD populations (Rowe, Ansara, Jaworski, Higgs, & Clare, 2018). A survey among Chinese, Vietnamese, Italian, Pasifika, Arabic and Spanish speaking communities in Sydney reported overall use of alcohol was lower than the general population in all communities (Donato-Hunt et al 2012). A similar pattern has been found in immigrants in the UK (Gazard, Frissa, Nellums, Hotopf, & Hatch, 2015), Canada, (Agic et al., 2016), Finland (Salama et al., 2018), Spain (Qureshi et al., 2014) and the US (Salas-Wright& Vaughn, 2014, Rolland et al., 2017). For long-term risk of harm from alcohol drinking, the limited available evidence indicates that overall rates among CALD populations in Australia are lower than among non-CALD populations (NSW Health 2016). However, in cross-sectional surveys with specific CALD communities, some groups have reported drinking practices associated with higher short-term risk to health (Donato-Hunt, 2012).

Whilst alcohol consumption is influenced by drinking patterns in country of birth (Szaflarski, Cubbins & Ying, 2011;, Savic, Barker, Best, & Lubman, 2014,; Barsties et al., 2017); levels and consumption behaviours do also change after migration and resettlement (Arfken, Broadbridge , Jamil, & Arnetz, 2014; Agic et al 2016; Jaworski et al 2016). One explanation is that consumption is related to acculturation (typically measured through language competence, age of migration or duration of residence), i.e. the uptake of the social, cultural, gender norms and practices relating to alcohol use in the resettlement country, which in Western countries tends to be more permissive (Park, Anastas, Shibusawa, & Nguyen, 2014;; Szaflarski, Klepinger, & Cubbins, 2019). Additionally, post-migration stressors including economic exclusion, social marginalisation, family-cultural conflict and discrimination can also lead to alcohol being used as a coping mechanism (Park et al., 2014; Horyniak, Higgs, Cogger, Dietze, & Bofu,2016). Lower substance use prevalence is not observed among people from culturally diverse backgrounds who have mental health issues (Rowe et al., 2018).

For refugee populations, whilst also likely to report lower levels of alcohol use (Giallo et al., 2017; Manhica et al., 2017) compared to host country populations; risk factors for increasing alcohol use also include trauma exposure, length of refugee experience and environmental setting (i.e. camp or community) (Weaver & Roberts 2010; Salas-Wright & Vaughn, 2014; Horyniak, Melo, Farrell , Ojeda, & Strathdee, 2016).

Alcohol and Other Drug treatment services in Australia report lower attendance by people born in overseas countries compared to the Australian population and by people who speak languages other than English at home (Australian Institute of Health

and Welfare, 2019a,b). CALD communities can experience significant barriers to accessing and engaging in Western treatment programs (Posselt, Galletly, de Crespigny, & Procter, 2014; McCleary, 2017) for reasons including and lack of cultural relevance and appropriateness of treatment programs, concerns about trustworthiness and inclusivity of mainstream services, and fear of consequences of service involvement (e.g. immigration) or confidentiality breaches (Gainsbury, 2017; Victorian Alcohol and Drug Association, 2016).

Cultural competence in assessment, treatment and service provision

The literature reviews of Gainsbury (2017) and of Bayley and Hurcombe (2010) conclude that the treatment needs of CALD communities are often not met. Greater attention to cultural issues is needed in the development and delivery of alcohol services in mainstream and specialist settings. Cultural Competence is defined as "a set of congruent behaviors, attitudes, and policies that come together in a system, agency, or among professionals and enable that system, agency, or those professionals to work effectively in cross-cultural situations." (Cross, Bazron, Dennis, & Isaacs, 1989, p. 28).

Clinicians should work in partnership with CALD health professionals and/or agencies to improve treatment access and appropriateness of care. The Victorian Alcohol and Drug Association's *CALD AOD Project Final Report* recommends that AOD agencies be supported to establish interagency partnerships and protocols with CALD organizations, thus ensuring more accessible, holistic and culturally safe services for individuals and family members impacted by harmful AOD use (Victorian Alcohol and Drug Association, 2016).

The Substance Abuse and Mental Health Services Administration's Treatment Improvement Protocol (TIP) monograph on Improving Cultural Competence (2014) is the most comprehensive manual to improving cultural competence in the Substance Abuse field. It lists a number of core assumptions:

• An understanding of race, ethnicity, and culture (including one's own) is necessary to appreciate the diversity of human dynamics and to treat patients effectively.

• Incorporating cultural competence into treatment improves therapeutic decision-making and offers alternative ways to define and plan a treatment program firmly directed toward progress and recovery.

• Organizational commitment to supporting culturally responsive treatment services,

including adequate allocation of resources, reinforces the importance of sustaining cultural competence in counsellors and other clinical staff.

• Advocating culturally responsive practices increases trust within the community, agency, and staff.

• Achieving cultural competence requires the participation of racially and ethnically diverse groups and underserved populations in the development and implementation of treatment approaches and training activities.

• Consideration of culture is important at all levels of operation and in all stages of treatment and recovery.

Guideline recommendations	Grade of recommendation
16.1 Clinicians should work in partnership with CALD health professionals and/or agencies to improve treatment access and appropriateness of care	C

Clinical Assessment and Engagement

Assessment of people with substance use problems is heavily dependent on the clinician's ability to establish effective communication and rapport across varying language and cultural systems. For CALD people it is recommended to document language spoken at home and where parents/ancestors are from. This will give more information than country of birth, which can obscure intra-ethnic and cultural differences. Enquire about the importance of a patient's cultural identity to them, without making assumptions (Rowe, 2014). This is part of a broader approach referred to as cultural humility (Hook, Davis, Owen, Worthington, & Utsey, 2013).

Guideline recommendations	Grade of recommendation
16.2 For CALD people document language spoken at home and where parents/ancestors are from. Enquire about the importance of a patient's cultural identity to them, without making assumptions. This approach is sometimes referred to as cultural humility	D

A number of studies indicate CALD patients prefer bicultural and bilingual counselling where this is available (see Rowe, 2014). Field and Caetano (2010) found that an ethnic match between patient and provider significantly enhanced the effectiveness of brief intervention among Hispanic patients, resulting in a significant reduction in drinking outcomes at 12 month follow up. In addition, there was a tendency for ethnic match to be most beneficial to foreign born and less acculturated Hispanic patients. Preferences for same-language clinician or interpreter options should be discussed with patients; as some may have concerns about confidentiality.

Using interpreters

If the best option is to use an interpreter for a clinical interaction these are typically provided through the nation-wide Translating and Interpreting Service or relevant state/territory government department. Treatment providers should confirm with their management or funding body what is applicable for their service.

Using the Teach- back method or other appropriate techniques to assess the need for language support will help develop an appropriate management plan. (NSW Multicultural Health Communication Service, Illawarra Shoalhaven Local Health District Clinical Governance Unit & Clinical Excellence Commission, 2013; Lee, Tavares, Popat-Jain &Naab, 2015).

Working with interpreters is a skill and clinicians should seek further training to utilise interpreting services effectively. A few simple strategies are listed here, however additional techniques will need to be applied depending on patient circumstances (e.g. trauma history).

- Allow the patient choice about interpreter options (e.g. gender, or sub-community) where possible.
- Speak directly to the patient, rather than the interpreter.
- Allow space for briefing and debriefing the interpreter before and after the consultation.
- Use short sentences and minimise jargon wherever possible. Even commonly used terms such as 'counselling' may not have an equivalent term in some languages and explaining the processes involved may be more helpful.

Guideline recommendations	**Grade of recommendation**
16.3 Use the Teach-back method or other appropriate techniques to assess the need for language support. Give the patient choice about interpreter options (e.g. gender) where possible. Provide bicultural and bilingual treatment/counselling where possible, and preferred by the patient.	C
16.4 For challenging conversations about alcohol use, a professional interpreter is preferable to using an attending family member or carer.	C

Language resources, where available, can be particularly valuable to CALD groups when used in conjunction with appropriate clinician support.

Information in community languages	
Multicultural Health Communication Service	http://www.mhcs.health.nsw.gov.au/
Health Translations	http://healthtranslations.vic.gov.au/
Drug info@ your library	http://www.druginfo.sl.nsw.gov.au/languages/index.html
Your Room	https://yourroom.health.nsw.gov.au/resources/publications/pages/publications.a (use languages search tag)

Guideline recommendations	Grade of recommendation
15.5 Use suitable materials and resources both in terms of language and social demographics, such as age and gender	B

Service Provision, the need for targeted services and resources

Some studies have indicated that the culturally adaptation of evidence-based treatments can increase recruitment, retention and treatment outcomes among certain CALD populations; although the relative level of effectiveness is still unclear. In addition to language and worker ethnicity matching, adaptations also include incorporating cultural health beliefs, cultural values (such as the importance of family) and health practices into treatment (Huey, Tilley, Jones & Smith, 2014; Gainsbury 2017). Few methodologically rigorous trials have been conducted to guide alcohol treatment practices operating in an Australian context as to which particular adaptations are effective for certain communities; and further research needs to be incorporated into existing culturally relevant treatment services. (Gainsbury 2017; Nagayama Hall, Ibaraki, Huang, Marti, & Stice, 2016; Jones, Huey & Rubenson, 2018).

Manuel and colleagues (2015) conducted a comprehensive review of the literature on screening, brief intervention and referral into treatment (SBIRT) in racial and ethnic subgroups in the US. Special attention to validated screeners, appropriate use of language/literacy, trust building, and incorporation of patient and community health care preferences may enhance SBIRT acceptability and effectiveness in diverse populations. More recently, Newcombe, Taufa, Tanielu, and Nosa (2019) demonstrated the use of the Talanoa approach, a Pacific methodology of conversation and information exchange whilst administering ASSIST (Alcohol, Smoking and Substance Involvement Screening Test) to allow for a more in-depth exploration of Pacific patient substance use.

Guideline recommendations	Grade of recommendation
15.6 Be respectful and culturally sensitive in screening, assessment, treatment, and referral approaches. Where possible, integrate elements of cultural philosophy, practices, and communication styles into treatment	B

Others have proposed the design of new cultural models of health interventions. The Drug and Alcohol Multicultural Education Centre (DAMEC)'s culturally responsive model of service is an example of both clinical and service provision approaches that are culturally sensitive. It recognises that culture informs gender, family, community and sense of self, is patient centred and multicultural in outlook and recognises the adverse health impacts of discrimination. (Rowe, 2014; Drug and Alcohol Multicultural Education Centre, 2015)

The Fonofale method (Pulotu-Endemann, n.d.) outlines a model developed to help understand Pacific cultures in a health context. It gives a holistic understanding relating to culture, family, spiritualty and religion. It is built on an understanding of the physical, mental, spiritual pillars in culture. Resources like these can assist clinicians in their understanding of different cultures and their impacts on communication and clinical care.

Guideline recommendations	Grade of recommendation
15.7 Utilise cultural and family support systems as desired by patients	C

Conclusion

Despite barriers to CALD communities receiving help for alcohol problems there is good evidence of the efficacy in treatment in people from CALD background. This can be enhanced by clinicians practicing with respect and cultural sensitivity. Clinicians need to recognize the importance of the variation within cultural communities and work through options with patients and seek to incorporate cultural strengths. Cultural competence for clinicians needs to be recognized as an important aspect of alcohol service provision and services need to utilize bicultural workers and organizations.

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CHAPTER 17

ALCOHOL USE AND TREATMENT FOR SEXUALITY AND GENDER DIVERSE POPULATIONS – A REVIEW OF THE EVIDENCE

17. Alcohol use and treatment for sexuality and gender diverse populations – A review of the evidence

Sexuality

In this chapter we use sexuality to mean a person's sense of themselves as a sexual person. How an individual describes their sexuality usually reflects their experience of sexual attraction and sexual practice and may be dynamic across the life course. Within the broad category of sexuality, we refer to heterosexual people (sexually attracted to people of the opposite gender), lesbian women (sexually attracted to other women), gay men (sexually attracted to other men), bisexual people (sexually attracted to people of any gender), and queer people (sexually attracted to people of all genders; also used as an umbrella term for sexuality and gender diverse people). When citing literature, we will reflect the terminology used by the authors, generally: lesbian, gay, and bisexual (LGB).

Determining the proportion of sexuality diverse Australians is not straightforward. The Australian Census does not use sexuality and gender identity indicators, and their use in large, national, Australian datasets is uncommon. The best available evidence, drawn from three nationally representative surveys, suggests 3.2% of Australian adults report a non-heterosexual identity (T. Wilson & Shalley, 2018). The 2012/2013 Australian Study of Health and Relationships (representative sample of 20,000 respondents) found women (3.6%) were slightly more likely than men (3.3%) to report a non-heterosexual identity (Richters et al., 2014). A larger proportion of respondents reported sexual behaviour with the same gender during their lifetime, with a notable gender difference: 14.7% women, 6.6% men. An even greater proportion reported some attraction to their own gender, again with a notable gender difference: 16% women, 7.4% men. Young people appear more likely to report a non-heterosexual identity. Among the youngest cohort in the Australian Longitudinal Study of Women's Health (aged 22-28 years), 38% of women identified as something other than exclusively heterosexual (the majority were 'mostly heterosexual'); 12.4% identified as lesbian or bisexual (Perales & Campbell, 2019). In a 2018 national survey of 6327 Year 10, 11 and 12 Australian school students, which used minimum quota sampling for type of school, gender, year in school and location, 21% self-identified as lesbian, gay or bisexual (Fisher et al., 2019).

Gender

In this chapter we use gender or gender identity to mean the sense a person has of having a particular gender. An individual's gender identity may or may not correspond with the sex they were assigned at birth and that was recorded on their original birth certificate. As with sexuality, we assume gender identity reflects the natural spectrum of human diversity. People who identify with the sex they were assigned at birth are termed cisgender. People whose gender does not align with the sex they were assigned at birth are referred to as transgender. Most transgender people identify as either woman/female or man/male. People who feel their gender does not align with either woman/female or man/male, or exclusively with woman/female or man/male, may use the terms non-binary, gender fluid or gender queer. When citing literature, we will reflect the terminology used by the authors, generally: transgender and/or gender diverse (TGD).

There is no reliable evidence on the proportion of gender diverse people in Australia. Historically, the Australian Census has only allowed respondents to record their sex as male or female, with no means to identify people who have a gender diverse experience. A systematic review of US population-based surveys conducted 2007-2015 provided a gender diverse population estimate of 0.5% and predicted this would increase with better data coverage (Meerwijk & Sevelius, 2017). A recent national survey found that transgender and gender diverse people in Australia first realise their gender diversity at 14 years of age on average (Callander et al., 2019). The 2018 national survey of 6327 Year 10, 11 and 12 Australian school students, found 2.3% identified as transgender or gender diverse (Fisher et al., 2019).

Intersex

Intersex is an inclusive term for people born with biological sex characteristics (sexual anatomy, reproductive organs, hormonal patterns and/or chromosomal patterns) that do not fit binary norms of male or female bodies (AISSGA, 2017; Jones et al., 2016). Intersex variations reflect the natural spectrum of human diversity. Most intersex people identify with the sex they were assigned at birth (Jones et al., 2016). It is widely stated that up to 1.7% of people have intersex variations, but there is no systematic population-based research to support this (Jones et al., 2016). Alcohol research rarely includes intersex status in data collection and even more rarely reports it in analysis. None of the evidence reviewed in this chapter presented specific knowledge about intersex people. As such, we limited this evidence review to sexuality and gender diverse people. However, recommendations are likely just as salient for intersex people.

Evidence status

Establishing an evidence base for patterns of alcohol use and treatment outcomes among sexuality and gender diverse Australians is challenging. While sexuality and gender diverse people do participate in large surveys and treatment studies, their sexuality and/or gender identity is rarely captured, and even if it is, it may not be reported in analysis. Sexuality and gender identity are not included in the Alcohol and Other Drug Treatment Services National Minimum Data Set (AODTS NMDS) for all government funded alcohol and other drug treatment specialist services. Guidance for the Sex data item states “Persons who have mixed or non-binary biological characteristics (if known), or a non-binary sex assigned at birth” be coded as “Other” (Australian Institute of Health and Welfare, 2019); that is, it may capture intersex status (and possibly some gender diverse people). However, there are variations in how individual jurisdictions apply the AODTS NMDS, and what other information they collect. For example in NSW the code “Other” is not utilised for the Sex data item; data collectors are directed to use the “Not stated/inadequately described” code for people who indicate their sex is neither female or male (Ministry of Health, 2015; reviewed 2020). Further, people who have undergone “sex change operations” have sex at the time of assessment (not birth) recorded; this means some gender diverse are allowed to have their affirmed gender recognised but their transgender status is obscured in the data. The patient data collection and reporting tool for non-governmental alcohol and other drug services in NSW (NADAbase), collects sexuality and gender identity (Network of Alcohol and other Drugs Agencies, 2019). In Victoria, there are separate

and mandated Sex at birth (also allows for intersex status but only if identified at birth) and Gender items, meaning gender diverse people can affirm their gender and are visible in the data (Department of Health and Human Services, 2019). There is also a mandated "LGB" item to capture sexuality diverse people.

Most of the literature reported here on patterns of alcohol use and on treatment access, experiences and outcomes is from the US. Even here there are significant methodological limitations: most data comes from observational studies; studies rely on small community or clinical non-representative samples (Gilbert, Pass, Keuroghlian, Greenfield, & Reisner, 2018); and randomised controlled trials are scarce (Fals-Stewart, O'Farrell, & Lam, 2009; Senreich, 2009). Methodological challenges around how sexuality is determined (for example, self-identification or researcher-determined based on historical sexual behaviour and/or attraction) or a focus on sexual behaviour only (for example, men who have sex with men rather than gay and bisexual men) make comparisons between studies difficult (Hughes & Eliason, 2002). Similarly, studies including gender diverse people often do not explain how transgender status was determined (Gilbert et al., 2018). There is a specific challenge when using assessment tools which have not been validated with gender diverse people; sex-based cut-offs are applied for the AUDIT but it is unclear whether the appropriate application of these thresholds is based on gender or sex assigned at birth (Gilbert et al., 2018; Kidd, Levin, Dolezal, Hughes, & Bockting, 2019). Analysis is often conducted with a single category including all sexuality diverse respondents (or sometimes, all sexuality and gender diverse respondents) with no disaggregation by sexuality and gender. Very few studies conduct separate analyses for gender diverse people versus cisgender people. Indeed, most of the research discussed in this chapter does not capture or report separately on gender diversity. Finally, the literature reported here often reflects a focus on substance use broadly, rather than on alcohol use specifically.

Recommendation	Grade of recommendation
17.1 Standardised sexuality and gender identity markers should be included in the Alcohol and Other Drug Treatment Services National Minimum Data Set and in epidemiological, clinical and treatment studies.	**GPP**

Patterns of alcohol use

Sexuality diverse people

There is consistent evidence that LGB people report greater use and experience alcohol/substance use disorders at higher rates than heterosexual people. A 2008 meta-analysis of 25 studies from Europe, North America, Australia, and New Zealand found the risk of alcohol dependence was higher among LGB respondents compared to heterosexual respondents (risk ratio [RR] = 2.22, 95% confidence interval [CI]: 1.78:-2.77) (King et al., 2008). A 2012 review of 12 US-national probability sample studies found that LGB people had higher rates of substance use and dependence than heterosexual people (Green & Feinstein, 2012). A subsequent analysis of pooled data from two waves of the US-National Epidemiological Survey on Alcohol Related Conditions (NESARC) also found a significantly higher lifetime prevalence of alcohol

dependence among LG (61.7%) and B (62.8%) respondents compared to heterosexual respondents (43.6%) (Allen & Mowbray, 2016).

There is mixed evidence of higher alcohol use amongst bisexual people compared to lesbian and gay people (Green & Feinstein, 2012). Studies using the US-Chicago Health and Life Experiences of Women Study (CHLEW) combined with the US-National Alcohol Surveys (NAS) or US-National Study of Health and Life Experiences of Women (NSHLEW) found hazardous drinking was lowest among exclusively heterosexual women and highest among bisexual women (Hughes, 2011b) and that 'exclusively' or 'mostly' lesbian women had lower rates of hazardous drinking than bisexual women (Wilsnack et al., 2008). Several studies reflect this pattern of a non-exclusive sexuality (bisexual or 'mostly' heterosexual/lesbian/gay) being more likely associated with problematic drinking, compared to exclusive sexuality (Corliss, Rosario, Wypij, Fisher, & Austin, 2008; Marshal, Friedman, Stall, & Thompson, 2009; McCabe, Hughes, Bostwick, & Boyd, 2005; Talley, Hughes, Aranda, Birkett, & Marshal, 2014). However, some studies with sexual minority youth have found no differences when comparing lesbian/gay and bisexual sub-groups (Germanos, Deacon, & Mooney-Somers, 2015; Newcomb, Heinz, & Mustanski, 2012).

Sexuality diverse people and gender

There is compelling and consistent evidence that LB women's patterns of alcohol use are different to heterosexual women's, while differences between heterosexual and GB men are inconsistent (Allen & Mowbray, 2016; Drabble & Trocki, 2005; Goldberg, Strutz, Herring, & Halpern, 2013; Stevens, 2012; Talley et al., 2014). In a 2012 review of 12 US-national probability sample studies, eight examined alcohol use, problems and diagnosis and included LB women; six found evidence of greater use, problems and/or rates of diagnosis and two found no difference compared to heterosexual women. In the six studies that included GB men; two found no differences, two found greater use, and two found lower use then heterosexual men (Green & Feinstein, 2012). Analysis of the 2015 and 2016 US-National Survey of Drug Use and Health found lesbian women had significantly elevated odds of substance use (including heavy episode drinking) and alcohol or substance disorder compared to age-matched heterosexual women; there were no differences between gay and heterosexual men (Schuler, Rice, Evans-Polce, & Collins, 2018). A 2008 meta-analysis of 25 studies from Europe, North America, Australia and New Zealand found the relative risk (RR) of alcohol dependence in the past year was higher for LB women (RR=4.00) compared to heterosexual women, than for GB men (RR=1.51) compared to heterosexual men (King et al., 2008). Most recently, analysis of the US-NESARC III, a nationally representative cohort, found sexual minority women were significantly more likely to report past year binge drinking and high-intensity binge drinking compared to their heterosexual peers. Sexual minority men were equally or less likely to report binge drinking compared to their heterosexual peers (Fish, 2019). In Australia, analysis of the 2013 NDSHS found GB men were no more likely than heterosexual men to report high risk alcohol consumption (AUDIT-C) or daily drinking. In contrast, LB women had twice the odds of high risk alcohol consumption and 3 times the odds of daily drinking in the past 12 months compared to heterosexual women (Roxburgh, Lea, de Wit, & Degenhardt, 2016).

Gender diverse people

There is less evidence on patterns of alcohol use and dependence for gender diverse populations, particularly in comparison to cisgender people. A 2018 systematic review of 44 studies that included data on gender diverse people, found only 49% reported transgender-specific prevalence estimates of alcohol outcomes, with prevalence of past-month binge drinking ranging from 7%-61% (Arayasirikul, Pomart, Raymond, & Wilson, 2018; Horvath, Iantaffi, Swinburne-Romine, & Bockting, 2014) and 47-48% reporting hazardous alcohol use (using the AUDIT) (Herrera et al., 2016; Kerr-Corrêa et al., 2017). Two studies that obtained a diagnosis of alcohol use disorder found a lifetime prevalence of 26% (Blosnich, Marsiglio, et al., 2017) and a past year prevalence of 11% among gender diverse people (Reisner et al., 2016). Two representative studies found no significant differences between gender diverse and cisgender people: data from 79,054 college students in the US found a similar risk of lifetime and past-month drinking for cisgender compared to gender diverse students (Coulter et al., 2015) and analyses of the US-Behavioural Risk Factor Surveillance System survey found no significant differences in alcohol consumption between cisgender and gender diverse respondents (Blosnich, Lehavot, Glass, & Williams, 2017). A subsequent US cohort study of 330 gender diverse people found that transgender people assigned female at birth were more likely to report risky drinking (43.8%) compared to gender diverse people assigned male at birth (30.0%) (Kidd et al., 2019).

Life course

Problematic alcohol use may begin early, with consistent evidence that sexuality diverse young people show a greater risk of alcohol use and an earlier onset of problematic alcohol use compared to young heterosexual people. A meta-analysis of 18 international studies found LGB young people (younger than 21 years) were 2.55 times more likely to report recent alcohol use and 1.34 times more likely to report heavy alcohol use, than their heterosexual peers (Marshal et al., 2008). A US-prospective cohort of young people found a younger onset of alcohol use for sexuality diverse young people, and this was associated with a higher risk of binge drinking (Corliss et al., 2008). Analysis of the US-National Longitudinal Study of Adolescent Health found LGB young people reported higher rates of alcohol use and binge drinking than heterosexual respondents, and their rate of use increased faster over time (Marshal et al., 2009). Analysis of the US-Youth Risk Behaviour Surveillance System found 13-18 year old LGB people were significantly more likely to report lifetime and past-month alcohol use, past-month heavy episodic drinking, earlier onset of drinking, and more frequent past-month drinking than heterosexual young people (Talley et al., 2014). Reflecting the same pattern of gender differences seen among adults, disparities are consistently greater for young LB women (cf. heterosexual) than for young GB men (cf. heterosexual) (Corliss et al., 2008; Marshal et al., 2009; Talley et al., 2014).

Alcohol use does not decline with age among sexuality diverse people in the same way as is seen in the general population. The US-CHLEW community study found little variation in alcohol use among four age groups of LB women (Hughes et al., 2006). The US-Washington State Behavioural Risk Factor Surveillance System surveys (2003-2010) with 50+ year old people, found LGB women and men were significantly more

likely than their age- and gender-matched heterosexual counterparts to report binge drinking (Fredriksen-Goldsen, Kim, Barkan, Muraco, & Hoy-Ellis, 2013).

There is no epidemiological data on initiation and trajectory of alcohol use among gender diverse populations.

Recommendation	Grade of recommendation
17.2 Given reported variations in problematic alcohol use between gay/lesbian and bisexual people, clinicians should be aware of diversity across sexuality sub-groups.	**C**
17.3 Due to deviations from normative gendered patterns of drinking, clinicians should be especially conscious of screening and early interventions for sexuality diverse women.	**B**
17.4 Due to deviations from normative age-related patterns of drinking, clinicians should be especially conscious of screening and early interventions for sexuality diverse people across the life course.	**B**

Drivers of problematic alcohol use

Sexuality and gender diverse people use alcohol for many of the same reasons as heterosexual and cisgender people, but two further explanations are extended in the literature: a) alcohol use as a stress response to experiences of discrimination and rejection, and b) normative influences of alcohol-based socialising.

Alcohol use as a stress response to experiences of discrimination and rejection

Australia's history of criminalisation and legally enshrined discrimination against sexuality and gender diverse people is very recent. For example, Tasmania was the last Australian jurisdiction to decriminalise sex between men in 1997, discrimination against same-sex couples was only removed from 85 Commonwealth laws including tax and social security in 2009, and it only became illegal to discriminate against people on the basis of sexual orientation or gender identity in 2013. Exemptions in some jurisdictions mean it remains lawful for a faith-based school (and in NSW any private school), to refuse to enrol or to exclude a student (including the child of sexuality or gender diverse parents) and to refuse to employ or dismiss a sexuality or gender diverse staff member. In some jurisdictions, transgender and gender diverse people seeking identity affirming documentation (e.g. a birth certificate or passport) are still required to first have gender-affirming surgery (including sterilisation). Only in 2017 was the right to marry, an indicator of state-tolerance, no longer determined by gender, and marriages that took place overseas recognised by Australian law. Many sexuality and gender diverse people come from countries (or have a cultural heritage) where sexuality or gender diversity is still criminalised. In 2019, consensual same sex activity between adults was criminalised in 70 counties, and punishable by death in 11 (International Lesbian Gay Bisexual Trans and Intersex Association, 2019). Literature examining country or state-level structural stigma (e.g. policies related to sexuality

discrimination/equality and levels of acceptance captured by public opinion polls) has shown an association with increased substance use among sexuality and gender diverse people (Hatzenbuehler, Jun, Corliss, & Bryn Austin, 2015; Pachankis, Hatzenbuehler, & Starks, 2014).

Sexuality and gender diverse people may experience stigma, discrimination, rejection, and physical abuse from a range of sources including family (who very rarely share their sexuality or gender diverse experience), friends, and strangers, as well as in educational and health systems (Meyer & Frost, 2013; Mullens et al., 2017; Stevens, 2012). Between 25.5 and 37.6% of LGB respondents in Australian community studies reported experiencing verbal harassment or abuse in the preceding year (Leonard et al., 2012; McNair, 2014; Mooney-Somers, Deacon, Scott, Price, & Parkhill, 2018). Experiences of discrimination or abuse are higher among gender diverse people in Australia, with 36.9-48.7% reporting verbal abuse (Hyde et al., 2014; Leonard et al., 2012), and even higher among gender diverse young people: 68.9% reporting they had felt discriminated against and 74% had experiencing bullying (Strauss et al., 2017). Many sexuality and gender diverse people report changing their behaviour or hiding their sexuality and/or gender for fear of discrimination or abuse. Australian community studies show 33.6-76.3% of LGBT people usually or occasionally hide their sexuality or gender identity in public, when accessing services, and at work (Berman & Robinson, 2010; Hyde et al., 2014). Bisexual men (71.1%) and women (54.3%) are more likely to report hiding their sexuality from family members, compared to gay men (34.4%) and lesbian women (28.6%) (Leonard et al., 2012). Experiences of prejudice and fear of discrimination have been associated with a higher likelihood of substance use among sexuality and gender diverse young people (Baiocco, D'Alessio, & Laghi, 2010; Birkett, Espelage, & Koenig, 2009; D'Augelli, Pilkington, & Hershberger, 2002), with harmful and hazardous drinking and with alcohol dependence for LB Australian women (McNair, 2014), and with persistent risky drinking among gender diverse people (Kidd et al., 2019).

The concept 'minority stress' builds on the idea from social stress theory that "conditions of the social environment create stress for individuals that can adversely affect their health and wellbeing" (Balsam, Beadnell, & Molina, 2013). The original work on minority stress theorised that gay men were subject to unique stressors that add to generic psychosocial stress, affecting their coping mechanisms and putting them at risk of mental health and substance use problems (Meyer & Frost, 2013). Meyer conceptualised minority stress processes along a continuum, with distal stressors being more objective events (e.g. experiencing discrimination) and proximal stressors being more subjective (e.g. internalised homophobia, perceived stigma, expectations of rejection, vicarious stress) (Balsam et al., 2013; Lea, de Wit, & Reynolds, 2014; Meyer, 1995; Meyer & Frost, 2013). Experiences of minority stress may differ across sub-groups with bisexual people more likely to score highly for proximal stressors and LG people more likely to score highly for distal stressors (Balsam et al., 2013).

There is a significant body of literature exploring the minority stress model and negative health outcomes including psychological distress (Swim, Johnston, & Pearson, 2009; Vincke & van Heeringen, 2002), with a meta-analysis finding small to moderate

associations between 'internalised homophobia' and anxiety and depression (Newcomb & Mustanski, 2010). A systematic review found mixed evidence for the relationship between 'internalised homophobia' and substance use (Brubaker, Garrett, & Dew, 2009). A subsequent secondary analysis of baseline data from an intervention study with men who have sex with men found 'internalized homophobia' was associated with more frequent heavy drinking and alcohol problems (Kuerbis et al., 2017). An Australian study with sexuality and gender diverse young people found that while three minority stress stressors (perceived stigma, internalised homophobia, and homophobic physical abuse) were moderately associated with poor mental health, they were inconsistently associated with substance use: dependent 'club drug' use (determined by the Severity of Dependence Scale) was associated with higher 'perceived stigma', but recent club drug use and hazardous alcohol use were associated with lower 'internalised homophobia' and lower 'perceived stigma', respectively (Lea et al., 2014). Many of these studies focus on a single gender or do not disaggregate by gender or sexuality. There is some evidence of meaningful gender differences in the relationship between minority stress and substance use. For example, a US-study of 335 LG people found that days drinking 5 or more drinks (past month) and days being drunk/very drunk were significantly related to 'internalised homophobia' for women, but not for men (Amadio, 2006). A US-longitudinal study of 1057 young LB women found minority stress was not associated with higher alcohol intake but was significantly associated (prospectively) with drinking consequences and with more drinking consequences (S. M. Wilson, Gilmore, Rhew, Hodge, & Kaysen, 2016).

Normative influences of alcohol-based socialising

Sexuality and gender diverse communities have historically organised around bars, clubs and other licensed venues, for safety, to meet like-minded people, and to express their identities
(S. D. Cochran, Grella, & Mays, 2012; Faderman, 1992; Wotherspoon, 1991). A US-interview study described the productive consequences of bar attendance for urban LB women as safety and support over the life course, lesbian identity development, reduction of stress, and establishment of social networks and intimate relationships (Gruskin, Byrne, Kools, & Altschuler, 2007). Individuals may also move to or socialise in more welcoming neighbourhoods, which may then develop a higher proportion of venues centred around alcohol use (S. D. Cochran et al., 2012). While acceptance of sexuality and gender diverse people has improved in many societies, and there are changes in the way communities organise (Reynolds, 2009; Rosser, West, & Weinmeyer, 2008; Stein, 2012), licensed venues remain a visible and central feature for many communities (Boyle, LaBrie, & Witkovic, 2016; S. D. Cochran et al., 2012). It is widely theorised that the significance of alcohol-based socialising has normalised alcohol (and illicit substance) use among sexuality and gender diverse people (Drabble & Trocki, 2014; Green & Feinstein, 2012; Gruskin et al., 2007; Jones-Webb, Smolenski, Brady, Wilkerson, & Rosser, 2013; Mullens et al., 2017; Mullens, Young, Hamernik, & Dunne, 2009; Parks, 1999; Remafedi, Jurek, & Oakes, 2008; Trocki & Drabble, 2008).

There is broad evidence of more frequent bar attendance being associated with alcohol among LGB people. A US study of 263 lesbian women found that being reliant on bars for socialising was the most significant predictor of alcohol use (Heffernan,

1998). A US-study of 428 young gay and bisexual men found frequent gay bar attendance was related to heavy alcohol use (Greenwood et al., 2001). Research with Italian LG young people found higher levels of engagement in LGBT community activities (not limited to bar or club attendance) was significantly associated with heavy and binge drinking (Baiocco et al., 2010). An Australian community study with LGB young people found that regular attendance at any licensed venues was associated with hazardous alcohol use but the association was stronger for LGBT venues than for straight or mixed venues (Lea, Reynolds, & de Wit, 2013).

There is also evidence that sexuality and gender diverse people perceive alcohol to be normalised among their communities. Recent Australian research found heavier drinking LB women were more likely to say that alcohol use was normalised among sexual minority women and that venues welcoming sexual minority women were "saturated with alcohol" (MacLean et al., 2019). A US study found more frequent bar and club use among lesbian women was associated with overestimating heavy alcohol use among their community (Boyle et al., 2016). The notion of high acceptability and a heavy drinking culture on the commercial LGBT scene and within community has been found across international samples (Demant, Hides, White, & Kavanagh, 2018; Emslie, Lennox, & Ireland, 2017).

Recommendation	Grade of recommendation
17.5 In assessment, treatment and aftercare, clinicians should consider a patient's experience of managing a stigmatised identity.	**C**
17.6 In assessment, treatment and aftercare, clinicians should consider the potential impact of a patient's engagement with sexuality and gender diverse community and exposure to community-specific drinking norms.	**C**

Treatment access and experience

While there is plenty of contemporary evidence on patterns of alcohol use, the research on treatment access, experiences and outcomes for sexuality and gender diverse populations is often more than a decade old. The following evidence review is best read as indicative of the types of experiences that can be problematic for sexuality and gender diverse people seeking treatment, rather than a reflection of contemporary experiences. Positive changes in societal attitudes may have permeated the provision of health care but we have no specific evidence to show this is true in alcohol/substance treatment services.

Treatment seeking

There is some evidence that sexuality diverse people access treatment for alcohol use at higher rates than heterosexual people. Analysis of the 2001-2002 and 2004-2005 waves of US-NESARC found 24% of lesbian and gay people (grouped together for analysis) and 29% of bisexual people, compared to 14% of heterosexual people, reported lifetime treatment for alcohol related problems (Allen & Mowbray, 2016).

Analysis of the 2013 Australian-NDSHS found GB men had twice the odds and LB women three times the odds of having ever attended treatment for alcohol and other drug use compared to heterosexual people (Roxburgh et al., 2016). An Australian study found that 52% of LB women who reported hazardous drinking had received treatment; however, the majority had received mental health or mental health and alcohol treatment - only 1.5% had received standalone alcohol treatment (McNair, 2014).

There is little evidence on gender diverse people's access to alcohol/substance use treatment. Qualitative research on AOD service access reveals they face specific structural barriers to accessing and navigating sex-segregated services (e.g. having to agree to use dormitories or bathrooms that do not align with their gender), and more broadly having to deal with incorrect pronoun or name use, not being allowed to dress as desired, or not being allowed to take hormones (Lyons et al., 2015; Nuttbrock, 2012; Senreich, 2011).

There is evidence that sexuality and gender diverse people entering substance use treatment are more likely to have mental health comorbidity compared to heterosexual and cisgender people. A higher proportion of (mainly) LGBT patients at an Australian LGBT community-based service reported high or very high levels of psychological distress (74%; measured with the K10) than the (mostly) heterosexual patients at non-governmental mainstream services (49%) (Lea et al., 2020). A 2006 analysis of 17,386 patient records from 212 substance treatment providers in Washington State (2001-2002) found LGBT patients were significantly more likely to have accessed mental health treatment in the past (39.2% of LGBT vs 20.6% of heterosexual patients), be currently receiving or in need of mental health treatment (48.1% LGBT vs 21.8% of heterosexual patients), to have been hospitalised for mental health treatment in past year (9.4% LGBT vs 5.3% heterosexual) compared to heterosexual individuals (B. N. Cochran & Cauce, 2006). A comparison study of 13,211 patient records from substance treatment providers in the county of San Francisco found that, compared to heterosexual patients, GB men were 2.2 times and LB women 1.3-1.5 times more likely to report a mental health diagnosis, and GB men were 2.5-3.5 times and LB women 1.5 times more likely to have a current mental health prescription medication (Flentje, Livingston, & Sorensen, 2016).

Experiences of treatment

There is evidence of lower levels of satisfaction and of connection with treatment among sexuality and gender diverse people compared to heterosexual and cisgender people (Drabble & Trocki, 2005; Senreich, 2009). An Australian study found alcohol and mental health treatment providers often assumed LB women's heterosexuality at the first consult, leaving women "feeling alienated, silenced or misunderstood" (Pennay et al., 2018). A study of 137 past patients of substance use programs in New York found being LGB was a negative predictor of sense of connection to the treatment program and satisfaction with treatment (Senreich, 2009). In qualitative interviews, a majority of LGB people said their sexuality negatively affected them in treatment due to homophobia from heterosexual patients, feeling vulnerable, unsafe, alienated and misunderstood (Senreich, 2009). It is noteworthy that patients who had not felt their sexuality had negatively affected their treatment still reported worrying in advance

that it would, or experiencing problems during treatment that were then resolved satisfactorily (Senreich, 2009). Interviews with 13 Canadian gay men who had attended substance use treatment found they felt isolated, not understood by staff and patients, and feared being subject to hurtful comments and hurtful actions by staff and patients (Cullen, 2004).

The limited evidence on the experiences of gender diverse people in substance use treatment is starker: they report much lower levels of feeling supported, ability to be honest and open, satisfaction, program completion (less than half the rate) and abstinence (less than half the rate) compared to cisgender (of any sexuality) respondents (Senreich, 2011). Another US-based study of the experiences of 14 transgender women accessing residential treatment found incidents of direct discrimination (including rejection, lack of support, denial of service, name-calling) and physical and sexual violence by other residents, with respondents saying they felt their needs were not being met and some ending treatment early (Lyons et al., 2015).

Identity disclosure

A central concern in the literature is that an inability to be honest and open about sexuality or gender will leave patients unable to undertake the therapeutic work necessary to address the issues that contributed to the onset of their alcohol problems, the maintenance of those problems and pose a risk of relapse (Barbara, 2002; Drabble & Underhill, 2002; Hicks, 2000; Matthews & Selvidge, 2005; Substance Abuse and Mental Health Services Administration, 2012). A few studies have shown former patients report difficulty being open about sexuality-related issues (Cullen, 2004; Senreich, 2009). A US-study with transgender women accessing residential substance use treatment programs found the experience or fear of discrimination resulted in them limiting what they shared in treatment (Lyons et al., 2015). The only study to investigate the impact of patients' in/ability to be open about sexuality and/or gender identity is a US-based retrospective study of former substance use patients (this included LGBT specialised services). By the end of treatment, 75% of LG patients were open about their sexuality with all treating staff and 69% with all patients. Being in a LGBT specialised program was the best predictor of openness. Level of openness with treating staff ('all' compared to 'some') was positively associated with feeling therapeutically supported and connected to treatment, and with program completion, and negatively associated with leaving treatment or being discharged; there was no association with abstinence (Senreich, 2010b). The analysis did not examine the effect of never disclosing (10% of patients).

Health care providers in general tend not to ask about sexuality (Dahan, Feldman, & Hermoni, 2008; Steele, Tinmouth, & Lu, 2006; Westerståhl & Björkelund, 2003), believing it is the patient's responsibility to disclose (McNair, Hegarty, & Taft, 2012; McNair, Hegarty, & Taft, 2015). Disclosure is a personal risk, with many patients having direct experience of discrimination in health care or vicariously experienced discrimination through the accounts of others, leaving them "determining when it is safe or not safe to reveal their sexual orientation to others" (Senreich, 2010b). Patients look for clues as to the likely reaction of their health care provider and in the absence of reassurance may avoid disclosing or avoid care entirely (Steele et al., 2006). Disclosure decisions are made on a practitioner-by-practitioner, consultation-by-

consultation basis (McNair et al., 2012), and may reflect identity salience, that is, how strongly sexuality is part of a patient's self-concept (Pennay et al., 2018). A systematic review of sexuality disclosure in various health care settings found the most prominent barriers to disclosure were the perceived irrelevance of sexuality to health care, the communication skills and language used by health care professionals, and the fear of poor treatment or reaction to disclosure (Brooks et al., 2018). These are all modifiable barriers.

Disclosure of gender identity to GPs may be relatively common, as GPs are the gatekeepers for hormone therapy, gender affirmation surgery and legal recognition (Pitts, Couch, Mulcare, Croy, & Mitchell, 2009). Gender diverse people may be more reluctant to disclose gender identity to other providers or when receiving treatment unrelated to gender identity (Couch et al., 2007).

Health care provider attitudes

Some health care providers are uncomfortable with or actively hostile towards sexuality or gender diverse patients. Several US studies found that while substance use treatment staff held broadly positive or ambivalent attitudes towards LG people, they were more likely to have negative attitudes towards bisexual and transgender people (Eliason, 2000; Eliason & Hughes, 2004). While most treating staff reported knowing at least one LGB person, 75% said they did not know one transgender person (Eliason, 2000). Some staff commented that LGBT issues should be minimised in treatment (Eliason, 2000), while another US study with 48 substance use counsellors reported 26% said they found it difficult to "relate to the specific problems" LGBT patients present in treatment (B. N. Cochran, Peavy, & Cauce, 2007).

Hostile or ambivalent staff may fail to acquire clinically important information about the salience of sexuality or gender identity for the individual, the experiences and consequences of coming out, the potential impact of stress and distress related to having a minority/stigmatised identity and the patient's support and social network, including the role of alcohol in their social networks (Nuttbrock, 2012; Substance Abuse and Mental Health Services Administration, 2012). A US study assessing the extent to which 58 lesbian women and gay men evaluated treating staff and treatment environments as gay affirmative (using a 21-item scale including use of language that did not assume heterosexuality and discussing homophobia/heterosexism) found that treatment considered more successful was also considered more gay affirmative (Matthews & Selvidge, 2005). Healthcare providers report they are not receiving education or training on providing care for sexuality and gender diverse patients (B. N. Cochran, Peavy, & Cauce, 2007; Eliason, 2000; Eliason & Hughes, 2004; Hughes, 2011b).

Recommendation	Grade of recommendation
17. 7 Clinicians require training in the health and health care needs of sexuality and gender diverse people	**GPP**
17. 8 Alcohol use treatment services need to create an environment where questions about	**GPP**

sexuality and gender identity are normalised, so patients feel disclosure is a valued part of their treatment and care	
17.9 Alcohol use treatment services and clinicians should be aware sex-segregated access may be restricted and/or uncomfortable for gender diverse patients; services should clarify access criteria	**GPP**
17.10 Clinicians need to facilitate openness and a sense of connection in order to explore clinically important psychosocial factors with sexuality and gender diverse patients	**GPP**

Treatment effectiveness

Generalist treatment

There is limited research on treatment outcomes for sexuality and gender diverse people in generalist programs; "rigorous clinical trials are scarce" (Fals-Stewart et al., 2009) and few studies compare treatment outcomes to heterosexual patients (Senreich, 2009). An early New Zealand study of former patients of a substance use program found LG patients were twice as likely as heterosexual patients to say their substance use stayed the same or had worsened after treatment and much less likely to report positive feelings about group therapy (MacEwan, 1994). A convenience sample study of past patients of substance use programs in New York found being LGB was a negative predictor of abstinence at the end of treatment and current abstinence; when analysed separately, gay and bisexual men reported significantly lower levels of abstinence at the end of treatment than all other groups (Senreich, 2009). GB men were also significantly less likely to have completed treatment, either because it was not meeting their needs or because they were discharged from treatment (Senreich, 2009). There were no differences between heterosexual and LB women.

Specialised treatment

Specialised substance use treatment programs offering culturally-tailored treatment for sexuality and gender diverse people arose in the US in the mid-1980s as a response to the belief that this population had unique life experiences (Rowan & Faul, 2011) and they were reluctant to enter generalist treatment due to fear of homophobia (Hicks, 2000) or transphobia (Nuttbrock, 2012). Such services were designed to provide supportive and safe therapeutic environments to address the coming out process and how this contributed to their substance use and develop alternative ways to socialise without centring on alcohol. Interviews with staff in four US services revealed the clinically relevant features of such services included: staff having knowledge of gay and lesbian life, specific content on the history and culture of sexuality and gender diverse people to create a sense of belonging and heritage, discussion of unique triggers and how to deal with them (Rowan, Jenkins, & Parks, 2013).

There is little empirical research on the efficacy of culturally-tailored services compared to treatment as usual (Hardesty, Cao, Shin, Andrews, & Marsh, 2012) and few attempts to understand what specific factors might contribute to their

effectiveness (Senreich, 2010a). The only evaluation of a culturally tailored service in Australia found a reduction in the severity of dependence scores at each assessment for patients with alcohol as their principal drug of concern. However, there were no statistically significant differences in days of alcohol use (compared to baseline) or the proportion reporting alcohol abstinence. Moreover, while the mean K10 (acute psychological distress) scores reduced at each assessment, there was no statistically significant change in the proportion reporting high/very high distress (Lea et al., 2020). Two widely cited (but early) US-studies found substantial reductions in substance use among patients attending culturally-tailored services, but there were no control groups (Driscoll, 1982; Paul, Barrett, Crosby, & Stall, 1996). A more recent US-study compared substance use outcomes for heterosexual men, GB men in generalist treatment and GB men in culturally-tailored treatment. In multivariate analysis, GB men in generalist treatment were significantly less likely than heterosexual men to be abstinent at the time of survey, had lower levels of connection to the treatment program, and were more likely to have left treatment early either by choice (for example because needs were not being met) or because of early discharge for breaking rules. GB men in culturally-tailored treatment had better experiences and outcomes compared to GB men in generalist treatment (Senreich, 2010a). The author argued the results showed culturally-tailored treatment "virtually eliminated any differences in current abstinence rates between heterosexual and gay/bisexual participants" (Senreich, 2010a).

In the US, culturally-tailored substance use treatment services for sexuality and gender diverse people are relatively rare outside urban centres, more likely to be private, for-profit, or exist within services that deliver comorbid treatment for substance and mental health (Hardesty et al., 2012). In Australia, they are rarer still. Those available are run by community-based LGBT organisations (for example, ACON in NSW and Thorne Harbour Health in Victoria). For example, ACON runs a substance support service providing outpatient counselling for LGBTI people and people affected by HIV. The service is government-funded and free to patients, provides up to 12 sessions (re-entry is possible) and operates in parallel with other specialist mental health and substance use services (including detoxification and residential) (Lea et al., 2020). A recent evaluation found the vast majority (82%) of the service's patients were men (including transgender men) and socioeconomically comfortable (62% employed, 87% in privately rented or owned accommodation). Alcohol was the principle drug of concern for 20% of male patients, 46% of female patients and 57% of non-binary patients (Lea et al., 2020). Australia's National Alcohol Strategy (Department of Health, 2019) names sexuality and gender diverse people as a priority population; this may increase community expectations for culturally-tailored services.

Treatment modalities

Concerns have been raised about specific treatment modalities, such as group treatment due to potential homophobia or transphobia from other patients or with family counselling where there is alienation due to sexuality or gender (Substance Abuse and Mental Health Services Administration, 2012). However, no research has systematically explored the efficacy of either modality for sexuality or gender diverse people.

There is limited research on the efficacy of other treatment modalities for sexuality and gender diverse people. A Randomised Controlled Trial (RCT) in the US compared behavioural couples' therapy (BCT) to individual behaviour therapy (IBT; 32 x 60-minute sessions over a 20-week period) for 48 lesbian women and 52 gay men. Both treatments were equally satisfying for patients, with no difference in percent days of heavy drinking post treatment, or in the rate of change in drinking during treatment. However, at 12-month follow up, BCT patients increased their days of drinking at a significantly slower rate. Moreover, the relationship satisfaction (measured using the Dyadic Adjustment Scale) of couples receiving BCT was significantly higher than patients receiving IBT at the end of treatment and at follow up (Fals-Stewart et al., 2009). An observational study of 194 sexuality and gender diverse and 107 heterosexual former patients of substance use services found those whose significant other was invited to participate in treatment had higher rates of abstinence at the end of treatment, higher completion rates, and greater feelings of counsellor support (Senreich, 2010b).

There is a growing evidence base for motivational interviewing/goal choice interventions in reducing alcohol use for men who have sex with men and to a lesser extent for transgender women (Green & Feinstein, 2012; Wray et al., 2016). A systematic review of RCTs of interventions to reduce heavy drinking and/or alcohol-related problems among men who have sex with men identified five studies (Wray et al., 2016); three used versions of motivational interviewing (MI) or cognitive behaviour therapy (Morgenstern et al., 2007; Morgenstern et al., 2012; Velasquez et al., 2009), one used contingency management (Reback et al., 2010) and one used personalised feedback (Croff, Clapp, Chambers, Woodruff, & Strathdee, 2012). Diversity in interventions, designs and follow up periods made meta-analysis impossible. While personalised feedback showed no change in alcohol use (Croff et al., 2012), MI/goal choice approaches showed some efficacy. A later RCT with men who have sex with men who are engaged in HIV care, found MI, compared to assessment only, was associated with significantly fewer drinks per week at 3- and 6-month follow up (Kahler et al., 2018). A systematic review of interventions for problematic substance use for gender diverse people identified two studies for transgender women (Glynn & van den Berg, 2017). The TRANS program comprised 18 one-hour weekly group workshops covering transgender sensitive health promotion that included substance use; there was no control group and marginal reductions in alcohol use at 30 day follow up (Nemoto, Operario, Keatley, Nguyen, & Sugano, 2005). The TEAM-I intervention was an RCT specifically for transgender African American women and Latinas comparing three group conditions: motivational enhancement intervention; brief individualized health promotion education; and a control condition; treatment was individual (Nemoto, Iwamoto, Eilkhani, & al., 2013). Alcohol use decreased for all intervention groups (6-month follow-up). The motivational enhancement treatment showed significant decreases in the frequency of alcohol use when compared with the brief individualised education and the control, with the most significant decreases in alcohol use frequency at 6-month follow-up compared to baseline.

There are no published RCTs examining alcohol use interventions tailored to LB women, transgender men, or non-binary people. An RCT of a culturally tailored short

message service (SMS/text) intervention to reduce alcohol use among LB women is currently underway in Australia (Bush et al., 2019).

Relapse prevention, recovery, and aftercare

Although concerns have been raised (Senreich, 2010b), no research has systematically explored how sexuality or gender identity is being addressed in relapse prevention, recovery and aftercare. Patients may anticipate and/or face challenges re-connecting with LGBT communities, seeking and maintaining social support, friendships and romantic partners in social, community and commercial spaces that are not "framed by alcohol consumption" (Gedro, 2014). There may be few alternatives for connection outside a LGBT bar or club (Barbara, 2002; B. N. Cochran, Peavy, & Robohm, 2007). Avoiding friends who use alcohol and/or settings where alcohol is consumed may leave sexuality and gender diverse patients with few social connections. At the same time, patients may anticipate and/or experience stigma and discrimination in generalist recovery programs such as AA, so specific sexuality and gender diverse-12 step groups can be both a safer option and provide an alternative connection to community (Substance Abuse and Mental Health Services Administration, 2012). There is surprisingly little research on sexuality and gender diverse people's use and experience of generalist or specific recovery programs. An early study found lower abstinence rates among LGB people affiliated with AA than those who were not (post-residential treatment program) (Holleran & Novak, 1989).

Recommendation	Grade of recommendation
17.11 A growing evidence base suggests motivational interviewing and goal setting are effective for addressing problematic alcohol use among men who have sex with men and among transgender women.	**C**
17.12 In the absence of specific evidence, usual best practice approaches should be used to address problematic alcohol use amongst LB women, transgender men, and non-binary people; more research is needed.	**C**
17.13 Treatment studies need to include standardized sexuality and gender markers and report on outcomes by gender and by sexuality	**GPP**
17.14 Despite calls for specialised culturally-tailored treatment, there is limited evidence of its efficacy over generalist treatment; more research is needed.	**GPP**
17.15 For relapse prevention, recovery and aftercare, clinicians should consider patients' access to social support, the social organisation of sexuality and gender diverse communities and referral to LGBT-specific aftercare.	**GPP**

Improving treatment connection, satisfaction, and effectiveness

Most sexuality and gender diverse people will be treated in a generalist alcohol/substance treatment service (Senreich, 2010a; Stevens, 2012) and they have a right to a safe and supportive treatment environment (Pennay et al., 2018). Recommendations for enhancing the treatment experiences and outcomes for sexuality and gender diverse people include inclusive treatment to address specific social, cultural and historical factors theorised to contribute to the development and maintenance of substance use (Talley, 2013). Apart from the limited research cited above on culturally-tailored treatment, there is no research on inclusive treatment for problematic alcohol use within generalist treatment settings (Talley, 2013). There is a growing awareness of inclusive practice and cultural competence in health care. This is defined as "the ability of practitioners, systems, agencies and institutions to respond to the unique needs of populations whose cultures are different from the mainstream or dominant cultures" (U.S. Department of Health and Human Services (USDHHS), 1992). While evidence cited earlier shows generalist alcohol/substance use treatment is often not experienced as culturally competent or inclusive, there is no research on clinician- or service-based interventions to address this.

***Recommendations for inclusive* practice**

Although there is no specific research on the provision of inclusive care in generalist alcohol/substance use treatment services, a range of recommendations for inclusive practice can be identified from published guidelines and studies on treatment experiences. Chief among these is the affirmation and celebration, rather than tolerance and acceptance, of sexuality and gender diverse people. Specific strategies include:

For services:

- On intake forms, assessments and intervention support materials using the terminology sexuality and gender diverse people use to describe themselves; e.g. gender, relationship status (Eliason & Hughes, 2004; Hughes, 2011a; Lombardi & van Servellen, 2000; Matthews & Selvidge, 2005; Van Den Bergh & Crisp, 2004)
- Displaying visible markers of inclusion in patient areas and participating in formal programs to designate safe spaces/places of refuge; e.g. rainbow or trans flags, artwork, books and magazines, stickers, and staff lanyards; e.g. the Welcome Here program https://www.welcomehere.org.au/ (ACON & NADA, nd; Matthews & Selvidge, 2005)
- Showing an awareness of history and community events and celebrations; e.g. marking diversity days (e.g. https://www.welcomehere.org.au/diversitydays), participating in community events (ACON & NADA, nd; Van Den Bergh & Crisp, 2004)
- Showing an understanding of the impact of legislation, social policy, and social and welfare systems; e.g. access to identity documents for gender diverse people (ACON & NADA, nd; Lombardi & van Servellen, 2000; Van Den Bergh & Crisp, 2004)

- Identifying and promoting safe referral options for recovery/aftercare; e.g. community-based and peer-led services and groups (Matthews & Selvidge, 2005)
- Understanding patients' confidentiality concerns and being transparent and flexible around the collection and sharing of sexuality, gender identity, relationship status; e.g. in referral letters, in electronic health records (Lombardi & van Servellen, 2000; Substance Abuse and Mental Health Services Administration, 2012)
- Developing comprehensive whole of service policies on inclusive practice; e.g. how to counteract and diminish homophobic, biphobic or transphobic language and behaviour by patients or staff, how to support gender diverse patients accessing sex-segregated services (ACON & NADA, nd; B. N. Cochran, Peavy, & Cauce, 2007; Eliason & Hughes, 2004; Hughes, 2011a; Lombardi & van Servellen, 2000; Pennay et al., 2018; Senreich, 2010a)
- Ensuring training and supervision for all staff on inclusive practice; LGBT community organisations in all Australian jurisdictions provide a variety of training and capacity building programs (ACON & NADA, nd; B. N. Cochran, Peavy, & Cauce, 2007; Eliason & Hughes, 2004; Hughes, 2011a; Lombardi & van Servellen, 2000; Pennay et al., 2018; Senreich, 2010a)
- Seeking formal accreditation of LGBTI-inclusive practice and service delivery; e.g. through the Rainbow Tick Standards program www.qip.com.au/standards/rainbow-tick-standards/
- Presence of sexuality and gender diverse staff (Matthews & Selvidge, 2005)
- Partnerships with local sexuality and gender diverse communities and organisations (Hughes, 2011a; Substance Abuse and Mental Health Services Administration, 2012)

For clinicians:

- Developing knowledge of multiple and intersectional oppressions patients face and how patients may use alcohol to cope with internalised homophobia/biphobia/transphobia, family and societal rejection, and stigma (Barbara, 2002; Finnegan & McNally, 2002; Lombardi & van Servellen, 2000; Matthews & Selvidge, 2005; Senreich, 2010a)
- Being cognisant of the social factors that present a risk for relapse during and after treatment; e.g. where social support is only available through community spaces where alcohol is present (Senreich, 2009)
- Being comfortable to express to patients what they do not know or understand about sexuality and/or gender identity (Finnegan & McNally, 2002)
- Being aware of countertransference issues involving their own discomfort regarding sexuality and/or gender identity (Drabble & Underhill, 2002; Finnegan & McNally, 2002) and accessing appropriate supervision to address such issues (Substance Abuse and Mental Health Services Administration, 2012)
- Recognising complex relationships with families of origin due to rejection or discomfort with sexuality and/or gender identity (Matthews & Selvidge, 2005)
- Recognising non-biological kindship bonds and involving 'chosen family' in treatment and recovery programs (Matthews & Selvidge, 2005)

Recommendation	Grade of recommendation
17.16 Treatment services need research evidence on specific clinician- and service-level interventions to enhance cultural competence and inclusiveness for sexuality and gender diverse people in treatment.	**GPP**
17.17 Clinicians and treatment services should use reflection, action, and meaningful engagement with sexuality and gender diverse communities to ensure health care is culturally competent and inclusive.	**GPP**

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CHAPTER 18

THE MONTREAL COGNITIVE ASSESSMENT (MOCA)

18. Older People and Alcohol Use Disorders

Population ageing is a global phenomenon that has been fuelled in the past decade by the advent of the baby-boomer generation, those born between 1946 and 1964, into late life. In 2017 approximately 3.8 million Australians (15% of Australia's total population) were aged 65 years and over (Australian Institute of Health and Welfare, 2018). Over the next 50 years the number of older people in Australia is expected to increase to between 8.6 million and 10.2 million, representing 21-23% of the total population (Australian Bureau of Statistics 2018)

There is no universally accepted definition of old age. The United Nations uses 60 for the minimal age of an older person (United Nations, 2003). The World Health Organization (WHO) defines an older person as 'a person who has reached a certain age that varies amongst countries but is often associated with the age of normal retirement' (WHO, 2004). Consistent with this latter approach, the term older-person in Australia has generally been used to refer to anyone aged 65 years and older with some exceptions, notably Aboriginal and Torres Strait Islander people and persons attending substance use disorder services, where 'older person' is often defined as aged 50 years and over (Australian Institute of Health and Welfare, 2018; NSW Ministry of Health, 2015). For aged care planning purposes, the age of 70 is used by the Australian Government (Department of Health, 2018). As needs change with increasing age, the terms 'young old' (65 to 74 years), 'middle old' (75-84 years), and 'old old' (85 years and over) have been coined with the needs for assistance in personal and everyday care increasing with age, particularly in the latter group (Productivity Commission, 2008).

Data from the 2016 National Drug Strategy Household Survey (Australian Institute of Health and Welfare 2017), of Australians aged 60 years and older indicate that:

- 10.2% of 60-69 year olds and 13.6% of those aged 70 years and over drank alcohol on a daily basis and 39.7% of 60-69 year olds and 30.4% of those aged 70 years and over drank alcohol on a weeklybasis;
- People in their 60s were the age group most likely to consume 5 or more standard drinks on at least 5 days per week (7% in 2016), while people aged 70 years and over were the least likely to consume alcohol in risky quantities, with only 11% consuming 5 or more drinks on a single occasion in the past year;
- The proportion of people in their 50s (9.1% to 11.9%) and their 60s (4.7% to 6.1%) consuming 11 or more standard drinks on a single drinking occasion in the past 12 months significantly increased between 2013 and 2016.

These data are reflected in the near doubling of the number of people aged 50-64 years receiving care in NSW drug and alcohol services over the decade 2004-5 to 2013-14 (NSW Ministry of Health, 2015). This is the baby-boomer generation that compared to previous cohorts has grown up in a culture of socially accepted drinking. As a cohort, they have been more likely to consume alcohol than earlier generations, at least partially due to the lower cost of alcohol and their comparative increase in wealth (Gilhooly, 2005). While the rate of risky drinking declines with age, in health care

settings older people are more likely to report problems. One Australian study of 210 participants (mean age 81.9 years) in geriatric hospital and community health services reported that 12.4% had medium to high risk alcohol use (Draper et al, 2015).

Older people drink for a variety of reasons. In one study, the most frequently reported reasons were to cope with depression and loneliness, to reduce anxiety and tension, habit or dependency, and enjoyment (Christie et al, 2013). Three patterns of late life alcohol misuse have been described: survivors (early onset users); maintainers; and reactors (late onset users) (Nicholas & Roche, 2014). In most studies, the majority, perhaps two thirds, are early onset survivors, often with age of onset of the alcohol use disorder in the 20s, and being more likely to have the effects of long term alcohol misuse with a range of health comorbidities and psychosocial issues including lower socioeconomic status, living alone and being divorced/separated (Dauber et al, 2018; Royal College of Psychiatrists, 2018). Due to these comorbidities this group often has evidence of premature ageing (Lintzeris et al, 2016; Royal College of Psychiatrists, 2018), which is likely accentuated by neglect of preventive medical services (Merrick et al, 2008). The 'maintainers' are really a subset of the 'survivors' in that their long term alcohol misuse only starts to manifest itself as an overt problem as age-related changes occur and previously well-tolerated, albeit excessive, consumption of alcohol is no longer tolerated or results in harm. Late onset users, the reactors, tend to develop alcohol use disorders after the age of 50 and this may occur in association with issues such as declining health, chronic pain, stress, insomnia, bereavement, unemployment, depression, social isolation and boredom (Moos et al, 2010; Christie et al, 2013; Kelly et al, 2018; Royal College of Psychiatrists, 2018). There is some evidence that late onset users are less likely to have a family history of alcohol misuse, have fewer alcohol-related comorbidities, and are less likely to be smokers (Wetterling et al, 2003).

Although retirement might be associated with increased alcohol misuse in some older people, perhaps related to loss of status, social marginalization and a sense of rolelessness (Alexander and Duff 1988; Ekerdt et al. 1989; Perreira and Sloan 2001), this seems to mainly happen when it is not taken voluntarily (Henkens et al, 2008). For most retirees, retirement is a positive life transition associated with improved health (Horner & Cullen, 2016). Also, alcohol consumption declines with increasing age and worsening health (Khan et al. 2006; Paganini-Hill et al. 2007; Moos et al. 2005).

Age-related changes physiological changes and alcohol – implications for lower risk drinking

Age-related physiological changes result in older adults having a lower tolerance for alcohol than younger adults. Older adults tend to have higher blood alcohol levels than younger adults after consuming the same amount of alcohol (Blow & Barry, 2002). Factors that contribute to this include an increased body fat ratio (Blow & Barry, 2002), slower alcohol metabolism due to decreased levels of the alcohol dehydrogenase enzyme (Smith & Levitt, 1995), and a decrease in total body water with age (Schoeller 1989; Watson et al. 1980). Thus, older adults have a higher sensitivity to alcohol and a decreased ability to metabolise it effectively.

Despite this, the National Health and Medical Research Council (NHMRC) Australian guidelines for reducing health risks from drinking alcohol, which are currently under review, do not differentiate between consumption recommendations for younger and older adults. The guidelines do acknowledge that people aged over 60 years face increased risks of alcohol-related harm but note that there might also be reduced risk of some chronic conditions. Older people are advised to consult their health professionals about the appropriate level of drinking for their health (NHMRC, 2009). In contrast, guidelines from the Royal College of Psychiatrists and the United States recommend levels of consumption for older people that are between 25 - 50% lower than for younger adults (Royal College of Psychiatrists, 2018; Substance Abuse and Mental Health Services Administration, 1998). Evidence from the Australian Men, Women and Ageing studies that there is benefit from having one or two alcohol free days per week, particularly in men, and that safe consumption levels in older women are lower than in men (McLaughlin et al, 2011).

Are there benefits of light to moderate alcohol use in older adults?

Despite numerous studies that purport to show benefits of light to moderate alcohol consumption (one to two drinks per day) on a range of health outcomes that include cardiovascular function (Bryson et al. 2006), cerebrovascular disease (Mukamal et al. 2005), frailty (Shah et al, 2018), type-2 diabetes (Djousse et al, 2007), and cognitive decline and dementia (Anstey et al, 2009; Sabia et al, 2018), perceived health benefits may be attributable to methodological issues such as poor selection of comparison groups, systematic error of misclassification, and failure to adequately address confounding factors such as diet, social activity, and education (Tjonneland et al. 1999; Filmore et al, 2006; Royal College of Psychiatrists, 2018). For example, in the Whitehall II study, the increased risk of dementia in abstainers as compared with light to moderate drinkers was mediated by the greater risk of cardiometabolic disease in abstainers (Sabia et al, 2018). Similarly, critical literature has found that people who never drink were at no greater risk of cardiovascular disease than light drinkers (Filmore et al. 2003). Furthermore, purported benefits of light to moderate alcohol consumption on mortality outcomes disappear when meta-analyses are adjusted for systematic misclassification and other study confounds (Stockwell et al, 2016).

Health risks and comorbidities of alcohol use in older adults

Older adults require special consideration due to a combination of their lower tolerance of alcohol from age-related physiological changes, the impact of long term alcohol use on health, the increased risk of coincidental health comorbidities and medication use with age, and the impact that these factors have upon their independent functioning and social interactions. To a certain extent, the pattern of alcohol consumption in the older adult and their age may be indicative of the main types of health issues that the older drinker might face. For example, early onset survivors aged 50 years and over (mean age 55 years) attending specialist drug and alcohol services in Sydney had high rates of liver disease, circulatory problems, depression, head injuries, falls, cognitive impairment, and comorbid prescription medication abuse (Lintzeris et al, 2016). Many of these health issues are likely to be related to alcohol. Longitudinal research indicates that in the absence of alcohol

consumption to cope with chronic pain, alcohol consumption decreases as health burden increases with age (Moos et al, 2010). Those who are in remission from alcohol misuse have poorer health function than lifetime non-problem drinkers (Schutte et al, 2009). In contrast, older adults (mean age 82 years) with harmful drinking in aged care hospital and community health settings had multiple health comorbidities but to a similar extent and pattern as abstainers or non-risky drinkers (Draper et al, 2015). Hence, in this latter setting, health risks mainly relate to the interaction of alcohol consumption with coincidental health concerns and medications.

i) Physical Health

Numerous physical health complications of alcohol misuse have been well-described including alcohol-related liver disease, cardiac disorders, gastrointestinal disorders, and neurological disorders (Butt et al, 2011). In older adults, many of these problems manifest in late mid-life and the 'young' old (see Lintzeris et al, 2016) and may contribute to premature ageing. Over the age of 75, there are few physical health features that distinguish risky alcohol users with one community study only finding liver disease in an otherwise healthy sample (Weyerer et al, 2009).

Chronic pain, often related to back problems and gout, is regularly reported and is often comorbid with depression, anxiety, and use of prescription opioids (Moore et al, 2006; Moos et al, 2010; Gilson et al, 2014; Serdarevic et al, 2019). Alcohol is used by some older adults to cope with the pain and those that do tend to have heavier levels of consumption (Moos et al, 2010).

Older adults with long term alcohol use are at increased risk of developing cancer. In Australia in 2010, the population attributable fraction (PAF) of cancers usually associated with alcohol consumption was 2.8% of all cancers. The highest number of cancers attributed to alcohol were of breast and bowel, though the highest PAFs were for cancers of the oral cavity/pharynx and oesophagus (Pandeya et al, 2015).

A systematic literature review found that while there was only weak evidence linking alcohol consumption with falls, injurious falls were more likely to occur following alcohol consumption in older people compared with younger people and that heavy alcohol consumption in older people was associated with increased risk of falls requiring hospitalization or resulting in death (Laberge & Crizzle, 2019). This is consistent with Australian data that reported falls to be a major alcohol attributable cause of hospital admission (Chikritzhs and Pascal 2005) and being reported as causing an injury in the previous year in 40% of older attendees at a specialist drug and alcohol service (Lintzeris et al, 2016). Older adults who are drinkers have a higher risk of impaired driving ability and are more likely to die in motor vehicle accidents than non-drinkers (Chikritzhs and Pascal 2005; Sorock et al, 2006).

The high rates of physical comorbidity in older people is associated with increased use of prescription drugs many of which have known interactions with alcohol with some being contraindicated. Increased sedation occurs with antidepressants, antihistamines, muscle relaxants, benzodiazepines and opioids (National Institute on Alcohol Abuse and Alcoholism 1995), which may result in falls, motor vehicle accidents and overdose

(Tanaka 2003; Weathermon and Crabb 1999). Alcohol use in combination with non-steroidal anti- inflammatory drugs can result in stomach bleeding, gastric inflammation and liver damage (Bush et al. 1991; Dart 2001; Kaufman 1999; Korrapati 1995; Tanaka 2003). In the Irish longitudinal study on ageing, 60% of participants exposed to alcohol interactive drugs such as cardiovascular agents, central nervous system (CNS) drugs, antihistamines and anticoagulants, were using alcohol. Heavy drinking occurred in 28% of those taking antihistamines, almost 20% with anticoagulants and cardiovascular drugs, and 16% with CNS drugs. Current smokers and people with increasing co-morbidities were at greatest risk for heavy drinking in combination with alcohol interactive medications (Cousins et al, 2014). Similarly, in Finland over 42% of 'at-risk alcohol users' aged 65 and over were taking alcohol interactive drugs, with 10% using warfarin, sedative hypnotics, or metformin (Immonen et al, 2013).

ii) Mental Health

Depression is associated with alcohol use and a meta-analysis of this association found that it is stronger in samples of older adults (Conner et al, 2009). The drinking context is important in determining the likelihood of depression in older drinkers. As already noted, depression is often comorbid with alcohol misuse in older adults in chronic pain (Serdarevic et al, 2019). Eighty-seven percent of older adults aged 50 years and over who screened positive for substance use, predominantly alcohol, in Screening, Brief Intervention, and Referral to Treatment services in Florida, had moderate to severe depressive symptoms on the Geriatric Depression Scale (GDS) (Schonfeld et al, 2015). Living arrangements may be a contributory factor as around two thirds of older adults attending drug and alcohol services in Sydney lived alone, many described being socially isolated, and 79% had moderate to severe depressive symptoms on the GDS (Lintzeris et al, 2016). In contrast, older adults with risky drinking behaviour living in a retirement community in Florida did not have an increased risk of depression (Fishleder et al, 2016).

Alcohol misuse is associated with suicidal behaviour in older adults although the risk declines with age (Neufeld et al, 2015; Kölves et al, 2017; Koo et al, 2017). In Sweden, 26% of suicide attempters aged 70 years and over had a lifetime alcohol use disorder with a similar level of risk in men and women (Morin et al, 2013). An Australian case-controlled psychological autopsy study of suicide in middle-aged and older adults found that at the time of death, nearly 22% had an alcohol use disorder. Compared with sudden death controls with an alcohol use disorder, the suicides were more likely to have a mood disorder, aggressive behaviour, feelings of hopelessness, and relationship problems including family arguments (Kölves et al, 2017).

Other mental health impacts of late life alcohol misuse include anxiety disorders, post-traumatic stress disorder, antisocial personality disorders, global psychological distress and increased length of stay of mental health admissions (Sacco et al, 2009; Chou et al, 2011; Pietrzak et al, 2012; Lane et al, 2017; Loscalzo et al, 2017). They are also more likely to be socially isolated, lonely and have decreased quality of life (Coyle & Dugan, 2012; Loscalzo et al, 2017).

iii) Psychotropic and illicit drug use

Older adults with alcohol use disorders are frequently prescribed sedative-hypnotic, anxiolytic and antidepressant drugs and use illicit drugs (Blazer & Wu, 2011; Ilomäki et al, 2013; Du et al, 2016; Lintzeris et al 2016; Han et al, 2017). In the Concord Health and Ageing in Men Project, 26% of sedative-hypnotic and anxiolytic drug users were heavy drinkers and nearly 43% were daily drinkers, while 27% of antidepressant users were daily drinkers (Ilomäki et al, 2013). A German study of over 2500 adults aged 60-79 years found that 14.2% of psychotropic drug users had risky drinking (Du et al, 2016), while 30% of older adults being treated for an alcohol use disorder in an Australian drug and alcohol service were using benzodiazepines and 27% cannabis (Lintzeris et al, 2016). In the US National Surveys on Drug Use and Health, adults aged 50 years and over who used illicit or nonmedical drugs had elevated rates of alcohol abuse and subthreshold dependence (Blazer & Wu, 2011; Han et al 2017). A Norwegian qualitative study that examined the reasons older adults misused alcohol and psychotropic drugs found that that they disclaimed any challenges with their use, trivialized it, and put the responsibility for their use onto the general practitioner (Johannessen et al, 2015).

iv) Cognitive impairment

Population-based epidemiological studies examining risk and protective factors for primary dementia in people aged 60 years and over have found that low to moderate alcohol consumption is associated with a reduced risk of dementia and cognitive decline (see reviews Anstey et al, 2009; Panza et al 2012; Rehm et al, 2019). As noted earlier, there are methodological concerns with these studies and a more conservative interpretation of the evidence is that light to moderate alcohol consumption in mid to late life does not appear to increase the risk of developing dementia (Panza et al, 2012). In contrast heavy alcohol consumption in mid to late life is associated with cognitive decline and increased risk of developing primary dementia and alcohol-related brain damage (Ridley et al, 2013; Rehm et al; 2019). Despite limited evidence, there is some concern that heavy alcohol use can develop in the context of primary dementia in older adults with premorbid light to moderate use largely due to the person with dementia forgetting how much they have had to drink (Rao & Draper, 2015). There is stronger evidence that heavy alcohol consumption in people with primary dementia is associated with increased hospital admissions for falls, head injuries and behavioural concerns (Draper et al, 2011).

Screening

The most frequently used for screening alcohol dependence and hazardous use are CAGE and AUDIT questionnaires both of which have been validated and widely used in various clinical settings in Australia.

The CAGE questionnaire, is a rapid screening tool to detect the main features of alcohol dependence. However, it is not sensitive to harmful/hazardous drinking and does not distinguish between current and prior alcohol problems (Adams et al 1996; Gomez et al, 2006).

The Alcohol Use Disorders Identification Test (AUDIT) is the most commonly used screening tool for alcohol misuse which can be used as a clinical decision tool as the score provides an indication of appropriate interventions as well as being used as an outcome measure. The total score is associated with a drinking risk category: The higher the score, the riskier the drinking status. The AUDIT comprises of 10 questions and a shorter version AUDIT-C has been developed for the use in community settings. Both AUDIT and AUDIT-C are validated for older people (Robert et al, 2005; Gomez et al 2006) however lowering the cut off points for AUDIT and AUDIT-C has been recommended in order to improve their sensitivity in older people. For AUDIT ≥5; and for AUDIT-C ≥4 has been recommended (Aalto et al, 2011).

Moore at al (1999) postulated that AUDIT's sensitivity may have been compromised in older adults as it does not take into account patient's medications, medical history and functional status. In order to address these concerns, they developed a screening tool based on AUDIT criteria called Alcohol-Related Problems Survey (ARPS) which has been recalibrated for Australian SD definition (Bright et al, 2015).

It has now been well established that brief screening can identify people with unhealthy alcohol use and with the appropriate use of brief interventions, can improve outcomes (Moyer et al, 2000). As a result, it has been suggested that regardless of the health care setting, a screening for harmful alcohol use should be undertaken for all new patients and reviewed at regular intervals that is, at least once a year with a view to document for use and misuse. In geriatric health care settings, older people with unhealthy alcohol use can be detected by screening and not by their clinical presentations (Draper et al, 2015). For older adults who present with unexplained physical and psychological symptomatology and inconsistencies or contradictions in the presentation; as well as the major life events should prompt re-screening for or assessment of alcohol and other substance use history (Royal College of Psychiatrists, 2018).

Older drinkers taking other medications, in particular those taking multiple medications or psychoactive medications (e.g. sedatives, anti-depressants), should have medications reviewed by their medical practitioner to assess for any drug interactions.

Recommendation	Grade of Recommendation
18.1 Regardless of the health care setting, screening for harmful alcohol use should be undertaken for all new patients over 50 years old and reviewed at regular intervals at least once a year with a view to document for use and misuse and associated complications.	**D**
18.2 For older adults who present with unexplained physical and psychological symptomatology and inconsistencies or contradictions in the presentation; as well as the major life events should prompt re-screening for, or assessment of alcohol and	**D**

other substance use.	
18.3 Concurrent physical or mental illness, medications, social conditions and functional limitations need to be considered when assessing older drinkers.	**D**
18.4 Reassess any concomitant physical and mental conditions several weeks to months after cessation of drinking. Abstinence can be associated with marked improvements; conversely, alcohol use may have been masking underlying illness.	**D**

Diagnosing Alcohol User Disorders in Older People

ICD-10 and DSM V are currently used to diagnose alcohol use disorders. Both of these systems explore similar domains in order to establish a diagnosis related to the patients' alcohol intake and the criteria used in both of these diagnostic systems are developed in and for younger adults and may not apply to older people. The issues raised with regards to current diagnostic criteria (Blow, 1998; Royal College of Psychiatrists, 2018) are:

- *Duration and amount of alcohol consumption*: Cognitive impairment may impede the ability to monitor amounts or the duration
- Desire to cutdown: There may be reduced incentive to decrease harmful use, which includes fewer social pressures and fewer personal and family pressures secondary to ageism.
- *Tolerance and Withdrawal:* Older people may not develop tolerance and alcohol related problems and negative problems may be present even at lower levels of consumption.
- *Impact of alcohol on physical, mental and social wellbeing:* Older people may have decreased activities due to physical and psychiatric comorbidities or 'slowing down'. Social isolation and disabilities may make detection more difficult. As well those who are caring for older people including healthcare providers may attribute alcohol related changes to age related functional changes as the index of suspicion for alcohol and other substance use for an older person is rather high among healthcare practitioners.

What is effective?

Our ever expanding understanding of the epidemiology of substance use disorders among older people has led to an increase in the number of good quality RCTs and

subsequent systematic reviews (Kok, 2014).

Four recent systematic reviews on the effectiveness of various treatment approaches to alcohol use disorder among older people concluded that there was no evidence base for treating older patients with an AUD, at risk or problematic drinking in a different way than younger adults with the same disorders or the same level of alcohol use (Moy et al, 2011; Bhatia et al, 2015; Armstrong-Moore et al, 2018; Kelly, 2018).

The interventions that have shown to be effective in reducing the amount or the frequency of alcohol consumption among older adults are varied and as follows:

- Brief interventions:
  - Combination of motivational interviewing with educational materials (Gordon et al, 2003; Schonfeld et al, 2010)
  - Web delivered brief interventions in addition to treatment as usual (Cucciare et al, 2013)
  - Mail-outs with personalized feedback (Kuerbis et al, 2015)
  - Physician advice to reduce alcohol with personalized feedback, education and aids for drinking reduction, and telephone follow-up (Fleming et al, 1999)
- Combination of multiple interventions:
  - Personalised feedback reports, drinking diaries, education and advice and follow-up telephone counselling compared to usual care or minimal intervention (Moore et al 2011; Ettner et al, 2014)
  - Provision of feedback about personal drinking risks and education given to the participants as well as feedback regarding the patient status to the participants' physician (Fink et al, 2005)

The most recent Cochrane review on the effectiveness of brief interventions in primary care populations (Kaner, 2018) confirms that there is sufficient evidence regarding the efficacy of brief interventions in the community settings for reducing harmful drinking however of the 69 studies that were included in the review only four (6% of all studies) specifically targeted older adults. This is a good indication that further research is needed in this field.

The only meta-analysis of the studies that explored the interventions that aimed to prevent or reduce excessive alcohol consumption found that there was an overall intervention effect for 3- and 6-month outcomes combined (8 studies; 3,591 participants; pooled standard mean difference (SMD) −0.18 (95% CI −0.28, −0.07) and 12 months (6 studies; 2,788 participants SMD −0.16 (95% CI −0.32, −0.01) but risk of bias for most studies was unclear with significant heterogeneity (Kelly et al, 2018). The areas they identified for future research are primary prevention of excessive alcohol consumption among elderly, and the identification of what elements of various brief interventions that were employed would actually work.

Recommendation	**Grade of recommendation**

18.5 Brief interventions should be employed for older people drinking at risky levels or experiencing alcohol-related harms (such as falls, driving impairment, drug interactions).	**A**

Withdrawal management for dependent drinkers

Alcohol withdrawal is a physical illness and may be life threatening if left untreated. The biological processes related to alcohol withdrawal are not age related, however the effect of comorbid physical illness and associated infirmities in older people has been identified as a significant modifying factor for the course of alcohol withdrawal syndrome in older patients (Wojnar et al, 2001). As a result it is important to carefully assess and closely monitor older patients who are at risk of developing alcohol withdrawal complications, ideally in an inpatient setting. Appropriate management of the nutritional status as well as the optimal management of comorbid physical and mental health problems will likely to ensure a shorter admission and reduce the risk of major alcohol withdrawal complications such as delirium tremens (Royal College of Psychiatrists, 2018) .

Benzodiazepines are cross-tolerant with alcohol and are considered first-line gold standard therapy for treating alcohol withdrawal symptoms. Diazepam is first metabolized by hepatic oxidation, then glucuronidation whereas lorazepam and oxazepam undergo only hepatic glucuronidation. Benzodiazepine oxidation is decreased in older adults. Excessive sedation and respiratory depression due to accumulation may be significant when administering diazepam to older patients. Lorazepam and oxazepam metabolism are minimally affected by age, hence these two medications are recommended for the management of alcohol withdrawal symptoms in older adults (Peppers, 1996). Older patients likely to require lower doses of benzodiazepines for the management of their withdrawal symptoms and as a result a symptom triggered approach is recommended for this group. However it is important to remember that the alcohol withdrawal scales are developed for the use in working age adults (Royal College of Psychiatrists, 2018).

Thiamine deficiency is common among people with severe alcohol use disorders. The latest Cochrane review on the role of thiamine in preventing and treating WKS (Day et al, 2013) concluded that there is good empirical evidence to support the use of thiamine however there was no good quality evidence in guiding the dose and the duration of thiamine use for those with severe alcohol use disorder. However current practice guidelines suggest he use of thiamine intravenously at least 500 mgs two or three times a day (Royal College of Psychiatrists, 2018). As the intravenous administration of this vitamin is associated with an anaphylactic reaction, an inpatient admission is ideal setting to provide the older patients with severe alcohol use disorder with intravenous thiamine.

Recommendation	**Grade of recommendation**

18.6 Withdrawal management of older dependent drinkers requires close monitoring, nutritional supplements especially IV thiamine, careful use of sedative medication, and management of comorbid conditions.	GPP
18.7 Caution should be exercised when prescribing medications to older drinkers. Short-acting benzodiazepines (such as oxazepam, lorazepam) are preferred for alcohol withdrawal management over long- acting benzodiazepines (such as diazepam).	D

Relapse Prevention:

Although there are several licenced relapse prevention pharmacotherapies for alcohol such as Acamprosate, Disulfiram, Naltrexone and Namlefene, their use in the older adult population has not been well studied. Of these medication, Naltrexone is the only one that has been studied in people age 55 and older. In this study by Oslin et al (2002), despite the fact that the older drinkers had longer drinking careers and associated complications, their adherence to treatment was better which in turn yielded better treatment outcomes.

The use of pharmacotherapies in relapse prevention for alcohol in older adults is an area for further research. Regardless, a careful consideration needs to be given in order to avoid the complications related to polypharmacy.

Recommendation	**Grade of recommendation**
18.8 Psychological and pharmacological treatment approaches should be tailored to physical, cognitive and mental health of older patients with a special attention to complications of polypharmacy.	**D**

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CHAPTER 19

COGNITIVE IMPAIRMENT: A REVIEW OF THE EVIDENCE

Chapter 19. Cognitive impairment: A review of the evidence

Introduction

In order to successfully enact the changes required to recover from Alcohol Use Disorder (AUD), numerous complex cognitive skills are necessary. For example, self-assessment, social cognition, emotional processing, as well as memory and executive function for decision making, are all required to make progress (Le Berre, Fama, & Sullivan, 2017). Obtaining informed consent for medical treatment (or research involvement) may even be difficult with patients with CI. Furthermore, the ability to inhibit automatic drinking behaviours in favour of healthier behaviours and enact behavioural avoidance strategies are also key skills to facilitate the transition from excessive drinking to controlled drinking or abstinence (Le Berre et al., 2017).

However, chronic excessive alcohol use has been consistently associated with cognitive impairment (CI), including impairments in memory, decision making, problem solving, cognitive flexibility, and increased propensity for risky behaviour (Davies et al., 2005; Glass et al., 2009; Le Berre et al., 2017; Moselhy, Georgiou, & Kahn, 2001). Higher frequency of drinking and longer-term duration of drinking have also been associated with the potential for worse cognitive outcome. This section reviews the types and causes of CI observed in AUD, prevalence rates, disease trajectory, and potential for cognitive recovery. The current evidence concerning best practice for screening and assessment of alcohol-related CI is reviewed, alongside the potential options for AUD treatment, cognitive rehabilitation and remediation.

Types and Causes of Alcohol-Related Cognitive Impairment

Long term heavy alcohol use can lead to a range of cognitive deficits of varying severity, which can in turn lead to a loss of ability to function in daily life (Hayes et al., 2016). Some deficits may reverse with abstinence from alcohol; others may be chronic. Neuroimaging and neuropathological findings show reductions in both white and grey matter, widening of the sulci, ventricular enlargement, and neuronal loss in people with AUD (see Hayes, Demirkol, Ridley, Withall, & Draper, 2016, for a review). Brain areas associated with alcohol-related damage include the frontal lobes, limbic system, and the cerebellum in particular, including connections between these regions (Chanraud et al., 2007; Noël et al., 2001; Oscar-Berman & Marinkovic, 2007; Uekermann & Daum, 2008). People with AUD are also at risk of traumatic brain injury due to an increased likelihood of falls and other injuries while intoxicated (Weil, Corrigan, & Karelina, 2018). Co-occurring psychiatric, nutritional, metabolic and hepatic abnormalities can also contribute to cognitive dysfunction. Importantly, it has been suggested that there may be a bidirectional relationship between alcohol use and CI, such that pre-existing CI may contribute to the initiation or exacerbation of risky alcohol use (e.g. Weil et al., 2018).

The main causes of permanent alcohol-related brain damage (ARBD) are thought to include direct neurotoxicity and thiamine (vitamin B1) deficiencies (e.g. Oscar-Berman & Marinkovic, 2007). In addition, around a quarter of people with ARBD will have evidence of vascular or traumatic brain changes (Wilson et al., 2012). Chronic alcohol

exposure is thought to cause neuronal loss through glutamate excitotoxicity, oxidative stress, and disruption of neurogenesis (Bates, Bowden, & Barry, 2002). In addition, individuals with AUD are at particularly high risk of thiamine deficiency (Hayes et al., 2016), which can lead to Wernicke's encephalopathy (WE), a potentially fatal neurological disorder (Harper, 1998). The clinical diagnostic criteria for acute WE includes *any two* of the following signs in patients with a history of alcohol dependence: dietary deficiencies, cerebellar signs, eye signs or CI (Caine, Halliday, Kril, & Harper, 1997). This is often followed by a clinical syndrome of anterograde amnesia, confabulation, and behavioural abnormalities i.e. Korsakoff Syndrome, although the severity of CI may vary (Fama et al., 2019; Pruckner et al., 2019). The neuropathology of WE and KS share similar neuropathological substrates (Hayes et al., 2016), and are commonly referred to as Wernicke-Korsakoff Syndrome (WKS), which accounts for the heterogeneity in neurological and cognitive symptoms. Other alcohol-related encephalopathies include: Marchiafava-Bignami disease, which is a rare disorder associated with progressive demyelination and necrosis of the corpus callosum and manifests as mental confusion and severe impairment in consciousness (Carrilho, Santos, Piasecki, & Jorge, 2013; Heinrich, Runge, & Khaw, 2004; Zuccoli et al., 2010); and hepatic encephalopathy which involves an accumulation of neurotoxic substances in the CNS following acute and chronic liver failure, and manifests as a wide spectrum of psychiatric disturbances and motor dysfunction (Zuccoli et al., 2010). These different alcohol-related encephalopathies (including WE) may share common anatomic regions and thus contribute to the assertion that these disorders exist along a continuum of alcohol related CI (Zuccoli et al., 2010).

Alcohol-related brain damage (ARBD) describes more permanent impairment, superseding use of the term 'alcohol-related dementia' (Ridley, Draper, & Withall, 2013). Signs of ARBD include memory loss and confabulation, confusion, difficulties in concentration and processing of new information, loss of motivation, and lack of insight (Goldstein et al., 2009; Harper, 2007). One cognitive domain thought to be particularly susceptible to heavy alcohol use is that of the executive functions (EF). EF include planning, reasoning, judgment, flexibility, and inhibition. In AUD, inhibition, flexibility, deduction of rules, organization and planning appear to be especially impaired (Le Berre et al., 2017). Memory is another key cognitive domain found to be impaired in AUD, in particular episodic/autobiographical memory and semantic learning; however, visuomotor procedural and implicit perceptual learning appear to be relatively preserved (e.g. Bruijnen et al., 2019). Recent research has also highlighted the importance of expanding the understanding of functional impairment in ARBD to include deficits in metacognition (the ability to accurately assess one's own cognitive abilities) and metamemory, as well as deficits in emotional and social cognitive abilities (see Le Berre et al., 2017, for a review).

Prevalence

Much of the research literature concludes AOD samples to have CI when only a statistically significant difference from the control group or population norms is found; however, it is important to distinguish between statistically significant impairment and clinically significant impairment (e.g. a performance on a neuropsychological test > 1.5 SD from health controls/population norms versus impacting upon treatment and recovery). This caveat should be considered while reading the following review of CI

prevalence studies. In treatment-seeking samples, rates of CI in people with AUDs are substantial; between one third to two thirds (Bates, 2013). As the presence and severity of CI may fluctuate with drinking levels and the presence of other co-morbid factors (e.g. acquired brain injury, mental health), the proportion of individuals with more chronic CI (i.e. ARBD) is difficult to determine. This is also complicated by variation in classification of type of ARBD across studies (e.g. WKS vs dementia) and the potential for diagnostic overlap (e.g. see Draper, Karmel, Gibson, Peut, & Anderson, 2011). However, based on the studies available, it appears that in the general population in developed countries, WE has been estimated to range from 0-2.8%, with heavy alcohol use accounting for approximately 90% of these cases (see Hayes et al., 2016, for a review). In one study on young onset dementia (YOD) in Eastern Sydney, it was found that the most prevalent clinical subtype was alcohol-related dementia (18.4% of 141 patients; Withall, Draper, Seeher, & Brodaty, 2014); another larger data linkage study based on French hospital data estimated that of the cases of YOD recorded, 38.9% were attributable to alcohol (Schwarzinger et al., 2018). In older dementia samples, one US study reported rates of alcohol-related dementia to be 25.6% in an elderly alcohol treatment population (see Cheng et al., 2017).

Disease Trajectory and Recovery

Due to the dynamic course of AUD, involving phases of withdrawal, abstinence, and relapse, each of these phases can be associated with fluctuations in levels of CI and recovery. Also relevant to impairment levels and recovery are factors such as premorbid differences in cognitive abilities, age, history of drinking patterns and amount consumed, as well as number of withdrawals (Le Berre et al., 2017). A history of multiple withdrawals, lower levels of education, and older age are thought to reduce potential for cognitive recovery with abstinence (see Ridley 2013). Unfortunately, due to the potential for memory impairment, gaining an accurate history of these patterns may prove difficult.

Most patients observed to have an acute episode of WE will display the severe CI associated with KS at follow-up (Victor, 1989). Beyond the period of acute hospitalization and the well-established benefits of high dose thiamine on the acute symptoms of WE (Thomson, Cook, Touquet, & Henry, 2002; Victor, 1989) some patients with WKS recover from the severe illness, including from the severe CI, although recovery may occur over months or years. For CI related to AUD more broadly, the most substantial recovery appears to happen in the short term post abstinence (one month), with more modest increased across mid-team (up to one year) and long-term (Bates, 2013). While some studies suggest that a return to premorbid levels of cognitive functioning is possible, deficits may remain for at least a year or even permanently (e.g. Florent Bernardin, Anne Maheut-Bosser, & François Paille, 2014; Ros-Cucurull et al., 2018; Woods et al., 2016). The rate at which cognitive recovery occurs also may differ across domains, with some suggestion of slower recovery of memory and executive deficits (see Bates, 2013). Another possibility is that while the damage may not be fully reversed, compensatory mechanisms, including use of alternate neural pathways, may facilitate return to prior levels of functioning (e.g. Oscar-Berman & Marinkovic, 2007). The potential for rehabilitation and remediation programs to assist further in the recovery of alcohol related cognitive decline will be discussed in a subsequent section.

Screening and Assessment

As indicated above, the CIs associated with AUD can be multi-domain and severe and have implications for daily independent functioning as well as treatment outcomes. As such, it is advocated that screening for CI is incorporated into everyday practice for clinicians, especially for those identified at risk - particularly older (aged 50+) patients with a history of long-term heavy alcohol use and/or pattern of frequent binge drinking. If significant CI is suspected, then a more thorough assessment by an appropriately qualified professional is indicated (Roebuck-Spencer et al., 2017). This stepped mode of assessment is best practice for an environment marked by high rates of CI, limited staff time (particularly staff with specialist training in cognitive assessment, such as neuropsychologists), and limited health service budgets. When screening, an individual's performance must be considered relative to their pre-morbid levels of functioning, i.e., that a test performance in the low-average range might not indicate CI if it aligns with their pre-morbid IQ (or fewer years education as an alternate proxy metric of expected performance).

Screening for Cognitive Impairment in AUD

The most widely used cognitive screening tool, the Mini-Mental State Examination (MMSE), while well validated for use in screening of early dementia, has limited sensitivity in detection of alcohol-related CI. Manning et al. (2009) found that global MMSE scores were insensitive to CI commonly found in dual diagnosis schizophrenia and AUD groups. Lintzeris et al. (2016) demonstrated that in a group of older adults (50+) attending community treatment, the MMSE had poor sensitivity to severe CI. Similarly, Ridley et al. (2018) and Oudman et al. (2014) have reported reduced discriminative ability of the MMSE in polysubstance users and individuals with KS, respectively compared to other cognitive screens. Limitations of using the MMSE in AUD cohorts include overreliance on language functions, absence of executive functioning measures and low sensitivity to mild CI (Ridley et al., 2018).

The most frequently used measure for detection of CI in AUD is the Montreal Cognitive Assessment (MoCA) (Nasreddine et al., 2005). The MoCA takes about 15 minutes to administer and assesses five cognitive domains: working memory, short-term memory, executive function, language, and visuospatial ability. The total possible score is 30 points, with an education adjustment of +1 to the final score if the participant has less than 13 years of education. It also has alternate forms to reduce the potential of practice effects with repeat administration. In validation studies to date, the MoCA has demonstrated good sensitivity and specificity to alcohol-related CI, although the optimal cut-score to determine impairment has varied among different samples. In a sample of 60 people with SUD attending outpatient treatment, Copersino et al. (2012) reported acceptable sensitivity (83.3%) and specificity (72.9%) at an optimal cut-score of 26. Ridley et al. (2018) and Wester, Westhoff, Kessels, and Egger (2013) also reported that the MoCA has good discriminative ability in detecting CI, although the recommended cut-score varied depending on preference for sensitivity or specificity. Oudman et al. (2014) also established the superiority of the MoCA versus the MMSE, but this time in Korsakoff's syndrome (KS). The MoCA was shown to have accurate psychometric properties and diagnostic validity to detect KS using a cut-point of 22/23 points, the same optimal cut-off point established in a

previous MoCA KS validation study (Wester et al., 2013). A revised MoCA cut-off of 23 was also supported by a meta-analysis of validation studies for all-cause MCI, which indicated that this cut-off provided the most robust classification accuracy and optimally balanced sensitivity and specificity (Carson, Leach, & Murphy, 2018).

Positively, the MoCA has also been shown to map onto treatment-relevant variables. Copersino et al. (2012) demonstrated criterion validity for the MoCA in the ability to predict clinically relevant behaviour (i.e. treatment attendance). Pelletier, Nalpas, Alarcon, Rigole, and Perney (2016) found that the MoCA was able to track longitudinal cognitive changes across a large sample of 236 patients admitted for DSM-IV alcohol dependence who were hospitalised for at least four weeks. At discharge, 53.8% of participants reported a MoCA score that was in the normal range, an increase from 15.8% at admission. The MoCA has also demonstrated sensitivity to comorbid contributing factors to CI, including head injury (Marceau, Lunn, Berry, Kelly, & Solowij, 2016), psychiatric comorbidity (D'Hondt et al., 2018), and nutritional deficiencies (Gautron, Questel, Lejoyeux, Bellivier, & Vorspan, 2018).
Bruijnen et al. (2019) assessed the criterion validity of the MoCA in a sample of people with SUD, predominantly AUD (70.7%). They cautioned that the MoCA domain scores at baseline did not map well to the equivalent domains on the full neuropsychological battery at 8-week follow-up, although the follow-up MoCA domain scores mapped well. It was suggested this might be due to the effects of abstinence and as such caution is needed when interpreting baseline MoCA domain scores and their implications for longer-term cognitive performance. The authors of the MoCA have also released a basic version of the MoCA, suited for those who are illiterate or who have less than five years of education, but this is yet to be comprehensively validated (Julayanont et al., 2015).

Another cognitive screen with some preliminary validity for use in AUD is the Addenbrooke's Examination–Revised (ACE–R). The ACE-R included the items within the Mini-Mental State Examination (MMSE), and was designed as a dementia screening tool. Due to copyright concerns, the current version of this tool is the Addenbrooke's Cognitive Examination-III (ACE-III). The ACE-III consists of 19 items that evaluate performance in five cognitive domains: attention, memory, fluency, language and visuospatial processing. It is longer than the MMSE and the MoCA and requires around 20-30 minutes to complete. A recent study of the ACE–R found it to be a viable screening tool in older alcohol and other drug service users (aged 50+; Monds et al., 2017), with a significant proportion of patients (65%) scoring below the 88 cut-score for mild CI. There were significant correlations between ACE–R total score and functional outcomes, e.g. mental health, with self-reported history of seizures was an independent predictor of CI. Ridley et al. (2018) also demonstrated that the ACE–R and MoCA had good discriminative ability whereas this was only fair for the MMSE. The optimal cut-score for the ACE–R was with impairment classified as a score of 92 or less (89% of individuals correctly classified). Validation of the updated ACE-III and a shorter version of the ACE-III, the Mini-ACE (M-ACE) is yet to be trialled in AUD.

In summary, the MoCA is currently the recommended screening tool for CI in AUD. It has alternate forms, is currently freely available for non-commercial use (although

important to note it will eventually require a one-off training fee for access), and can be administered by a range of health professionals. As advised by the authors, the interpretation of the test should only be performed by healthcare professionals who have experience in the cognitive field. However, it should be acknowledged that there are also screening tools for distinct groups, such as Aboriginal or Torres Strait Islander patients or patients with criminal justice involvement, e.g. the Kimberley Indigenous Cognitive Assessment (KICA). In general, cognitive screening should be completed in conjunction with assessment of other causes of CI to provide a comprehensive clinical picture (e.g. acute nutritional deficiencies, history of head injury, comorbid psychological disorders). Furthermore, when taking a patient's history attention should be given to employment history, medical history, social circumstances, family violence, TBI, and/or developmental issues as this may help clinicians understand their patients' CI complaints, how they have arisen and how they can best assist. Occasionally a family member or significant other may be present at the interview (with the patients' consent), and this can help corroborate, supplement or clarify any information supplied.

When Should Cognitive Screening and Further Assessment Take Place?

Whilst it is preferable for cognitive screening and assessment to occur after a period of abstinence - even one to two weeks is beneficial (Alarcon et al., 2015) - this may be difficult to achieve for some patients. In this instance the presence of a cognitive screen and/or assessment is preferable to none at all and may be more robust with respect to external validity (Bruijnen et al., 2018) and establishing likely day-to-day impairments. In Bruijnen et al.'s (2018) longitudinal study, the majority (42.7%) were not abstinent at either baseline or follow-up. The presence of CI on admission to AUD treatment is critical to ensure that the treatment is suitable for the level of the individual's cognitive ability (Florent Bernardin, Anne Maheut-Bosser, & Francois Paille, 2014). As there can be rapid improvements in cognitive functioning that take place over the first few weeks of abstinence (Petit et al., 2017), any cognitive screening that takes place within this period should take into account the possibility of improvement, and the presence of other co-morbid factors that can influence performance such as physical health status and use of medications (e.g. benzodiazepines). Ideally, the patient should be medically stable, hence cognitive screening post the withdrawal period (for those that achieve abstinence) is optimal. Repeat screening can help to establish cognitive changes during this initial period.

Given that CIs are primarily evident in older patients, for whom approximately 40% will screen positive for significant CI, it is advocated that screening should occur for all patients aged 50+. Self-reported scales of cognitive performance are likely to have limited clinical utility in AUD since patients frequently lack insight into the presence and severity of their CI, as indicated by a lack of correlation between objectively-measured and subjectively-experienced cognitive deficits (Horner, Harvey, & Denier, 1999; Walvoort, Wester, & Egger, 2013). Further detailed cognitive assessment can be considered for those who screen positive for impairment, although this can only be performed by a specialist in this area (e.g. neuropsychologist). Given the high rate of screen positives (around 40-70%) and the considerable time and cost investment of gathering this finer-grained information on individual functions within domains of

impairment, whether it is needed should be carefully considered. Most alcohol treatment facilities will not have access to a neuropsychologist on staff (Alarcon et al., 2015). For most patients where CI is suspected screening with a multi-domain tool such as the MoCA may be sufficient, although it must be stressed that a result on a screening test cannot act as a substitute for a full neuropsychological assessment, especially in guiding cognitive rehabilitation. Where possible, the neuropsychological assessment should be completed after a time of abstinence; Walvoort et al. (2013) suggests that it takes six weeks for neuropsychological functioning to return to a fairly stable level. The assessment must also take into account for the possibility of continuing improvement over a year or more (Stavro, Pelletier, & Potvin, 2013). In some circumstances, a comprehensive cognitive assessment may be required while the individual is still drinking to advise on matters of decision-making capacity or guide current treatment plans and service provision (Hayes et al., 2016).

Recommendation	Grade of Recommendation
19.1 All patients should be screened for cognitive impairment on treatment entry. If cognitive impairment is suspected, comprehensive assessment should be conducted that includes medical review (including nutritional deficiencies, physical and psychiatric comorbidities), review of other risk factors for cognitive impairment (e.g. past head injury), and cognitive screening with a standardised tool (e.g. Montreal Cognitive Assessment). Neuropsychological assessment may be beneficial if cognitive impairment persists post an initial stabilisation period.	A
19.2 Periodic re-evaluation of cognition (e.g. annually) in continuing patients is advised as impairment levels can fluctuate. Patients should be screened earlier if there are any inconsistencies in presentation or when people are not meeting their treatment goals/requirements. Using the same measure as at baseline is advised to be able to detect any changes in results.	B

Treatment of Alcohol Use Disorder in People with Cognitive Impairment

Does Cognitive Impairment Impact Treatment Efficacy?

As standard treatment for substance use disorders entails learning of new knowledge and skills and appropriate application of these skills (Morgenstern & Bates, 1999), it could be expected that reductions to cognitive skills impede treatment success. However, the presence of a direct relationship between cognitive impairment (CI) and treatment outcome has not been consistently reported. This inconsistency has brought much-needed scrutiny to the role of individual factors, including characteristics of the people with AUD (e.g. severity of use, co-morbid factors, domains of brain dysfunction), measurement tools, and the different contexts of AUD treatment, which could account for the discrepant outcomes.

Bates, Buckman, and Nguyen (2013) proposed that CI is not necessarily predictive of

poor treatment prognosis or worse drinking outcomes, but that it may mediate or moderate other factors which relate to treatment outcomes. For instance, CI may negatively impact specific aspects of treatment processes (e.g. such as treatment attendance, skill learning, self-efficacy), which are reliable predictors of drinking outcomes. It may also change the strength (moderate) of other predictive factors related to treatment outcome. There is support for both models. As a mediator, CI has been negatively associated with learning of new skills, including drink refusal skills (Smith & McCrady, 1991) and coping skills acquired in CBT (Kiluk, Nich, & Carroll, 2011). CI also has been shown to impact on 'motivational' factors, with treatment providers viewing cognitively impaired patients as having lower motivation and greater denial of addiction compared to other patients (Goldman, 1995), lower readiness to change (Le Berre et al., 2012), and less ability to achieve insight-oriented treatment goals (Rinn, Desai, Rosenblatt, & Gastfriend, 2002). There is also evidence that CI impacts on the ability to adhere to and remain in AUD treatment – which has positive associations with not only substance use changes, but other outcomes such as quality of life. Bates, Pawlak, Tonigan, and Buckman (2006) used structural equation modelling to demonstrate that in a multi-site, outpatient sample, CI led to fewer sessions attended, which in turn predicted drinking levels. Copersino et al. (2012) similarly found that cognitively impaired patients attending a high intensity program were less likely to attend all their group treatment sessions. Brorson, Arnevik, Rand-Hendriksen, and Duckert (2013) across different study designs, samples and measurement methods, confirmed that lower cognitive functioning was associated with a higher degree of drop-out from treatment. Shulman et al. (2018) more recently demonstrated the relationship between higher cognitive functioning and retention in outpatient psychosocial treatment over 12-weeks. While the latter two studies included individuals with varying substance use disorders, these results overall point to a negative association between cognitive ability and ability to adhere to treatment plans.

CI has been also shown to moderate (i.e. reduce or enhance) treatment processes which impact on outcome. In cognitively intact patients, self-efficacy is associated with ability to resist drinking urges and drinking behaviour following treatment. However, in patients with clinically significant CI, increased self-efficacy or commitment to abstain did not lead to improved outcomes for CI patients as it did for those without (Bates et al., 2006; Morgenstern & Bates, 1999). CI has also been shown to amplify the influence of social networks on drinking outcomes in individuals with CI (Buckman, Bates, & Cisler, 2007; Buckman, Bates, & Morgenstern, 2008). The Project MATCH study, a multi-site large-scale American study which examined the interaction of outpatient patient and treatment characteristics found that the influence of social networks was more predictive of treatment outcomes in CI individuals than those without CI, both in positive (i.e. social network supporting sobriety) and negative (social network supporting drinking) forms (Buckman et al., 2007). The Project MATCH data also indicated that CI was positively associated with AA involvement, which in turn was related to increased days of abstinence (Bates et al., 2006).

These findings suggest that individuals with CI can achieve equivalent outcomes in treatment as non-cognitively impaired patients, but that they may rely on different mechanisms for effective treatment, such as a greater influence from social networks

(e.g. strong family support, AA involvement) and less reliance on self-efficacy (e.g. motivation to abstain) to change drinking behaviours. They are also at risk of reduced treatment compliance, which impacts on overall outcomes.

What Treatment Settings or Techniques are Better for Patients With Cognitive Impairment?
Treatment Setting: Relatively few studies have investigated whether people with CI benefit from specific AUD treatment settings (e.g. outpatient or inpatient treatment). Rychtarik et al. (2000) used random assignment groups to examine the interaction of patients characteristics with inpatient, intensive outpatient, or standard outpatient treatment. Patients with more severe alcohol use had reduced drinking days over 18 months following inpatient treatment than those with lower levels of use; patients lower in cognitive functioning also appeared to benefit more from inpatient than outpatient care. However, AA engagement appeared to moderate this effect (i.e. AA attendance among outpatients might negate any additional benefit from inpatient care). A follow-up extension study by the same research group (Rychtarik, McGillicuddy, Papandonatos, Whitney, & Connors, 2017) confirmed the benefit of inpatient treatment for individuals high in alcohol-severity, but did not replicate the advantage of inpatient treatment for patients with CI.

Psychosocial Treatment Techniques: The appropriateness of specific psychosocial treatment techniques for CI patients is an area of increasing investigation. Buckman et al. (2007) found no difference in drinking outcomes (i.e. days abstinent, drinks per drinking day) between outpatient CBT, motivational enhancement therapy and 12-step treatment modes of treatment over a three-year follow-up for individuals with CI in their analysis of Project MATCH data. Shulman et al. (2018) also reported no association of cognitive functioning to treatment outcome in an internet-delivered behavioural intervention (combining skills-oriented counselling and contingency management) provided in the community for 12 weeks. Borsari, Apodaca, Yurasek, and Monti (2017) reported no relationship between global cognitive status and ability to benefit from motivational interviewing in a brief intervention provided in an Emergency Department setting. However, other studies have indicated a relationship between level of cognition and ability to benefit from psychosocial treatment forms. Cooney, Kadden, Litt, and Getter (1991) randomly assigned alcohol-dependent patients to CBT based coping-skills training or interactional groups, run weekly for 6 months. Over a two-year follow-up period, patients with CI (as assessed with a multi-domain cognitive battery) who were treated in the coping skills group relapsed first; CI patients treated with interactional group therapy fared best. Cooney speculated that CI patients may have found the coping skills training too complex, whereas they may have perceived the interactional groups as more supportive. Jaffe et al. (1996) found that higher levels of verbal learning were associated with better outcomes for CBT based relapse prevention therapy, but not for supporting therapy, in randomly assigned groups. Literature in other substance use disorders also suggests that use of programs with lower cognitive demands for individuals with CI (e.g. computer-assisted CBT, contingency management) may increase treatment adherence (Secades-Villa, García-Rodríguez, & Fernández-Hermida, 2015).

The need for treatments to consider the cognitive abilities of patients with CI has been acknowledged in recent years. Allan, Collings, and Munro (2019) adapted a residential

drug and alcohol treatment program in regional NSW to cater for the high prevalence of CI. This included adapting treatment programs to include daily routines, memory aids such as diaries; skills practice; and simplified written material to complement verbal instructions. Over a 3-month program, individuals with CI (as identified by a basic screener, the ACE-R) completed treatment at the same rate as others in the program (49%), a significant improvement on the retention rate prior to program introduction (10%). However, strategies for maintaining change and lack of ongoing support were identified as sources of concern for participants, and the need for appropriate aftercare to assist in preventing relapse, particularly in those with limited self-efficacy, was identified. For those with more severe impairment (i.e. ARBD). Wilson et al. (2012) has proposed a model of structured psychosocial rehabilitation and treatment, trialled successfully in the United Kingdom. This is program involves five stages – medical stabilisation, psychosocial assessment, therapeutic rehabilitation, adaptive rehabilitation, and long-term maintenance and relapse prevention. Specialised and coordinated support from health services in providing appropriate person-centred is required to enable this program. In some cases, those with severe ARBD may require significant levels of care and protection for their own wellbeing i.e. Guardianship or long-term placement.

Pharmacological Treatments: As discussed in a previous chapter, pharmacological treatments for alcohol use disorder most frequently include acamprosate, naltrexone and disulfiram. While these drugs target general neurotransmitter systems impacted by substance use and addiction (e.g. GABA and NMDA), there have been minimal attempts to examine whether efficacy of these substances in treatment is impacted by cognitive status. This may be in part due to the fact that individuals with severe CI may not be appropriate candidates for pharmacotherapy due to likely poor adherence and potential for harm (e.g. overdose due to memory lapses). Jaffe et al. (1996) suggested that individuals with lower levels of verbal learning and higher levels of craving had greater benefit from naltrexone versus placebo. Some authors have reported poorer memory performance as a side effect of acamprosate (Schneider et al., 1999), however the Cochrane systematic review did not indicate increased reported memory issues compared to placebo (Rösner et al., 2010). Other authors have suggested that cognitive enhancers (e.g. modafinil) have the potential to improve cognitive functioning in addictive disorders, however these are not yet established or approved treatments (Brady, Gray, & Tolliver, 2011).

At present there appears to be no compelling evidence for one AUD treatment setting or technique being preferentially suited for patients with CI. However, there is some evidence that adapting forms of existing treatment to suit the cognitive demands of CI patients may lead to better treatment outcomes for these patients. There needs to be further systematic investigation of the efficacy of treatment-interventions adapted specifically for use with CI patients.

Do Different Domains of Cognitive Functioning Impact on Treatment Outcomes?

Earlier studies defined typically defined CI by overall performance on cognitive screening or neuropsychological measures (e.g. O'Leary, Donovan, Chaney, & Walker, 1979). The last decade has brought increased attention to the role of specific cognitive

domains in predicting treatment outcomes. Specific reductions in learning and memory skills may impact ability to learn treatment-relevant information. Heinz et al. (2016) found that poorer learning and memory was associated with higher alcohol consumption in veterans with comorbid PTSD and AUD; Jaffe et al. (1996) also documented a relationship between reduced verbal learning and poorer drinking outcomes for individuals attending relapse-prevention therapy. Reduced memory skills have also been associated with lower readiness to change drinking behaviours (Le Berre et al., 2012), and with lack of achievement of 'denial-related' treatment goals (Rinn et al., 2002).

With the development of neuroscience models which point to reduced 'top down' executive control as a central component of addiction (Naqvi & Morgenstern, 2015), the majority of cognitive domain-specific research has been in the area of executive functioning. To date, the most consistent executive domains that have been linked to treatment outcomes are reward-based decision making and response based inhibition/impulsivity (Dominguez-Salas, Diaz-Batanero, Lozano-Rojas, & Verdejo-Garcia, 2016). Poor decision-making (i.e. a tendency to choose short-term rewards over better long-term outcome) has been associated with greater risk of relapse (Bowden-Jones, McPhillips, Rogers, Hutton, & Joyce, 2005) and premature treatment dropout (Barreno et al., 2019). Higher risk-taking (as assessed by a computer-based simulation task) has been associated with less engagement with computer-assisted CBT and greater substance use over an 8-week treatment period (Carroll et al., 2011). Similarly, Czapla et al. (2016) found that patients with many previous detoxifications and large deficits in response inhibition showed the highest relapse risk in six-month follow-up period. Individuals with poorer decision-making skills may also rely more heavily on automatic processing of alcohol-related stimuli to determine extent of alcohol use (Albertella et al., 2017; Cappelli, Ames, Shono, Dust, & Stacy, 2017). These findings promote the role of reward-based decision making and response inhibition as key factors to consider as part treatment for addiction; however, further replication of these findings in alcohol-specific contexts and across varied settings are necessary. The relevance of brain regions that contribute to relapse risk is a further area of interest, particularly as neural activity changes in specific areas (e.g. the premotor cortex) has been shown to differ in prospective abstainers versus relapsers, despite equal performance on cognitive measures (Charlet et al., 2014).

Cognitive Training/Remediation for Improving Alcohol-Related Cognitive Impairment

Cognitive rehabilition and cognitive training methods have been proposed as an intervention to restore and/or increase cognitive functioning in individuals alcohol use disorder and potentially address these impacts on treatment. This section will summarise the evidence employing classical remediation techniques in substance use disorder samples containing alcohol-use individuals and those specifically with alcohol use disorder, other cognitve remediation methods such as goal-setting and methods in combination.

Classical Cognitive Remediation

Classical remediation programs have been used extensively as a cognitive rehabilition

technique, aimed at increasing cognitive functioning and potentially increasing treatment adherance and clinical outcomes. This technique generally involves intensive, multi-session cognitive task batteries that target multiple domains of cognitive processes, including attentional processes, working memory, executive functioning, visuo-spatial awareness, set-shifting flexibility (Bates et al., 2013; Manning, Verdejo-Garcia, & Lubman, 2017; Verdejo-Garcia, 2016).

Several early studies involved substance use disorder samples comprising individuals using more than one drug (polysubstance-use), but for whom alcohol was the primary substance used. Application of standardised, computer-delivered cognitive remediation programs such as PSSCogRehab (CogRehab; Psychological Software Service Inc., Indianapolis, USA) to increase treatment outcomes in polysubstance-use individuals. Poysubstance-use veterans who completed a CogRehab program remained in treatment longer than a control group in a small pilot study (Grohman, Fals-Stewart, & Donnelly, 2006). A larger RCT of SUD patients (74% were AUD participants) completed CogRehab cognitive rehabilitation and had better posttreatment clinical outcomes at up to a year post-treatment (percentage of days abstinent, reduction in severity of alcohol problems) compared to an active attention treatment control group, but it was unclear whether the treatment improved cognitive outcomes (Fals-Stewart & Lam, 2010). Another RCT of SUD inpatients (70% at least AUD within the treatment groups) (Hendershot et al., 2018) examined the efficacy of Cogmed remediation training embedded within the 3-week residential program TAU, with patients allocated to either adaptive or non-adaptive training treatment groups. Performance improved in some cognitive tasks in the adaptive treatment group (digit span, delayed discouting), but there was no consistent overall improvement, and treatment effects did not transfer to longer-term clinical outcomes. Finally, Marceau (2017) and colleagues assessed both performance-based (i.e. neurospychological tasks) and inventory-based executive functioning outcomes, and self-regulation outcomes (impulsivity, self-control, emotion regulation) of computer-delivered cognitive remediation in inpatient SUD females. Cognitive remediation participants again demonstrated improved post-intervention performance in performance-based (response inhibition) and self-regulation (impulsivity,self-control) outcomes compared to a TAU control group. Taken together, computer-delivered cognitive remediation programs appear to have some positive effects in improving treatment outcomes in polysubstance-use individuals, but improvements to alcohol-related CI are mixed, and alcohol-specific effects difficult to acertain.

Delivering cognitive remediation treatment to AUD participants only allows for alcohol-specific cognitive improvements to be attributable to cognitive remediation strategies, but there is currently a paucity of studies. AUD participants who completed 12 sessions of computer-assisted cognitive remediation (Rupp, Kemmler, Kurz, Hinterhuber, & Fleischhacker, 2012) exhibited improvements in executive functions and memory from pre- to post-treatment assessments, along with secondary outcomes of reduced reported craving and improved psychological well-being. However, the inpatient setting and comprehensive cognitive batteries may mean these outcomes are less generalizable to outpatient settings.

The recent emergence of mobile technologies has allowed for the adaptation of

cognitive remediation techniques that could be delivered in an outpatient setting. Additionally, programs could be completed by patients at their convenience, and not restricted to laboratory or structured testing environments, increasing the ecological validity and feasibility of cognitive remediation as an intervention. An RCT conducted using serious mobile internet games (mHealth) involved completing 10 1-hr executive function training exercises (therapist-assisted) and TAU by AUD outpatients over a 4-6 week period compared to control AUD group that only received TAU (Gamito et al., 2014), with pre- and post- assessments of cognitive functioning. While overall general improvement in cognitive functioning from pre to post-treatment assessments were seen for both groups, patients receiving the cognitive training exercises demonstrated overall increased executive functions performance in the standardised battery, compared to the control AUD group, but not in specific executive functioning tasks (e.g. Wisconsin card sorting task). However, it can be difficult to maintaining patient motivation to sufficently complete outpatient-delivered programs, and providing performance-based contingent payments is one strategy to further increase motivation. When SUD participants who completed CogRehab cognitive remediation (CogRehab) received monetary rewards for improvements in task performance that subsequently increased in difficulty (contingency-based cognitive remediation) (Kiluk et al., 2017), they demonstrated some modest increased performance related to contigency-based remediation compared to a control group receiving regular reimbursement.

Other cognitive remediation techniques, and in combination

Classical remediation methods are most often used as cognitive remediation, but other techniques aimed at increasing or recovering impaired cognitive functions have been developed. Scheurich and colleagues included a goal-setting paradigm aimed at improving motivation and cognitive performance of recently detoxified AUD outpatients undergoing traditional neuropsychological testing by receiving test-specific instructions on performance, compared to AUD group that received unspecific instructions (Scheurich et al., 2004). Both groups showed pre-test cognitive deficits, but AUD patients receiving goal-setting instructions showed greater improvement when completing cognitive tasks, indicating goal-setting strategies may increase their neurospychological performance. Goal management training was also employed in conjunction with mindfulness meditation techniques in polysubstance patients that primarily used alcohol, in both inpatient (Valls-Serrano, Caracuel, & Verdejo-Garcia, 2016) and outpatient (Alfonso, Caracuel, Delgado-Pastor, & Verdejo-García, 2011) settings. The combination of these two techniques improved executive functions from pre- to post-intervention in both inpatient and outpatient samples compared to a control group recieiving standard treatment. Additionally, within the outpatient sample the combined goal-management training and mindfulness intervention increased the transfer of these toward more ecologically valid goal-oriented tasks measured post-intervention. Taken together, goal management strategies appear to improve cognitive functioning in AUD patients, potentially through increasing motivation to improve performance, and these cognitive improvements and strategies may potentially generalise to everyday outcomes of improved functioning and maintenance of reduced drinking goals.

Lastly, classical cognitive remediation has also been used in combination with other therapies that may be synergistic in improving outcomes. An RCT of outpatient veterans allocated to combined cognitive remediation and work therapy treatment program found that increased cognitive functioning outcomes compared to treatment as usual (Bell, Laws, & Petrakis, 2017). Additionally, the combined therapy improved drinking outcomes, with very high levels of abstinence at 6 months (94%), but there were no single therapy only control groups to discern the effects of either therapy alone.

Cognitive Remediation: Conclusions

The use of cognitive remediation as a strategy to improve cogntive functioning shows evidence of improving cognitive functioning in executive functions and working memory post-treatment. Moreover, combination of treatments, and more ecologically valid strategies such as goal management also increase neurospsychological performance and cogntive functioning outcomes. However, while there is some constistency in the effectiveness of the approach, the extent of improvement in clinical outcomes, such as reduced relapse, are mixed. Cognitive recovery after abstinence also plays a large role in the improvements seen in these studies. Most of the research has been conducted in substance use disorder samples that are often polysubstance-use individuals, making it difficult to assess alcohol-specific impairment and subsequent recovery. Furthermore, the majority of the studies were conducted in inpatient settings, that are advantageous in increasing control for treatment delivery and reducing the confounds of ongoing alcohol use, but are less generalizable than outpatient settings. This is reflected in the lack of evidence for longer-term transfer effects regarding post-treatment clinical outcomes (e.g. relapse). Overall, cognitive remediation strategies may be effective in improving alcohol-related CI. However, more systematic evidence of larger RCT studies using AUD individuals only is required, along with clearer evidence of improvement in long-term drinking outcomes and transfer of cognitive recovery, to better elucidate the lasting effects of these techniques.

Recommendation	**Grade of Recommendation**
19.3 The possibility of improvement in cognitive functioning should be considered by allowing a sufficient period of abstinence (or substantial reduction of alcohol intake) to elapse before finalising treatment planning; the treatment plan should also address nutritional improvements and treatable co-existing medical conditions. Treatment planning should be undertaken in collaboration with the patient, as well as relevant supports (i.e. family and friends), and relevant health professionals (i.e. GPs, addiction medicine specialists).	A
19.4 Where cognitive impairment is confirmed, treatment should be tailored to meet the cognitive abilities of the patient (e.g. simplify instructions, appointment reminders).	A

19.5 Where cognitive impairment is identified, referral for cognitive remediation techniques may improve the patients' cognitive functioning and clinical outcomes (e.g. managing alcohol use) and may assist in engagement of other treatments.	GPP
19.6 Where cognitive impairment is more severe, utilisation of external supports (e.g. family members), referral to formal support services (e.g. National Disability Insurance Scheme) or legal interventions (e.g. guardianship) may assist to engage the individual in treatment and manage their alcohol use.	B

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CHAPTER 20 POLYDRUG USE AND DEPENDENCE

Chapter 20. Polydrug use and dependence

Introduction

Alcohol is by far the most prevalent psychoactive substance in Australia and globally (Peacock et al., 2018). Given the prevalence of alcohol consumption, it is not surprising that use of alcohol in combination with other substances is also relatively common. An alcohol use disorder when comorbid with another substance use disorder, is significantly more associated with relapse risk (Sliedrecht et al., 2019). Polysubstance use is more common in young people (Moss et al., 2015) and subcultures (e.g. dance clubbers, ravers) and in people who are already dependent upon substances (Connor et al., 2014).

The Australian National Drug Strategy Household Survey 2016 (Australian Institute of Health and Welfare 2017) found that 49% of people who smoke tobacco, and 58% of people who had used an illicit drug in the previous 12 months had also consumed alcohol in risky quantities (defined as more than 2 standard drinks a day on average or more than 4 on a single occasion at least once a month). Drinking more than four standard drinks on one occasion on a monthly basis was particularly prevalent among users of stimulants such as ecstasy (84%), cocaine (82%), hallucinogens (78%) and meth/amphetamine (73%). These data point to the importance of polydrug use as a focus for assessment no matter what the primary substance of concern.

The reasons for polydrug use are likely to be diverse. There may be a deliberate combination of substances to produce a particular effect; one substance may be used to reduce the adverse effects or withdrawal symptoms of another; or there may be indiscriminate use of multiple substances to produce intoxication. There is some evidence, for example, that the combination of alcohol and amphetamine is associated with a greater sense of euphoria, and fewer performance and sleep disruptions, and this combined effect may be the basis of at least some combined use of alcohol and amphetamines (Kirkpatrick, Gunderson, Levin, Foltin, & Hart, 2012).

A specific disorder of polysubstance use/dependence is no longer defined in the Diagnostic and Statistical Manual (DSM-5) or the International Classification of Diseases (ICD-11). In the past, polydrug use was usually taken to imply the concurrent and/or interchangeable use of two, three or more drugs (Page, Falster, Litchfield, Pearson, & Etherton-Beer, 2019), and in DSM-IV, polydrug dependence was defined as present when multiple drugs used regularly all met some of the criteria for dependence, so that in combination diagnostic criteria for dependence were met. It is important to recognize that polydrug use may involve dependence on more than one substance.

Given the move away from diagnostic definitions of polydrug use and dependence, this section focuses on psychoactive substances (including tobacco) that are commonly used concurrently with alcohol, then considers clinical implications in treatment of alcohol dependence.

Polydrug use in people with risky alcohol consumption

A recent study (Moss, Goldstein, Chen, & Yi, 2015) used data from Waves 1 and 2 of the US National Epidemiological Survey on Alcohol and Related Conditions to assess patterns of substance use by people with alcohol dependence. Four patterns of substance use were identified:

- alcohol and tobacco only (weighted 32.4%)
- alcohol only (weighted 27.5%)
- alcohol, tobacco, cannabis, cocaine and other illicit drugs (weighted 25.3%)
- alcohol, tobacco and cannabis only (weighted 14.8%).

Polydrug use commonly involves use of alcohol, tobacco, cannabis and/or other substances. A pilot study of screening and brief intervention in a hospital emergency department in Adelaide found similar patterns, with the majority of people using either alcohol only, or alcohol and tobacco (Ali, Gowing & Harland, 2018).

Characteristics of people using multiple substances with alcohol

A consistent finding is that people with risky alcohol consumption who also use other drugs are more severely affected by their substance use. This is indicated by findings (primarily in the USA) that people using multiple substances tend to be younger, less likely to be married or in a relationship, more likely to have mental health comorbidities, have a higher intensity of alcohol consumption, and greater severity of alcohol use disorder (Hedden et al., 2010; Saha et al., 2018).

Major depression, panic and other anxiety disorders, and various personality disorders are all more prevalent in people who use alcohol and other drugs compared to those who use only alcohol (Hedden et al., 2010; Moss et al., 2015).

Rates of smoking are high in alcohol-dependent populations, with smokers showing a greater risk of developing alcohol dependence compared with non-smokers. Alcohol dependent smokers tend to be heavy smokers and have more difficulty with smoking cessation efforts (Kelly, Grant, Cooper, & Cooney, 2013).

The prevalence of polysubstance use varies in different populations studied, for example it is more common in subcultures like dance party groups ("rave" meets), LGBTI groups (AIHW 2017), and in those already dependent on substances. Wide-ranging polysubstance users carry higher risk of comorbid psychopathology including deficits in cognitive functioning and physical health problems (Connor et al., 2014).

Youth and polydrug use

Evidence from US studies indicate a high prevalence of polysubstance use in early adolescents, estimating around a third of those under 16 years of age (Moss et al., 2015) and a National study of 10th-grade students also indicated a high rate of polysubstance use particularly in youth with higher levels of depressive and somatic symptoms suggesting need for screening of youth with polysubstance use (Conway et al., 2013). In Australia, while alcohol, tobacco and cannabis use among youth has fallen, a recent survey administered to 1661 Australian adolescents aged 15-17 years identified different factors may influence the initiation of substance use versus poly drug use, including age, degree of parental supervision, the experience of externalising problems, conduct disorder and a diagnosis of major depression. Such factors may help

identify those young people as more “at risk” and therefore potentially benefit from targeted intervention (Jongenelis et al., 2017;2019).

Issues related to aging population

Data from the Australian National Drug Strategy Household Survey shows a trend of increasing prevalence of high-risk alcohol consumption in people aged 50 years or more (Roche & Kostadinov, 2019). Developed countries have seen substantial increases in longevity over the past 20 years, contributing to a global demographic shift. As a result, the number of older people (aged over 50) experiencing problems from substance use is growing rapidly (Rao & Roche, 2017). Alcohol Use Disorder is the most prevalent substance use disorder in later life while Opioid problems and Cannabis use is growing amongst older people in the US (Lehmann & Fingerhood, 2018). However, little is known regarding the best models of care for older adults with substance use disorders and pharmacologic agents used to manage alcohol use disorder have not been adequately studied in older adults (Lehmann & Fingerhood, 2018).

Older people with substance use disorders are more likely to be diagnosed with chronic conditions, have reduced organ function, and are more likely to be taking multiple prescription medications (Lehmann & Fingerhood, 2018) and polypharmacy is also recognised as a growing problem in older Australians (Page et al., 2019). Gao *et al*. (2018) used data from two comparable population-based studies in the UK, one undertaken in 1991-1994 and the other in 2008-2011. The similarity of the datasets enabled comparison of prescription medication use in these two timeframes. The data showed a substantial increase in the use of prescribed medicines and over-the-counter products during that timeframe. The proportion of people taking five or more items increased from 12 to 49%, while the proportion who did not take any medication decreased from around 1 in 5 to 1 in 13. Cardiovascular drugs were the most frequently taken medication. Hence, older populations with polydrug use are more likely to require integrated, multidisciplinary and tailored treatment approaches (Chhatre et al., 2017).

The combination of increasing use of medications by older people and increasing prevalence of high-risk alcohol consumption points to the need to consider in older people possible interactions between alcohol and prescription medications (Lehmann & Fingerhood, 2018). Clinically significant drug-drug interactions that should be considered include increased levels of sedation, and greater impairment of driving ability, and possible effects of alcohol on the metabolism of prescription medications which may increase or decrease blood levels with associated reductions in therapeutic efficacy or increases in adverse effects. As well as the risk of adverse health effects, these interactions may result in poor adherence to prescribed medications (Holton et al., 2017).

Comorbidity associated with polydrug use

For some time, it has been known that polysubstance use is often associated with particularly psychiatric comorbidity (Darke & Ross, 1997) and in a recent study of methamphetamine-related suicides in Australia, a particularly common finding in addition to methamphetamine was the presence of prescription medications (Darke et

al., 2019). Psychiatric comorbid disorders have been identified as important risk factors for premature drug-related death (Fridell *et al*., 2019). Polydrug use is often associated with disorders of personality, notably borderline personality (Scalzo et al., 2018). In addition to psychiatric factors, physical comorbidity is also commonly associated with polysubstance use. In particular, the adverse effects of specific combinations, which may cause respiratory depression, coma, organ toxicity and the combined adverse cardiovascular effects of prolonged alcohol and stimulant use (Saunders et al., 2016). Anxiety-related characteristics, including anxiety sensitivity and trait anxiety are elevated in individuals with alcohol and nicotine dependence and are associated with greater difficulties with quitting smoking (Kelly et al., 2013).

Smoking cessation in people with alcohol use disorders

As indicated above, smoking has been associated with increased risk of relapse during treatment for alcohol dependence (Baltieri et al., 2009). Previous clinical practice gave priority to the treatment of alcohol dependence which is more immediately life threatening, and there was a view that addressing tobacco smoking at the same time could destabilise treatment of alcohol dependence.

Support for the feasibility of concurrent treatment of alcohol use disorders and smoking cessation is provided by Cooney *et al*. (2015) who randomly assigned smokers in an intensive 3-week outpatient program for alcohol abuse or dependence to either a concurrent or planned delayed smoking cessation program. The smoking cessation program consisted of behavioural counselling (12 sessions) and combination nicotine replacement therapy (patch plus gum or lozenge). Those allocated to the delayed treatment group were scheduled to commence the smoking cessation program three months after commencement of alcohol treatment. At 13 weeks (prior to the delayed group commencing the smoking cessation program) 19% in the concurrent group and none in the delayed group were abstinent from smoking. There were no significant group differences in alcohol outcomes. Other trials have addressed the efficacy of varenicline for alcohol use disorders and smoking cessation. One study (Litten et al., 2013) focused on the treatment of alcohol dependence. In this study varenicline, compared to placebo, was associated with fewer drinks per drinking day and also a lower average number of cigarettes smoked in those who smoked (Falk, Castle, Ryan, Fertig, & Litten, 2015).

A more recent trial (Hurt et al., 2018) compared varenicline and placebo in alcohol-dependent smokers, focusing particularly on smoking outcomes. The average age of participants was around 40 years, 64% male, smoking about 20 cigarettes per day. Participants were randomly allocated to 12 weeks of varenicline (1 mg twice daily) or placebo. All received brief (10 minute) behavioural counselling sessions during clinic follow-up visits (weekly for 4 weeks, then every other week). At week 12, 43.8% in the varenicline group (N=16) and 5.9% in the placebo group (N=17) had not smoked tobacco for seven days. Average alcohol consumption was also lower in the varenicline group (mean (SD) drinks per drinking day 5.7 (3.9) for the varenicline group compared to 9.0 (5.3) for the placebo group). At baseline the two groups were similar on alcohol consumption measures. These data support the efficacy of varenicline for concurrent treatment of tobacco smoking and alcohol use disorders, but the strength of the finding is reduced by the small number of participants, and higher rate of dropout from

the placebo group (5 of 17 in the placebo group completed the medication phase, compared to 12 of 16 in the varenicline group).

Another recent trial (O'Malley et al., 2018) compared varenicline and placebo in people who were alcohol dependent and smoking two or more times a week and considered both alcohol and smoking outcomes. In this study participants were randomly allocated to varenicline (1 mg twice daily) or placebo with stratification by gender. In addition to 16 weeks of medication, participants received medical management emphasising medication adherence for four weeks, followed by support for changing drinking. Compared to placebo, varenicline was associated with significant reductions in heavy drinking among men, but not women, and there was an overall increase in smoking cessation. More research is needed to determine the efficacy of varenicline in the treatment of alcohol dependence in people who smoke.

A systematic (Cochrane) review of interventions for smoking cessation in people in treatment for or recovery from substance use disorders (Appollonio, Philipps, & Bero, 2016) found that smoking cessation interventions were significantly associated with tobacco abstinence for people with alcohol dependence. However, the quality of evidence was low, and there were insufficient studies to determine the relative efficacy of different types of intervention or different pharmacotherapies.

Smoking cessation treatment can be undertaken concurrently with treatment of alcohol dependence – varenicline may support reduction in both tobacco smoking and alcohol consumption.	C

Alcohol and Cannabis use

The use of alcohol, cannabis or tobacco increased risk simultaneous co-use of one of the other two substances, while the co-use of alcohol with tobacco and of cannabis with tobacco more correlated with same day tri-use, i.e. use of the three substances together (Roche, et al., 2019). The co-use of alcohol and cannabis is associated with additive impairment, higher and more frequent consumption levels, greater likelihood of substance use comorbid with mental illness and increased rates of adverse social and behavioural consequences (Yurasek, Aston, & Metrik, 2017). Further, it has been demonstrated that when cannabis use is combined with alcohol use, there is an association with heavy alcohol consumption (Metrik et al., 2018) and that problems with use of alcohol and cannabis are associated with opioid misuse and the severity of opioid dependence among adults with chronic pain (Rogers et al., 2019).

Association between stimulant use and alcohol consumption

There is an association between the use of stimulants, such as methamphetamine or products containing high levels of caffeine, and alcohol drinking. In a study of regular users of alcohol and methamphetamine in the USA (Bujarski et al., 2014), alcohol consumption increased the risk of methamphetamine use on the same day, and heavy episodic drinking increased the risk for methamphetamine use above and beyond the effects of drinking itself. There is a high prevalence of concurrent use of alcohol and

psychostimulants like methamphetamine, considered likely to potentiation of euphoric effects and/or decrease negative effects of one/other. Alcohol has been shown to increase the blood concentration of different psychostimulants and combined use to increase heart rate, blood pressure, myocardial oxygen consumption and cellular stress; also, some evidence that combined use in pregnancy associated with foetal brain injury (Althobaiti & Sari, 2016).

The association between alcohol consumption and increased risk of suicide attempts is well established (Pompili et al., 2010) and there is also evidence of an association between methamphetamine use and suicidality with rates of attempted suicide for people who use methamphetamine exceeding rates in the general population (Darke, Kaye, Duflou, & Lappin, 2019).

There are no medications of proven effectiveness in the treatment of amphetamine dependence (Lee, Jenner, Harney, & Cameron, 2018). A systematic review of 52 studies involving psychosocial interventions for psychostimulant users (cocaine or amphetamine) found that the addition of any psychosocial treatment to treatment as usual (which often includes some degree of psychosocial support) probably reduces the dropout rate and increases the longest period of abstinence (Minozzi, Saulle, De Crescenzo, & Amato, 2016). A recent systematic review found a variety of psychological treatments effective in reducing levels of methamphetamine use and improving psychological symptoms (Stuart et al., 2019), and the Australian Patient Pathways Study similarly found community-based treatments effective in reducing methamphetamine use. However, when an alcohol use disorder is the principal concern, treatment outcomes were less effective (Manning et al., 2017).

Alcohol consumption and long-term opioid use

Hazardous alcohol consumption is common among people in substitution treatment for opioid dependence, studies estimating reporting prevalence typically around thirty percent (Ryder et al., 2009., Nolan et al., 2016., Soyka., 2015., Klimas et al., 2018., Pikovsky et al., 2018) and in people with chronic pain. The prevalence of use of benzodiazepines is also elevated in these groups (Lintzeris & Nielsen, 2010). The increased risk of adverse events, overdose and death from the combination of alcohol, opioid drugs, and benzodiazepines (Gudin et al., 2013; Nolan et al., 2016., Leece P et al., 2015., Jones et al., 2014), make it important to identify high risk patterns of alcohol consumption in these populations, and intervene early. The prescription of benzodiazepines should be avoided in this population because of the risk of sedation and overdose as well as impaired memory and cognitive performance (Gudin et al., 2013; Lintzeris & Nielsen, 2010). Further, alcohol use in opioid agonist treatment programs increases the risk for opioid toxicity, poor treatment program adherence (Nolan et al 2016), poor physical (e.g. liver disease) and mental health, and for mortality (Soyka 2015). While alcohol dependence is generally considered a precaution for opioid substitution treatment for opioid dependence (Comer et al., 2015), therapy with disulfiram or acamprosate is suggested (Gowing et al., 2014).

Chronic pain has been associated with co-use of alcohol and opioids which contributes to worse treatment outcomes for either substance and to opioid overdose morbidity and mortality, however research on management for alcohol use disorder with opioid dependence and chronic pain is lacking (Edwards, Vowles, & Witkiewitz 2017; Witkiewitz, & Vowles, 2018). In one study, over twenty percent of chronic pain patients on opioids misused both alcohol and opioids (Vowles et al., 2018). While not available in Australia, a pilot study investigating depot naltrexone treatment in treating HIV clinic patients with alcohol and/or opioid use disorders suggested efficacy (Korthuis et al., 2017).

Comorbid alcohol use disorders and opioid dependence may be associated with alterations in opioid pharmacokinetics, through the effects of alcohol on liver function (Weathermon & Crabb, 1999), and through the effect of alcohol on release of morphine from sustained-release preparations (Gudin et al., 2013). People with a history of injecting drug use are at risk of hepatitis C which increases the risk of adverse effects from alcohol consumption.

Recommendation	**Grade of recommendation**
Patients dependent on alcohol and benzodiazepines or opioids should be stabilised on agonist medications while undergoing alcohol withdrawal.	GPP
Active alcohol use disorder significantly increases the risk of overdose associated with the administration of opioid drugs for chronic pain or substitution treatment of opioid dependence. Close monitoring is required, and if blood alcohol levels confirm intoxication, reduce or withold administration of opioid drugs. Specialist advice is recommended before treatment of people dependent on both alcohol and opioid drugs.	GPP

Important drug interactions

Patients with alcohol use disorder have higher risk of pharmacological interactions, due to the presence of comorbidities, the concomitant intake of several medications, prevalence of other substance use and the pharmacokinetic and pharmacodynamic interferences of ethanol. Some of the medications prescribed for alcohol use disorder e.g. baclofen to facilitate remission in alcohol dependence and benzodiazepines for alcohol withdrawal, can adversely interact with alcohol particularly heavy consumption following a lapse, and it is important to consider this risk before prescribing (Guerzoni, Pellesi, Pini, & Caputo, 2018).

Alcohol interaction with other medications is a particular concern in older populations on polypharmacy (Page, Falster, & Litchfield, 2019) and development of the POSAMINO criteria might help identify older adults at risk of potentially serious alcohol–medicine interactions in the future (Holton, et al., 2017), and in particular regarding falls risk (Holton et al., 2019).

Paracetamol is a commonly used analgesic-antipyretic metabolised by CYP 2E1, a cytochrome also metabolising alcohol. While it has been suggested that chronic alcohol exposure may increase risk for paracetamol toxicity, there is no good quality clinical evidence from prospective trials that alcohol consumption increases the risk of paracetamol toxicity (Caparrotta, Antoine, & Dear, 2018).

Recommendation	**Grade of recommendation**
All patients with alcohol-use disorders should be screened for other substance use using quantity–frequency estimates, or through structured screening instruments such as the ASSIST questionnaire.	GPP
Polydrug dependence is typically associated with higher levels of physical, psychiatric and psychosocial comorbidity. Comprehensive treatment plans should address use of alcohol and other drugs together, taking into account comorbidity.	GPP
Communication between clinicians is essential where more than one is involved particularly more than one prescriber.	GPP

Polydrug use in the context of managed alcohol withdrawal

Where there is dependence on multiple substances, there may be a need to prioritise treatment. This should consider the risk of harm associated with the substances on which the person is dependent with priority given to first addressing the substance with the greatest source of harm (Bonomo et al., 2019; Nutt, King, & Phillips, 2010). The risk of complications points to the need for polydrug withdrawal to be undertaken in a specialist setting. Managing withdrawal in a person with multiple dependencies requires extra clinical vigilance and consideration of the order in which withdrawal should be managed. A stepped approach may be preferred so that withdrawal from one drug at a time can be addressed. In a stepped approach the order of withdrawal should be determined by the most problematic withdrawal. In most instances, this will be alcohol especially in cases of combined alcohol with other sedative dependence wherein the severity of withdrawal is likely enhanced (Saunders et al., 2016).

Benzodiazepine administration is widely accepted for the management of alcohol withdrawal (Amato et al., 2010). Given the risk of misuse of benzodiazepines (Gudin, Mogali, Jones, & Comer, 2013) the duration of benzodiazepine administration should be limited to the period of acute alcohol withdrawal. People with a history of benzodiazepine use may need higher doses of benzodiazepines for the management of alcohol withdrawal. It is important to note that within populations of alcohol dependent individuals, it has been estimated that around 40% are likely using benzodiazepines and/or "z-drugs" (i.e. zopiclone or zolpidem) and over 20% are likely also benzodiazepine/z-drug dependent (Morel et al., 2016). Further, a recent UK study identified that a quarter of the population were prescribed drugs of dependence (i.e. having dependence and withdrawal potential) and long-term prescribing (> 12 months) was common (Marsden et al., 2019). Both alcohol and hypno-sedatives (benzodiazepine/z-drugs) develop cross tolerance and it is therefore likely that patients dependent on both substances would need initially higher benzodiazepine doses in treating alcohol withdrawal (Weintraub, 2017) followed by gradual benzodiazepine dose weaning.

People prescribed baclofen long-term for the treatment of alcohol use disorders who continue to consume alcohol may require managed withdrawal despite the use of baclofen (Martinez et al., 2018). In this context alcohol withdrawal may be complicated by baclofen withdrawal, the symptoms of which are very similar, can be severe and may not respond to benzodiazepine treatment (Rolland et al., 2014).

Recommendation	**Grade of recommendation**
Patients undergoing polydrug withdrawal need close monitoring, increased psychosocial care, and increased medication. Consider specialist advice.	GPP

Polydrug use and relapse risk

Co-occurring alcohol disorder and drug use have been associated with problems in the treatment and remission of alcohol disorder (Ives & Ghelani, 2006; Karno, Grella, Niv, Warda, & Moore, 2008), and greater prevalence of psychological and social harms (Hedden, Malcolm, & Latimer, 2009). In the context of a trial comparing naltrexone and topiramate for the treatment of alcohol dependence (Baltieri, Daro, Ribeiro, & De Andrade, 2009), it was found that smoking status increased the odds of relapse to drinking by 65%, independently of the medications prescribed. It has also been found that alcohol consumption after treatment for other drug use may increase the likelihood of relapse to the primary drug and a subgroup of people will be vulnerable to alcohol becoming the primary addiction (Staiger, Richardson, Long, Carr, & Marlatt, 2013). Opioid misuse has been identified as a predictor of heavy drinking lapse and strongly associated with the probability of being a frequent heavy drinker both during and after treatment, with poorer adherence to alcohol pharmacotherapy a likely factor (Witkiewitz, Votaw, Vowles, & Kranzler, 2018).

Psychosocial interventions for polydrug use

While there is limited research evidence to support a particular approach/s to polydrug use, polysubstance users carry higher risk of comorbid psychopathology, health problems, and deficits in cognitive functioning and there may be benefit in targeting specific polysubstance use and risk profiles (Connor, Gullo, White, & Kelly, 2014). There is no evidence to support any specific pharmacotherapy for polydrug use, however there is some evidence supporting psychosocial interventions.

Psychological treatment and general counselling may be more effective if they address a person's multiple substance use issues simultaneously. Focusing on one substance to the exclusion of other can result in limited improvement in functioning despite a reduction in use of one substance. Psychological therapies such as cognitive behavioural therapy have been shown to be effective across a range of substance use disorders (Carroll, 2005; Gates, Sabioni, Copeland, Le Foll, & Gowing, 2016; Minozzi et al. 2016), although specific evidence for the treatment of polydrug use in the context of alcohol dependence is lacking (Klimas et al. 2018). However, no firm conclusions can be made because of the paucity of the data and the low quality of the retrieved studies.

A variety of psychological interventions have been found effective in reducing methamphetamine use with evidence suggesting that more intensive interventions have greater impact on methamphetamine use and related psychiatric symptomatology (Manning et al., 2017; Stuart et al., 2019). A meta-analysis of psychosocial interventions for cocaine and/or methamphetamine addiction found significant support for a combination of contingency management combined with a community reinforcement approach (De Crescenzo et al., 2018). Contingency management has demonstrated efficacy in managing non-prescribed drug use, including polydrug use, during treatment for opiate addiction (Ainscough et al., 2017). Further, considering the adverse interaction between alcohol and cannabis use (Metrik et al 2018), psychosocial interventions like cognitive-behavioural therapy (CBT), motivational enhancement therapy (MET) and a combination of MET plus CBT with abstinence-based incentives were most consistently supported for treatment of cannabis use disorder.

People severely impacted by alcohol and other drug dependence may benefit from a period of residential rehabilitation such as a therapeutic community. Residential approaches address the behaviours of addiction that are common to all forms of substance use which can be beneficial for people using multiple substances. Therapeutic community treatment, sometimes considered as a more intensive intervention for substance use disorder, also has some evidence supporting efficacy (Malivert et al., 2012).

Treatment of alcohol dependence in a person using multiple psychoactive drugs needs to consider the likelihood of mental, physical and medical comorbidity, particularly in older people. This makes for a degree of complexity regarding treatment decisions for which specialist referral and collaboration is recommended. Overall, it is important to assess risks from alcohol and other substance use and formulate a treatment plan in collaboration with the patient that takes account of individual circumstances and

identifies a long-term path for recovery from alcohol and other psychoactive substance use.

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CHAPTER 21

CO-OCCURRING ALCOHOL USE AND MENTAL DISORDERS

Chapter 21. Co-occurring Alcohol Use and Mental Disorders

Since the last national guidelines for the treatment of alcohol problems in 2009 and its accompanying evidence review (Proude et al., 2009), there have been a number of related guidelines (eg Marel et al., 2016), revisions to both the ICD and DSM nosologies, emerging evidence for e-therapies, and there has been further progress in assessment and treatment of comorbidities with alcohol use disorder.

This section summarizes recent evidence for the assessment and treatment of comorbid alcohol use and mental disorders. Marel et al.'s (2016) second edition of the Australian national *Guidelines on the management of co-occurring alcohol and other drug and mental health conditions in alcohol and other drug treatment settings* included literature up to 2015. This review focuses on literature published from 1 January 2015 to the search completion for this review on 31 July 2019. This review pays particular attention to recent clinical practice guidelines and systematic reviews.

This review focuses on three questions:

1) What is the prevalence and significance of comorbid mental disorders (primarily in Australian treatment settings but also informed by community surveys and international data);

2) How should comorbid mental disorders be recognised in people presenting for assistance with alcohol use disorders, and how should alcohol use disorders be recognised and assessed in those presenting for assistance with mental disorders; and

3) For adults with AUD and one or more additional mental disorder what is the best intervention over and above that focused on alcohol in terms of reducing alcohol consumption and harms, in reducing the symptoms of comorbid mental disorders and in improving functioning and quality of life.

What follows is a review of reviews focusing on new evidence summarised since the last guidelines in order to justify any changes to the guidelines. It is not a comprehensive review of all primary sources. Before we focus on the literature to address these questions, the following paragraphs describe some of the context, issues, and methods of the review.

The difficulties of research in co- and multi- morbidity

Much clinical trial research in mental health explicitly excludes people with comorbid alcohol and other substance use, making it difficult to generalise findings to those with this pattern of comorbidity. While this situation may be improving, we often have little direct evidence to inform treatment choices. The proxy of adopting evidence based guidelines for the separate disorders comes with problems (Whitson & Boyd, 2018)– the separate guidelines may be contradictory, the expertise to provide that care is often not available within a single treatment setting, and complexity may bring negative experiences of care and difficulties in negotiating the health system. Our working solution in this review is to look for evidence confirming recommended interventions for specific disorders that have at least some supporting evidence in people with comorbidity.

There is some evidence from epidemiology to guide the patterns of co-occurrence that

are common in the community (Teesson et al., 2010). However, better monitoring methods are needed to identify common patterns of multimorbidity associated with alcohol use in different health settings and to prioritise gaps in research (e.g. Nygaard et al., 2019).

A note on terminology

Following Feinstein (1970, p 467) "*In a patient with a particular index disease, the term co-morbidity refers to any additional co-existing ailment*". Since then the related term *multimorbidity* has also been used to refer to complexity (the presence of two or more long term health conditions) without a focus on an index condition.

That a condition is conventionally thought of as a "mental" or "physical" disorder can be limiting – and this is particularly so for multimorbidity. Multimorbidity may be a diagnostic dilemma, it may suggest an underlying cause, and/or warn of complexity in treatment. There is a balance between identifying the issues a person wants assistance with, understanding their likely causes, developing a plan for intervention. There is a danger that there can be too great a focus on diagnosis. For example the person with obesity, depression, and heavy alcohol consumption may or may not have pseudo Cushing's syndrome (Pecori Giraldi, 2015) – and the resolution of the differential diagnosis is only a part of ensuring quality health care. Quality care is likely to need to engage the person; understand how they view their problems and strengths; and to be co-ordinated, consistent, and compassionate.

This review uses the terms specified in the American Psychiatric Association's (2013) Diagnostic and Statistical Manual of Mental Disorders (5th Edition DSM5) and the World Health Organisation's (2018) International Classification of Diseases (11th Edition, ICD11) because these documents provide the most widely accepted working definition of terms relating to alcohol and comorbidity. Despite their many limitations, these documents are our current best consensus dictionary. The following sections on assessment, psychosocial interventions, and pharmacotherapy are organised by chapters in DSM5.

Alternative taxonomies of psychopathology have received recent empirical evaluation including the National Institute of Mental Health Research Domain Criteria (NIMH RDoC, Insel et al., 2010), and the Hierarchical Taxonomy of Psychopathology (HiTOP, Kotov et al., 2018; Soe-Agnie et al., 2018). These alternatives are in part supported by the high prevalence of comorbidity when existing nosologies are applied to clinical and community samples. While there is mounting empirical support, the practical implications for assessment and treatment have not yet been developed nor tested, so the DSM and ICD taxonomies represent the most viable option for clinical practice at the time of writing.

10.2.1 Review methods

The following sections describe the results of a number of rapid reviews focusing on the identification and critical appraisal of systematic reviews, meta-analyses and other guidelines published since the last evidence review in 2009 and the last edition of the Australian National Comorbidity Guidelines (Marel et al., 2016). Searches for the 2016 comorbidity guidelines were completed in 2015 (Marel et al., 2016).

This review of reviews was registered with PROSPERO (record 145075).

Review questions are given above. Searches for this review were conducted in *PubMed* and *PsycINFO* using the systematic review filters (*Search Strategy Used to Create the PubMed Systematic Reviews Filter*, n.d.) developed by Montori, Wilczynski, Morgan, and Haynes (2005) using MESH or thesaurus of psychological index terms reflecting problems with alcohol ("Binge Drinking" or "Alcoholism") in combination with terms reflecting all of the chapters of DSM5 or all the sections of the mental and behavioural disorders chapter in ICD11. Search terms were based in part on those used in Reus et al. (2018). In addition, the "tests and measures" field in *PsycINFO* was used to find information about specific assessment tools in combination with relevant subject headings. The TRIP Database (www.tripdatabase.com) and the Australian Clinical Practice Guidelines Portal (www.clinicalguidelines.gov.au) were used to identify relevant clinical practice guidelines from other jurisdictions. Searches were limited to 2015 to July 2019. The title and abstract of each identified publication was scanned for relevance by one of the authors and those of relevance were retrieved for detailed review.

Exclusions: Recent guidelines from the Danish Health Authority (2018) were available only in summary form, and we were not able to critically appraise the basis for recommendations and so were not included. Preuss et al's (2016) guidelines were available only in German, however their search window (June 2005 to June 2012) was within that conducted by Marel et al (2016) and is likely to be encompassed by that guideline.

10.2.2 Introduction, prevalence, and consequences of comorbidity

Since searches for the 2009 evidence review (Proude et al., 2009), results from the 2007 Australian National Survey of Mental Health and Wellbeing in Australia have been published. This population survey of 8841 people sampled to reflect the Australian population represents the best Australian data to gauge the prevalence and impact of comorbidity. In the 2007, 2.9% met the ICD10 criteria for alcohol abuse, and 1.4% met the ICD10 criteria for alcohol dependence. Of this latter group half (53.6%) met the criteria for an anxiety disorder and one-third (34.0%) met the criteria for a mood disorder (ABS 2008). Among people with mental disorders, such as depression, 34% of men and 15% of women have concurrent alcohol use problems.

One difficulty in epidemiological research on comorbidity is verifying that estimates of mental disorders are not inflated or confounded by the direct effects of recent alcohol consumption via intoxication and withdrawal (Schuckit & Monterio, 1988).

In addition to the literature included in the 2016 National Comorbidity guidelines (Marel et al., 2016) the systematic reviews that were published between 2015 and 2019 and that report on the co-occurrence of specific mental health disorders are reviewed below.

Kingston et al (2017) conducted a systematic review of the prevalence of comorbid mental health conditions in people accessing treatment for substance use in Australia. 18 studies using heterogeneous methods were included in the review. Between 47% and 100% of people in contact with substance use treatment services were estimated to have a current mental disorder. There were important differences in the setting, timeframe (lifetime, 12 month or current), coverage of disorders (single disorders such as depression vs comprehensive assessments), and methods of assessment (structured

interview vs screening questionnaire) so no formal meta-analysis or pooling of data was undertaken. The authors concluded the risk of bias across the 18 included studies was moderate to high because samples were unlikely to be representative, sampling was not random and brief screening questionnaires likely resulted in reduced reliability and validity. Despite these reservations these estimates remain the best available.

Attention-deficit/hyperactivity disorder (ADHD)

Young et al (2015) reported a meta-analysis of the relationship between ADHD and substance use disorder (including alcohol) in 18 studies of incarcerated samples and found a homogeneous increased risk in adults (OR 2.41, 95% CI 1.22–4.79) with a prevalence of 74% (95%CI 52-96%) but not young people (OR 2.28, 95% CI 0.73–7.12, prevalence 70% 95%CI 59%-80%). Kingston et al's (2017) review included two Australian studies: one used a diagnostic interview and found a prevalence of 2%, the other reviewed clinical notes and reported 6% prevalence.

Psychosis

Hunt et al (2018) conducted a systematic review and meta-analysis of studies in community and clinical settings and found that 22.7% (95%CI 19.6-26.1%) of people with schizophrenia in 62 clinical samples have an alcohol use disorder. In broader analyses, the prevalence of substance use disorder does not appear to have changed over time (based on the date of publication). SUD was more prevalent for men with schizophrenia (48%) than women (22%). Finally, SUD was associated an earlier age of onset of schizophrenia.

Kingston et al (2017) reviewed 8 Australian studies of psychotic disorders in substance use disorder treatment settings and report prevalence estimates from 2 to 41%.

Bipolar Disorders

Hunt et al (2016) conducted a meta analysis of the estimated prevalence of alcohol use disorder in people with bipolar disorders in 20 studies in clinic settings. The lifetime prevalence of AUD in men with bipolar disorder was estimated to be 35.0% (95%CI28.9–41.1%) and 16.9% in women (95%CI, 28CI28.9–41.1%) and 16.9% in women (95%CI,12.0–21.8%).

Frias et al (2015) reported the prevalence of substance use disorders of 31% in young people up to age 18 with a diagnosis of bipolar disorder, though the number of studies on alcohol use disorder included in their review was small.

Messer et al.'s (2017) systematic review confirms that male gender is associated with greater risk of substance use disorders including alcohol in those with a diagnosis of bipolar disorder. They also reported that a larger number of manic episodes and suicidality are associated with greater risk of SUD perhaps caused by greater impulsivity. They did not support previous suggestions that psychosis or anxiety disorders were associated with greater risk of SUD in those with bipolar diagnoses though this may warrant further research.

Kingston et al's (2017) review summarised 5 studies of bipolar disorder in Australian substance use treatment settings as between 4 and 11%.

Depressive Disorders

People with a diagnosis of a depressive disorders are 2.42 times more likely to also be diagnosed with an alcohol use disorder (OR 2.42, 95% CI-2.2-2.64, Lai et al., 2015). Lai et al's (2015) systematic review of the prevalence of comorbid substance use, anxiety and mood disorders in epidemiological surveys from 1990 to 2014 was based on 21 studies. They also found no difference in the association between diagnoses in the last 12 months compared to lifetime diagnosis.

Kingston et al's (2017) review found 10 studies of current depressive disorders in Australian substance use treatment settings with prevalence ranging from 27%-85% and eight of the 10 studies reported prevalence greater than 50%.

Anxiety disorders (Agoraphobia, Panic Disorder, Generalised Anxiety Disorder, Social Phobia)

Lai et al's (2015) meta-analysis also included 31 studies of the prevalence of comorbid anxiety and AUD. Overall they found a pooled odds ratio of 2.11 (95%CI 2.03-2.19) for any alcohol use disorder and any anxiety disorder with stronger relationships for alcohol dependence (OR 2.53, 95%CI 2.24-2.86) and similar relationships for 12 month and lifetime diagnoses.

In a systematic review including nine studies Cruz et al (2017) found that peer acceptance, female gender, affective problems for alcohol use, and presence of secondary comorbidities such as depression and generalised anxiety contributed to an increased association between alcohol used disorders and social phobia.

Kingston et al's (2017) review found 14 studies of anxiety disorders in Australian substance use treatment settings. Prevalence of any current anxiety disorder ranged from 12%-91% in 10 studies. For specific anxiety disorders, Generalised Anxiety Disorder ranged from 1% to 75% across 5 studies, Panic disorder ranged from 2% to 76% across 7 studies, Agoraphobia ranges from 2% to 27% in 3 studies, and Social Anxiety Disorder ranged from 2 to 21% in 5 studies.

Obsessive-Compulsive and Related Disorders

The prevalence of Obsessive Compulsive Disorder in treatment settings was estimated Kingston et al. (2017) from 6 studies to be between 1% and 41% for current OCD, 10% in one study of 12month prevalence, and 52% lifetime prevalence in one study.

Trauma & Stressor Related Disorders

In Australian substance use disorder treatment settings Kingston et al. (2017) reported the prevalence of Post-Traumatic Stress Disorder (PTSD) to be at least 25% across 4 studies (ignoring one study reporting 1% based on clinical notes). Current PTSD prevalence ranged from 5% to 66%, one study reported 12 month prevalence at 31%, and lifetime prevalence was estimated to be 42% to 59%.

Personality Disorders

Guy et al (2018) presented a systematic review of 16 studies of the prevalence of alcohol use disorder in those with personality disorders. They estimated that alcohol use disorder occurs in 76.7% (95%CI, 65.7-86.1) of those with a diagnosis of antisocial

personality disorder, and 52.2% (95%CI, 41.9-62.5) of those with a borderline personality disorder diagnosis. People with other forms of personality disorder or undifferentiated personality disorder had a lifetime prevalence of alcohol use disorder of 38.9% (95%CI, 28.9-49.4). Guy et al also reported no difference between treatment seeking and population samples. Lower estimates of personality disorder prevalence were estimated by Newton-Howes et al (2017) who reported a median prevalence of antisocial personality disorder at 28% (8 studies, range 15% to 28%) borderline personality disorder median 18% (3 studies, range 11% to 27%), and%) any personality disorder median 55% (22 studies, range 34% to 71%). Newton-Howes et al (2017) also found that people with co-morbid antisocial personality disorder (ASPD) and AUD show greater levels of impairment at baseline – higher alcohol consumption, earlier onset of drinking and of related problems, more legal problems, and greater use of other substances compare to those without ASPD. However, there were inconsistent results suggesting that people with comorbid personality disorders experience the same, and if not better improvements with treatment compared to those without a personality disorder. There were a small number of studies reporting a wide variety of outcomes measures and some risk of bias so this last conclusion was tentative. In summary while personality disorder was associated with greater severity at baseline, there wasn't clear evidence that personality disorders were associated with a poorer response to intervention.

Kingston et al (2017) reviewed 4 studies of personality disorders in Australian substance use treatment settings. Two reported a prevalence of any personality disorder ranging from 5% to 26%. Two reported on borderline personality disorder with 16% prevalence of current BPD in one and 48% lifetime prevalence in the other. In the 3 studies that reported prevalence of antisocial personality disorder one reported current prevalence of 12%, another reported 12month prevalence of 26%, and the third reported lifetime prevalence of 72%.

Feeding and Eating Disorders

Kingston et al (2017) reviewed 4 studies of personality disorders in Australian substance use treatment settings. An eating disorder was estimated to be current in between 2% and 8% of people in substance use treatment, with one study reporting lifetime prevalence of 34%. One study using retrospective analysis of clinical notes found 9% with any eating disorder, 4% for anorexia and 4% for bulimia.

Sleep Wake Disorders

Insomnia is common in people with alcohol use disorders (AUD). Miller et al (2017) reported as many as 74% of people who are actively drinking reporting insomnia. During early recovery, this drops to 69%, and drops further to 50% after four weeks of sobriety. These estimates include people whose insomnia is an effect of alcohol use disorder rather than a separate comorbid disorder and more research is needed to make this separation and consider other sleep disorders. Miller et al's (2017) also report that insomnia symptoms have been shown to precede and predict relapse to alcohol use .

Pigeon, Bishop and Krueger (2017) systematically reviewed longitudinal studies between 2014 and 2017 to assess the expected risk of insomnia on individuals with new onset of mental disorders including AUD. They found mixed evidence regarding

the role of insomnia in developing AUD/SUDS. Some studies report that insomnia predicts AUD symptoms at a 1 year follow up. Other studies found that insomnia only predicted AUD symptoms at a 6 year follow up.

Other Mental Disorders

Dowling (2015) reviewed 36 studies of people presenting for gambling treatment and found that prevalence of alcohol abuse (18.2%, 95% CI 13.4–24.2), alcohol dependence (15.2%, 95% CI 10.2–22.0) were greater than expected in the general population.

Conclusion

Research reviewed in the past 5 years is consistent with an increased prevalence of mental disorders in people with AUD. There is variability around estimates, some of which is likely to be due to the methods used. We recommend that priority is given to enhancing the quality of research methods by proactively using risk of bias tools (eg. Hoy et al., 2012). In addition it remains difficult to ascertain whether confounding due to intoxication and withdrawal has been adequately taken into account (Schuckit & Monterio, 1988). A review of primary studies updating Kingston et al (2017) would be timely.

Anxiety, depressive, and post traumatic disorders are sufficiently common in people presenting for alcohol use disorders that they should be part of routine assessment, other mental disorders are likely to be less common and assessment may be triggered by screening or other indicators such as slower progress than expected or relapse.

10.2.3 Models of Care and the Organisation of Care

Marel et al. (2016) identify 4 broad approaches to comorbidity: sequential, parallel, integrated and stepped care. Despite international consensus in favour of integrated care there was little evidence to compare these approaches at the time. Importantly each of the approaches requires some degree of coordination at a service or team level. A key recommendation of Marel et al (2016) is the "*no wrong door*" approach – that alcohol treatment services should expect to see people with comorbid mental disorders and have staff trained in recognition and treatment (based in GPP) this may be expressed as a *comorbidity informed* approach as was recommended as a minimum standard of care in Marel et al. (2016).

Integration can be achieved at *service* level – where teams or services for people with alcohol use disorder combine the expertise required to provide *comorbidity informed care* and are able to provide that in a coordinated fashion. Integration can describe the care provided to an *individual* with alcohol use disorder where they receive the right care at the right time from the right provider(s). And lastly integration can describe the *content of an intervention* or package provided to a person with an alcohol use disorder. Which of these levels of integration is often not clear in the literature.

Since then, Leung et al (2016) and Hobden et al (2018) have conducted systematic reviews of studies that tested parallel, or integrated interventions. Leung et al (2016) found support for both integrated and non-integrated psychosocial treatments in reducing substance use and psychiatric symptoms and recommended the integration of mental health and substance use providers in order to deliver a larger range of different options. Hobden et al (2018) found 7 studies that of people with "alcohol misuse" and depression and concluded that there was little evidence to suggest that

integrated treatment is more effective in treating co-morbid alcohol misuse and depression compared to single treatment. They judged the quality of evidence to be poor and recommended caution. They also found no studies of sequential treatment.

Hunt et al (2019) examined studies of integrated care compared to standard care in their Cochrane review of psychosocial interventions for people with both "severe mental illness" and "substance misuse" they found a small number of studies (between 1 and 3 depending on the specific outcome measure) with no clear differences from low or at best moderate quality evidence. We found no other relevant reviews and there is a clear need to evaluate the optimal model of care for other comorbidities.

While we didn't set out to search for individual primary studies two may be of some relevance in this context. Wolitzky-Taylor et al (2018; 2018) published two reports from an RCT of integrated care for anxiety and substance use (including alcohol) compared to usual care. (UC). There is evidence to suggest that integrative CBT for SUD and anxiety disorders is efficacious. Compared to usual care, integrated CBT was associated with greater improvements in alcohol use. Older age, and female gender was associated with greater improvements on anxiety outcomes for integrated CBT compared to usual care.

Our own study of individually targeted care for comorbid depression and anxiety compared with usual care may provide some evidence (Morley et al., 2016). In a small RCT we found that integrated care led to better alcohol outcomes but had no significantly better effects on anxiety and depression compared to usual care. It is unclear how this package of integrated care would have fared against an optimal alcohol focused intervention rather than usual care.

Other reviews and clinical practice guidelines place these findings in the context of expert opinion. Wright et al's (2016) review and expert opinion on the management of comorbid substance abuse and mental disorders in prisons concludes that the currently accepted parallel approach to dual diagnosis is limited by the inability to communicate effectively between treatment teams. They argue that an integrated approach that is coordinated, holistic, staged, gender responsive, straightforward, comprehensible and flexible may improve client outcomes.

Sequential treatment may be taken to mean that successful treatment of alcohol use disorder (ie abstinence) is required before treatment of comorbid mental disorders. A period of abstinence or significantly reduced consumption remains an important technique to establish the differential diagnosis of a separate mental disorder. But that does not need to imply that assistance for disturbing symptoms related to a separate mental disorder is not provided. Thus the *no wrong door* and *comorbidity informed* minimum standard outlined in Marel et al. (2016) is based in expert consensus around GPP.

Guidelines for specific mental disorders (other than alcohol use disorder) vary in their coverage of comorbid AUD. For example, Malhi et al's (2015, p 117) RANZCP clinical practice guidelines for the treatment of mood disorders describe comprehensive assessment, and sequential treatment focused first on detoxification and reduction in alcohol consumption followed by integrated treatment on the basis of GPP.

We found three reviews of optimal care of multimorbidity across healthcare that may be of relevance. Smith et al (2016) report a Cochrane review of interventions targeting

multimorbidity in primary care. Interventions were either in the coordination of care provided by health professionals focused on specific disorders or the promotion of active self-management. They found that coordination of care lead to little improvement in clinical outcomes or health service use but modest reductions in symptoms of depression and improvements in functional outcomes. Because of risk of bias in the studies the conclusions were made with low level of certainty. Only one of the studies they reviewed (Morgan et al., 2013) reported alcohol consumption outcomes so the generalisation to alcohol treatment settings needs caution. Whitson & Boyd's (2018) *UpToDate* review on managing multiple comorbidities and Framer et al's (2016) summary of the UK NICE guidelines on multimorbidity both have a focus in aged care where multimorbidity is greatest. Their recommendations for the planning and coordination of care are largely consistent with Marel et al's (2016) and are included in the following recommendations.

	Recommendation	Grade of recommendation
ADD	10.12 Offer care that is tailored to the person's personal goals and priorities	GPP
ADD	10.13 Consider reducing interventions that have a high burden on the individual in case these are likely to be difficult to adhere to	GPP
ADD	10.14 Develop and agree upon an individualised management plan with clear responsibilities for coordination of care	GPP
Qualify/Add	10.8 Differential diagnosis of comorbid disorders should take place once withdrawal has diminished, since some anxiety and depressive symptoms may abate once alcohol consumption is reduced or ceased	B

E-therapy interventions

The internet has been used to deliver a variety of information and psychological interventions to people with alcohol use and other mental disorders. High quality systematic reviews of e-therapy interventions for specific disorders have supported the use of specific e-therapy interventions (Marel et al., 2016) in alcohol (Bhochhibhoya et al., 2015; Kaner et al., 2017; Kazemi et al., 2017), depression (Marel et al., 2016), anxiety disorders (Olthuis et al., 2016; Richards et al., 2015), gambling (Chebli et al., 2016) and other disorders. This method of delivery reaches people who might not otherwise contact health services and is cost –effective (Donker et al., 2015) especially where some professional support and guidance is also provided. The National Comorbidity Guidelines (Marel et al., 2016) provide guidance for specific e-therapies for specific conditions, and, in addition, portals like http://beacon.anu.edu.au/ or http://www.emhprac.org.au/ provide links to specific e-therapy packages.

Gilmore et al (2017) examined the efficacy of technology-based interventions in improving mental health outcomes for people with patients co-occurring trauma and substance use symptoms. They found technology-based interventions may be efficacious in reducing co-occurring trauma and substance use symptoms, regardless of technological mode of delivery (i.e, web, video, mobile, telephone).

Based on this evidence e-therapy may provide people with comorbidity with access to effective care for their comorbid conditions. The caveat being that the effectiveness of these interventions has mostly been demonstrated in those with the single conditions without comorbidity.

Individual clinicians and health services face the difficulty of identifying effective e-therapy interventions from the myriad available. Portals like https://beacon.anu.edu.au/ or http://www.emhprac.org.au/ provide some screening and quality assessment before including potential e-therapy packages in their listings.

E-therapy may provide additional challenges to ensuring continuity of care for people with comorbid disorders. It is very unlikely that passive referral to e-therapy without ongoing contact with the client will lead to positive outcomes, on the other hand, active referral alongside continued contact focused on alcohol with monitoring of progress and engagement and problem solving of any inconsistencies has much greater potential to be of benefit.

	Recommendation	Grade of recommendation
ADD	10.15 E-therapy targeting either specific separate disorders or comorbidity may be offered to those with comorbidity if there is monitoring of progress and engagement and continuity of care is maintained	GPP

10.2.4 Assessment and diagnosis

This section reviews recent evidence firstly about the use of screening and assessment tools for mental disorders in people with problems relating to alcohol and secondly about screening and assessment of alcohol use in people with mental disorders.

The question posed is whether a formal screening process is superior and more cost-effective than an unstructured clinical interview like that typically used as an assessment in routine services. Unfortunately, the evidence retrieved rarely compares self-report screening processes against a realistic clinical alternative. Ideally one would assess whether a formal self-report screening process adds additional information to the typical unstructured clinical interview and whether the additional information is worth the additional time and resources. In other contexts, such as the identification of depression in those with cardiovascular disease, structured self-report screening questionnaires detect additional people with depression compared to routine physician assessment (Löwe et al., 2004) so there is at least a potential for greater recognition in the alcohol treatment context.

Practical issues like required reading level, availability in community languages, administration and scoring time, cost and copyright may have a greater impact on the use of structured formal assessments.

The standards of evidence for screening tools and assessments are unclear. On the one hand, the highest level evidence is a controlled trial which randomly allocates people to be to be screened or assessed vs no assessment and then followed up to measure the health benefits. The UK NICE guidelines for Depression (Gilbody et al., 2006) used this standard to recommend against the routine assessment of depression in primary care, for example. We could find no evidence like this in the literature on alcohol and other mental disorders. On the other hand, there is a variety of evidence that assessment of alcohol use and mental disorders, and their comorbidity can reliable and valid. In the following sections, we review evidence that the reliability and validity of assessment tools, or the sensitivity and specificity as a screening test has been supported in samples with alcohol use and other mental disorders. This is evidence that the assessment can be made accurately and precisely, rather than that the assessment is shown to lead to health outcomes.

Identifying mental disorders among those seeking treatment for alcohol

Firstly, given the high prevalence of mental disorders amongst people with an alcohol use disorder, it is essential that checking for particularly common symptoms of anxiety, depression, post-traumatic stress, sleep disturbance, and ADHD is a routine part of the assessment.

Since the 2009 Alcohol guidelines more information about the performance of specific assessment tools has been published allowing more specific guidance. Marel et al (2016) provides guidance for the recognition and assessment of Attention Deficit/Hyperactivity Disorder (ADHD), Psychosis, Bipolar disorders, Depression, Anxiety, Obsessive Compulsive Disorder, Trauma and Post Traumatic Stress Disorder, Eating Disorders, Personality Disorders, Confusion or disorientation, cognitive impairment, ,Grief and Loss, and Aggressive, Angry or violent behaviour. In the following sections we review reviews of assessment, screening, or recognition of these comorbid disorders published since the last evidence review in 2015 supplemented by information from earlier sources.

Neurodevelopmental Disorders

Attention Deficit/Hyperactivity Disorder (ADHD): Marel et al (2016) recommend Version 1.1 of the Adult ADHD Self Report Scale (ASRS, Kessler et al., 2005). The ASRS v1.1 is 6 items, freely available (https://www.hcp.med.harvard.edu/ncs/asrs.php), and available in a number of community languages, with simple scoring.

Subsequently Daigre et al. (2015) examined the performance of the ASRS and the Wender-Utah Rating Scale (WURS) compared with a Connor's adult ADHD Diagnostic Interview as the reference standard. The WURS provides a retrospective assessment of childhood ADHD in adults with 25 items assessing childhood ADHD. In a sample of 355 people attending either of two drug or alcohol outpatient services, the ASRS v1.1 (cut off of 14) showed a sensitivity of 86.7%, a specificity of 66.1%, and a positive predictive value of 40.6% (Negative Predictive Value was 94.9%). The WURS (>= 41) gave a sensitivity of 79.6%, specificity of 60.3%, and positive predictive values of 45.1%. Screening positive on both scales improved PPV to 55% at the cost of additional respondent burden.

Luderer et al (2019) compared the ASRS v1.1 against a structured interview and expert consensus reference standard in a residential rehabilitation service for AUD

and found less impressive screening results. In a sample of 400 people with alcohol dependence admitted to an inpatient addiction centre, the ASRS (cut off of 14) showed sensitivity of 57.1%, specificity of 97.2% and a PPV of 84.2%. The study also examined the Connor's Adult ADHD Rating Scales – screening self- rating version (CAARS-S-SR) and this in combination with the ASRS produced better screening results again with 30 additional questions and a resulting higher respondent burden.

A revised version for DSM5, the ASRS-5, has been developed, tested (Ustun et al., 2017), and is similarly available at the above website. We could find no literature examining the performance of the updated version in drug and alcohol settings and suggest the ASRS v1.1 be used with updated scoring for DSM5 (described on the above website) if that is required.

Together these studies represent Level C evidence for the use of ASRS to screen for ADHD in people seeking assistance for alcohol use disorder.

Schizophrenia Spectrum and other Psychotic Disorders

No further literature was identified on the detection of psychosis in those with AUD. The Psychosis Screener (Degenhardt, et al., 2005) as recommended in Marel et al (2016) remains the best available option (Level C evidence)

Bipolar and Related Disorders

We found no literature on assessment of bipolar disorders in people with AUD after the Marel et al (2016) review. Two papers outside our search window may provide some useful information. Nallet et al (2013) compared the Mood Disorder Questionnaire (MDQ, 15 items, Hirschfeld et al., 2000) and the Hypomania Checklist-32 (HCL-32, 32 items, Angst et al., 2005) with a clinician administered SCID in 103 people attending a specialist alcohol treatment facility. Twenty-one (20.4%) participants received a SCID diagnoses of Bipolar I, Bipolar II or Bipolar NOS. The MDQ with a cut off of 7 or more showed sensitivity of 71.4% and specificity of 82.9% (with a modified scoring sensitivity increased to 76.2% with a loss of specificity to 76.8%) while the HCL-32 with a cut off of 14 or more yielded 85.7% sensitivity and 39.0% specificity. Both measures had low positive predictive values (MDQ 51.7%, and HCL-32 26.5%) suggesting caution in their use to identify people with Bipolar Disorder. Goldberg et al. (2012) compared a self-report MDQ with a clinician interview guided by the MDQ in 113 voluntary admissions to an inpatient psychiatric facility, 52 of whom reported alcohol use. The MDQ with a cut off of 7 or more, showed sensitivity of 71%, specificity of 47%, a positive predictive value of 33% and a negative predictive value of 82%. The low positive predictive values in both these studies coupled with relatively small sample sizes and the Goldberg et al (2012) study lacking a gold standard assessment of bipolar disorder leads to the conclusion that neither the MDQ or HCL32 are recommended for use to identify bipolar disorder in routine drug and alcohol treatment services.

Depressive Disorders

No additional reviews were identified in addition to those included in the 2016 National Comorbidity Guidelines (Marel et al 2016). It is worth noting that Arnaud et al. (2010) confirmed the internal consistency of the K10 or K6 in a French alcohol treatment seeking sample. They compared K10 scores with clinician administered Hamilton Depression Rating Scale and the MINI structured diagnostic interview the

day after admission and found scores of 14 or more on the k10 (sensitivity = 0.95, specificity = 0.54, PPV=65.5, NPV=92.3) or 10 or more on the k6 (sensitivity = 0.92, specificity = 0.62, PPV=66.7, NPV=90.9) were optimal for screening for a diagnosis of major depressive episode. Notably neither assessment were taken after a reasonable period of abstinence (4-6 weeks). The best quality evidence comes from Rush et al (2013) who studied a large sample of people in treatment for substance use disorders and compared a variety of screening assessments against SCID diagnosis. While this study found while the Global Appraisal of Individual Needs–Short Screener for Internal Distress (GAIN-SS-IDScr, Dennis et al., 2006) was superior in identifying any mental disorder, the advantages over the K6 were small. While the K6 is free the GAIN-SS-IDScr has administration costs. K6 scores over 7 (sensitivity= 86 specificity=54 PPV=81 NPV=62) or over 8 (sensitivity=81, specificity=63 PPV=84 NPV=59) were recommended. In a similarly good quality study Hobden et al. (2017) examined the ability of the Montgomery Asberg Depression Rating Scale to screen for SCID diagnoses. While there was no head to head comparison the best performance of the MADRAS at scores >14 (sensitivity =66%, specificity = 60%, PPV= 50% NPV=75%) was not as accurate as the K6 in other research.

Together these studies provide Level C evidence for the use of the K6/10 and Level D for the MADRAS.

Anxiety Disorders & OCD

No additional literature was identified in addition to that found for the 2016 National Comorbidity Guidelines (Marel et al 2016). A number of questionnaires have been validated to screen for specific anxiety disorders without evidence for their screening properties in comorbid populations.

Trauma & Stressor Related Disorders

No additional literature was identified in addition to that found for the 2016 National Comorbidity Guidelines (Marel et al 2016). The Trauma Screening Questionnaire (TSQ, Brewin et al., 2002) and Primary care PTSD screen (PC-PTSD, Prins et al., 2004) were suggested by Marel et al based on evidence we rate as Level D. Both of these tools have subsequently been used in studies alongside measures of alcohol consumption but without validation of its screening properties in a comorbid sample.

Sleep-Wake Disorders

While sleep disorders present a risk for the onset of and relapse of AUD we found relatively little literature to guide the assessment of sleep disorders in this context.

Perney et al. (2012) developed a brief interview to detect sleep problems is people with alcohol use disorder (the Short Sleep Index) based on 4 insomnia questions from the Structured Interview Guides for the Hamilton Anxiety and Depression Rating Scales (Williams, 1988). While the Hamilton Scales are intended to be interview administered, this subset of items seems to be intended as self-report. Each question is rated on a scale from 0 to 2. The brief interview was validated against a widely used self-report measure the Pittsburgh Sleep Quality Index (PSQI) and found to have good screening properties. While they report the PSQI is widely used in alcohol research, it would be more useful to use clinician verified diagnosis of a sleep disorder as the reference standard. In addition, the 4 insomnia items from the Hamilton scales reflect insomnia rather than the breadth of sleep disorders. Because the Hamilton scales are

so widely used it is likely that they are available in community languages. We rate this as level D evidence to support the use of the Short Sleep Scale to screen for insomnia in people seeking assistance for alcohol use disorder.

A systematic review of screening questionnaires for sleep disorders reported by Klingman et al (2017) and recommended the Global Sleep Assessment Questionnaire (GSAQ, Roth et al., 2002) as comprehensive and efficient. However, we could find no literature reporting on the GSAQ in samples with alcohol use disorder.

Eating and Feeding Disorders

No additional literature was identified in addition to that found for the 2017 National Comorbidity Guidelines (Marel et al 2016). The Eating Disorder Examination – Questionnaire (EDE-Q), was suggested in Marel et al with supporting evidence from one study (Black & Wilson, 1996) in a small sample of 48 women with substance use disorder (including 18 with alcohol alone and 24 alcohol and other drugs). Based on data reported in that paper the sensitivity of the EDE-Q in detecting Bulimia Nervosa among this sample was 0.5 (95%CI 0.11 to 0.88) with a specificity of 1.0 (95%CI 0.92-1.0) and a positive predictive value of 1. There was insufficient data reported in the paper to calculate sensitivity and specificity for Eating Disorder Not Otherwise Specified and there were no diagnoses of Anorexia Nervosa reported in the sample. The wide confidence intervals reflect the small sample size and the low precision this study gives in estimating the screening properties of the EDEQ. This represents Level D evidence for the use of the EDE-Q.

Impulse control disorders

Intermittent Explosive Disorder. Often anger is a symptom of Depression, PTSD, or Borderline Personality Disorder and care needs to be taken to understand what drives the emotion and associated aggressive or violent behaviours. The DSM and ICD diagnoses of intermittent explosive disorder may be appropriate. Cougle et al. (2017) used the State-Trait Anger Expression Inventory-2 (STAXI-2, Spielberger, 1999) to assess anger in people with AUD as part of a clinical trial. They cite literature to support a consensus that a score of 22 or greater (at or above the 75th percentile) on the trait anger subscale is used to indicate moderate to severe problems with anger. The STAXI-2 contains 57 items and is available for purchase from the Australian Council for Educational Research (https://shop.acer.edu.au/state-trait-anger-expression-inventory-2nd-edition-staxi-2). This is insufficient evidence to recommend the use of the STAXI-2

Personality disorders

We found no further literature on the assessment of personality disorders in people seeking alcohol treatment than that reported in Marel et al (2016). Gonzalvez's (2014) small study of 53 people in inpatient care for alcohol and/or drugs provides some preliminary information. Forty-two percent of the sample were judged to have a personality disorder and two screening questionnaires – the Iowa Personality Disorder Screen (IPDS-SR, 11items, Germans et al., 2010) and the Standardized Assessment of Personality-Abbreviated Scale (SAPAS-SR, 8 items, Germans et al., 2008) correctly classified 77.4% and 73.6% of participants respectively. We grade this as level D evidence supporting the use of the IPDS-SR and/or the SAPAS-SR. Because of the brevity of these scales and the unlikelihood of any adverse consequences they

may be useful as part of a comprehensive assessment.

Conclusion & Recommendation

Standardised questionnaires provide information that complements clinician interview. In some studies outside the drug and alcohol context a standardised screening questionnaire is more accurate in detecting mental disorders than a clinician interview. Where staff in alcohol treatment services have limited training and or experience in mental disorders it might be expected that the value of standardised screening questionnaires would be greater.

If time is short the K10 or K6 have reasonable screening properties for detecting a wide range of mental disorders.

Where there is more time available or the likelihood of comorbidity is higher specific screening questionnaires for common comorbidities are likely to provide additional information as part of a comprehensive assessment. The ASRS for ADHD (level C evidence), The Psychosis Screener (C), Trauma Screening Questionnaire and/or the Primary Care PTSD Screen for PTSD (D), Short Sleep Index for insomnia (D), EDE-Q for eating disorders (D), and the IPDS-SR and/or the SAPAS-SR for personality disorders (D). These suggestions are based on a patchwork of evidence – while the screening properties of specific questionnaires may be well known, their use together is untested as far as we are aware. Importantly the incremental validity, how informative each questionnaire is over already known information, has not been established.

Standardised questionnaires provide useful evidence as part of a comprehensive assessment that considers previous history of symptoms and current withdrawal status. They are not sufficiently accurate to be the sole assessment of comorbidity.

When should assessment for comorbid mental disorders occur? Anxiety, Depressive and Post-traumatic stress disorders are likely to be sufficiently common that they should be considered as part of a routine assessment for Alcohol Use Disorders. Other mental disorders are less common so may be considered for screening or be assessed when there are clinical indicators. Other indications for assessment based in good clinical practice would be fluctuation or deterioration – lapse or relapse to alcohol use, drop-out from treatment. Thus comorbidity can be assessed as a potential reason for less than expected progress. Formal routine monitoring of progress with feedback to clinicians and consumers may be a useful in identifying those who are not progressing as expected (Crits-Christoph et al., 2012) and additional benefits may result from standardised assessment of the barriers to progress (such as motivation and therapeutic alliance).

Because of the wide variety of possible comorbdity standardised screening questionnaires provide useful information as part of a comprehensive assessment. Regular use of standardised questionaires to assess progress may also help to identify problems earlier and hence improve outcomes.

	Recommendation	Grade of recommendation
ADD	10.4 The K10 or K6 are recommended for brief screening for distress associated with any comorbid mental disorder in people seeking help for AUD	A
ADD	10.5 To identify specific mental disorders the Adult ADHD Self-Report Scale (ASRS) is recommended to screen for Attention Deficit Hyperactivity Disorder (level C evidence), as is The Psychosis Screener as a screen for psychotic disorders (with level C evidence) as part of a comprehensive assessment.	C
ADD	10.6 The Trauma Screening Questionnaire (TSQ) and/or the Primary Care PTSD Screen (PC-PTSD) for PTSD (D), Short Sleep Index for insomnia (D), Eating Disorder Examination – Questionnaire (EDE-Q) for eating disorders (D), and the Iowa Personality Disorder Screen (IPDS-SR) and/or the Standardized Assessment of Personality-Abbreviated Scale (SAPAS-SR) for personality disorders (D) as part of a comprehensive assessment.	D
ADD	10.7 routine standardised assessment of alcohol use and symptoms of comorbid disorders may alert clinicians to clients who are not progressing as expected and allow for barriers to progress to be attended to	GPP
Modify and Clarify	10.8 Differential diagnosis of comorbid disorders should take place once withdrawal has diminished, since some anxiety and depressive symptoms may abate once alcohol consumption is reduced or ceased.	B

Identification of problematic alcohol use among those seeking treatment for mental disorders

RANZCP clinical practice guidelines for eating disorders (Hay et al., 2014) and mood disorders (Malhi et al., 2015) recommend that substance use be included in routine assessments but provide no further guidance. Similar recommendations are in the UK NICE guidelines for ADHD (Chaplin, 2018). The evidence reviewed in the following

paragraphs suggests that the AUDIT is a suitable screening tool to begin this assessment.

A recent review of screening for alcohol use disorders from the US Preventative Services Task Force (O'Connor et al., 2018a, 2018b) included people with "non-psychotic mental disorders such as anxiety and depression" in its scope but unfortunately excluded those attending mental health services. Their full report (O'Connor et al., 2018a) listed the 6 studies excluded because they focused on an out of scope population and only one study excluded appeared to be relevant to the current question (Durbeej et al., 2010). Of the included studies, three considered anxious or depressed populations (Bartoli et al., 2016; Boschloo et al., 2010; Levola & Aalto, 2015) and one examined screening in a sample presenting for assistance with ADHD (McCann et al., 2000).

The Alcohol Use Disorders Identification Test (AUDIT, Saunders et al., 1993) was used in 4 of these studies (Boschloo et al., 2010; Durbeej et al., 2010; Levola & Aalto, 2015; McCann et al., 2000). In people presenting for assistance with anxiety or depression Boschloo et al (2010) found AUDIT ≥ 9 for men and ≥6 for women was optimal in screening for CIDI diagnosed alcohol dependence but could not recommend a cut off for alcohol abuse. Levola and Aalto (2015) used the timeline followback as the reference standard against which the screening properties of the AUDIT, AUDIT-C, and AUDIT-3 were judged. They found AUDIT≥ 9, AUDIT-C≥ 6, and AUDIT-3≥ 2 were optimal cut off scores for at risk drinking in men and AUDIT≥ 5 for women. The AUDIT-C and AUDIT-3 were not sufficiently accurate in women for cut offs to be estimated. McCann et al (2000) examined the AUDIT in people seeking help for ADHD and found scores ≥ 6 were optimal in detecting psychiatrist diagnosed alcohol use disorder. In an incarcerated sample of people with suspected mental disorders Durbeej et al (2010) found AUDIT≥13 was the optimal cut off score to identify alcohol use disorders diagnosed by the SCAN or another briefer interview.

Overall the literature on the AUDIT in samples with mental disorders is a small subset of the overall AUDIT literature, the particular mental disorders studied are not representative of all mental disorders, and the reference standards used are diverse. Thus we can conclude that while the AUDIT appears to be a suitable screening tool for identifying risky, problem and dependent alcohol consumption amongst people with mental disorders (Cassidy et al. 2008; Dawson et al. 2005) optimal cut off scores may not have been established, and may vary from the general recommendations.

The remaining study of relevance from O'Connor et al.'s (2018a, 2018b) review, Bartoli (2016), examined the performance of a single question '*How many times in the past year have you had X or more drinks in a day*?' where X is 5 for men and 4 for women (NIAAA, 2015) to detect AUD as identified by the Mini International Neuropsychiatric Interview (MINI) in people presenting for outpatient anxiety and/or depression treatment who also drank alcohol. With a cut off of one or more (i.e. drinking more than 5 drinks for men and 4 drinks for women once or more in the past year) this single item showed a sensitivity of 91.9% (95% CI: 78.1–98.3%) and a specificity of 91.2% (95% CI: 86.5–94.7%). The findings may not easily generalise to the Australian context given differences in the size of standard drinks (14g vs 10g alcohol). A MINI diagnosis of alcohol use disorder is unlikely to be the optimal reference standard for screening. However these findings are supportive of relatively simple consumption screening like

that in the AUDIT-C as the beginning of an assessment.

Because of heterogeneity in the recommended cut off scores for the AUDIT to identify alcohol use disorders in people with mental disorders we suggest that screening with the AUDIT is part of an ongoing assessment process and takes into account greater risk with higher AUDIT scores rather than relying solely on cut off scores.

	Recommendation	Grade of recommendation
Clarify	10.9 AUDIT in full or briefer versions (AUDIT-C) is recommended to help identify AUD in those attending mental health services as part of a comprehensive assessment.	A

10.2.5 Intervention

The overarching principle from the 2009 edition of the guidelines was to provide people with evidence based care for the separate conditions. The highest-level evidence would be to demonstrate differential effects in the presence of comorbidity compared with its absence. Comparisons like this are very rare in the literature. Most evidence confirms benefit from interventions that are supported for separate conditions. In the absence of specific evidence, comorbid mental disorders should be treated according to the clinical practice guidelines for those specific disorders. The service that provides care should be integrated, but little evidence supports use of specific packages that integrate the content of psychological interventions. The psychosocial treatments discussed in Chapter 9 can be tailored to individual needs. Regardless of whether services follow integrated or parallel models, they should be well coordinated and provide for long-term follow-up (Tiet and Mousebach 2007; Harsefall et al. 2009; Hesse 2009).

10.2.5a Management of Alcohol Withdrawal

Victorian Guidelines for Alcohol and Drug Programs list comorbid mental disorders as one of the criteria for admission to subacute beds for withdrawal (VicHealth, 2018).

10.2.5b Brief interventions

Boniface et al (2018) conducted a systematic review of brief interventions for alcohol use among those with comorbid mental disorders. From a narrative review of 11 trials, they concluded that there was significant variability in the participants, methods and results of these trails and could not discern any combination of these factors that lead to a successful reduction in drinking. Because brief interventions have been extensively studied in non-comorbid samples and because they are a reasonable second step after identifying hazardous consumption or an alcohol use disorder they are recommended with adequate monitoring and follow-up so that intervention can be stepped up if reduced drinking is not achieved.

	Recommendation	Grade of recommendation
ADD	10.10 Brief intervention including Motivational Interviewing is recommended for people with mental disorders and hazardous or harmful alcohol use who are presenting for mental health care with adequate monitoring and follow-up to step up intervention if reduced drinking is not achieved	D

10.2.5c Psychosocial interventions

The following section reviews systematic reviews and meta-analyses of the effectiveness of psychosocial interventions published since Marel et al's (2016) national comorbidity guidelines.

Attention-deficit/hyperactivity disorder (ADHD)
While ADHD appears common in those presenting to alcohol treatment settings there is very little research to guide clinicans. We found no revews in the search window and reitereate the recommendations of Marel et al's (2016) National Comorbidity Guidelines. One RCT of integrated CBT for ADHD & Substance Use compared to CBT focused on substance use, whose protocol was mentioned in Marel et al, has been susequently completed and their results published (van Emmerik-van Oortmerssen et al., 2019). There were greater reductions in ADHD symptoms in the integrated group but this did not last to two month follow-up. There were no signififcant differences between the interventions on substance use outcomes. At best 34% of those receving the integrated CBT experienced at least a 30% reduction in their ADHD symptoms indictaing that while the interventivion was better than comparison significant ADHD remained in many. While ADHD appears common in those presenting to alcohol treatment settings there is very little research to guide clinicans. We found no revews in the search window and reitereate the recommendations of Marel et al's (2016) National Comorbidity Guidelines.

Schizophrenia Spectrum and other Psychotic Disorders

A recent update of the Cochrane Review of Psychosocial Interventions for people with both severe mental illness and substance misuse (Hunt et al., 2019) was published after the search date for this review but is included here because of its relevance and importance. Based on a review of 25 RCTs they conclude that there is no high quality evidence to support one form of intervention over another across a wide variety of possible outcomes.

Bipolar and Related Disorders

Frías et al's (2015) systematic review of comorbid bipolar disorder and substance use in adolescents found one small open study (Goldstein et al., 2014) of 10 adolescents and their families. Only 6 of the 10 completed 6 month follow-up at which mania and depressive symptoms had reduced with little effect on cannabis use. Further research is required before a specific recommendation can be made.

Malhi et al.'s (2015, p 117) RANZCP guidelines recommend "10.4. For patients with severe alcohol or other substance use disorders (DSM-5), detoxification should occur followed by relapse prevention measures integrated with CBT (Integrative Group Therapy – IGT) to maintain abstinence." on the basis of a single trial (Weiss et al., 2009) but earlier work could also be considered (Weiss et al., 1999, 2007).

	Recommendation	Grade of recommendation
ADD	Integrative group therapy for comorbid bipolar and substance use disorder is likely to provide better substance use outcomes than intervention focused on substance use for people with this comorbidity	B

Depressive Disorders

We found only one review of the treatment of comorbid depression published since Marel et al's (2016) review. A systematic review of 15 studies conducted by Babowitch and Antshel (2016) synthesised the effectiveness of integrated treatment for depression and substance abuse (including alcohol) in adolescents. Results offered some support for the efficacy of CBT, motivational enhancement therapy (MET) and family-focused therapy in reducing depression and substance abuse symptoms. Furthermore, there is evidence to suggest that an integrative approach, incorporating CBT and motivational enhancement therapy (MET) may be efficacious.

Malhi et al.'s (2015) RANZCP guidelines recommend "10.4. For patients with severe alcohol or other substance use disorders (DSM-5), detoxification should occur followed by relapse prevention measures integrated with CBT (Integrative Group Therapy – IGT) to maintain abstinence."

Anxiety disorders

We found no further systematic reviews or guidelines relating to either agoraphobia, panic disorder, social anxiety disorder, generalised anxiety disorder or obsessive compulsive disorder. Marel et al (2016) review specific studies reporting that CBT leads to reductions in anxiety symptoms and improvements in functioning. In some instances the content of intervention is integrated and this may result in improved outcomes. In other instances the recommended intervention for single disorders is confirmed to lead to anxiety symptom reductions with little impact on alcohol outcomes.

Similarly no further systematic reviews or guidelines where found for comorbid obsessive compulsive disorder (OCD).

Trauma- and Stressor-Related Disorders

A Cochrane review of intervention for comorbid PTSD and Substance use (including alcohol) and a related publication by Roberts et al (2015, 2016) were included in the 2016 National Comorbidity Guidelines. Unfortunately this review found the quality of evidence to be low, based on expected and unavoidable issues like lack of blinding and heterogeneity in the samples. Across 13 studies they found that individual (but not group) trauma focused psychotherapies were more effective that treatment as usual in reducing PTSD severity but not drug or alcohol use. Treatment completion was lower in trauma-focused therapy than in treatment as usual. Psychotherapies that did not have a trauma focus were not better than treatment as usual or minimal intervention for PTSD severity.

A more recent systematic review conducted by Gilmore et al (2017) examined the efficacy of technology-based interventions in improving mental health outcomes for people with co-occurring trauma and substance use symptoms. They found technology-based interventions may be efficacious in reducing co-occurring trauma and substance use symptoms, regardless of technological mode of delivery (ie, web, video, mobile, telephone).

	Recommendation	Grade of recommendation
ADD	10.26 Trauma focused therapy (including prolonged expoure) is recommended for people with alcohol use disorder and comorbid PTSD	B
ADD	10.27 In the context of PTSD and substance use disorders, the trauma-focussed component of PTSD treatment should not commence until the person has demonstrated a capacity to manage distress without recourse to substance use and to attend sessions without being drug or alcohol affected.	GPP[10]
ADD	10.28 In the context of PTSD and substance use disorders, where the decision is made to treat substance use disorders first, clinicians should be aware that PTSD symptoms may worsen due to acute substance withdrawal or loss of	GPP[2]

[10] Adopted from the Australian Centre for Posttraumatic Mental Health (ACPMH). (2013). Australian guidelines for the treatment of adults with acute stress disorder and posttraumatic stress disorder. https://www.phoenixaustralia.org/wp-content/uploads/2015/03/Phoenix-ASD-PTSD-Guidelines.pdf

	substance use as a coping mechanism. Treatment should include information on PTSD and strategies to deal with PTSD symptoms as the person controls their substance use.	

Eating and Feeding Disorders

We found no further systematic reviews or guidelines relating to eating and feeding disorders. Marel et al (2016) found one RCT of Naltrexone vs Placebo that included CBT focused on alcohol in both groups (O'Malley et al., 2007) which in general provides support for the recommended treatments for the separate disorders.

Sleep-Wake Disorders

Miller at al. (2017) reported a systematic review of 9 studies to determine the effectiveness of behavioural (ie. CBT-I and progressive muscle relaxation) and pharmacological interventions (ie. gabapentin, trazodone, and quetiapine) for insomnia among individuals with alcohol use disorder. They found behavioural (vs pharmacological) interventions were more effective in improving sleep quality compared to control interventions. However, neither intervention improved rates of alcohol abstinence nor had differing effects on depressive symptoms. The findings are tempered by varying definitions of insomnia (diagnostic insomnia vs complaints of sleep disturbance) in the published literature and a relatively small number of primary studies.

	Recommendation	Grade of recommendation
ADD	10.29 Sleep hygiene and psychoeducation about sleep are recommended as the first line intervention for insomnia that lasts beyond withdrawal	GPP
ADD	10.30 Behavioural interventions including CBT-I and progressive muscle relaxation are recommended as second line interventions for insomnia	GPP

Disruptive Impulse-control, and Conduct Disorders

Anger and associated aggressive or violent behaviour is a common focus of clinical attention in alcohol use disorder however there is very little evidence in the literature to guide treatment. We found one small RCT of an experimental e-therapy intervention (Cougle et al., 2017) focusing on the modification of interpretation biases thought to underlie episodes of anger. Compared to an attention control, participants receiving the intervention reported less anger, less alcohol use and fewer interpretation biases. The paper did not report concealment of randomization nor blinding of assessments but the control condition received an intervention that was at

least as credible as the intervention. This intervention is not widely available and is a stimulus for more research in the area. As our search strategy was aimed at finding secondary sources (systematic reviews and guidelines) we are not confident that this is comprehensive survey of the literature on comorbid Disruptive Impulse-control, and Conduct Disorders.

Personality Disorders

Euler et al (2015) reported a systematic review of treatment for comorbid substance use and personality disorders (in German) and found evidence to support the use of Dialectical Behaviour Therapy for Substance Abusers (sic DBT-S, Dimeff & Linehan, 2008), Dual Focused Schema Therapy (DFST, Ball, 1998; Ball et al., 2005, 2011; Ball & Young, 2000) and Dynamic Deconstructive Psychotherapy (Gregory et al., 2009, DDP, 2010; Gregory & Remen, 2008) with reservations about small sample sizes, participant drop out, and difficulty rulling out the effects of other interventions over the prolonged course of treatment.

Lee et al (2015) systematically reviewed the efficacy of dialectical behavioral therapy (DBT), dynamic deconstructive psychotherapy (DDP), and dual-focused schema therapy (DFST), for co-occuring substance abuse and borderline personality disorder. They concluded that DDP and DBT appeared to be somewhat efficacious in reducing substance use and suicidal/self-harm behaviors. Lee et al. recommended the use of DBT, due to its strong evidence base. However, there is limited information about the treatment of men, as most studies recruited women. In addition, conclusions were drawn from a small sample of studies. Finally, studies examining DBT may have been confounded by the introduction of pharmacotherapy.

	Recommendation	Strength of recommendation
ADD	10.31 Dialectical Behaviour Therapy (DBT) should be provided to people with comorbid Borderline Personality and AUD	B

10.2.5d Pharmacotherapy

Pharmacological treatments have proved effective in treating anxiety, depression and psychosis in people with co-occurring mental and AUD. However, they should not be used as first line treatments of alcohol use disorder as there is little evidence that treatment of co-morbid mental disorder alone leads to a reduction of alcohol intake.

The overall approach described by Kranzler and Soyka (2018) is recommended "*When psychiatric symptoms persist despite a substantial reduction or cessation in drinking, the*

optimal approach is to continue alcohol pharmacotherapy and add a specific psychiatric medication." (p 817). The following sections consider evidence from reviews that pharmacotherapy targeting alcohol should be different in the context of a comorbid mental disorder or whether pharmacotherapy targeting a comorbid mental disorder (when alcohol use disorder is present) diverges from general recommendations for that specific disorder.

Caution should be exercised in applying the results of clinical trials for separate mental disorders as participants with comorbidity may have been excluded. Where possible the following sections summarize evidence from samples of people with comorbidity.

Literature referring to comorbid mental disorders in general

Pani, Trogu, Pacini, and Maremmani (2014) report a Cochrane review of anticonvulsants (including gabapentin, topiramate, valproate) for alcohol use disorder and give findings for those with "psychiatric comorbidity" from 8 studies with 472 participants. There was no statistically significant difference compared to placebo in dropout (8 studies), relapse to heavy drinking (3 studies 100 participants), number of drinks per drinking day (5 studies 303 participants), abstinence (4 studies 238 participants), and days abstinent (5 studies 291 participants). Since that review Batki et al. (2014) have conducted a small RCT in 30 people with comorbid alcohol and PTSD that we review in the PTSD section below.

Neurodevelopmental disorders

Cunill et al. (2015) conducted a systematic review of 13 randomised placebo controlled trials of pharmacotherapy for comorbid substance use disorder (including Alcohol) and Attention deficit hyperactivity disorder (ADHD). Medications studied were methylphenidate (in 9 publications), atomoxetine (3 studies), pemoline, bupropion, and lisdexamphetamine (one each). Overall significant reductions in ADHD symptoms were reported compared to placebo with moderate homogeneity and some risk of bias particularly from high dropout. Of the medications atomoxetine and methylphenidate showed significant effects. These effects were also found in those with AUD. There was no overall effect on substance use or on retention in treatment.

The UK NICE Guidelines on ADHD (National Institute for Health and Care Excellence, 2019) recommend that titration of ADHD medication dose be slower and monitoring more frequent in those with "substance misuse".

	Recommendation	Grade of recommendation
ADD	10.34 Psychostimulants (methylphenidate) and noradrenaline reuptake inhibitors (atomoxetine) have been shown to be beneficial in people with ADHD and comorbid substance use including alcohol.	B
ADD	10.35 Titration of ADHD medication dose be slower and monitoring more frequent in those	GPP

	with “substance misuse”	

Schizophrenia spectrum and other psychotic disorders

Note the treatment of Alcoholic Hallucinosis is covered in section xxx (p. xxx) above.

Marel et al (2016) conclude that clozapine among the newer atypical antipsychotics leads to generally positive outcomes for people experiencing comorbid alcohol use disorder and psychotic disorders. Arranz et al. (2018) published a systematic review examining the efficacy of clozapine in SUD improvement in people with schizophrenia. 4 studies were included with a focus on alcohol use disorder. While Clozapine appears more efficacious compared to first generation antipsychotics in improving overall substance use and maintaining remission rates, In studies with a 1 year follow-up, clozapine was equal to treatment as usual in reducing alcohol use.

Temmingh et al (2018) report a Cochrane review comparing Risperidone with other antipsychotics for people with schizophrenia or bipolar disorders and comorbid substance misuse (including alcohol). They reviewed seven RCTs mostly where secondary sub group analyses were conducted to examine comorbidity. They reported significant heterogeneity in samples and methods and concluded that there was “not sufficient good-quality evidence available to determine the effects of risperidone compared with other antipsychotics in people with a dual diagnosis.”

The Danish Health Authority Guidelines for the treatment of Alcohol Dependence (Danish Health Authority, 2018) make the following recommendation about disulfiram “Persons with memory loss or other cognitive problems (e.g. reduced cognitive function, dementia, psychosis and hepatic coma) should not be given this treatment.” Kranzler and Soyka (2018) also indicate psychosis is a rare adverse effect from disulfiram.

	Recommendation	Grade of recommendation
ADD	10.36 Disulfram should not be first line pharmacotherapy for people experiencing psychotic and AUD	GPP
ADD	10.37 Clozapine appears to be more effective than other antipsychotics in reducing symptoms of psychosis in people with comorbid schizophrenia and alcohol use disorder without significant impact on drinking	C

Bipolar and related disorders

Sepede (2018) reviewed the literature on the use of atypical antipsychotics (including quetiapine, olanzapine, risperidone) for those with comorbid substance use (including alcohol) and bipolar disorder. From ten primary studies they concluded that although

atypical antipsychotics were well tolerated and led to reduction in symptoms of bipolar disorder there was no benefit for craving or substance use. In the 10 studies reviewed there was a lack of control for confounding factors such as other pharmacological treatments that were administered in parallel, and other co-occurring disorders that affect people with comorbid, BD and SUD.

We found no further review of pharmacotherapy for comorbidity in young people with bipolar disorder since the Marel et (2016) guidelines. Frias et al's (2015) earlier systematic review included one study of relevance by Geller et al (1998). Geller et al. found that lithium was effective in treating comorbid substance use disorder (mostly alcohol or marijuana) and bipolar disorder in young people aged 12-18. Thus the guidelines for the treatment of bipolar disorder (e.g. Malhi et al., 2015) should be used to select appropriate pharmacotherapy for bipolar disorder in the context of alcohol use disorder.

	Recommendation	Grade of recommendation
ADD	10.38 atypical antipsychotics (such as quetiapine, olanzapine, risperidone) appear to reduce symptoms of bipolar disorder in people with comorbid bipolar and substance use disorder but there is little evidence of benefit for substance use	C

MANAGEMENT OF BIPOLAR DISORDER WITH COMORBID SUBSTANCE USE Grade

Depressive Disorders

We found three systematic reviews of pharmacotherapy for depression comorbid with AUD. Agabio, Trogu, and Pani (2018) report a Cochrane review on the use of antidepressants for the treatment of people with co-occurring depression and alcohol use disorder. They reviewed 35 studies and concluded that there is some evidence that antidepressants are effective for treating people with comorbid depression and alcohol use disorder compared to placebo on measures of depression severity, days abstinent, the proportion of participants abstinent and the number of drinks per drinking day. However, results were mostly from studies they assessed as low to very low quality. When high risk of bias studies were removed from analysis, interviewer rated severity of depression and response to treatment failed to reach significance. The number of days abstinent and the number of drinks per drinking day remained significantly better in those receiving antidepressants compared to placebo when high risk of bias studies were excluded. They were not able to make conclusions about the relative efficacy of the different antidepressants studied.

Earlier Foulds et al (2015) conducted a systematic review of studies on substance induced depression compared ("occurring only during a period of active alcohol dependence") to depressive disorder that was judged to be independent of substance use (beginning before the onset of alcohol use disorder or continuing after abstinence). Overall they found significant improvements in depression symptom severity over treatment – particularly for people with more severe depression (as indicated by a Hamilton Depression Rating Scale score ≥17). In 10 studies of antidepressants (sertraline, nefazodone, imipramine, desimparmine, & fluoxetine) vs placebo they

reported no significant benefit with significant heterogeneity in the effect on depression symptoms where the depression was judged to be substance induced or undifferentiated (standardized mean difference 0.08, 95%CI -0.31 to 0.47) but an homogeneous significant benefit in those with depression independent of substance use (SMD= 0.25, 95%CI 0.06 to 0.44).

Zhou et al (2015) conducted a systematic review and meta-analysis on the effectiveness of anti-depressants for adolescents and young adults with comorbid depression and substance use disorder (including AUD). Anti-depressants are effective in reducing depression symptoms in young people with comorbid substance use and depression. However, there is no evidence to suggest that antidepressants improve substance use outcomes.

There may be other primary sources that are relevant but were not included in this review.

McKay et al.'s (2015) expert opinion is that serotonin reuptake inhibitors (eg citalopram, sertraline) are only justified to treat late onset "alcoholics" (i.e. onset after age 25) or those with comorbid depression if combined with naltrexone (based on Pettinati et al.'s (2010) trial).

In conclusion, antidepressants should not be the first line of treatment for people with comorbid AUD, unless there is high level of suicidal ideation, severe depressive symptoms or a history of pre-existing depressive disorder.

Studies of pharmacotherapy targeting alcohol use disorder sometimes include a measure of depression as a secondary outcome or include depression among adverse effects that are monitored for. Minozzi et al's (2018) Cochrane review of the efficacy of baclofen for alcohol use disorder found no impact on symptoms of anxiety but an increase in symptoms of depression (SMD 0.27, 95% CI 0.05 to 0.48) based on 3 studies with 387 participants. As in the pharmacotherapy chapter above it is recommended to monitor mood when prescribing baclofen for alcohol use disorders.

In addition to these reviews other clinical practice guidelines have made mention of the following caveats around pharmacotherapy for comorbid depression and alcohol use disorder. Quigley et al's (2018) Western Australian guidelines recommend that if naltrexone is used in people with depression additional monitoring may be needed to identify potential worsening in mood (clinical practice guideline. McKay et al's (2015) expert opinion concluded that while increased depression and dysphoria has been observed "occasionally" in normal volunteers, people with opioid use disorder report "few symptoms". The Western Australian guidelines also mention a very rare exacerbation of mood in those taking disulfram (Quigley et al., 2018). Malhi et al's (2015) RANZCP clinical practice guidelines give a consensus based recommendation "When considering the use of tricyclic antidepressants (TCAs) in patients with major depression continuing to misuse substances, the potential benefits should be balanced against the risk of suicide."

	Recommendation	Grade of recommendation

Clarify	10.39 Antidepressants (sertraline, nefazodone, imipramine, desimparmine, & fluoxetine) are likely to reduce depression in those with comorbid depression that is independent of alcohol use with some small or inconsistent effects on alcohol use.	B
ADD	10.40 Antidepressants may provide limited benefit for symptoms of depression in those whose depression only occurs during active alcohol use disorder with no expected benefit for alcohol use.	C

Anxiety disorders

Typical pharmacological treatments for anxiety disorders also reduce anxiety when they co-occur with AUD. However, treating only a comorbid anxiety disorder usually does not lead to an improvement in alcohol outcomes.

Benzodiazepines are not recommended for treatment of comorbid anxiety in people with alcohol-use disorders due to high risk of dependence and a potential synergistic interaction with alcohol.

	Recommendation	Grade of recommendation
ADD	10.42 SSRIs may reduce the symptoms of anxiety in people with comorbid anxiety and alcohol use disorder without impacting on alcohol use	C
Clarify	10.43 Benzodiazepines are not recommended for treatment of comorbid anxiety in people with alcohol-use disorders due to high risk of dependence and a potential synergistic interaction with alcohol.	GPP

Obsessive-Compulsive and Related Disorders
We found no reviews of the pharmacological treatment of comorbid obsessive–compulsive and alcohol use disorder since Marel et al's (2016) review.

Trauma- and stressor-related disorders
Australian PTSD clinical practice guidelines recommend that pharmacotherapies be added to trauma focused CBT if there is not sufficent benefit from CBT (Australian Centre for Posttraumatic Mental Health (ACPMH), 2013).

Benzodiazepines are not recommended for treatment of comorbid PTSD in people with alcohol-use disorders due to high risk of dependence and a potential synergistic interaction with alcohol. A systematic review of 18 studies of benzodiazepines for

PTSD found worse substance use outcomes with the use of benzodiazepines (Guina et al., 2015) .

Anticonvulsants such as Gabapentin and Topiramate have limited evidence supporting their use in PTSD (Varma et al., 2018) but have and FDA approved indication for weight loss in the United States. Is it then appropriate for people with comorbid alcohol and PTSD? (Peckham et al., 2018). Note the Pani et al (2014) Cochrane review found no significant benefit over placebo for people with alcohol use disorder and "psychiatric comorbidity" for a variety of alcohol outcomes. They did not report mental health outcomes.

From Marel et al's (2016) review the antidepressants sertraline, desipramine and paroxetine as well as naltrexone and disulfiram have been successfully trialled for comorbid PTSD and substance use disorders. Naltrexone and prolonged exposure therapy have been successfully combined in one RCT (Foa et al., 2013)

	Recommendation	Grade of recommendation
Clarify	10.44 Benzodiazepines are not recommended for treatment of comorbid PTSD and alcohol-use disorders as they may lead to poorer substance use outcomes	B
ADD	10.45 The antidepressants sertraline, desipramine and paroxetine as well as naltrexone and disulfiram may be beneficial for comorbid PTSD and substance use disorders	B

Sleep-Wake disorders

Disturbed sleep is common in people with AUD and may resolve with reassurance and successful alcohol treatment if not intervention targeted at sleep may be required. We found one systematic review of interventions for insomnia in the date range for this review. Miller et al. (2017)'s systematic review found 5 studies examining pharmacotherapies (two gabapentin (Brower et al., 2008, 2008), two trazodone, and one quetiapine) for insomnia in people with alcohol use disorder. Four studies compared against a placebo control, one against trazodone. Results for sleep quality were heterogeneous with only Friedmann et al (2008) showing improvements in sleep quality for the trazadone group which returned to the same level as placebo after cessation of the medication but . worse alcohol outcomes from trazadone. An earlier small study by Le Bon et al (2003) reported benefits in one index of sleep efficiency. These small studies focused on insomnia alone with heterogeneous results provide little evidence to guide practice.

A recent review (Panin & Peana, 2019) published since the search inclusion window found no additional RCTs focused on insomnia though did synthesize reports of sleep related adverse effects in RCTS of pharmacotherapies.

The US Substance Abuse and Mental Health Services Adminstration (2014) guide to

Treating Sleep Problems of People in Recovery From Substance Use Disorders suggests that acamprosate, “may also improve sleep during withdrawal from alcohol” on the basis of two earlier trials (Perney et al., 2012; Staner et al., 2006).

Benzodiazepines are not recommended for treatment of comorbid insomnia in people with alcohol-use disorders due to high risk of dependence and a potential synergistic interaction with alcohol.

Personality Disorders

Euler et al. (2015) found one study on pharmacotherapy for comorbid personality disorders and alcohol use (Ralevski, Ball, Nich, Limoncelli, & Petrakis, 2007) and no primary studies since the last guidelines. These results and those reviewed by Gianoli et al. (2012) suggest that the presence of personality disorders does not alter the effectiveness of naltrexone nor that of disulfram.

Feeding and Eating Disorders

While anticonvulsants such as topiramate may be recommended as second line intervention for eating disorders (Hay et al., 2014) we found no studies of this group of drugs for comorbid alcohol and eating disorders .

10.2.5f Other Interventions

We found no specific reviews of other interventions such as exercise, or electroconvulsive therapy, for comorbid alcohol use and mental disorders and refer readers to recent reviews of the effectiveness of these interventions in non-comorbid populations. While some neuromodulation techniques (including transcranial magnetic stimulation or transcranial direct current stimulation or deep brain stimulation) are applied for the treatment of depressive disorders we found no additional relevant evidence to inform the treatment of people with comorbid depression and alcohol use disorder.

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CHAPTER 22

MEDICAL COMPLICATIONS OF ALCOHOL USE DISORDERS

Chapter 22. Medical complications of alcohol use disorders

This chapter provides the guidelines for assessment, treatment, and prevention of physical comorbidity in patients with alcohol use disorders.

The medical burden of alcohol

Globally, alcohol accounts for 2.2% of age-standardised female deaths and 6.8% of age-standardised deaths for men. (Griswold et al., 2018) Among young people (15-49 years old), alcohol is the leading risk factor for mortality, accounting for 3.8% and 12.2% of female and male mortality, respectively. In people 50 years or older, alcohol causes significantly more harm, contributing to 27.1% of deaths in women and 18.9% of male deaths, and no benefit or harm minimisation effect has been found. (Griswold et al., 2018)

People with alcohol use disorders (AUD) have a higher rate of mortality compared with the general population due to the multiple overlapping physical comorbidities.(Schoepf and Heun, 2015) A meta-analysis of longitudinal studies found persons with AUD have higher standardised mortality ratios predominantly from comorbidities, including 10 times higher mortality for liver cirrhosis and 7 times higher for injuries, cancers, and cardiovascular diseases compared with the general population.(Roerecke and Rehm, 2014) Global alcohol intake is forecast to continue to rise, and with it, the problems associated with AUD.(Manthey et al., 2019) Alcohol ranks third as a contributor to the global burden of disease, behind only high blood pressure and tobacco smoking, and ranks as highest in many parts of the world.(Lim et al., 2012)

Alcohol use disorder is associated with more than 60 physical comorbidities and in general the risk alcohol-related comorbidity increases in response with the dose or intake of alcohol.(Corrao et al., 2004, Schoepf and Heun, 2015) People with AUD develop both short-term and longer-term chronic physical comorbidities. The pattern and epidemiology of alcohol's health effects in people with AUD depend, among other factors, on the person's dose and frequency of alcohol use, age, gender, weight, as well as the presence of other co-morbidities that might impact mental health, cardiac, neurologic and liver function.

Accidents, intentional and unintentional injuries, and poisonings are short-term physical health effects of alcohol misuse. Chronic medical comorbidities include cardiovascular diseases (e.g. hypertension, obstructive sleep apnoea, cardiac dysrhythmias, and alcoholic cardiomyopathy), gastrointestinal disorders (e.g. alcoholic hepatitis, liver cirrhosis, pancreatitis, and gastrointestinal bleeding), musculoskeletal disorders such as osteoporosis, neurologic disorders including Wernicke-Korsakoff's Syndrome, cerebellar degeneration, myopathy, and peripheral neuropathy), infections, psychiatric diseases, nutritional disorders (e.g. thiamine deficiency), metabolic disorders (e.g. hypoglycaemia and diabetes mellitus), endocrine deficiencies (e.g. reduced fertility, hypogonadism), cutaneous problems (e.g. porphyria, psoriasis, eczema), and cancers.(Rehm et al., 2010) This section will focus on the medical complications of alcohol. Two important medical complications of alcohol are acute

alcohol withdrawal and Wernicke-Korsakoff Syndrome, and these are discussed in Chapter 9.

Do health benefits from alcohol use exist?

In the media and popular press, much has been made of purported health benefits of alcohol. Cultural bias and commercial interests implicitly and often explicitly favour the continuing myth of alcohol's health benefits. At the societal level such factors negate public health efforts to reduce the community harm from alcohol, however at an individual patient level such messages help to fortify cognitive bias that validates continued alcohol consumption, particularly for individuals with alcohol dependence at most risk of other harms evident from AUD.

The potential for a cardio-vascular protective effect from alcohol use has been a point of much debate and controversy. Initial epidemiological studies suggested some benefit from low doses of alcohol (so-called "J curve") and have fostered much interest in the popular media. These studies have been beset by methodological flaws including incomplete characterisation of pre-existing health risks and alcohol exposure and abstainer bias. (Behrens et al., 2011), (Leong et al., 2014, Smyth et al., 2015, Zhao et al., 2017) Abstainer bias requires some clarification. Abstainer bias may be present when subjects included in the abstaining group make the decision to abstain from alcohol due to medical problems which may impair survival, or include subjects who are currently abstinent but have a history of prior harmful use with or without medical complications from that use. In both of these again negatively impacting survival but incorrectly attributed to abstaining rather than their prior alcohol).

More recently, Wood and colleagues reviewed three large prospective cohorts, including 599,912 drinkers with 5.4 million person-years follow-up. (Wood et al., 2018) To address abstainer bias, the authors excluded abstainers, and adjusted for age, sex, smoking and diabetes, with adequate quality data on alcohol intake and serial alcohol exposure assessments in 71,011 of the total sample. They found an association between higher alcohol intake and a higher risk of stroke and coronary disease and heart failure, but with a log-linear inverse relationship with myocardial infarction (MI), though this relationship was complex and confounded and perhaps less evident in non-fatal MI.

Any possible putative cardiovascular benefits are relevant to only very few individuals, occur at less than 100g per week of alcohol consumption, and if present at all, are modest and complex, moderated by other risk factors such as hypertension and cholesterol. These effects are rapidly offset by amounts of alcohol greater than 100g per week. The stronger and more consistent conclusion from this data is that attenuation of any benefit and an increase in the risk of harm occurs at a consumption of alcohol approximately from 100g per week - a level significantly lower than most national recommendations currently suggest, including Australia.(Connor and Hall, 2018) A clearer conclusion for patients and as a community, is that based on available evidence, alcohol has no benefit to health and increasing intake of alcohol is associated with shorter life expectancy.(Burton and Sheron, 2018, Wood et al., 2018)

These patterns are repeated at the global level. (Griswold et al., 2018) When considering alcohol, there is a tendency to see risks in a specific sense to the individual, divorcing harms from a full appraisal of the social and health costs of alcohol, as well as

the harm an individual's alcohol consumption may have to *others* through for instance trauma or injury.(Britton and Bell, 2017, Chikritzhs et al., 2009, Murray et al., 2012, Rehm et al., 2017a, Rehm, 2011) These issues are not merely academic. In treating an individual with alcohol use disorders, it can often be therapeutic to help that individual see the social context of their use, the additional commercial and popular culture pressures (including health benefit myths), that may perpetuate their harmful alcohol use.

Recommendation	Grade of recommendation
22.1. It is recommended to advise patients that alcohol use has no beneficial health effects, and there is no clear risk-free threshold for alcohol intake. The safe dose for alcohol intake is dependent on many factors such as underlying liver disease, comorbidities, age and sex	A

The spectrum of medical complications of alcohol - who is at risk of what?

Australia's pattern of alcohol-related harms is consistent with that seen globally. According to the Australia Burden of Disease Study 2015, alcohol use was responsible for 4.5% of disease burden in Australia and contributed to the burden of 30 other diseases and injuries including 8 types of cancer and chronic liver disease. (Australia Institute of Health and Welfare) Australian Census data from 2017 demonstrated there were 4,186 deaths where alcohol was mentioned as being a contributing factor to mortality. For deaths of females, in 2017 this had increased to its highest rate in twenty years, at 7.0 deaths per 100,000 persons.

In general, younger peoples' burden of alcohol-related illness and death comes predominantly from accidents (e.g. from road traffic accidents and falls) or self-inflicted injury (e.g. suicide or attempted suicide). In older Australians, added morbidity and mortality from alcohol are attributed primarily from chronic conditions such as liver cirrhosis and increased cancer risk.(Australian Bureau of Statistics, 2017) Alcohol's contribution to the burden of disease in Australia appears to be increasing, despite relatively stable consumption patterns.(Ogeil et al., 2016)

Assessment and management of medical complications of alcohol

Patients with AUD often present due to medical complications of alcohol as the trigger for change, rather than to seek direct help for alcohol problems. Presenting conditions may include accidental injury, domestic violence, poor work performance, concerns from family or symptoms of physical illness in a range of medical conditions including neurological disorders (eg cognitive impairment, gait disturbance), gastroenterological symptoms (eg dyspepsia from alcoholic gastritis), cardiac (eg palpitations from arrhythmia) or mood problems such as anxiety or depressive symptoms. For many individuals, concerns about the medical complications may be their only motivator to

seek help for alcohol dependence. Recognising This as a “ticket of entry” for patients and ensuring it is attributed correctly to the alcohol is critical. By recognising the implications of their alcohol use patients may be more likel to be engaged and committed to abstinence-oriented alcohol dependence treatment programs.

It is important to note that some pharmacotherapies for AUD such as naltrexone and disulfiram can be hazardous in patients with advanced liver disease, and clinicians prescribing such agents should be able to assess for an underlying diagnosis of decompensated alcohol-related liver cirrhosis.

Patients with AUD mostly have multiple physical comorbidities and require assessment for physical comorbidities irrespective of the presentation.(Shivanand et al., 2015) Therefore, management of AUD should include screening for major physical health problems, particularly of liver and pancreas, cardiovascular diseases, diabetes, and cancers.(Roerecke and Rehm, 2014) Some of these medical complications have an extremely poor prognosis, leaving little time for therapeutic interventions for AUD to take effect. For examples, severe decompensated liver cirrhosis has a 50% mortality rate at two years.(D'Amico et al., 2006) The implications of ongoing alcohol use needs to be communicated to the patient rapidly to allow for appropriate decision making. Specialist care and multidisciplinary opinion may need to be sought.

Recommendation	Grade of recommendation
22.2. Comprehensive medical evaluation for physical comorbidities is recommended for patients with AUD, even when the reason for a consultation does not include a medical comorbidity	B

Alcohol in accidental and non-accidental trauma

Accidental and non-accidental injury provide a significant contribution to the burden of alcohol-related illness but pose methodological challenges to measure.(Shield et al., 2012) In 2004, global burden of disease data suggested the burden of injuries attributable to alcohol consumption corresponded to 17.3% of all injury deaths and 1.4% of all disability-adjusted years of life (DALYs) in 2004.(Shield et al., 2012) Alcohol is related to intentional interpersonal violence in a dose-dependent manner.

In a recent study from Australia and New Zealand, 8435 emergency department (ED) attendances were prospectively screened for alcohol problems using the Alcohol Use Disorder Identification Test (AUDIT) score, a well-validated test for alcohol dependence.(Egerton-Warburton et al., 2018) Nearly ten percent of all ED presentations were alcohol-related. Patients were more likely to be male, young, brought in by emergency services and requiring urgent treatment. These findings were consistent with a national trauma registry study examining ED presentation with assault between 19999-2009. The authors showed about 12% of assault presentations were associated with alcohol; that the odds of major trauma increased three-fold in

patients with intoxication versus those not intoxicated; and that alcohol intoxication was associated with more severe injury including head injury.(Dinh et al., 2014)

In a Perth-based study of one week's consecutive attendances at an ED, 15% of attendances were related to alcohol, with these more likely to be male and younger and admitted to a trauma unit.(McLay et al., 2017) Over that week the direct cost of care for alcohol-related presentations was $121,619, and estimated annually at $6.3 million.(McLay et al., 2017) In a single-centre study from Bristol in the UK, 14% of all emergency attendances were perceived by the attendee to be related to alcohol, while treating clinicians reported that 21% were related to alcohol either directly or indirectly.(Hoskins and Benger, 2013)

In another multi-national study, 63% of all violence-related injuries involved alcohol use on the part of either/or the perpetrator or victim.(Cherpitel et al., 2012b) The risk of injury – predominantly from violence-related injury- effectively doubles after the consumption of one drink, with injury risk for women increasing more rapidly than men.(Cherpitel et al., 2015) It is clear, however, that heavy and episodic or "binge drinking" has specific and important harms related to injury.(Cherpitel et al., 2012a, Cherpitel et al., 2019) In a Scandinavian case-control study, heavy episodic drinking was linearly associated with alcohol-related injury with 6.6% of high-risk drinkers accounting for 42% of all alcohol-related injuries.(Rossow et al., 2013)

Meta-analysis suggests the relationship between injury and alcohol intake is non-linear. Compared with drivers who have consumed no alcohol, the odds of a having a motor vehicle accident after 10g of alcohol consumed increased by 1.24 (95% CI 1.18-1.31) but increased to 52 times the risk of motor vehicle accident after an intake of 120g of alcohol (95% CI 34.5-78.3).(Taylor et al., 2010) Similar non-linear increasing relative risk with heavy intake was seen for non-motor vehicle accidents and intentional injury.(Taylor et al., 2010) Importantly, while high intake is associated with significant increases in risk, increased risk of harm from injury is observed even at relatively low levels of alcohol intake, with the odds of fatal injury of 1.74 (95% CI: 1.43-2.14) for every 0.02% increase in BAC.(Taylor and Rehm, 2012)

Importantly, harm from alcohol extends well beyond the alcohol drinker. In a US survey of 8750 respondents, one in five had experienced harm in the last 12 months as a result of another person's drinking.(Nayak et al., 2019) Consistent data were reported in a UK-based cross-sectional study, where 20% of patients reported alcohol-related harm from another person's drinking.(Beynon et al., 2019) In a population-based phone survey in New Zealand, 45% of all physical and sexual assault was perpetrated by a person who had consumed alcohol.(Connor et al., 2009) Approximately 40% of people injured in motor vehicle accidents were not the drinker responsible for the accident.(Connor and Casswell, 2012)

Alcohol use disorders reduce risk-aversion, increase impulsivity thus increasing the probability of high-risk sexual practice. Alcohol increases the risk of sexually transmitted infection, an effect that continues beyond the mid-'30s and seems to affect women more than men.(Connor et al., 2015) A longitudinal study following individuals for both alcohol misuse and STI, showed that alcohol misuse more often precedes STI, suggesting that it may be considered at least a risk if not causative factor for STI.(Boden et al., 2011b) In another longitudinal study, risk of unprotected sex and

emergency contraception for women and sexual dysfunction in men were both associated with alcohol misuse.(Aicken et al., 2011)

Admission of adolescents and young adults for alcohol-related harms is increasing in Australia.(Hides et al., 2015, O'Donnell et al., 2017) An estimated 5,785 Australians aged 15 years and older died of alcohol-attributable disease and injury in 2015 (NDRI, 2016)[11]. Queensland data suggest young adult (18-24 years old) drinkers are more likely to present to emergency departments due to violence or a fall while adolescents (12-17 years old) present with self-harm or intoxication.(Hides et al., 2015) Introduction or more restrictive liquor licencing laws targeting heavy episodic and binge drinking in a Sydney nightclub district saw a 25% relative reduction in alcohol-related presentations to the nearby emergency department.(Fulde et al., 2015) A multi-national study demonstrated that countries with more restrictive alcohol policies (as measured across four domains of alcohol availability, motor vehicle restrictions, advertising restrictions and drinking context) were associated with lower rates of alcohol-related injury. More restrictive policies reduced alcohol-related injury independent of individual-level drinking, demographic characteristics, country-specific detrimental drinking culture/pattern or drinking self-report.(Cherpitel et al., 2018a) Well-informed alcohol policy has a clear and critical role to reduce alcohol-related harms.(Cherpitel et al., 2018b)

In summary, alcohol accounts for a significant proportion of emergency presentations with acute injury, often in younger people and males. Injury is not limited to drinkers but often involves non-drinkers. Heavier drinking is associated with markedly increased injury risks. Screening for alcohol dependence and problems should occur at the emergency and primary care level using well-validated instruments such as the AUDIT score. Effective social policy to reduce harms can improve alcohol-related injury.

Recommendations	Grade of recommendation
22.3. Screening and assessment for alcohol use disorders is recommended in hospital emergency departments and primary care using validated tools such as AUDIT	A

Chronic medical conditions associated with alcohol use

Broadly, people with AUD are more likely to have medical problems and require medical intervention. A European study investigated physical health problems among patients with AUD at alcohol treatment agencies in six European cities.(Gossop et al., 2007) In 315 individuals with AUD, 79% had at least one medical problem, and 59% had two or more problems, including approximately a quarter of patients who had cardiovascular or neurological problems. Factors associated with increased medical comorbidity were frequency of drinking, duration of AUD, and the severity of AUD.(Gossop et al., 2007) Confounding the increased risk for medical comorbidity is

[11] NDRI; National Drug Research Institute, 2016. Estimated alcohol-attributable deaths and hospitalisations in Australia, 2004 to 2015

the strong positive correlation of alcohol and tobacco use, particularly in younger people(Anthony and Echeagaray-Wagner, 2000, Falk et al., 2006) This should provide a strong rationale for the role of specialist alcohol treatment services and primary health care agencies to routinely conduct physical health screening for patients seeking alcohol use disorder treatment or support.

A patient query about their alcohol, or presentation with a medical issue possibly related to alcohol provides an opportunity to assess for AUD using validated tests such as AUDIT.(Babor et al., 2001) Recently the AUDIT score was associated with mortality risk, based on a meta-analysis of observational studies including 309,991 participants (mostly male and a high proportion of them Veterans) and involving 18,920 deaths.(Kuitunen-Paul and Roerecke, 2018) For each increase in AUDIT score, an additional 1.04 (95% Confidence Interval (CI) 1.04 to 1.05) risk for mortality was observed.

Table 1 A systems approach to alcohol-related medical comorbidities

System and Disease	**Symptom**
Cardiovascular Disease	
Hypertension	Asymptomatic or headache, chest pain
Cardiac dysrhythmia	Palpitations, collapse/syncope, breathlessness
Alcoholic cardiomyopathy	Dyspnoea, orthopnoea, chest pain
Obstructive Sleep Apnoea	Fatigue, headache, daytime somnolence
Insomnia	Difficulty falling asleep, fatigue, sleepiness after waking
Cardiac failure	Shortness of breath, tiredness, leg swelling, abdominal swelling
Neurological Diseases	
Wernicke-Korsakoff's Syndrome	Impaired memory, confabulation, gait disturbance, falls
Cerebellar Degeneration	Gait and coordination disturbance, falls
Alcoholic myopathy	Weakness, difficulty rising from a chair
Alcoholic peripheral neuropathy	Paraesthesia, pain, stocking-glove distribution, falls
Infectious diseases	
Tuberculosis	Weight loss, chronic cough (>2 weeks)
HIV/AIDS	Weight loss, malaise

Sexually transmitted diseases	Genital discharge, ulcer
Pneumonia	Chest pain, fever, fast breathing, shortness of breathing
Gastrointestinal Diseases	
Alcoholic hepatitis	Jaundice, nausea, often recent cessation of alcohol, fevers
Alcohol-related liver cirrhosis	Asymptomatic, Abdominal swelling (ascites), ankle swelling, jaundice, bruising, confusion, variceal bleeding
Alcoholic gastritis	Nausea, dyspepsia, anorexia
Alcoholic pancreatitis	Abdominal pain, anorexia
Malnutrition	Weight loss, tingling pain in extremities
Osteoporosis	Minimal trauma bone fractures
Endocrine diseases	
Diabetes mellitus	Polyuria, polyphagia, weight change, tingling pain
Infertility	Unable to conceive
Hypogonadism	Impotence, reduced infertility, reduced facial hair growth
Cancer	Fatigue, weight changes, lump

Alcohol-attributable cardiovascular diseases

Hypertension

Hypertension is considered the leading single risk factor for morbidity and mortality-accounting for 10.7 million deaths, through coronary and cerebrovascular disease. Alcohol has a linear relationship with blood pressure, causing oxidative stress, increasing catecholamines and cortisol and the activating vasoconstrictors and damaging endothelium and impairing relaxation, as well as upregulation of the Renin-Angiotensin-Aldosterone system (RAAS).(Husain et al., 2014, Piano, 2017)

Regular alcohol consumption increases the risk of hypertension in a dose-dependent association.(Day and Rudd, 2019) Recent systematic meta-analysis showing approximately two and a half times the risk of hypertension in those drinking 100g of ethanol per week, with the risk greater in men and Asians.(Taylor et al., 2009) Alcohol reduction improves blood pressure and should be an early suggestion to manage patients with hypertension: in a meta-analysis of 36 trials on alcohol reduction involving 2865 participants, the strongest association with alcohol reduction and concomitant blood pressure reduction was seen in those who drank more than six drinks per day and were able to reduce intake by half.(Roerecke et al., 2017) This same

study estimated that if reductions in alcohol intake were translated, that up to 7000 inpatient hospitalisations could be prevented and 678 cardiovascular deaths per year could be prevented.(Roerecke et al., 2017) Alcohol reduction should be a key strategy in the management of hypertension.(Day and Rudd, 2019)

Alcohol-related cardiomyopathy

Alcohol-related cardiomyopathy accounts for about one-third of all cardiomyopathy.(Day and Rudd, 2019) Alcohol-induced oxidative stress generates direct ethanol metabolites such as acetaldehyde and ethyl esters, free radicals which may lead to apoptosis, catabolise or saturate endogenous anti-oxidant proteins and also activate native neuro-hormonal stress pathways such as RAAS.(Piano, 2017) The effects of alcohol differ between individuals, however, there is a dose and duration-dependent effect on left ventricular mass and diastolic dysfunction and for women a reduced left ventricular ejection fraction(Gonçalves et al., 2015, Lazarevic et al., 2000) At a cellular level, myocyte apoptosis and necrosis are seen, with impaired regeneration and hypertrophy occurring through the repair process, resulting in loss of heart mass, thinning of the ventricular wall and left ventricular dilation and dysfunction.(George and Figueredo, 2010)

Cardiac dysrhythmias

Harmful use of alcohol is associated with the development of cardiac arrhythmia including in persons with normal cardiac function.(Day and Rudd, 2019) Atrial fibrillation (AF) is the most common of the dysrhythmias seen in alcohol abuse and can affect drinkers with normal hearts. Dysrhythmia can also be a manifestation of alcohol cardiomyopathy. Patients with chronic high alcohol intake are most at risk, with a 10% increase in AF risk for every extra 10g ethanol after 140g. Sudden death in alcohol misuse (SUDAM) has recently been characterised in a case series, and alcohol may represent an unrecognised contributing aetiology, with QT interval prolongation suggested as a mechanism.(Templeton et al., 2009)

Recommendation	Grade of recommendation
22.4. A high index of suspicion for cardiovascular diseases such as dysrhythmia is indicated in persons with AUD, even without clinical sign and symptoms of cardiovascular diseases. An abstinence-focused treatment plan for alcohol use disorders is recommended for patients with alcohol use disorders to prevent the complication of cardiovascular diseases and improve clinical outcomes.	B

<u>Sleep Disorders: Obstructive sleep apnoea and insomnia</u>

Alcohol's sedative effect is experienced at higher levels of blood alcohol concentration (BAC), and most often after peak BAC has been reached and is declining. Alcohol's stimulatory and sedative effects are mediated predominantly through the neurotransmitters gamma-aminobutyric acid (GABA) and glutamate. The balance or

homeostasis of excitatory and inhibitory neurotransmitters moderates sleep and wake states, respectively. GABA is a neuro-inihibitory central nervous system (CNS) neurotransmitter, while glutamate is the major CNS excitatory transmitter. The effect of alcohol on GABA and glutamate may be in turn moderated by other second-messenger systems such as adenosine and acetylcholine and other mechansims not fully understood.

Alcohol is often sought for its sedative effects for sleep, but frequently creates other problems such as poor sleep lability (intermittent arousal or wakefulness with impaired return to deeper sleep states after waking), nocturia (from suppression of anti-diuretic hormone) and early morning waking. It effects hormones regulating circardian rhythm.(Van Reen et al., 2013)While it may be associated with rapid onset to sleep (reduced sleep latency), it is associated with slow-wave, non-Rapid Eye Movement (REM) sleep, which is of lower quality.(Kissin and Begleiter, 1983, Papineau et al., 1998) This early sedated but poor quality sleep creates a "rebound effect" on later sleep periods once the alcohol has been metabolised, leading to poorer sleep latency.(Van Reen et al., 2013) The confounding of impaired sleep with post-intoxication symptoms ("hangover") increases symptoms of fatigue and anxiety.(Mc KINNEY and COYLE, 2005) The net effect of alcohol is to decrease the quality of sleep, especially the later period of sleep by increasing lability and waking periods and reducing sleep latency and the quantity of more restorative REM-phase sleep.

Sleep disturbance is a DSM V diagnostic criteria for both of depression and anxiety disorders. Patients may be focusing on the treatment of their neurovegetative symptoms of a mood disorder which in facts serves as a gateway to alcohol misuse and dependence. Using alcohol as a sedative for sleep, typically leads to tolerance and dose escalation to achieve sleep, followed by rebound axiety on waking. Frequently this leads to a viscious cycle of uptitrated intake with poorer sleep quality and neglect or loss of other techniques and skills that can be used to fall and remain asleep.

Obstructive sleep apnoea (OSA) is common and an important cause of morbidity and mortality globally.(Yaggi et al., 2005) In a longitudinal study of men's health, high alcohol consumption was strongly associated with the risk of OSA.(Senaratna et al., 2016) Metanalysis has shown alcohol to be strongly associated with OSA, increase the risk by about 25% (RR 1.25, 95%CI 1.13-1.38).(Simou et al., 2018a)

In those with OSA, alcohol increases the risk of snoring, lowers the nadir oxygen saturation and increases the risk of a significant respiratory event during sleep.(Kolla et al., 2018) In individuals who used alcohol for sleep, OSA was strongly associated with an increased risk for hazardous drinking (OR = 4.58; 95% CI, 2.97-7.08, compared with moderate drinking).(Vinson et al., 2010).

Other sleep problems have been observed in alcohol-dependent individuals including restless leg syndrome and insomnia.(Chakravorty et al., 2016, Vinson et al., 2010) In younger adults, binge drinking was associated with a range of sleep disorders.(Popovici and French, 2013) Individuals with AUD will often attribute their heavy alcohol intake to "treat" poor sleep, often difficulties with getting to sleep.

Managing sleep-based problems in patients with AUD is important. Emphasising relaxation and mindfulness tehniques, removing television and electronic devices from the bedroom and good sleep hygiene are all important to ensure that an individual can reach a calm and relaxed "pre-sleep" phase and is then mentally prepared to fall asleep. Recognising and treating comorbid mood problems such as anxiety or depression and OSA broadens the discussion and management options in patients with sleep problems and AUD. Some anti-depressant medications may aid sleep (eg Mirtazipine). Baclofen, a GABA-$_B$ receptor agonist, a medication used to aid alcohol craving also can have some sedative effects that are useful adjuncts specific for people with AUD and sleep problems, but can also impair mood and lower seizure threshold.(Agabio et al., 2018)

Alcohol-related neurological disease

Cognitive deficits are common among individuals with AUD and impacts not only quality of life for affected individuals, but also their ability to engage and adhere to psychological and pharamco-therpeutic interventions to reduce the risk of relapse.(Alarcon et al., 2015, Bates et al., 2006) Alcohol stimulates a variety of excitatory and inhibitory neurotransmitters including dopamine, noradrenaline, endogenous opioids, GABA, glutamate and serotonin.(McIntosh and Chick, 2004) Other than acute intoxication, the well-known neurological sequelae of more chronic alcohol misuse are alcohol withdrawal and Wernicke's encephalopathy (due to thiamine deficiency).(Diamond and Messing, 1994)

Alcohol appears to be highly toxic to the cerebellum, thought potentially due to GABA pathway effects.(Luo, 2015) It's thought that alcohol's effect on Purkinje cells are particularly implicated in the key feature of cerebellar injury- ataxia.(Dar, 2015) Alcohol can cause memory loss and in those patients with thiamine deficiency causes diffuse cortical injury and atrophy, a diagnostic feature of Wernicke-Korsakoff Syndrome.(McIntosh and Chick, 2004) Wernicke-Korsakoff and alcohol withdrawal are important to recognise and treat are considered elsewhere in this document (Chapter 9).

Alcohol poses direct neurotoxicity to multiple cell types in the nervous system, causing inflammation, atrophy and impaired nerve conduction.(de la Monte and Kril, 2014b) There is increasing interest in the pro-inflamatory effects of alcohol and oxidative stress on the pathopsyiology of cognitive decline in alcohol.(Coppens et al., 2019)Loss of brain mass occurs predominantly from loss of frontal lobe white matter and particularly in the corpus callosum, a key interhemispheric integrative area of the brain.(Harper, 2009)

Frontal lobe injury is a major site of neurologic injury from alcohol.(Moselhy et al., 2001) The frontal lobe has a major role of moderating affective drive and impairment can result in disinhibition and impulsiveness, key targets for cognitive-focused psychological interventions to prevent relapse. Women drinkers maybe more vulnerable to the harmful neurologic effects of alcohol, though mechansims for why this si so are unclear.(Acker, 1986)Neurologic disability may affect mobility and interaction which in turn fosters social isolation that may exacerbate alcohol intake and alcohol-related harms. Even in younger people, alcohol-related neurological injury

can impact the ability for self-care and sadly necessitate prolonged nursing home placement, at significant cost to the community.

A dose-response gradient has been recognised after the threshold of "heavy drinking" is passed (defined by the investigaotrs as one episode of intoxication in the last 6 months and at least two adverse consequence to drinking (eg DUI)), with cognitive inefficiencies apparent after an intake of 72 grams of alcohol per day, mild cognitive deficits between 84-120 g/day and moderate cognitive deficit associated with >120g/day.(Parsons and Nixon, 1998)

In addition to effects of chronic alcohol use, the acute or binge pattern of alcohol use has been associated with impairments in memory attenion and planning.(Townshend and Duka, 2005) The post-alcohol state or "hangover", is also associated with reduced cognitive function and impairing intellectual task processing and psychomotor performance, and subjective evaluation of concentration and reaction time.(Prat et al., 2008) Other factors related to the presence and severity of hangover include alcohol withdrawal, sleep disturbance, use of other drugs including nicotene, hydration staus and glucose and electrolyte imbalance.(Swift and Davidson, 1998)

Alcohol-related cognitive decline may result in a dementia-like illness and occur insidiously with the injury unrecognized due to its multi-factorial nature, often contributed or confounded by head and brain trauma, frontal lobe impairment, hepatic encephalopathy, Wernicke's and other nutritional deficiencies and seizures.(Harper, 2009)

Alcohol can effect multiple regions of the brain, particularly the cerebellum and frontal lobe. Neurologic disability in these regions may affect mobility and interaction which in turn fosters social isolation that may exacerbate alcohol intake and alcohol-related harms. Even in younger people, alcohol-related neurological injury can impact the ability for self-care and sadly necessitate prolonged nursing home placement, at significant cost to the community.

Alcohol-related seizures

Seizures are over-represented in AUD, varying in incidence to 1-15% and alcohol is implicated in 9-25% of status epilepticus, the most severe form of tractable seizure.(Hillbom et al., 2003) This may occur by provoking seizures in non-epileptic individuals or reducing seizure threshold in individuals with epilepsy.(Hamerle et al., 2018) Alcohol intoxication directly increases seizure thresholds by effecting adaptive changes the glutamate NMDA and GABA receptors, however, the adaptations cease concurrently with alcohol intake, leaving vulnerable patients prone for 6-48 hours after alcohol cessation.(Hillbom et al., 2003) Other data suggest that it is alcohol intake itself, independent of alcohol withdrawal or time since last drink that is most associated with seizure risk, and this is supported by the observation of late-onset seizures (ie after the acute withdrawal period) in heavy users of alcohol.(Dam et al., 1985, Hillbom et al., 2003, Stephen et al., 1988) Importantly, confounding co-morbid issues such as brain injury may also change the seizure threshold independent of alcohol intake or timing.

Alcohol intake and risk of seizure are strongly correlated. A US-based case-control study of hospitalised patients with (n=308) and without (surgically admitted, n=294)

new-onset seizure.(Stephen et al., 1988) The risk of seizure increased according to alcohol intake starting at 3-fold increase risk for new seizure for intakes of 51 to 100 g per day (95%CI 1.3 and 6.3), 8-fold for between 101 to 200 g per day (95%CI 3.3 and 18.7), and 20-fold at 201 to 300 g per day (95%CI 6.1 and 6.2).

The frequency of occurrence of epileptiform seizures is increased by consumption of a large volume of alcohol, often precipitated by the triggers of acute heavy alcohol intake such as altered sleep architecture, impaired adherence to antiepileptic medication, and metabolic disturbances. (Hamerle et al., 2018) Other studies have also found in people with epilepsy, occasional binge drinking is associated with loss of seizure control.(Samsonsen et al., 2018) Patients with epilepsy should be counselled about the increased risk for seizures related to heavy alcohol consumption.(Hamerle et al., 2018)

Alcohol withdrawal-related seizures are most commonly generalised seizures but also vary and are diverse in their pattern and timing(Bråthen et al., 1999, Stephen et al., 1988) Risk for new-onset seizure appears to return to baseline after 12 months abstinence.(Stephen et al., 1988) For individuals withdrawing from alcohol, both primary and secondary prevention of seizures is suggested and is particularly in patients with a history of seizure or head injury. Clinical practice mostly involves the use of benzodiazepines, but there is increasing interest in Non-Benzodiazepine Anticonvulsants (NBAC, such as carbamazepine, oxcarbazepine and valproic acid, gabapentin, pregabalin, levetiracetam, topiramate and zonisamide). NBAC medications may have a role in the treatment of alcohol withdrawal and longer-term treatment of alcohol dependence.(Hammond et al., 2015) Much of their appeal comes from the pharmacological premise that NBAC medications act in a neuro-inhibitory fashion, while alcohol induces a predominantly excitatory imbalance between glutaminergic and GABAergic neurotransmitters, which can precipitate seizure. Most studies have assessed NBAC's role in alcohol withdrawal and longer-term abstinence rather than seizure prophylaxis, and many of these studies use NBACs in conjunction with symptom-triggered benzodiazepines.(Hammond et al., 2015) As a result, there is insufficient data to suggest a role for NBAC agents for seizure prevention.

Despite early interest(Sampliner and Iber, 1974), multiple studies have shown no or little benefit for seizure prevention from phenytoin administration, either in ward-based or emergency presentations.(Alldredge et al., 1989, Chance, 1991, Rathlev et al., 1994) One study assessed the use of intravenous phenytoin for secondary prophylaxis of seizures in individuals presenting with alcohol-related seizures however found no benefit from phenytoin administration. Baclofen is not indicated as prohylaxis for alcohol related seizures.(Agabio et al., 2018)

Alcohol-related peripheral neuropathy

Chronic alcohol use can cause a debilitating and painful peripheral neuropathy (PN), classically occurring in a "glove and stocking" distribution on the hands and feet with small-fibre-predominant axonal degeneration of peripheral nerve fibre, sensory nerve fibre involvement and secondary demyelination.(Ammendola et al., 2001) Peripheral neuropathy can further impair the ability of an individual with AUD to engage in the community, contributing to social isolation. In addition, the pain associated with peripheral neuropathy may lead patients with AUD to use alcohol- a poor analgesic,

thus ineffectively treating pain and contributing to further harm from alcohol. Thus, peripheral neuropathy has significant social and clinical implications.

The mechanisms behind alcoholic PN are not well understood but various mechanisms have been postulated including oxidative stress leading to free radical-induced injury, activation of microglia in the spinal cord, activation of glutamate receptors and sympathetic and hypothalamic-pituitary activation.(Chopra and Tiwari, 2012) Duration of alcohol use and total lifetime dose are associated with more severe PN as well as family history.(Ammendola et al., 2001) Thiamine deficiency commonly occurs with chronic alcohol use, and this can also cause a PN indistinguishable from alcoholic PN, so much so that there is conjecture whether they are in fact the same disease.(Koike et al., 2003) Irrespective, high dose thiamine in addition to other vitamins is a cornerstone of treatment of the nutritionally deplete individuals with a history of alcohol abuse.

Alcoholic neuropathy occurs in the background of long-term high-dose alcohol abuse and often related nutritional and vitamin deficiency. The treatment of alcohol-related neuropathy involves involves alcohol abstinence, analgesia, podiatry review, physical therapy, vitamin supplementation, and encouraging a nutritionally balanced diet.(Alekseenko, 2016, de la Monte and Kril, 2014a)

Recommendation	Grade of recommendation
22.5. Alcohol abstinence, analgesia, high dose thiamine and a balanced diet supplemented with thiamine and other B vitamins, is recommended in persons with alcoholic neuropathy who present with AUD or neurologic symptoms.	B
22.6. Persons with AUD should be screened for risk of seizures and be provided with benzodiazepines to prevent seizures in case of withdrawal symptoms	B

Infection risk and alcohol use

Biological pathways affect the innate and adaptive immune response of the human body. The presence of defective monocytes, described as defective monocyte oxidative burst and reduced expression of nicotinamide adenine dinucleotide phosphate oxidase are associated with increased risk of infection and death in persons with AUD.(Gacouin et al., 2012, Vergis et al., 2017b) Harmful use of alcohol over a longer period also impairs phagocytosis by polymorphonuclear cells (such as neutrophils and macrophages) responsible for ingestion ad processing of dead cells. Alcohol exposure suppresses the release of cytokines that modulate chemotactic signals.(Rehm et al., 2017b) Increased risk of bacterial infection is associated with liver cirrhosis-related immune dysfunction that alters both innate and adaptive immunity, due to defects in the systemic immune response as well as local immunity of the liver.(Noor and Manoria, 2017) AUD is associated with increased risk for community

acquired pneumonia (CAP), and patients with current alcohol intake have more severe CAP.(de Roux et al., 2006)

Behavioural factors associated with heavy alcohol consumption including injecting drug use, tobacco smoking, sexual decision making and condom use behaviour have a have an impact on the risk of infectious diseases and sexually transmitted infections in persons with AUD. The risk of tuberculosis, HIV/AIDS, and sexually transmitted infections is significantly impacted by behavioural factors.(Rehm et al., 2017b)

Major alcohol attributed infectious diseases include tuberculosis, human immunodeficiency virus and acquired immunodeficiency syndrome (HIV/AIDS), other sexually transmitted infections, and spontaneous bacterial peritonitis, lower respiratory infections (e.g. pneumonia). Alcohol harm reduction and abstinence programs are known to be effective in reducing the burden and improving the prognosis of infectious diseases.(Schwarzinger et al., 2017)

Tuberculosis (TB)

Globally, about 10% of the TB cases were attributed to alcohol consumption.(Rehm et al., 2009) Both biological and social causal pathways play a role between heavy alcohol consumption and the incidence of active TB. Alcohol use causes defective innate and adaptive immunity which increases the risk of TB infection in people with alcohol misuse. TB is also more prevalent in communities with poor socio-economic status and crowding, where problem drinking is often common.(PARRY et al., 2009)

People with alcohol use level of 40gm per day or more are nearly 3 times more likely to have a diagnosis of tuberculosis, thought to be multifactorial including a defective immune response caused by alcohol exposure and alcohol-related social factors such as malnutrition, overcrowding, and immunosuppressive comorbid diseases such as HIV/AIDS.(Lonnroth et al., 2008) A meta-analysis found persons with any alcohol consumption had nearly twice (pooled odds ratio=1.9, 95%CI 1.63-2.23) odds of developing active TB and every 10-20 gm daily alcohol consumed increased the risk of TB infection by 12%.(Simou et al., 2018b) This is broadly consistent with another meta-analysis which found people who consume alcohol were three times more likely to develop TB disease (odds ratio=2.94, 95% CI 1.89-4.59).(Rehm et al., 2009) In addition, adherence to TB therapy is reduced in patients with AUD, and higher rates of treatment failure have been observed with higher transmission and higher mortality for those effected.(Myers et al., 2018, Volkmann et al., 2015)

HIV/AIDS

Besides the biological role of alcohol use on immunity, alcohol use also affects HIV incidence and prevalence indirectly through high-risk sexual decision-making and condom avoidance. There is a linear relationship between heavy alcohol consumption and exposure to risky sex and hence increased incidence of HIV infection. In a systematic review, any alcohol use (odds ratio=1.63, 95% CI 1.39-1.91) or problem drinking (OR = 1.98, CI 1.63-2.39) were associated with an increased rate of unprotected sex in people living with HIV.(Shuper et al., 2009). Heavy alcohol use also impacts HIV/AIDS progression through treatment adherence and pharmacologic (alcohol- drug) interactions with antiretroviral drugs.(Rehm et al., 2017b)

Sexually transmitted infections (STI) (excluding HIV)

Studies showed a clear causal pathway in which high alcohol consumption and AUD are associated with increased STI risk.(Aicken et al., 2010, Wray et al., 2019) A New Zealand Birth Cohort study found high alcohol consumers were nearly twice as likely to be diagnosed with STIs compared with persons using a low volume of alcohol.(Boden et al., 2011a)

In summary, there is a dose-response causal relationship between alcohol use and risk of CAP, HIV, TB and STI. Clinicians treating STIs should include screening for AUD and problem drinking aiming at abstinence to reduce risk. Adherence to TB and HIV therapy is impaired in the setting of AUD. This increases transmission transmission risk and impairs both individual patient outcomes and public health measures to contain important infectious diseases. Focusing on reducing heavy alcohol use and problem drinking is an essential component of infectious disease control strategies to improve immune response to infection, reduce the incidence of alcohol-related STI and also improve treatment adherence.

Recommendation	Grade of recommendation
22.7. Delivering focused education about unprotected sex and risks for HIV/AIDS and other preventable STIs is recommended for persons with alcohol use disorders and/or high-risk alcohol use.	B

Nutritional, gut and liver disease related to alcohol

Vitamin deficiencies

Alcohol can impair gut motility and inhibit nutrient absorption through the intestinal wall.(Bode and Bode, 1997) Thiamine deficiency should alert clinicians to the possibility of other vitamin deficiencies, particularly in the setting of neuropathy: chronic alcohol abuse can alter the intake, absorption and utilization of nicotinic acid, vitamin B2, vitamin B6, vitamin B12, folate or vitamin E), leading to clinical problems including anorexia, diarrhoea, skin changes (erythematous and/or hyperkeratotic dermatitis, cheilosis, glossitis, keratoconjunctivitis and dermatitis) and mental changes in pellagra (B3, nicotinic acid deficiency), vitamin B2 (riboflavin) and B6 (Pyridoxine and related compounds) deficiency (cheilitis and stomatitis) and myelopathy, with the latter particularly notable in vitamin B12 (cobalamin) and folate deficiencies.(Koike et al., 2003)

Protein and or energy malnutrition complicating alcohol abuse

Malnutrition can complicate alcohol abuse but is commonly seen in those with more severe alcohol dependence and particularly with the sarcopenia of advanced liver disease (when malnutrition may complicate liver disease even in the absence of ongoing alcohol intake).(McClain et al., 2011, Quigley, 1996) Clinically this may be present as loss of muscle tissue, and evident symptomatically as weakness and loss of muscle bulk in the upper arm and thigh. This may a particular problem in patients with cirrhosis and liver injury who have depleted glycogen stores and existing sarcopenia. These patients may need enteral nutrition acutely and nocturnal supplementation in

the longer run.(Fialla et al., 2015, Plank et al., 2008)

Assessment and management of alcohol-related malnutrition

Persons presenting with moderate to severe AUD should undergo a complete nutritional assessment looking for symptoms of undernutrition including weight loss, fatigue, decrease in muscle strength, oedema, gastrointestinal symptoms, and dietary history; physical examination for decreased body mass index, muscle mass, and subcutaneous fat; and laboratory findings. Dynamic measures such as grip strength, short physical performance battery and six-minute walk test can be used where available to measure strength, particularly in hospital based clinics where occupational therapists and dietitians can assist in evaluation. Radiological measures using cross sectional imaging and nuclear medicine (DEXA-scan) are also validated in the assessment of muscle mass in the assessment of sarcopenia and malnutrition. (Beaudart et al., 2019)

Loss of muscle mass and strength is a key component of frailty which is associated with poorer long term mortality.(Hanlon et al., 2018)While alcohol consumption reduces over the life course, higher middle-age alcohol intake is associated with increased frailty in older age.(Strandberg et al., 2017) This suggests that most benefit may come from identifying AUD risk and where possible intervening earlier in life, to prevent worse latter outcomes.

Aggressive nutritional assessment and characterization of measures of frailty are important to recognize sarcopenia and malnutrition. Consider supplemental thiamine and/or a multi-vitamin for all individuals with alcohol misuse. In patients with liver disease, assess for sarcopenia and consider input from a dietitian. Patients with malnutrition may require supplemental feeding of both protein and calories as well as vitamin supplements with a multi-vitamin and thiamine. Patients with loss of muscle mass and frailty may benefit from allied health assessment and intervention with occupational therapy and physiotherapy. Early recognition of malnutrition, sarcopenia and frailty is important to offset its significant social and individual health impacts.

Osteoporosis

Osteoporosis is the loss of bone mass, strength and micro-architectural deterioration with subsequent bone fragility.(Abukhadir et al., 2013). Osteoporosis is associated with bone fractures (hip, forearm, spine) and hospitalizations due to osteoporosis-related conditions.(Cummings and Melton, 2002)

Alcohol increases the risk of impaired bone mineral density in a dose-dependent manner, although studies have been conflicting.(Bang et al., 2015, Cheraghi et al., 2019) The direct mechanism for this is unclear, but mechanisms have been suggested that impact osteocyte apoptosis directly through oxidative stress and indirectly through Wnt signalling pathway modulation.(Maurel et al., 2012)

In the setting of alcohol-related liver disease, fracture risk increases nearly two-fold.(Bang et al., 2015) For persons with AUD, vitamin D supplementation for prevention and bisphosphonates for osteoporosis treatment has been suggested.(Abukhadir et al., 2013) While the benefits of routine Vitamin D

supplementation in AUD is controversial, careful assessment for osteoporosis is mandated, especially in those with multiple synergistic risks including AUD, female gender and/or cirrhosis. Improving fracture risk assessment, may then allow better adherence to current osteoporosis treatment guidelines, and also provides another therpeutic support to help incentivise abstinence in individuals with AUD.

Alcohol-related cutaneous disorders

Skin diseases in people with AUD are important health issues. Common skin diseases in people with AUD include psoriasis, porphyria cutanea tarda, and pruritus. Other skin disorders in people with AUD are flushing, cutaneous stigmata of cirrhosis, seborrheic dermatitis, rosacea, and skin cancers (squamous cell carcinoma of the oral cavity and basal cell carcinoma).(Kostović and Lipozencić, 2004) The cutaneous disorders related to AUD could also include ulcerations, recurrent skin infections, and granuloma. In this population group, skin disorders can be detectable at an early and preventable stage of alcohol-related liver disease. (Kostović and Lipozencić, 2004) For example, pruritus, hyperpigmentation, and urticaria can be early clinical manifestations of AUD. (Liu et al., 2010)

Alcohol use disorders contribute to cutaneous disorders indirectly by increasing the occurrence of other diseases with cutaneous manifestation. For example, protein-energy malnutrition (dry, wrinkly, and inelastic skin related to marasmus and fissured and scaling due to kwashiorkor) and vitamin A, B and C deficiencies, and pancreatitis (subcutaneous fat necrosis) have dermatologic manifestations, often complicated by infection.(Smith and Fenske, 2000)

Dermatologists and general practioners reviewing skin disease are in a unique position to detect and treat cutaneous disorders associated with AUD, but are also in an opportunity to detect AUD and alcohol-related liver disease before the onset of liver cirrhosis and refer appropriately for support.(Smith and Fenske, 2000)

Alcohol-related liver diseases

About two-thirds of alcohol-induced deaths are secondary to advanced liver disease. Alcohol-related liver disease includes a spectrum of acute (e.g. alcoholic hepatitis), chronic (e.g. cirrhosis) or acute-on-chronic injury. Furthermore, chronic liver disease is also a spectrum from fatty infiltration and hepatomegaly (alcoholic steato-hepatitis), sometimes in the absence of major liver ezyme elevation which over time may lead to alcohol-related cirrhosis which in turn can deteriorate from compensated to decompensated, and be complicated by portal hypertension and hepatocellular carcinoma. Alcohol-related liver disease causes significant loss of life and quality of life. The median age for those dying of alcohol-related liver causes is 60 years for men and 56 years for women.(Australian Bureau of Statistics, 2017)

Alcoholic hepatitis

Patients with alcoholic hepatitis (AH) present with rapid onset of jaundice (elevated bilirubin) and acute liver injury characterised with elevated transaminases and very often including synthetic dysfunction with prolonged clotting time and low albumin.(Lucey et al., 2009) AH occurs in 10%-35% of persons with heavy alcohol use

and an estimated 50% of AH patients have established cirrhosis at the time of diagnosis.(Basra and Anand, 2011) In the setting of more advanced liver disease, elevations in liver transaminases are classically described as a ratio of 2:1 between aspartate aminotransferase (AST) to alanine aminotransferase (ALT), but may be may be quite modestly elevated and out of proportion to the degree of hyperbilirubinemia.

AH is graded on severity using validated tools such as Maddrey's discriminant function (MDF).(Maddrey et al., 1978, Lucey et al., 2009)Severe AH is defined as MDF ≥32 and is associated with an at least 17% 28-day mortality, though historically rates have been approximately 30%.(Lucey et al., 2009, Thursz et al., 2018) Diagnostically, it is important to exclude other causes of liver disease that may mimic AH suchas a acuteauto-immune hepatitis, viral hepatitis or Wilson's Disease and excluding infections that may exacerbate or precipitate AH; causes for decompensated cirrhosis; and, ensuring nutrition is restored.(Mitchell et al.) Prognosis of alcoholic hepatitis can be estimated using scoring systems such as MDF and MELD score.

Therapeutic options for AH have been disappointing. Clinical trials in AH face many challenges including heterogeneity of patient population, differing approaches to diagnosis (especially the absence of liver biopsy confirmation), infection screening practices and treatment, nutritional interventions, incomplete follow-up and the variability and documentation of abstinence rates after an intervention.

Nutritional supplementation has not shown to improve survival in randomised studies. Currently, there is no definitive evidence supporting pharmaco-therapeutic intervention with prednisone, pentoxifylline or other treatments that improve three-month or one-year mortality, beyond alcohol abstinence.(Buzzetti et al., 2017, Hosseini et al., 2019, Thursz et al., 2015b, Thursz et al., 2018)

Prednisone has been the mainstay of treatment for AH despite variable results.(Maddrey et al., 1978, Louvet et al., 2018, Mathurin et al., Mathurin et al., 2013, Thursz and Morgan, Thursz et al., 2015a, Thursz et al., 2015b) Treatment with prednisone can be guided by validated tests such as the Lille score, which predominantly focus on discontinuing prednisone to reduce treatemnet related harms for those individuals who are unlikely to gain benefit.(Louvet et al., 2007) Maddrey's seminal study published in 1978 on prednisone in AH included just 55 patients with only 32 days of follow-up.(Maddrey et al., 1978) Similarly, the Lille Score was developed in a single centre using a retrospective cohort, then validated in a another single centre retrospective cohort (cumulative cohort n= 320 patients).(Louvet et al., 2007) Over time, larger and more rigorously conducted trials of prednisone in AH have failed to show definitive longer term benefit.(Louvet et al., 2018, Thursz et al., 2015b) Ultimately, despite tools such as the MDF and Lille score, it remains difficult to identify individuals likely to benefit or conversely be harmed by steroids, which are a blunt therapeutic tool for a condition that is incompletely understood. New strategies and therapies for AH are an area of urgent clinical research need.(Mathurin and Thursz, 2019)

Recently, in a well-designed multi-centre randomised control study enrolling 1103 patients conducted in the United Kingdom (STOPAH), prednisolone and/or pentoxifylline was compared to placebo.(Thursz and Morgan) No benefit was found in survival from the intervention, although post-hoc analysis did support some benefit from prednisolone for 28-day survival but not for periods beyond this (28 days OR

0.609; p =0.015 vs 90 -days (OR 1.02) and one -year (OR 1.01)).(Louvet et al., 2018) Previous uncontrolled and retrospective studies have suggested that some patients with AH achieve a survival benefit from steroids, though identifying and excluding those whose survival is worsened remains the major clinical challenge.(Louvet et al., 2018, Louvet et al., Mathurin et al.) In the STOPAH trial, infection occurred more frequently in patients given steroids than placebo and accounted for 25% of deaths, but no difference was seen in infection-related mortality between treatment and placebo groups, infection was associated with higher mortality. Most serious infections occur after prednisone ceases, and elevated bacterial DNA predicted mortality and may offer a tool to identify those patients at greatest risk of adverse outcome.(Vergis et al., 2017a) Fungal infections, including invasive fungal infections with increased mortality have been a persisting concern in AH and particularly in steroid exposed patients with AH, and may reflect reduced fungal diversity.(Lang et al., 2020) Despite the lack of robust evidence for steroid treatment, guidelines still suggest the use of prednisione for selected patients.(Mitchell et al., 2017, European Association for the Study of the Liver. Electronic address and European Association for the Study of the, 2018, Crabb et al., 2020, Lucey et al., 2020)Corticosteroid's persisting role in the treatment of AH reflects the relative scarcity of therapeutic alternatives. Abstinence remains the key predictor of survival in alcoholic hepatitis.(Altamirano et al., 2017)

Liver failure (either from primary liver injury or secondary causes such as infection or multi-organ injury), drives short-term mortality in AH, while after six months mortality is affected predominantly by abstinence.(Louvet et al.) Of note is that only 35% of patients in the STOPAH study demonstrated complete abstinence at one year follow -up. Abstinence remains the key driver for longer-term survival.(Altamirano et al., 2017, Louvet et al., Pessione et al., 2003)

Recommendation	Grade of recommendation
22.7. There is insufficient evidence of survival benefit to recommend routine prednisone use in the treatment of alcoholic hepatitis. Alcohol abstinence is the only proven intervention that improves survival in these patients.	A

A major survival gap remains for patients at risk of early mortality from alcoholic hepatitis, with a high chance of death (+/- 30%) before six months of abstinence can be achieved. While the six-month rule is currently a preclusion to liver transplantation for severe acute hepatitis in Australia, new data has recently challenged this paradigm with reasonable short term outcomes in this group of carefully selected patients. A global shift is evident with research in process towards better identifying and characterising those patients with AH for whom liver transplantation is beneficial, safe and offers long term survival benefit.(Barosa et al., 2017, Marot et al., Marroni et al., 2018, Mathurin et al., 2011, Mathurin and Lucey, 2018)

Recognising the survival gap imposed in the six-month rule and high six-month mortality in AH, a European multi-centre tested the hypothesis that selected patients

with AH may benefit from orthotopic liver transplantation (OLT).(Mathurin et al., 2011) Patients from seven transplant centres, with most predominantly from Lille and Brussels, were compared to historical AH cohorts matched for disease severity and other characteristics. Most patients were non-responders to prednisone with only a small percentage of patients screened for transplantation underwent OLT (6.6% from the Lille cohort and 11.5% of the Brussels cohort). Most screened patients were excluded due to the presence of comorbidity, uncontrolled infection or a history of presentation with decompensated liver disease.(Mathurin et al., 2011)

In North America, a consortium of 12 liver transplantation centres (American Consortium of Early Liver Transplantation for alcoholic Hepatitis (ACCELERATE-AH) assessed outcomes retrospectively (median follow-up post-transplant 1.6 years) in 146 patients who received early liver transplantation between 2006-2017 for severe AH.(Lee et al., 2018)In contrast to the 6-month rule, the median period of abstinence was 55 days, and over half had recieved corticosteroids prior to transplant. All patients had strong social supports by family and friends, had few comorbid medical problems and had had no prior episodes of AH. The study was uncontrolled retrospective case series, and the North American transplantation practice is different to that applied in Australia.

In ACCERLERATE-AH, survival after transplant was 94% at 1-year (95%CI 89-97%) and 84% at 3 years 95% CI 75-90%).(Lee et al., 2018)Sustained alcohol use post transplant was associated with poorer mortality, and 10% percent of transplanted patients had relapsed to sustained drinking by 1-year and 17% by 3-years.(Lee et al., 2018)In post-hoc analysis, predictors of sustained relapse included : consumption of more than 10 drinks per day at initial hospitalisation, multiple prior rehabilitation attempts, prior alcohol -related forensic issues and prior illicit drug use.(Lee et al., 2019)

There is emerging evidence globally and increasing experience in liver transplantation for acute AH, however further data are required to better characterise which patients may benefit from liver transplantation.(Im, 2018, Lee et al., 2018, Mathurin and Thursz, 2019, Nahas and Im, 2018). A study by Mitchell and colleagues found liver transplantation offers short-term survival benefits to severe AH patients.(Mitchell et al., 2020)

Alcohol-related cirrhosis

Recommendation	Grade of recommendation
22.8. In patients with AUD, early recognition of the risk for liver cirrhosis is critical. Patients with cirrhosis should be abstinent from alcohol and should be offered specialist hepatology referral for liver disease management and to an addiction physician for management of AUD.	A

Cirrhosis is a pathological process of chronic injury to the liver, with healthy liver tissue injured by fatty inflammation (steatohepatitis) and the process of repair and injury eventually leading to fibrous bands of “scar” forming liver nodules. Cirrhosis, and more specifically the complications of cirrhosis, are the major cause of death for patients with alcoholic liver disease.(Addolorato et al., 2009)

The greatest gains can be made in diagnosing an individual at risk of cirrhosis prior to its development, allowing intervention to reduce the risk of progression and thus prevent cirrhosis. The risk of progressive fibrosis and cirrhosis in alcohol related liver disease is not well defined, but factors that may increase the risk of progression is the level of alcohol intake; the presence of AUD; elevated liver enzymes and fatty infiltration or hepatomegaly on ultrasound, and the presence of other risks for liver disease such as viral hepatitis, or metabolic associated fatty liver disease.

Screening for liver fibrosis and cirrhosis in persons with AUD using non-invasive methods such as imaging techniques (for example ultrasonography, computerised tomography (CT) or magnetic resonance imaging(MRI)), blood tests and serological biomarkers, and liver elastography (for example Fibroscan/transient elastography). Considering and screening for liver injury helps early-stage detection and motivation for treatment of underlying alcohol-related problems of liver fibrosis and cirrhosis. Early recognition reduces hospitalizations, number of patients requiring liver transplantation, and mortality from complications of cirrhosis. (Vonghia et al., 2014)

A diagnosis of compensated cirrhosis can be difficult to make as while the liver may be damaged (for instance liver enzymes are elevated), it continues to synthesise sufficient proteins (measured clinically as serum albumin) and vitamins (measured clinically as pro-thrombin time in Vitamin K deficiency) required to sustain bodily function without symptoms and the liver continues to produce, clear and re-cycle bilirubin. This is a time of *critical* opportunity for a patient to stop drinking to prevent progression to decompensated liver disease, where mortality diverges from . Damage is evident and risk for progressive injury and its prognosis can be made clear. Unfortunately, most patients with alcohol-related liver cirrhosis are diagnosed in the decompensated stage of cirrhosis, when symptoms become apparent, but by which point the prognosis is poor.(Alvarez et al., 2011)

Hepatic decompensation occurs when the liver is no longer able to produce and recycle the proteins for the body’s needs- when the albumin is low (which may contribute to ankle swelling or ascites), prothrombin time prolonged (easy bruising) and/or the bilirubin is elevated (jaundice). Clinical decompensation can also occur predominantly with the symptoms and signs of portal hypertension (PHT) presenting with ascites, encephalopathy or upper gastrointestinal (GI) bleeding from varices. Most medications are metabolised through the liver, and many medications can be harmful in advanced liver disease. It is important to be abware of the impact of liver disease on drug metabolism whn prescribing new medications.

All patients with liver injury should be asked about alcohol intake. This is a key opportunity to assess for alcohol dependence using validated tests such as the AUDIT.(Babor et al., 2001) Even for patients where alternative causes such as fatty liver may be thought to be the predominant driver of liver injury, alcohol should be assessed and counselling provided about the possible contribution of alcohol to liver

injury and its progression. Alcohol abstinence is the only treatment for alcohol related cirrhosis. A patient with cirrhosis of any cause should be abstinent from alcohol.

Any patient with concerns about progressive liver injury and at risk of cirrhosis should be informed of the possible contribution of risk from alcohol and be offered an alcohol abstinence program.(Askgaard et al., 2019) This is important to allow patients to make informed decisions on their risk from continued alcohol consumption. It is medico-legally prudent that discussions should be well documented to ensure any subsequent decisions to drink alcohol were made in the context of understanding its medical harms.

Recommendation	Grade of recommendation
22.10. Recognition of advanced liver disease and portal hypertension is recommended to ensure the safe use of pharmaco-therapeutics used to aid alcohol abstinence	A
22.11. Screening for alcohol-related liver cirrhosis using non-invasive methods such as ultrasonography, transient elastography and/or serological biomarkers is recommended for persons with AUD	B

Patients with liver cirrhosis require a referral to a hepatology or gastroenterology specialist service to optimise management of their liver disease, screen for complications of end stage liver disease and where appropriate, undergo assessment for liver transplantation when liver deterioration is irreversible and progressive. Patients with AUD benefit from referral to an addiction medicine physician.

Recommendation	Grade of recommendation
22.12. For patients with alcohol-related liver cirrhosis timely specialist referral for optimization of liver and portal hypertensive complications is recommended	A

Liver transplantation for decompensated alcohol-related chronic liver disease

In Australia, more than one-in-ten adult liver transplants occur for alcoholic liver disease(McCaughan and Munn, 2016) and this proportion is anticipated to increase.(Cholankeril and Ahmed, 2018, Mathurin and Lucey, 2018) Liver

transplantation is an effective treatment for end-stage liver disease from alcohol, improving 5 year survival outcomes which are equivalent to other liver transplant indications.(Vassallo et al., 2018)

A retrospective study from South Australia assessed 87 liver transplant recipients, finding 1-, 3- and 5-year survival of patients was 93.1, 87.4 and 82.0%, respectively and survival consistent with other indications.(Wigg et al., 2017) In this study, 16% of recipients were considered to have relapsed harmfully and this was associated with an increased mortality hazard ratio (HR) (3.2, 95% confidence interval (CI) 1.1-9.7, P = 0.041), although only two deaths of 87 recipients were directly attributed to recurrent alcohol use. Factors associated with harmful relapse include prior alcohol rehabilitation (HR 8.4, 95% CI 2.5-28.4, P = 0.001) and the absence of married supports (single versus married status: HR 0.09, 95% CI 0.02-1.2, P = 0.019).(Wigg et al., 2017)

Six months of alcohol abstinence is currently considered mandatory for patients where alcohol is a significant contributor to chronic liver injury or alcohol dependence is raised as a concern. Australian guidelines for liver transplantation in chronic liver disease uses this “six-month rule” to determine both transplant need and the risk for recidivism, however, guidelines extend to potentially exclude patients who are considered to have an “unfavourable” recidivism risk even with six-months abstinence.(The Transplantation Society of Australia and New Zealand, 2016)

In general, patients with chronic liver disease who have Model for End Stage Liver Disease (MELD) score of >14 may be considered for liver transplant assessment. Six months of abstinence allows time to determine a baseline of liver function in the absence of persisting alcohol injury to ensure transplantation is required.(Singal et al., 2018) Many patients with decompensation recover (“re-compensate”) with abstinence to the point where transplantation is not required or can be deferred. Some patients with AUD will not be able to maintain abstinence. Unfortunately, many patients with decompensated liver disease will continue to deteriorate despite abstinence due to progressive liver disease, portal hypertensive complications or liver cancer.(Pessione et al., 2003)

Pre-transplant abstinence also helps to determine “natural history” of dependence and the risk of relapse to drinking as well as underlying liver disease. While the “6-month rule” is the widely accepted, it has limited sensitivity as a test of recidivism risk, though reasonable positive predictive value (patients unable to maintain 6 months abstinence pre-trasnplant are at high risk of relapse). The literature is heterogenous, with differing and inconsistent defintions for lapse, sustained drinking or “problem drinking” and variable methods at assessing these (e.g. patient self-report, collateral history, blood alcohol or liver funtion testing.) Some have questioned the robustness of the six-month abstinence criteria as a predictor (and viz as a “rule”) of problematic alcohol use post OLT and the impact on graft function and patient survival.(Mackie et al., 2001, Dom et al., 2015) The opportunity to integrate addiction medicine into transplantation programs has been a major evolving emphasis. (Addolorato et al., 2013, Vassallo et al., 2018)

Generally, as one might expect, longer periods of pre-transplant abstinence are associated with lower rates of alcohol recidivism post-transplant.(Tandon et al., 2009) In one retrospective study from Canada, 171 patients were followed after

transplantation, with 24% admitting to any drinking and 13% returning to “problematic drinking”, with median post-transplant abstinence of 19 months, and duration of pre-transplant abstinence the only predictor or returning to problematic drinking.(Tandon et al., 2009)

Another retrospective study from Germany in a liver transplant population of 300 patients demonstrated a 19% returned to drinking post-transplant, with < 6 months “sobriety” an independent predictor of recurrent alcohol use, and a return to “abusive drinking” associated with poorer survival- predominantly from recurrent alcoholic liver disease.(Pfitzmann et al., 2007) Relapse post-transplant occurs sooner with shorter abstinence, but the duration of pre-transplant abstinence was not significant in a retrospective Scandinavian study. Among those with shorter pre-transplant abstinence, years of drinking, previous addiction treatments and the absence of children were associated with poorer survival.(Lindenger et al., 2018)

Recent meta-analysis aimed to determine the effect of alcohol relapse on graft histology and survival.(Kodali et al., 2018) Using data from seven studies, the annual alcohol relapse rate was 4.7% and 2.9% for heavy alcohol use. Alcohol relapse was associated with poorer graft histopathology and a three-fold risk of mortality at 10 years, but no difference at five years, with recurrent alcohol-related liver cirrhosis accounting for one-fifth of deaths.(Kodali et al., 2018) In a French retrospective study of transplanted alcoholic liver disease, recurrent alcohol relapse occurred in 128/712 (18%), with recurrent cirrhosis occurring in 41(32%) of these relapsing patients, and associated with significantly lower survival (21% vs 41% at 15 years, P<001).(Dumortier et al., 2015)

Determining relapse remains largely reliant on self-report and in terst in biomarkers for alcohol ingestion has developed. Indirect markers include liver particularly the AST and gamma glutamyl transferase (GGT), transaminases and in heavy drinking mean cell volume increases and cytopenias may present from bone marrow suppression. These indirect tests are not specific enough to identify alcohol as the cause, particularly in the setting of cirrhosis. Carbohydrate Deficient Transferrin (CDT) is used as an indicator of alcohol use, but because it requires relatively high and sustained alcohol intake (50-80g ethanol over 1-2 weeks).(Anton et al., 2002) CDT has poor sensitivity in the seting of cirrhosis, lower alcohol intake levels or binge drinking with periods of abstinence >2 weeks.(European Association for the Study of, 2012)CDT has only minor advantage over GGT, though may be of some use in combination.(Anton et al., 2002)

Direct measures of alcohol consumption include alcohol levels in taken within 4-12hours of consumption using serum or exhaled air (97% sensitivity and 93% specificity). Alcohol intake can be measured in differing substrates using metabolites such as ethyl glucuronidev(EtG, serum, whole blood, urine, hair), phosphatydilethanol (PEth, whole blood) fatty acid ethyl esters (hair)and ethyl sulfate (EtS, serum, whole blood, urine).(Wurst et al., 2015)Detaectability latency depdens on both substrate and metabolite. EtG can be captured in urine up to 80 hours post-ingestion and provides a sensitivity of 89% and sensitivity of 99%.(European Association for the Study of, 2012, Wurst et al., 2015) PEth leels are present in whole blood up to two weeks after ingestion, and hair EtG and FAEEs may be present for months.(Wurst et al., 2015)

Each substrate and metabolite has advantages and disadvatages and all can provide false positive and false negative results under different circumstances. The expansion of new direct biomarkers create new challenges. and while objective tests no doubt have some "policing" role, they are best avoided as coercive tools and instead framed as a cooperative health care opportunities to identify relapse in order to offer appropriate support to patients.(Dom et al., 2015, Wurst et al., 2015, Barrio et al., 2018)

Clearly, in determining an individual's risk of lapse, relapse and return to heavy or harmful drinking, pre-transplant abstinence is not sufficiently sensitive or specific yet remains a survival-limiting rule for many. Pre-transplant assessment for risk of recidivism involves several features, that are not always well codified or scored. In addition to the ability to maintain pre-transplant abstinence several other features may impact transplant outcomes including social isolation or integration; the candidate's acceptance of a drinking problem; any prior treatment for an AUD including inpatient rehabilitation and other comorbid psychological disorders(Beresford, 1994.)

Multiple studies assessing recidivism identify social supports as a feature of risk, though these remain difficult to score objectively. Others have suggested that recidivism risk was described in Beresford suggested four key domains to a candidate's risk profile including social isolation or integration; the candidate's acceptance of a drinking problem; any prior treatment for an AUD and other comorbid psychological disorders.(Im and Lucey, 2016)

In a recent meta-analysis, for patients undergoing transplantation for alcohol-related liver disease the mean alcohol relapse rate was 22% (95%CI: 19–25%) and for heavy alcohol relapse was 14% (95%CI: 12–16%) with a mean follow-up time of 48 months (+/- 24.7 months).(Chuncharunee et al., 2019) Relapse data were predominantly via self-report though in some included biochemical confirmation was used. "Heavy" alcohol relapse was considered alcohol consumption associated with significant medical harm. Factors associated with relapse included psychiatric comorbidities (odds ratio (OR) 3.46, 95%CI: 1.87–6.39), pre-transplant abstinence of less than 6 months (OR 2.76, 95%CI: 2.10–3.61), lack of social supports as flagged by single/unmarried status (OR 1.84, 95%CI: 1.39–2.43), and smoking (OR 1.72, 95%CI: 1.21–2.46).(Chuncharunee et al., 2019)

In summary, the pre-transplant assessment of relapse risk is challenged by multi-factorial surrogate measures that include the personal history of addiction, mental health and social supports and engagement. The six-month rule currently serves to determine both liver related outcomes and to exclude those with very high risk of relase who cannot meet this abstinence period, but serves poorly those who are unwell and may not survive beyond six months, nor is sensitive in identifying all individuals at risk of relapse. Integrating biomarkers for alcohol consumption into addiction medicine programs offers their best utility to help identify and treat individuals with AUD who relapse.

Recommendation	Grade of recommendation

22.13. For patients engaged in an alcohol abstinence goal with decompensated liver cirrhosis from alcohol, referral for assessment for orthotopic liver transplantation should be undertaken	A
22.14. It is recommended to achieve six-months of alcohol abstinence for eligibility for liver transplantation, particularly where alcohol use and/or dependence has been a major contributor to liver disease	C

Alcoholic pancreatitis

Acute pancreatitis (AP) is inflammation of the pancreas, which when severe can lead to pancreatic cell necrosis, systemic inflammatory responses, multi-organ failure and death. The absence of alcohol dehydrogenase is associated with susceptibility to pancreatitis, which is race and ethnicity dependent.(Fang et al., 2015, Zhong et al., 2015) Genetic studies also suggest a familial risk, with a large cohort study identifying that the T allele of CTRC 180C > T polymorphisms modulates the risk of alcoholic pancreatitis.(Usategui-Martín et al., 2020) There is a dose-response relationship between alcohol consumption and acute pancreatitis. Meta-analyses showed consumption of less than 40 g per day of alcohol or abstinence is associated with reduced risk of acute and chronic pancreatitis.(Irving et al., 2009, Samokhvalov et al., 2015)

The diagnosis of acute pancreatitis is made on the presence of at least two of three criteria: upper abdominal pain consistent with pancreatitis, positive laboratory markers (either serum amylase or lipase >3x upper limit of normal) and/or imaging (CT, MRI, ultrasonography) criteria.(Working Group, 2013) Alcohol is implicated in about 25% of AP, exerting a direct toxic effect and may further stimulate pancreatic enzyme secretion-induced duct-plugging causing obstruction, eventually leading to atrophy and fibrosis from chronic pancreatitis.(Johnson et al., 2014, Lankisch et al., 2015) In moderate to severe forms, alcoholic pancreatitis can become complicated by pancreatic necrosis, pseudocyst formation and severe sepsis or bleeding that requiring surgical intervention, prolonged hospitalisation and a high risk of multi-organ failure and mortality.(Lankisch et al., 2015) The use of prophylactic antibiotics in severe alcoholic pancreatitis may reduce the risk of severe infection that could lead to death, though this has not been found on meta-analysis published by the Cochrane group and Guidelines do not recommend their use empirically.(Crockett et al., 2018, Delcenserie et al., 1996, Villatoro et al., 2010) Acutely, management relies on close observation of IV fluid balance and cautious replacement and maintaining enteral nutrition while possible.(Crockett et al., 2018) Continued interventions aimed to reduce alcohol consumption significantly reduce the recurrence of alcoholic pancreatitis.(Nordback et al., 2009).

Chronic pancreatitis (CP) is a relapsing and remitting condition, which can cause significant morbidity and mortality, cause prolonged hospitalisaton and disability at

significant cost to the communnity. Most commonly it occurs in the setting of recurrent AP causing acute pain or constant upper abdominal (Braganza et al., 2011)pain. CP is diagnosed radiologically with calcification, ductal dilatation and atrophy on cross sectional imaging such as CT or MRI. Heavy drinkers are three times more likely to get chronic pancreatitis compared to light drinkers or abstainers (OR 3.1 95%CI 1.87-5.14, where heavy drinking is >5 drinks per day).(Singh et al., 2019)

Recommendation	Grade of recommendation
22.15. Alcohol abstinence is indicated to prevent recurrence of acute alcoholic pancreatitis	A
22.16. In acute alcoholic pancreatitis, the use of prophylactic antibiotics is not recommended, with management focused on observing for complications such as pancreatic necrosis and on managing fluid balance and maintaining enteral nutrition when possible.	B

Alcohol consumption and cancer risk

Alcohol is considered by the International Agency for Cancer Research (IARC) as a Group 1 carcinogen, suggesting the strongest level of evidence of linkage as a cause of cancer.(Bagnardi et al., 2013, Rehm et al., 2019) Good evidence exists for its contribution to multiple cancers, including aero-digestive (oropharynx, larynx, oesophagus), liver, colon, rectum and breast, and is attributed as a cause in 5.8% of all cancer.(Connor, 2017) Using data from IARC, Rehm and colleagues describe the 2016 alcohol-related cancer burden: an estimated 376,200 cancer deaths and 10.3 million cancer DALYs.(Rehm et al., 2019)

Though the exact nature and distribution of cancer risk across alcohol intake patterns remain to be further defined for respective cancers. For some cancer types, there appears an increased risk even with light alcohol intake, perhaps most evident in the risk of breast cancer in women and colorectal cancer.(Allen et al., 2009, Bagnardi et al., 2013, Chen et al., 2011, Choi et al., 2018) There is a clear dose-dependent risk that is most apparent at with higher risk at higher levels of alcohol intake.(Bagnardi et al., 2015; L. Chen et al., 2009; Fedirko et al., 2011; Islami et al., 2010; Jayasekara et al., 2015; Jayasekara, MacInnis, Room, & English, 2016; Kunzmann, Coleman, Huang, & Berndt, 2018; Li et al., 2014; McNabb et al., 2019; Rota et al., 2017; Turati et al., 2014; Vartolomei et al., 2019; Vartolomei et al., 2018) Alcohol intake also appears related to colonic adenomatous and serrated polyps- risk factors for colorectal malignancy(Jayasekara et al., 2017, Pelucchi et al., 2011, Wang et al., 2015, White et al., 2017, Zhu et al., 2014) There does not appear to be an association of alcohol intake with epithelial ovarian cancer and there may be an association with melanotic and non-melanotic skin cancers.(Kubo et al., 2014, Rota et al., 2012, Shield et al., 2016, Yen et

al., 2017) Cessation of drinking should be encouraged in patients with cancers known to have an association, with risk reduction associated with cessation(Ahmad Kiadaliri et al., 2013, Jarl and Gerdtham, 2012)

Recommendation	Grade of recommendation
22.17. Alcohol abstinence reduces the risk of cancer and improves outcomes after a diagnosis of cancer	**A**

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CHAPTER 23

AFTERCARE AND LONG-TERM FOLLOW-UP

Chapter 23. Aftercare and long-term follow-up

Recommendation	Grade of recommendation
23.1 Long-term follow-up of patients following an intensive treatment program is recommended as part of a comprehensive treatment plan, reflecting the chronic relapse possibility of alcohol dependence.	D

A number of studies have examined various methods of continuing care for patients with alcohol use disorders. For example, a telephone intervention was tested for acceptability and feasibility by Burleson and Kaminer for short-term follow-up of adolescents (Burleson and Kaminer 2007). Four therapists and 43 adolescents who completed a series of manualised guided follow-up telephone interventions responded favourably and consistently to a questionnaire concerning its acceptability, feasibility, and confidentiality.

Three other studies tested the effect of continuing care by telephone on abstinence rates (Rus-Makovec and Cebasek-Travnik 2008; McKay et al. 2004; McKay et al. 2005; Horng and Chueh 2004). The first study showed a positive influence on quality of life in the telephone follow-up group but had no effect on abstinence rates at the long term (Rus-Makovec and Cebasek-Travnik 2008). Positive indicators of therapy success (abstinence or decrease in drinking, stable social relations, and more positive self-evaluation of well-being) were found in 53% of patients at 3 months, 44% at 6 months, and 31% at 12 months in the telephone group. However, groups did not significantly differ in abstinence level (telephone group=28%, control group=24%) at the 24-month mark. There were significant differences in measure of well-being, with the telephone group scoring higher on self-assessment of psychological health, self-evaluation of financial status, and general quality of life.

The McKay studies showed more positive effects. The 2004 publication (McKay et al. 2004) looked at continuing care for 359 substance dependent (alcohol and/or cocaine) patients, using a randomised procedure, comparing a telephone-based monitoring and brief counselling intervention (TEL) with 2 face-to-face interventions, relapse prevention (RP) and standard 12-step group counselling. Self-report, collateral, and biological measures of alcohol and cocaine use were obtained over a 12-month follow-up. The treatment groups did not differ on abstinence-related outcomes; however, in participants solely with alcohol dependence (n = 91), the telephone group (TEL) improved more than did the 12-step group; heavy drinking days decreased from 40-50% prior to follow-up care, to 5% of days at 3 months and 8-18% at 12 months.

At 24-month follow-up the results were similar but were no longer significant between the groups (McKay et al. 2005). However the TEL group did not deteriorate faster, as might have been expected, over time; they still had higher rates of abstinence than the 12-step group, and had lower GGT levels than the RP group, at the 24- month mark. It

seems apparent from this study that telephone-based counselling following an intensive stabilisation period can be as effective as more intensive face-to-face treatments and is more cost-effective.

A smaller study of patients (34 in each group) recruited from a psychiatric centre (Horng et al. 2004) used a quasi-experimental pre-post control group design to compare abstinence rates, re-admission rates, alcohol consumption, addiction severity and social adjustment between the two groups. The experimental group received regular telephone counselling at 1, 3, 5, 9, and 13 weeks after discharge. These sessions were 30 minutes to one hour in length. All outcome measures showed significant differences between the groups at 3 month follow-up.
Readmissions in the control group were 38% while in the experimental group was 9%; both groups decreased alcohol consumption; the experimental group's average alcohol consumption was 28g compared to the control group's average 119g; however the control group had a higher level of consumption at baseline. The authors conclude that telephone counselling is highly recommended to help reduce readmission, to improve social functioning, and to reduce alcohol consumption post- discharge for alcoholism. They do recognise that the experimental group was more highly motivated to change, as participants were not randomly selected, and that it may have been difficult to continue beyond 3 months due to mobility of their patients. This limits the generaliseability of their results.

Another study of follow-up focussed on improving compliance with aftercare treatment by 74 patients on disulfiram, following their admission to an inpatient program (Neto et al. 2007). This study focussed on attendance at aftercare groups, psychiatric appointments, and attendance at AA. The results, using intention-to-treat analysis, show that 39% of patients were abstinent at 6 months; the largest percentage of relapses occurred at 3 months. However, 80% were abstinent at 30 days and the relapse rate slowed, with the median time to first relapse at 120 days. A closer inspection showed that 47% of patients had not attended their monthly outpatient psychiatric appointment, 20% had not attended the fortnightly aftercare groups, and 34% had not attended the AA sessions. This matter of compliance would seem to be major factor in the success (or failure) of such a program.

A randomised controlled trial of adolescents with alcohol use disorders (Kaminer et al. 2008) also looked at the effect of outpatient aftercare on abstinence rates, frequency of drinking, and cannabis use (n = 177). Participants were assigned to 5 face-to-face sessions (active aftercare), brief telephone follow-up, or no contact. All had completed 9 weekly cognitive behavioural therapy group sessions to address their alcohol problems. Results at three months showed the likelihood of relapse increased significantly in the no contact condition, although all groups relapsed to a degree. The differential treatments were more effective for females; there was a significant change in abstinence rate for girls from baseline to follow-up in the active aftercare 5-session group. The results are not clearly presented in the paper; however the active aftercare produced better outcomes than did the control condition. Youths enrolled in active aftercare showed significantly fewer drinking days ($p = .044$) and fewer heavy drinking days ($p = .035$) per month relative to controls. The authors conclude that, in general, active aftercare was effective in slowing the expected relapse to higher frequency and amount of alcohol use; however, maintenance of treatment gains was only achieved for

females.

Other studies reinforce the evidence for longer treatment and longer follow-up having more beneficial results for patients. Moos and Moos looked at the influence of duration and intensity of treatment on 473 previously untreated patients with alcohol use disorders (Moos and Moos 2003). They found that, compared with patients who did not enter treatment immediately, individuals who started treatment relatively quickly and who obtained a longer duration of treatment had better short- and long-term alcohol-related outcomes and better short-term social functioning. Patients were followed up at 1-year, 3-year and 8-year intervals. It was found that patients who underwent a longer duration of additional treatment had better alcohol-related outcomes than others who had no additional treatment but, in those who delayed treatment entry, the duration of treatment was not associated with improved outcomes. In general, the intensity of treatment was not related to better outcomes; rather the length of treatment was the deciding factor, with 68% being abstinent at an 8-year interval after 53 or more weeks of continuing additional treatment. The message from this particular study seems to be – start treatment immediately and keep in continued contact (at least once weekly) for at least one year.

Two other longitudinal studies followed patients over 16 and 20 years. The first one (Ilgen et al. 2008) surveyed 420 US patients who had not received treatment for alcohol use disorders at baseline and 1 year and reassessed them at 8 and 16 years. It is not stated whether any treatment was delivered to these people; it appears to be a naturalistic study. In the 6 months prior to the 1-year assessment, 36% reported abstinence from alcohol, 48% reported drinking problems, and 16% reported non-problem drinking. At each follow up, between 16% and 21% of the entire sample were problem-free. Those who were problem-free at 1 year had reported, at baseline, fewer days of intoxication, fewer drinks per drinking day, fewer alcohol dependence symptoms and alcohol-related problems, less depression, and more adaptive coping mechanisms than did the abstinent and problem-drinking participants. In addition, 48% of participants who were problem-free at 1 year continued to report positive outcomes (either no problem drinking or abstinence) throughout the long-term follow-up, whereas 77% of those who were abstinent at 1 year reported the same positive outcomes throughout the same period.

Gual et al's 20-year follow-up (Gual et al. 2009) covered 850 patients in 8 "addiction centres" in Catalonia, evaluating long-term outcomes after outpatient treatment. This treatment focussed on abstinence, building on awareness of alcohol dependence as an illness, the acquisition of new lifestyle habits, and improvement of quality of life, delivered over a 2-year period. Participants were followed up at 1, 5 and 10 years, and then 20 years, using quantity-frequency measures of alcohol consumption over the previous 12 months. All information was collected at interview with either a psychiatrist or clinical psychologist from the initial study centres. Data were also collected about chronic illnesses, medications, hospital visits, alcohol-related accidents, employment, financial or legal problems, or disability; psychosocial stress was assessed using DSM-III-R Axis IV. Results show that 50% were abstinent at year 5, 42% at year 10 and 33% of the original sample at year 20 (32% were deceased by that time, and 10% lost to followup). Women had better outcomes, with 84% abstinent at

20 years, compared to 66% of men; mortality rates were significantly different (22% of women compared to 34.5% men; p = 0.03). A factor that is recognised by the authors is that heavy drinkers had double the mortality rates than controlled drinkers or abstainers, with 5-year drinking status predicting mortality rates at 10 and 20 years, thus abstinence rates remain high in the surviving cohort (70% of those who answered questions at 20 years).

Recommendation	**Grade of recommendation**
11.2 A range of clinical strategies should be used to reduce alcohol-related harm in people who continue to drink heavily and resist treatment. These include attending to medical, psychiatric, social and medico-legal issues, maintaining social supports, and facilitating reduction in alcohol intake.	D

The authors of one of the studies above also examined the personal and social resources that predicted positive alcohol-related outcomes in that particular study, following up 461 patients (Moos and Moos 2007). They found that in general, social learning (self-efficacy and approach coping), health and financial resources, association with Alcoholics Anonymous, and bonding with family members, friends, and co-workers predicted better alcohol-related and psychosocial outcomes. In particular, more self-confidence and financial resources at one year independently predicted less 3-year alcohol consumption and fewer drinking problems. Better health and participation in AA also predicted fewer drinking problems, while more self-confidence and more health and financial resources predicted less depression. The social learning and health and financial resources also tended to predict better 8-year outcomes. The authors concluded that the application of social learning theory, economic behaviour, and social control theories may help to identify predictors of remission. If these are tackled at the same time as treatment for alcohol problems in isolation, better results may be achieved.

Other factors affecting positive outcomes include the length of initial stay in treatment and attendance at 12-step programs. One such study looked at gender differences in seven year outcomes among older adults (Satre et al. 2007). The sample was 25 women and 59 men aged 55 and over who took part in one of two treatment options in the same abstinence-based program. Average length of stay in treatment, including after care of up to one year, was 142.6 days among women and 80.1 days among men. At seven years, 76% of women reported abstinence in the prior 30 days while 56% of men did so. Also at 7 years, more frequent attendance at 12-step programs (mean 3.9 meetings in previous 30 days) was significantly associated with abstinence in the same period. Abstinent people also reported attending significantly more meetings in the prior 12 months (mean 42.8) vs a mean of 2.3 meetings for non-abstinent participants (p = 0.005). The authors consider that, given the projected rate of growth in the older population, the influential factors for successful treatment of older people for alcohol problems need to be carefully assessed and implemented.

There are several other studies that report on various dimensions that influence continuity of care. One article (Schaefer et al. 2008) looked at staff practices and engagement in care, and whether they mediated or moderated the interaction between the patient and treatment factors. They compared the 18 different intensive outpatient substance use disorder programs that varied in their continuity of care practices, in which 429 patients were enrolled. Methadone maintenance programs were excluded; however most patients (82%) had an alcohol and drug problem. They found that abstinence was more likely to occur when the patient's discharge plan specified at least one follow-up care appointment per week, appointments were arranged before discharge, drug-free or sober living arrangements were available, and when patients were engaged for a longer time (up to 6 months, in this case) in continuing care. They also state that psychiatric or clinic use in the year prior to entry for treatment, completion of treatment, access to transport for appointments, and more patient motivation for continuing care also predicted abstinence. The follow-up rate was 78% and almost all patients were male (98%); therefore this study may not be generalisable to females. Average age was 47 (standard deviation, SD = 7.9) years; 58% were divorced or separated, and at discharge 25% were employed.

A pilot study by Passetti et al (Passetti et al. 2008) examined community treatment methods to engage alcohol-dependent patients in treatment. They compared two clinics which differed in the degree of assertiveness with which they tried to engage people with a history of repeat presentation for alcohol problems. The usual care clinic sent patients an opt-in letter and they had to telephone for an appointment. The flexible access clinic operated a walk-in service; caseloads were smaller, and the staff telephoned patients reminding them to attend a session. Failure to attend was followed up. Staff role composition was similar at each clinic. Results of this study show that retention in treatment of recidivist patients was more likely in the flexible care clinic, with 35% completing withdrawal compared to 26% of usual care patients ($p<0.05$), and 23% entering aftercare compared to 14% ($p<0.02$). However, as patients were not randomly assigned, selection bias may have occurred.

A small quasi-experimental study (n = 40) evaluated whether social reinforcement would further improve aftercare attendance and treatment outcome (Lash et al. 2004). Social reinforcement in this case was personal verbal recognition by the therapist, a certificate of attendance at the 6th visit, their name on an honour roll and a medallion on completion of 8 sessions. At 6-month follow-up, patients who received social reinforcement had less alcohol use, and were also more likely to be abstinent form alcohol than the standard care patients (76% versus 40%; $p = 0.036$). They were also more likely to attend aftercare for a longer time (up to 12 months). This seems a very simple strategy, but it was effective in encouraging attendance and reduction in alcohol use. Randomisation was not possible due to patients' personal schedules but the two groups were very similar on demographic variables, diagnostic criteria or Addiction Severity Index scores at baseline. However it must be noted that drug use was not affected by the social reinforcement technique; it was only effective for alcohol.

Another method of keeping patients engaged in treatment is presented in a paper by

Collins et al. (2007). These authors describe three case studies of patients for whom email was utilised between patient and physician as an adjunct to the ongoing treatment for alcohol or substance dependence. They applied this method to selected patients who were at higher risk due to previous relapse or to complacency, and they were invited to communicate with their addiction specialists. They have continued for between 6 months and 5 years. It comes through from these selected studies that the support gained by patients was highly effective in aiding their continuance and perseverance in recovery programs. Patients using this method (or selected to use this method) are commonly high-functioning professionals who might otherwise feel isolated and who benefit from the constant responses of their provider. They are accustomed to self-analysis, able to express themselves clearly and are willing to email daily. For one patient it also served as a map of progress.

It is important therefore to utilise methods of retaining patients in after care using whatever method is available, cost-effective, and feasible to both the patient and the provider of care.

Retraining cognitive biases to prevent relapse?

Due to associative learning experiences whereby the rewarding effects of alcohol are repeatedly paired with stimuli, such as tastes, smells, visual cues, and physical and social contexts, the brain's reward system becomes sensitised to alcohol and alcohol-related stimuli. This may result in alcohol-related cues triggering automatic tendencies to attend to and approach alcohol to consume it. This process occurs, in part, outside of conscious awareness, which could make it difficult to address. However, research has shown that these cognitive biases could possibly be dampened through a computerised cognitive training intervention known as cognitive bias modification (CBM). Over a few sessions (typically 4-6), individuals with alcohol dependence practise repeatedly "avoiding" alcohol cues (e.g., pictures of alcoholic beverages) and "approaching" neutral cues (i.e., non-alcohol-related images). There is some evidence that CBM delivered as part of inpatient alcohol withdrawal treatment may reduce relapse risk (Rinck et al., 2018; Manning et al., 2020). While promising, these effects should be interpreted within the context of two recent meta-analyses of all studies on CBM, which both concluded that there was insufficient evidence to support its clinical utility in the treatment of alcohol dependence (Boffo et al., 2019; Cristea et al., 2016). More research in a variety of clinical contexts with stronger methodology and longer-term follow-up is required.

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