One person, diverse needs: living with mental health and alcohol and drug difficulties.

National Mental Health Commission's report card on mental health and suicide prevention

A review of best practice produced by the NHMRC Centre of Research Excellence in Mental Health and Substance Use

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EXECUTIVE SUMMARY

What we know

- In the general population approximately 25% of people with a mental disorder have two or more mental disorders.
- Comorbid mental health and substance use problems (MHSUP) occur in up to 71% of people in mental health services, and 90% of people in substance use treatment settings.
- Individuals with comorbid MHSUP experience a more complex and severe clinical profile than those without, and are at greater risk for a range of harms, including suicide, and 20-30 years reduced life expectancy.
- Once both mental and substance use problems have been established the relationship between them is one of mutual influence with conditions maintaining/exacerbating one another.
- Despite evidence that any treatment is at least partly effective for comorbid MHSUP, relapse rates are unacceptably high, and the majority will never receive face-to-face intervention.
- Despite efforts and a rapidly growing evidence base, access to evidence-based interventions and treatment models remain the exception rather than the rule in Australia.

What the evidence shows is good practice

- Access to evidence-based comorbidity treatments is crucial in overcoming the problem of comorbid MHSUP and its associated harms
- There is increasing evidence that addressing both the mental health and substance use problem in an integrated way is intuitively appealing, feasible and generally effective. However, greater evaluation is still required, as rigorous comparisons to other models of care are lacking.
- A one size fits all approach to comorbidity is likely to be unsuitable.
- Services that integrate comorbidity guidelines into routine practice and have clear policies and procedures regarding such conditions are most likely to represent best practice.
- Establishment of a working translation model which connects the disparate streams of research and clinical practice, is fundamental to establishing best practice services in Australia.

Areas for Improvement

- Government initiatives, policy documents, and clinical practice guidelines have been essential, however, system fragmentation and funding remain a problem.
- Access to timely and quality interventions for comorbid MHSUP is difficult and thus inadequate under the current silo-style organisation of the health system. We require systems which support the integration and delivery of evidence-based care to address the significant unmet need.
- At-risk populations including young people, Indigenous peoples, and the homeless require special attention and tailored interventions.
- The current challenges faced in this area are unlikely to be solved by doing more of the same.
- A new national initiative around comorbidity is necessary to addressing this issue at a strategic level.

Promising Future Directions

- MHSUP typically have their onset in late adolescence and early adulthood presenting unique opportunities for *prevention*.
- Brief interventions in primary care settings show promise for comorbid MHSUP.
- eHealth initiatives are emerging as a key force in addressing current structural and attitudinal barriers to accessing integrated treatment for comorbid MHSUP, and have demonstrated efficacy in managing comorbidity.
- There is an imperative to move away from a focus on individual disorders towards multifaceted health behaviour change.

PART I:
Comorbidity

"Comorbidity" in this chapter refers to the co-occurrence of a substance use disorder (SUD) with one or more other mental disorders. "Substance use" encompasses licit (e.g., alcohol, tobacco) and illicit drugs (or extra-medicinal use of pharmaceuticals).

How common is comorbidity?

The 2007 Australian National Survey of Mental Health and Wellbeing (NSMHWB) found that one in five Australian adults (17.6% of men and 22.3% of women) met criteria for an anxiety, mood, or substance use disorder in the past year, representing approximately 3,197,800 Australian adults [1]. Approximately 25% of people with mental disorders were found to have two or more classes of mental disorder [2]. Table 1 shows the proportion of the population with one disorder class (14.9%), two disorder classes (4.4%) and three disorder classes (0.7%). Although anxiety disorders and affective disorders were both highly comorbid in men and women, substance use comorbidity showed more pronounced rates in men as depicted in Figure 1.

Table 1: 12-month mental disorder comorbidity prevalence in the total population and in those with a 12-month mental disorder [2]

	Total population (%)	12-month disorder[#] (%)
No disorder	80.0	-
One disorder class	14.9	74.6
Two disorder classes	4.4	21.9
Three disorder classes	0.7	3.5

[#]Individuals with one or more 12-month disorders

Although the NSMHWB focussed on SUDs, anxiety, and affective disorders, rates of SUDs are also particularly high among individuals with psychotic disorders (e.g., bipolar, schizophrenia). The estimated treated prevalence of 1-month psychotic disorders in Australian adults was 3.5 people per 1,000 [3]. However, this is likely to be an underestimate as this survey excluded those treated in the private sector and those not treated at all. Nevertheless half (50.5%) of the 1,825 individuals interviewed had a lifetime history of alcohol abuse or dependence (58.3% for males and 38.9% for females), approximately twice that of the general population [4]. Similarly, 54.5% had a lifetime history of illicit drug abuse or dependence (63.2% for males and 41.7% for females); more than five times that of the general population.

The presence of co-occurring conditions increases the likelihood of treatment-seeking, as the risks of hospitalisation combine in those with more than one condition [5]. Prevalence rates for comorbidity in clinical samples tend to be even higher than those in population-based studies, ranging from 70 to 90% in substance use treatment services [6-9]. In mental health settings, rates of problematic

substance use range from 11 to 71% [10-12]. These rates vary depending on the treatment setting, disorder, demographics, and method of assessment.

Figure 1: Prevalence (%) of single and comorbid affective, anxiety, and substance use disorders amongst Australian males and females in the previous 12 months [2]

Males Females

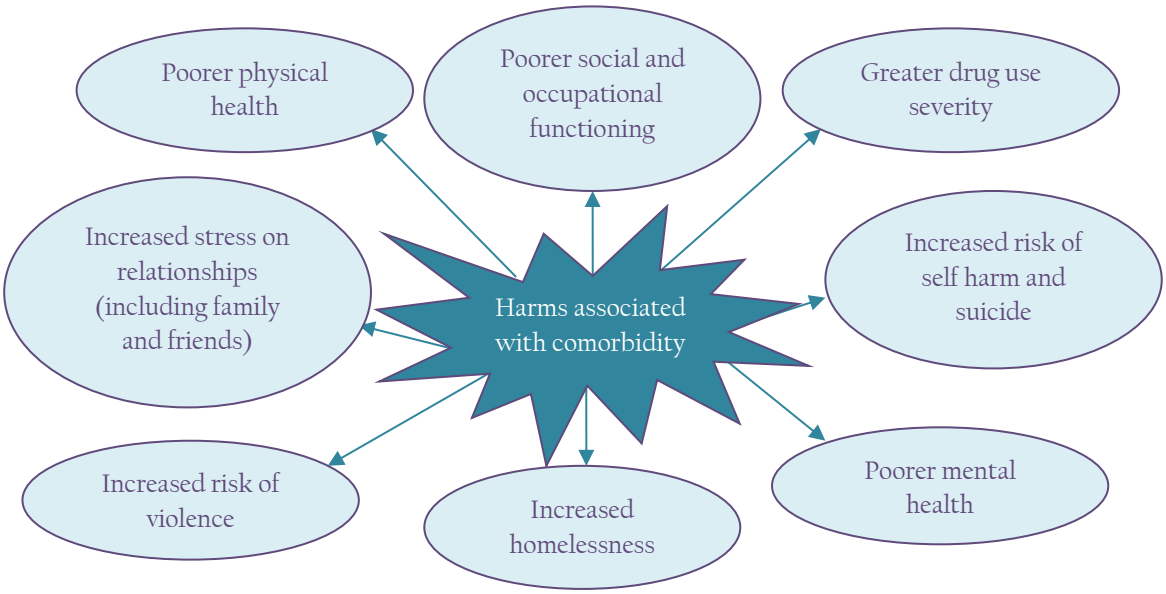
Little research has been conducted comparing the rates of mental health disorders across different types of SUDs; however, there is some evidence to suggest that co-occurring disorders are higher among those who use stimulants and opioids [13, 14], whilst the types of substances used most commonly by those with mental health disorders (alcohol, cannabis) generally mirror trends of the general population [15, 16].

Nicotine addiction is frequently overlooked when comorbidity is discussed, however, tobacco use among individuals with mental health conditions is disproportionately high. Australian data indicate that 32% of current smokers have a mental disorder in the prior 12-month period, which is twice the prevalence of 12-month mental disorders of those who have never smoked (16%) [1]. Compared to individuals who have never smoked, current smokers experience four times the prevalence of 12-month SUDs (12% vs. 3%), almost three times the prevalence of 12-month affective disorders (12% vs. 5%) and twice the prevalence of past-year anxiety disorders (22% vs. 11%) [17]. Rates of smoking among individuals with psychotic disorders are extremely high ranging from 58% to 90%, with most studies suggesting it is almost universal [18]. In addition, a recent review of 42 studies from 20 countries found that heavy smoking and high nicotine dependence were more frequent in smokers with schizophrenia than in smokers among the general population [19]. In people with comorbid mental health and substance use problems (MHSUP), tobacco use contributes disproportionately to premature mortality and morbidity, and is often not considered in comorbidity treatment planning.

Risks, harms, and the burden associated with comorbidity

Comorbidity magnifies the already heavy burden experienced by people with either a mental health or substance use problem on its own. The burden of these conditions in the population is immense, especially among vulnerable groups, such as young people, where mental disorders represent 45% of the disease burden [20]. Individuals with comorbid MHSUP experience a more complex and severe clinical profile than those without, placing enormous strain of individuals and families (see Figure 2).

Figure 2: Harms associated with comorbidity [21]



Individuals with comorbid MHSUP present with greater symptom severity, higher rates of other concurrent mental disorders, and poly-drug use, along with poorer social, interpersonal, and general functioning than those with a single disorder [22-24]. Comorbid MHSUP are associated with increased suicidal ideation, ideation intensity, behaviours, and more lethal means of suicide compared to those with any disorder in isolation [25-32]. This group is also likely to report poorer quality of life [33] and increased treatment reliance [34-39]. Issues surrounding stability of accommodation and homelessness are more pronounced in this comorbid group [40]. As Table 2 indicates, rates of comorbid MHSUP amongst the homeless are nearly universal [41, 42].

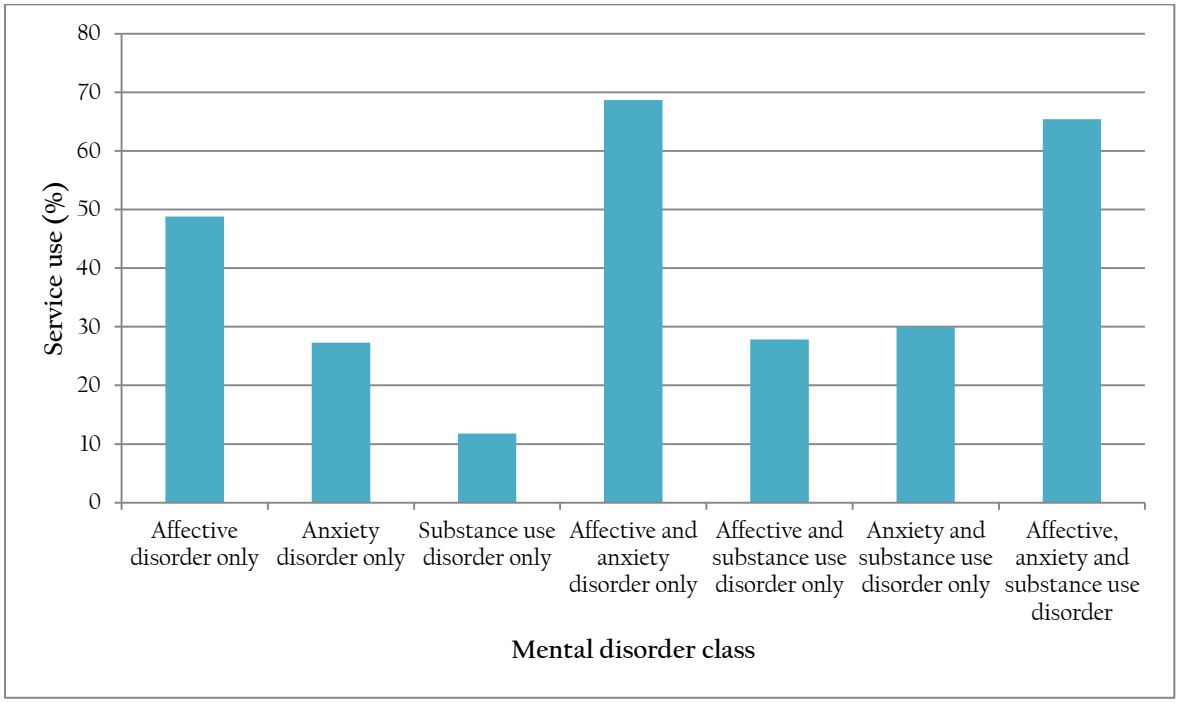
Table 2. Prevalence of mental disorders among homeless people in inner Sydney and the Australian general population [42]

	Homeless in inner Sydney		Australian population
	Men %	Women %	All people %
Psychotic disorders			
Schizophrenia	23	46	0.5
Substance use disorders			
Alcohol dependence-abuse	49	15	6
Other drug dependence-abuse	34	44	3
Opiate dependence-abuse	19	23	0.3
Cannabis dependence-abuse	22	18	2
Sedative dependence-abuse	10	13	0.5
Stimulant dependence-abuse	8	10	0.3
Other substance dependence-abuse	9	13	-
Affective disorders			
Any affective disorder	28	48	7
Any major depression	22	38	6
Dysthymic disorder	4	8	1
Anxiety disorders			
Any anxiety disorder	22	36	6
Any panic disorder	7	19	1
Social phobia	8	10	3
Generalized anxiety disorder	8	10	3
Any mental disorder	**73**	**81**	**18**

Treatment seeking for comorbidity

As Figure 3 demonstrates, comorbidity increases treatment seeking efforts, but there is considerable unmet need in this population [2], and difficulties with treatment access. It is of concern that less than 30% of individuals with comorbid depression and substance use report service use, this is considerably less than those with affective disorders only (49%). Due to the complexities inherent in comorbidity presentations, together with the organisation of current treatment provision into segregated mental health and substance use services, ineligibility and difficulty of access to treatments for people with comorbid MHSUP are a significant problem and treatment deterrent. People with comorbid MHSUP frequently experience a challenging 'navigation' through, what has been appropriately termed, the 'comorbidity roundabout'—a health care system with many points of entry, many wrong exits, and many options regarding the direction to be taken [43]. It is a concern that, for many with comorbid MHSUP, this journey is taken in isolation, or with family/friends sharing the responsibility for plotting the course through treatment services.

Figure 3: Service utilisation by single and comorbid 12-month disorder classes [2]



Once accepted into treatment, people with comorbid MHSUP who engage with mental health services report poorer treatment outcomes [10, 44], most likely accounted for by a more complex clinical profile at presentation that mediates treatment engagement and response [45]. In substance use treatment services, the degree of improvement in substance use, general physical and mental health, and functioning, among individuals with comorbid MHSUP is similar to that of their non-comorbid counterparts. Importantly, however they commence treatment at a more acute phase of illness, often requiring more high cost and emergency services as a result [8, 46, 47]. In either service context, people with comorbid MHSUP face significantly increased relapse risk if both mental health and substance use conditions and associated disabilities are not addressed.

PART II:
Current Approaches and Directions for the Future

Models of care for comorbid mental health and substance use problems

Historically, several models of treating comorbid MHSUP have been used, guided by different aetiological models of comorbidity. These include: "sequential", "parallel", "integrated", and "stepped care" treatment approaches. There has been much contention about the benefits of using one model of care over another for individuals with comorbid MHSUP, and until recently, very little available research to guide these debates [48].

- *Sequential treatment* – the individual is treated for one condition first which is followed by treatment for the other condition. With this model, the substance use is typically addressed first then the mental health problem, but in some cases, it may be whichever disorder is considered to be primary (i.e., which came first). It is frequently difficult to disentangle the temporal sequence of comorbid MHSUP, and once both conditions have arisen, the relationship is one of mutual influence.

- *Parallel treatment* – both the individual's substance use and mental health condition are treated simultaneously but the treatments are provided independent of each other. Treatment for substance use is provided by one service, while the mental health condition is treated by another. The onus is on the person with comorbid MHSUP to synthesise treatment messages on their own, often in the context of differing treatment philosophies from each service.

- *Integrated treatment* – both the individual's substance use and mental health condition are treated simultaneously by the same treatment provider or service. This approach allows for the exploration of the relationship between the individual's substance use and mental health condition, under guidance from the treating team.

- *Stepped care* – the flexible matching of treatment intensity and focus (integrated/single) with case severity. The least intensive and expensive treatment is initially used and a more intensive or different form of treatment is used when the less intensive form has been insufficient, or according to client/practitioner preference.

Current trends in comorbidity treatment

Treatment for mental conditions, as for physical problems, is typically organised around a primary individual condition. This treatment philosophy has generally been applied to mental health and substance use settings, where treatment is segregated according to different diagnostic groupings based on primacy (the dominant condition considered to predate and thus cause all other conditions). [6, 49]. The majority of MHSUP treatment service systems, both nationally and internationally, are designed in this way, resulting in individuals with acute comorbid substance use issues often being refused entry to mental health programmes, with the advice to seek treatment for their substance use problem before mental health treatment can be offered [50]. However, there are practical difficulties in reliably diagnosing primary and secondary conditions [51]. Once both conditions are established, the relationship between them is often one of mutual influence, with each condition maintaining or exacerbating the other, thus rendering the primary/secondary distinction somewhat irrelevant [52]. In practice, even if an individual with comorbid MHSUP completes treatment for substance use, they are unlikely to receive subsequent treatment from mental health services over and above medication, unless the disorder is in a severe or acute phase [50, 53]. This is a concern, given psychological treatments for comorbid MHSUP have frequently been shown to reduce risk of relapse to both problems [52].

The idea of combining treatment for multiple disorders has considerable appeal, and presents a number of advantages over sequential or parallel approaches. Although early reviews comparing integrated and non-integrated models were equivocal due to study limitations [54], it has been suggested that integration of services is essential for effective treatment of co-occurring conditions [55]. Integrated treatment by a single service helps to ensure internally consistent treatment with common objectives which can explore of the complex relationship between conditions. This single point of contact reduces burden on the client, along with potential communication problems and discordant treatment philosophies, reducing the chance of clients 'falling through the gaps' when it comes to treatment [56]. Nevertheless, much more research is required, especially as most evidence to support the use of integrated MHSUP treatment has been in the area of psychotic disorders [57]. Baker and colleagues [58] have recently reported that, compared with single-focused interventions, integrated psychological treatment of depression and problematic alcohol use was associated with a greater reduction in drinking days and level of depression than a single-focussed (depression or alcohol) intervention. There is also growing support for the use of a stepped-care approach to treating comorbidity [59]. A number of studies examining the efficacy of this approach are currently underway.

One model will not fit all

One model of care will not fit all comorbidity. What is critical is the identification of comorbidity and models for the increased translation of evidence into practice. We have increasing research evidence for effective interventions, which are outlined in this report. The support of the translation of this evidence through training and a clinical research translation initiative is currently missing in the Australian mental health system.

Current Australian policies and systems

Australian governments have made significant policy funding commitments to improve mental health and to a lesser degree substance use treatment. Unfortunately such systems are characterised by fragmentation and poor coordination [60]. The Australian health system is built in speciality-silos which, historically, inhibit collaboration and integration between services [61]. This style of system imposes sequential (or at best parallel) treatment of comorbid MHSUP. Kavanagh and colleagues [62] found that treatment staff report a number of difficulties which can be seen as a direct consequence of this segregation. These difficulties included organising joint case conferences, appropriateness of secondary treatment, case management and duty of care issues, and problems in accessing assessment and treatment services. In reality most individuals with both MHSUP will be unlikely to receive adequate care for both conditions. The nature of these conditions (particularly where they co-occur) tend to lead to frequent interaction with multiple parts of the healthcare and broader social services (e.g., employment services), compounding the difficulties caused by this segregation. As a result carers and individuals are responsible for organising care and navigating these fragmented and uncoordinated systems [63].

Government Initiatives

Different initiatives in recent years have attempted to overcome some policy and systems issues. For instance:

- *National Comorbidity Project 1998-2003* aimed to identify comorbidity and effective treatments, and improve response.
- *National Comorbidity Initiative 2004-2008* was developed with the aim of improving service co-ordination and treatment outcomes for people with comorbid MHSUP. The initiative worked to raise awareness, promote good practice, provide clinical support and resources, and improve data collection methods and systems.
- *National Comorbidity Collaboration 2010-2011* focused on improving coordination, education, and service delivery (via guidelines).
- *Improved Services Initiative 2006-2012* focussed on building capacity of non-government agencies.
- *Victorian Dual Diagnosis Initiative 2001-2010* was commissioned with the aim of delivering improved service response for people that experience comorbidity issues. To this end a number of strategies have been utilised including outreach teams, rural clinicians, education and training, and psychiatrist support [64].

Nevertheless, such initiatives can often add complexity to an already fragmented system and more widespread reform is needed [60].

Best practice in comorbidity treatment

The overall consensus of research evidence and clinical expertise, is that psychiatric or addiction-focussed treatments on their own are not sufficient to manage comorbid MHSUP [65]. It is clear that more research is needed before definitive practices can be prescribed that will improve outcomes for both MHSUP. Although evidence (particularly that pertaining to integrated interventions) is promising, further development, and evaluation of treatments is required [54]. Although, forms of integrated treatment are generally viewed as best practice in Australia [66], it has not yet known whether such care is associated with significantly better outcomes for individuals, their families, or the health care system compared to other forms of treatment. Rigorous trials are required to address this gap in the literature, however, such trials require considerable resources. Indeed, just determining whether such an approach is superior to the individual alone requires an exploration of a number of social-, treatment-, and disorder-related outcomes. Nevertheless, what the existing research has shown is that integration appears feasible and is likely to overcome some of the barriers present when co-occurring disorders are treated separately. Integrated treatments can be tailored to the particular needs and treatment readiness of the client, targeting areas of high distress and priority, addressing both acute and non-acute symptoms. Combinations of different therapeutic styles and modalities, such as various psychotherapies, pharmacotherapies, and behavioural treatments can often exert a synergistic effect on treatment [67], while time spent in treatment moderates improvement regardless of substance used [68, 69]. Unfortunately effectiveness trials of specific manualised therapies (phase 4 trials) are rare, particularly in Australia, and this represents a significant gap in the knowledge base concerning best practice. From a treatment standpoint alone, motivational interviewing (MI), cognitive behavioural therapy (CBT), and a range of additional therapeutic approaches can be incorporated into the one coherent comorbidity-specific treatment plan; specific strategies are described in Part III of this report. Ideally, however, integration should stretch beyond treatment for the specific conditions and into the broader social services system (housing, employment, etc.).

Best practice programs – Bridging the gap between evidence and practice in comorbidity treatment

It remains unclear how well Australian substance abuse programs (or mental health treatment agencies) are able to effectively address the needs of individuals with co-occurring conditions [70]. In the US it is estimated that only 7% of people with comorbid MHSUP receive treatment for both disorders [71], although corresponding Australian data does not exist. True co-ordinated and integrated models of care for comorbid MHSUP are rare [72].

Research on specific agencies that represent best practice is lacking, however, those services which have integrated comorbidity guidelines into routine practice, or which have specific comorbidity-based programs—e.g., the Hunter New England Mental Health Service Mental Health & Substance Use Service (MHSUS), Substance Use and Mental Illness Treatment Team (SUMITT)—are likely to most closely adhere to evidence-based practice.

Clinical Guidelines and policy documents

At a clinical level, recent treatment guidelines have facilitated the transfer of evidence-based practice recommendations for comorbidity to individual service providers, although this has largely taken place in the Drug and Alcohol sector. For example, *the Guidelines on the management of co-occurring alcohol and other drug and mental health conditions in alcohol and other drug treatment settings* [21] is a useful resource for many drug and alcohol services [73].

A number of state-based government guidelines and policy documents have also been crucial:

- *The NSW clinical guidelines for the care of persons with comorbid mental illness and substance use disorders in acute care settings* [74]
- *The Mental Health Reference Resource for Drug & Alcohol Workers* (NSW) [75]
- *Comorbidity framework for Action: Mental Health/Drug and Alcohol* (NSW) [76]
- *Dual diagnosis – key directions and outcomes for service delivery* (VIC) [77]
- *Queensland Health Policy – Service delivery for people with dual diagnosis (co-occurring mental health and alcohol and other drug problems)* [78]
- *Dual diagnosis clinical guidelines: Co-occurring mental health and alcohol and other drug problems* (QLD) [79]
- *Dual diagnosis clinician tool kit: Co-occurring mental health and alcohol and other drug problems* (QLD) [80]
- *The ACT comorbidity strategy* (2010-2013)

Specialised agencies that focus generally on mental health and wellbeing (such as *Headspace* for young people) are also strong examples of good practice in terms of comorbidity, particularly due to the comprehensive approaches of such agencies to a broad range of overlapping conditions and the links they share with research organisations. The conversion and dissemination of research into clinical services is vital in enabling good practice, especially in emerging fields such as comorbidity, as such the establishment of a strong systemic translational model is required. The *National Health and Medical Research Council Centre for Research Excellence in Mental Health and Substance Use* represent a useful centralised translational body and is discussed below.

Translational approaches

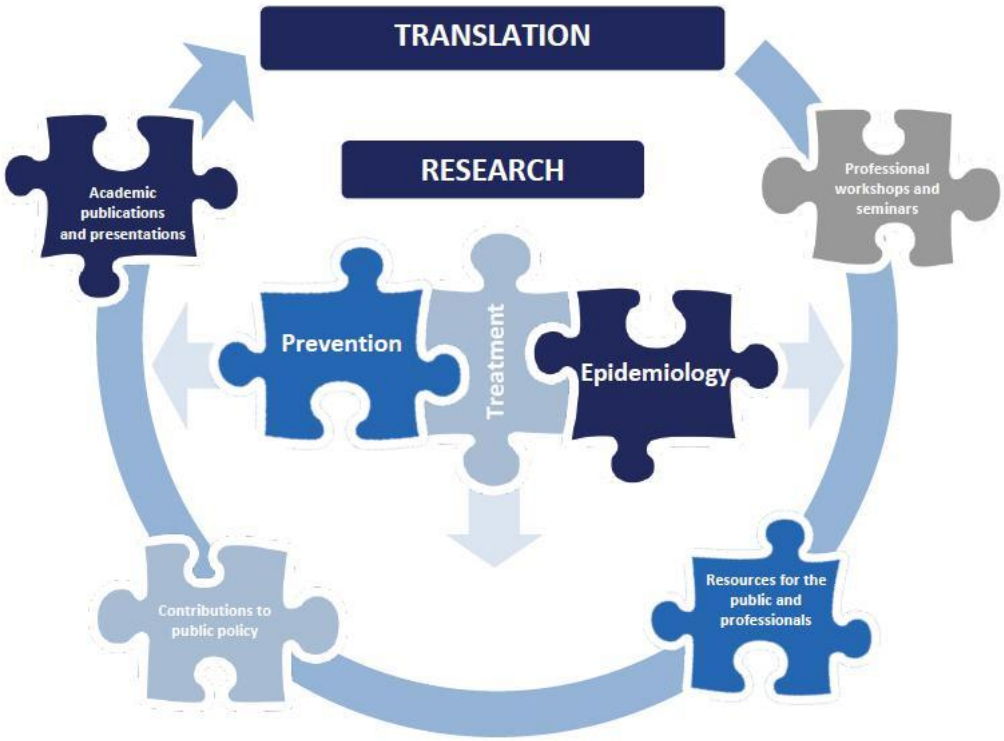
Internationally, the *US Veterans Health Administration Mental Health Program* is attempting to provide uniform, evidence-based services nationwide, with greater transparency over what services are being provided across its network. Integration of healthcare pathways and services is a key component of this approach. Developing a national framework to ensure treatment consistency and improved access is not beyond the scope of the existing Australian system [60].

The *South Carolina Clinical and Translational Institute* at the Medical University of South Carolina is an international example of a working model which facilitates translation of evidence into best-practice. The key features of the model include:

1. *A focus on translation:* Address current shortcomings characterised by a scattered and fragmented research and clinical infrastructure that relies upon specific individuals in separate institutions and disorder areas conducting independent clinically relevant research. This is not conducive to capacity building or training of clinical researchers for a complex disease pattern such as comorbidity.
2. *Clinical Research Paradigm:* Health professionals who are supported to maintain their clinical commitments while forming links with research are critical to treatment improvements.
3. *Facilitating Mentorship:* Mentorship has an important influence on personal development and career guidance for students, clinicians and researchers.

A significant recent Australian development has been the establishment of the *National Health and Medical Research Council Centre for Research Excellence in Mental Health and Substance Use*, which represents a vital step in providing the opportunity for researchers—working separately in the fields of addiction, depression, anxiety and psychosis worldwide—to share skills, innovations in treatment and research approaches, synergise data collection, and establish collaborative databases. As Figure 4 indicates a specific stream is devoted to translation of evidence-based comorbidity treatment packages into clinical practice and policy across the primary care, mental health, and substance use service settings.

Figure 4: Australia's Centre for Research Excellence in Mental Health and Substance Use translation model



Opportunities for now and the future

Systemic issues in the Australian health care system limit dissemination and application of effective treatments. Increased health care service demands, costs, and complexities are already testing the limits of the financial, physical and human resources of the Australian health system. These challenges require a better, more sophisticated system of care which has the capacity to deliver integrated, coherent interventions in flexible modalities and across service settings [81]. It is estimated that optimal treatment at current coverage is likely to alleviate only 20% of the burden associated with mental and substance use disorders generally. Even optimal coverage would fail to avert over 60% of this burden [82]. Clinicians working in mental health and substance use settings frequently recognise the high prevalence of comorbid MHSUP, and the importance of addressing multiple comorbidities when present. Despite this, evidence indicates that clinicians have little time and confidence in their expertise to move beyond assessing comorbid MHSUP [71].

While this is an important first step, the availability of services, particularly those that are able to support integrated care for people with comorbid MHSUP, remains a significant challenge for Australia. Publicly-funded health care, including mental health care, has traditionally struggled to respond to an increasing demand for services in a context of limited financial, physical and, importantly, human resources [72]. This situation will not be solved by doing more of the same, or by continuing in our current efforts until major structural reform occurs. By doing so, there is a real risk that by 2020, the majority of those in need will not receive appropriate care [83], and that this unmet need will be disproportionately borne by people with comorbid MHSUP.

Primary care

Primary care is the principal point of contact for more than 50% of people with mental illness [84], with estimates indicating that two patients per day in an average Australian General Practice are experiencing comorbid MHSUP [72]. The World Health Organisation has highlighted the integration of mental health into primary care as the most viable means of addressing the burden of mental health conditions [85]. Together, this demonstrates an increasingly important need to better support primary and community care providers to access and share relevant health information and treatment [86]. Brief clinically integrated interventions delivered by primary care professionals may help to alleviate pressures placed on specialist services, and have been shown to be an effective means of intervening where more intense approaches are unavailable or impractical [58]. However, this alone will not be sufficient [87]. In this context, it is suggested that "convenience sells", with inconvenience to both practitioners and clients posing challenges to integrated care [84]. Future

work to enhance the delivery and convenience of accessing integrated treatment, particularly psychological treatments such as CBT are needed.

eHealth

The emergence of eHealth (health services and information delivered or enhanced through Internet and related technologies) has been touted as possibly the most important revolution in healthcare in the recent times [88]. eHealth interventions present a unique opportunity to overcome traditional barriers that prevent many people from seeking help, including societal or cultural stigma, mistrust in the system, access, and availability [89, 90]. Health-information and treatment seeking over the Internet also overcomes the gender differences inherent to face-to-face treatment [91]. There is evidence of a decreasing digital divide in ability to access the Internet across socioeconomic and cultural groups, indicating that eHealth technologies can play a significant role in the daily lives of those experiencing marginalisation [92]. eHealth therapies also have the potential to reduce costs associated with treatment (by reducing contact time with the therapist) and increase treatment standardisation [89, 93].

Over 100 different Internet-based interventions have been shown to be effective and cost-effective in treatment for a number of common mental disorders [94-105]. Australia has been the leader in this area for both prevention and treatment programs [83]. The integration of eHealth treatment programs for addiction and mental health problems into primary care settings may be one strategy for fostering stronger links between systems of care [106]. However, this may still restrict treatment access, and fail to fulfil the potential of eHealth interventions. The challenge is not only to model and implement services and systems of care that usefully integrate eHealth with existing programs, but to develop novel models of eHealth service provision that, for example, may exist entirely online [83, 107]. The provision of funding and research focussed on how best to disseminate and provide eHealth treatments outside of research settings is fundamental to meeting this challenge.

Of equal importance is to avoid replicating the siloed approach to designing and delivering eHealth interventions that has been taken in mental health and substance use research and practice. To date, the tendency has been for eHealth to also be developed and delivered in silos, with components and programs emerging without regard for comorbidity [88]. Only one evidence-based program to date has utilised eHealth technology to the case of comorbid MHSUP [108, 109]. *SHADE* (Self-Help for Alcohol/other drugs and DEpression) has been evaluated in two randomised controlled clinical trials, and is associated with significant and sustained reductions in depression, alcohol and cannabis equivalent to a therapist-delivered program, and greater than a brief intervention, and a supportive counselling program [108, 109]. Much more research effort is required in this area, particularly with a view to understanding how best to deliver and support these interventions in real world contexts.

Prevention and early intervention

Prevention and early intervention strategies are a practical strategy to averting the development of more severe, ingrained morbidity, and the burden this places on individuals, families, and the health system [110-112]. These strategies are of specific importance to a number of at-risk populations including young people and those in early phases of mental disorders (e.g., first episode psychosis).

Although the majority of such programmes are aimed specifically at drug, alcohol, or mental health symptomatology in isolation, encouraging findings in these areas suggest they may hold promise for those with comorbid conditions. Indeed, there is evidence to suggest that a number of conditions share common underlying vulnerabilities, mechanisms and/or psychopathological processes (e.g., emotional instability, anxiety sensitivity) [113, 114]. As such, prevention and early intervention programmes which address these constructs may help alleviate distress.

In Australia, one recent computer-based prevention programme, *Climate Schools*, is one of the few evidence-based prevention programs available for alcohol and cannabis use. The programme uses a universal approach, is based in harm-minimisation and the efficacy has been established using a cluster randomised controlled trial (RCT) across 10 schools in Australia [115-117]. However, it has been suggested that other illicit drugs may be better addressed using selective rather than universal prevention programmes [118]. In this way, work is currently underway to integrate the *Climate Schools* program with the selective *Preventure* programme in an Australian setting [119]. *Preventure* is the first and only selective school-based programme that has been shown to curb excessive alcohol and illicit drug use in Canada and the United Kingdom [120-123]. Unlike universal programmes delivered to a whole population, this selective personality-targeted approach addresses four personality risk-factors for early-onset substance misuse and other risky behaviours: Sensation Seeking, Impulsivity, Anxiety Sensitivity and Negative Thinking [124]. This is of particular relevance to comorbidity as many of these personality traits are common to mental health conditions.

Moving away from individual disorders towards multiple health behaviour change

People with MHSUP comorbidity face a number of other health problems in addition to the direct health consequences of these disorders [87, 125]. Cardiovascular disease, cancer and other tumours, and respiratory system diseases, are the most common causes of death among this population, with people experiencing comorbid MHSUP reporting an average lifespan of 25 years less than the general population [126]. Contributing factors include the high rates of tobacco smoking, physical inactivity, and poor diet in those with MHSUP [127], all of which are potentially modifiable. A multiple health risk behaviour approach to treating comorbid MHSUP represents an important new innovation in the treatment of co-existing MHSUP. It reduces stigma, is more appealing to clients, and avoids prematurely focusing on substance use and evoking client resistance. Moving away from treatment

planning for mental health and substance use problems specifically and towards consideration of the person in a broader health context that includes (but is not limited to) these domains also means that treatment can be provided in any setting. A multiple health behaviour approach to co-existing MHSUP involves intervening across the range of health risk areas (smoking, poor diet, physical inactivity, mental health, alcohol/other drugs) within the one integrated treatment program [127]. It allows small changes across a number of health behaviours that increase self-efficacy for further behaviour change. Research has found that individuals are willing to target multiple problems simultaneously, and can make improvements in both mental health and substance use domains [128-130]. Specific behaviours, the number of behaviours targeted and the sequence in which they are targeted remains the subject of future research.

PART III:

Specific Evidence-Based Treatments for Comorbid Mental Health and Substance Use Problems

Prevention and early intervention

Early intervention attempts to prevent disorder progression and establishment and minimise adverse outcomes. Such programmes generally provide a combination of screening, education, and brief therapy to individuals before they would normally present for treatment or at initial presentation [131]. Such programmes often occur in primary care or tertiary education settings depending on the condition. A number of reviews have indicated that interventions aimed at alcohol misuse in tertiary [95, 132, 133] and primary care settings [134] are efficacious and cost-effective.

Early interventions aimed at illicit drug use are less common due to elevated rates of stigma, infrequent use of services, and difficulties in identification of users in the early phases of use. However, even single session MI- [135, 136] or CBT-based [137] have indicated positive cannabis and alcohol use outcomes. Nevertheless, more sessions are required for significant long-term reduction in consumption. Research is lacking around other forms of substance use, however, the use of brief interventions with these populations suggest potential [138-140].

In mental health prevention and early intervention (sometimes referred to as 'indicated' prevention) programmes are also common. In the case of depression and anxiety these programmes tend to target general emotion-regulation skills, use CBT, interpersonal therapy, or psychoeducation, and be delivered in school settings [141-145]. Again Australian researchers are at the forefront of this area. Early work in primary schools demonstrated the value of (even brief) very early intervention for anxiety disorders [146, 147]. Recent work has indicated that even universal prevention approaches, such as the *YouthMood* [148], and *FRIENDS* [149] programs, have some utility in preventing and reducing the symptoms of anxiety and depression in young people. Although encouraging, it is important to note that in many trials long-term follow-up assessments and adequate control conditions are often missing, and where present, findings are weaker. Nevertheless, where room for change is increased (e.g., early intervention programmes) greater effects are reported [141, 143]. These findings are promising and warrant further investigation, and sustainable delivery methods [141-143], while the use of eHealth interventions in this area may be particularly useful [144].

Trauma victims are also a population for whom early intervention is likely to benefit. Such an approach can potentially avoid acute stress disorder and early posttraumatic stress disorder (PTSD) progressing to more severe PTSD and self-medication [150]. Available evidence suggests CBT facilitates adaptation post-trauma, however, many people either drop-out or do not respond to these treatment, and tailored approaches are required [151].

Australian researchers have been central proponents for early intervention and policy reform regarding psychotic disorders. McGorry and colleagues [152, 153] have proposed a clinical staging model for early intervention in psychosis, comprising three foci or stages: ultra-high risk, first episode, and the recovery or critical period. Amongst a number of beneficial functional outcomes [154-158], early and vigorous management of these conditions can result in better outcomes regarding comorbidity [159].

This staging model has also been proposed as a means to manage bipolar disorder [160]. There is evidence that early intervention in bipolar may have the potential to prevent a number of neuroanatomical, neuropsychological, clinical and function consequences of disease progression [161]. Moreover, there is also evidence to suggest that where intervention (both psychological and pharmacological) does not occur early enough, they may be ineffective [162, 163] and full functional and social recovery may not occur [164].

It is important to note that prevention and early intervention is rarely aimed at comorbidity, and a great deal more work is required in order to prevent and arrest the development of mental disorders and SUDs and achieve full functional recovery.

General treatment approaches

There are a number of treatment approaches that have a strong evidence base for the effective treatment of both [165]. These approaches include:

- Motivational interviewing.
- Cognitive behavioural therapy.
- Relapse prevention techniques.
- Psychosocial and self-help groups.
- Mindfulness training.
- Contingency management.
- Pharmacotherapy.

In some cases, it may be necessary for a substantial reduction in substance use and withdrawal symptoms to occur before more intensive psychotherapies can be effective. Some people with comorbid MHSUP may respond better to cognitive interventions if they are taking pharmacotherapies for their substance use which free them from distracting cravings and physiological withdrawal symptoms (e.g., acamprosate or naltrexone for alcohol dependence). In

these cases, however, people with comorbid MHSUP will still need assistance to achieve these reductions, manage withdrawal, and comply with medication regimens. People do not necessarily have to be abstinent from substances in order for treatment to commence. This is particularly true for behavioural interventions.

Motivational interviewing

MI is a client-centred counselling strategy aimed at increasing a person's motivation to change. The strategy involves a non-confrontational conversation regarding specific medical, social, interpersonal, or psychiatric effects that substance use has had on the individual's life. MI has four broad stages including engagement, focusing, evoking, and planning [166], with the overall aim of seeking out ambivalence in the individual's attitudes that can be used as encouragement for behavioural change and motivation towards this change. This strategy assumes equity in the client-counsellor relationship and emphasises one's right to define one's problems and choose one's own solutions. It is, in this sense, a counselling style based on collaboration rather than confrontation, evocation rather than education and autonomy instead of authority, as opposed to a set of specific techniques [167]. As MI targets behaviour change it is most commonly and effectively used in substance use treatment [168-171], and the treatment of other unhealthy behaviours [172]. Its utility in improving treatment adherence, engagement, and outcomes make it particularly useful for comorbid populations [173, 174].

Cognitive behavioural therapy

CBT emphasises the importance of thought and activity in subsequent emotions and behaviours. Automatic unhelpful thoughts are common in both those substance use problems (e.g., craving) and common mental health conditions (e.g., negative thought patterns in depression and anxiety). These thoughts are unpleasant, and tend to escalate when the individual becomes aware of them. For individuals with comorbidity, this automatic thinking may result in a cycle of negative thoughts and cravings to use.

CBT is a gold standard therapy for a number of disorders and among the most effective treatments for depressive, anxiety, and SUDs [175, 176]. CBT strategies individual disorders can be easily utilised for those with comorbidity [177].These therapies generally involve a number of different components such as mood and activity monitoring, cognitive restructuring, pleasure and mastery events scheduling, goal setting, and problem solving. Many of the interventions designed for specific comorbid disorders (discussed later in this review) are based on CBT techniques.

Relapse Prevention

Individuals with both MHSUP can potentially experience a relapse of either condition, which is likely to affect the other. Relapse prevention strategies are used in an attempt to prevent this from

occurring and have been shown to be effective particularly in regards to substance use [178, 179] These can include: discussion and normalisation of relapse, identification and planning for high-risk situations, enhancement of commitment to change, use of CBT and mindfulness strategies, and social support [180-182].

Psychosocial and self-help groups

Psychosocial and self-help groups can also be useful for some individuals with comorbid conditions [183-185]. Dual Recovery Anonymous groups, specifically for individuals with co-occurring disorders, are also emerging in Australia. However, it is important that such groups are facilitated in ways that avoid confrontation and reinforce formal treatment messages. Sustained emotional distress can worsen a number of mental health conditions and a confrontational treatment approaches may be harmful to individuals with comorbidity [57]. Experiences of social anxiety, social awkwardness, or impairments in social judgement and social skills, may make such approaches inappropriate for some individuals [186].

It should also be noted that some groups, particularly those that adopt a 12-step philosophy, may discourage the use of any medication. This can be problematic as individuals with comorbid MHSUP are often prescribed medication to help treat their mental health problems [185]. Some individuals with comorbidity, particularly those who experience religious delusions, may also have difficulty with the strong spiritual focus of many self-help groups [186].

Mindfulness Training

Mindfulness is a meditative technique that encourages the individual to pay attention to what is happening in the present moment, without judgement or the pressure to act [187]. This is a useful practice for any individual, but in the context of comorbid MHSUP, can foster a greater awareness of the automatic patterns of thinking that can often maintain the mental health-substance using cycle. There is good evidence for the efficacy of mindfulness for treating mental conditions [188],health conditions [188]—particularly anxiety and depression [189]—and as a relapse prevention strategy in substance use [190]. In general, mindfulness involves the person training themselves, through daily practice, to bring their attention to a deliberate focus in the present moment (e.g., routine activities such as eating, walking, showering), rather than allowing their mind to wander automatically (often to a negative effect). People practice allowing thoughts and feelings to happen, without feeling the pressure to change them [73].

Contingency Management (CM)

CM involves rewarding or reinforcing desired behaviour in a supportive manner [191]. This includes vouchers for clean urine samples, treatment attendance, medication compliance, or goals achieved.

CM techniques are not commonly used in Australia despite evidence of their effectiveness [192-196]. In relation to comorbidity, studies have found CM to be effective in promoting cocaine and opiate abstinence amongst buprenorphine-maintained clients with comorbid major depression [197], and in promoting abstinence in a cocaine-abusing, comorbid homeless group [198].

Pharmacotherapies

Medications are a common treatment for many mental disorders. Similarly, a variety of pharmacotherapies are also used in the treatment of SUDs. Much less work has been done to investigate how these individual treatments may affect co-occurring conditions. Research does, however, suggest that certain medications may be inappropriate for those with certain comorbidities (due to reduced effectiveness, contraindication, abuse, or other risks). Other medications may be potentially beneficial for both conditions. Importantly, any pharmacotherapy should be combined with psychological support and treatment, particularly in people with comorbid MHSUP.

Approaches to treating specific comorbidities

With comorbidity generally there is a tendency to exclude those with problematic substance use from clinical trials of treatments for psychiatric disorders [199-201]. This has limited the findings in this area (particularly around specific conditions) and has at times made inference difficult [202-204]. Nevertheless, evidence continues to emerge regarding specific treatment approaches.

Comorbid major depressive disorder and substance use disorders

Historically there have been over-restrictive attitudes towards pharmacological treatments for depressive disorders among people with SUDs, leading to withholding medication until abstinence is achieved. However, considering the safety of most of the newer antidepressants such as selective serotonin reuptake inhibitors (SSRIs), such caution cannot be justified [184]. Individuals being commenced on antidepressants should be carefully monitored, particularly for elevated suicidality, on commencement of antidepressant treatment [205].

There are few RCTs investigating the efficacy of all currently available antidepressants on depression comorbid with SUDs. Generally, unless there are significant contraindications, it appears clinically appropriate to use medication which has proven efficacious in the treatment of major depression in those depressed individuals with a SUD [23, 206]. However, such medications have been found to be relatively ineffective in improving substance-related symptoms among these individuals [67, 207]. Any changes that do occur in substance use outcomes tend to be indirect, by way of depression improvement [206, 208]. Effects on alcohol use have been particularly contentious [184, 185, 208-212],

with some studies indicating a negative effect on alcohol consumption in alcohol-dependent young men prescribed SSRIs [213-216]. Similarly, the few existing studies examining antidepressant use in adolescents and young adults indicate pharmacotherapy rarely improves outcomes above that of placebo for depression or substance use outcomes when both treatment and control groups also receive adjunct psychological therapy [217].

Although studies of comorbid alcohol dependence and major depression generally support the use of SSRIs, studies of cocaine and opiate dependent clients do not [177]. In a review of the research literature, it was concluded that different types of antidepressants seem to be suitable for different types of SUDs [195]. In particular, individuals with SUDs may respond better to antidepressants that have a similar direct or side effect profile to their substance of abuse. Hence, the more sedating antidepressants such as doxepin or paroxetine may be more effective in people with depression who are also using alcohol, heroin and sedatives, with the more stimulating antidepressants such as desipramine and buproprion demonstrating greater efficacy in people using stimulants and nicotine who are also depressed. As there are no guidelines as yet for the treatment of comorbidity with depression in users of psychostimulants such as amphetamines and ecstasy [218], the use of the more stimulating antidepressants for these individuals provides the best guidance at this time.

Research suggests that naltrexone, acamprosate and disulfiram (medications for treating alcohol use disorders) are all tolerated well in individuals with comorbid depression, but research has not been conducted to demonstrate any impacts of these pharmacotherapies on depression [219]. Naltrexone has been found to be associated with better drinking outcomes in individuals being treated with antidepressants for their depression and anxiety [220]. While both acamprosate and naltrexone are available on the Pharmaceutical Benefits Scheme (PBS) for alcohol dependence, disulfiram is expensive and only available with a private prescription. Although only a tentative finding requiring further research, another study found that buprenorphine had better outcomes with people with depression who are using opiates than those who were not depressed [221]. This suggests that buprenorphine may prove to be useful for this sub-group.

Generally, it is observed that psychological therapy should at least be an adjunct to pharmacotherapy, if not a first-line treatment strategy, for individuals with co-occurring substance use. A recent meta-analysis identified 14 double-blind, RCTs for the treatment of depression and comorbid SUDs in general adult samples revealed a modest (i.e. 0.38) pooled effect size of antidepressant treatment, but maintained concomitant therapy directly targeting the substance use was indicated [206].

Recent reviews indicate integrated psychological treatment for depression and SUDs is effective in reducing substance use and depressive symptoms, with longer interventions generally producing the

best outcomes [204, 222]. Of the limited studies available, CBT techniques (particularly in combination with MI) are effective in the treatment of co-occurring SUDs and depression [58, 59, 185, 222, 223]. Australian researchers are at the forefront of a number of innovative new treatment approaches in this area,, including brief interventions [58, 59] and eHealth therapies [108, 109].

CBT has the best-documented efficacy of the non-pharmacological approaches to treatment of SUD and depression when they occur in isolation of each other [225, 226]. CBT also lends itself well to integrated psychological treatment for comorbid depression and substance use problems [109, 114]. A recent review has found that although there is support for the efficacy of CBT over no treatment, more evidence comparing CBT to other psychotherapies is required [227]. A number of integrated-CBT treatment interventions, incorporating strategies related to both depression and SUD have been developed, with promising results both on substance use and depression outcomes [58, 228, 229]. It is now crucial that such programs are properly disseminated and taken up by clinicians.

Comorbid bipolar disorders and substance use disorders

Despite the relatively frequent co-occurrence of SUD and bipolar disorder, few studies have focused on treatments for this population. Lithium is often considered the standard pharmacological treatment for bipolar disorder, and although an early study was promising [230], there is evidence to suggest that co-occurring SUDs may be a predictor of poor response to lithium, due to mixed episodes of depression and mania and rapid cycling between the two [231]. There is some data suggesting that anticonvulsant mood-stabilizing agents may be a better choice in individuals with comorbid SUDs [232]. In particular, recent trials have indicated a combination of lithium and valproate is associated with better alcohol-related outcomes compared to lithium plus placebo in people with alcohol dependence and bipolar disorder [233, 234]. Similarly, a review by Le Fauve and colleagues [209] found more positive drinking outcomes when sodium valproate was added to treatment as usual in a sample of bipolar clients with alcohol use disorders. They also found a trend toward improvements in manic symptoms as well. Other studies have suggested the potential of carbamazapine and lithium in controlling co-occurring substance misuse [235]. Quetiapine has had mixed results and has been implicated in abuse itself [236, 237]. There have been some promising pilot studies investigating the use of naltrexone and disulfram in individuals with co-occurring alcohol dependence and bipolar disorder [238]. However, many more studies are needed [239]. Due to the nature of manic episodes, it is recommended that all individuals with bipolar disorder be assessed for substance use and receive psychological intervention concerning the negative impact of substance use and risk for developing dependence.

Although research on psychological treatments for comorbid bipolar disorder and SUDs is scarce, recent work integrating treatment for both disorders has had positive results. Preliminary work has

suggested that integrated treatment may reduce hospitalization in those with comorbid bipolar-SUD [240]. Schmitz and colleagues [241] reported that CBT group therapy in combination with medication monitoring, was associated with improved pharmacological treatment compliance for bipolar medication and mood symptoms in comorbid individuals compared to medication monitoring alone. A recent RCT compared an integrated psychosocial group program (i.e. incorporating both SUD and bipolar management strategies) to group drug counselling in comorbid bipolar patients concurrently treated with mood stabilizers. Results indicated higher group treatment retention and significantly fewer days of substance use in the integrated group programme [242-244]. It has been suggested that treatment approaches that address the shared mechanisms inherent to both bipolar disorder and SUD (e.g., impulsivity, poor modulation of motivation and responses to rewarding stimuli, and susceptibility to behavioural sensitization) may be promising, however research is lacking [237].

Comorbid anxiety disorders and substance use disorders

As with depression, some of the anxiety exhibited by individuals with substance use problems will subside following a period of abstinence and stabilisation without the need for any direct attention [195, 245]. Although the research is scarce on evidence-based treatment approaches for comorbid anxiety and substance use, it would be reasonable to draw similar conclusions for these comorbid groups as for those with depression-SUD comorbidity—namely, use of a medication such as a SSRI (which has anxiolytic properties), with a good side-effect profile, established efficacy in the mental health disorder, and minimal negative interactions with the substance [246].

Despite their demonstrated effectiveness in relieving anxiety, the use of benzodiazepines is not recommended for comorbid anxiety and SUDs due to their abuse potential [177, 246]. Benzodiazepines should only be prescribed among individuals with a history of problematic substance use if there is a compelling reason to use them, there is no good alternative (i.e., other psychological and medication options have failed), close follow-up and supervision is provided, and monitoring for misuse is in place. If benzodiazepines are used, use should be restricted to the lowest possible dose for only a short period of time [246].

Psychological interventions should always accompany pharmacological treatments for individuals with comorbid anxiety and SUDs [185]. A recent Cochrane review concluded that CBT is effective in treating anxiety disorders [247], and there is good evidence that CBT and MI are effective psychotherapies for particular types of substance abuse. However, few well-conducted treatment outcome trials for comorbid anxiety and SUDs exist. Those that do exist have generally not shown integrated interventions to be more successful than treatments focused on specific disorders [204,

248]. Instead, targeting specific mechanisms that may underlie comorbidity (e.g., anxiety sensitivity tension reduction alcohol expectancies) is likely to be a productive strategy [114].

Comorbid generalised anxiety disorder (GAD) and substance use disorders

A review of treatments for anxiety disorders concluded that a combination of psychosocial therapy and the newer antidepressants such as the SSRIs, venlafaxine, and paroxetine, promises best outcomes in the long-term for those with GAD [249-252]. However, these findings have not been confirmed in those with comorbid SUDs. The use of these medications is considered preferable to benzodiazepines for GAD because they are more effective in treating symptoms such as worry, tension, irritability and concentration problems, and have a safer side-effect profile [253]. Some research has found that buspirone, a non-benzodiazepine, anti-anxiety medication, is effective in treating anxiety in people with alcohol use disorders as well as increasing treatment retention in this group [177, 254, 255]. One study of buspirone found improvements in drinking outcomes as well as in anxiety outcomes [254]. A more recent RCT has suggested that Buspirone is not effective for reducing anxiety among methadone treated opioid users, but may help protect against subsequent depression and substance abuse [256]. Unfortunately, buspirone is not subsidised in Australia for non-veterans and is only available at significant cost by private prescription. Buspirone has the added difficulty that it can take up to four weeks at a therapeutic dose to have anti-anxiety effects. This may prove unattractive to individuals who want the instant relief from their anxiety that can be provided by alcohol or benzodiazepines.

Few specific GAD-focussed psychological interventions exist, although common approaches to treating anxiety (generally) and depression are likely to be effective. A recent RCT found some evidence in support of Affect Focused Body Psychotherapy (a psychotherapy adapted from chronic pain management) over treatment as usual. However, cluster analysis confirmed that the supportive, exploratory aspects of the treatment were more important than the content of the therapy [257]. Again, these treatments have not been applied to people with GAD and comorbid SUDs.

Comorbid panic disorder and substance use disorders

A recent Cochrane review concluded that in the treatment of panic disorder, it is equally efficacious to use CBT-based psychotherapy alone, pharmacotherapy alone (SSRIs in particular), or a combination of these, and that client preference should be taken into account when deciding on a course of treatment [258]. Although not confirmed with this group due to the absence of relevant research, it would be prudent to adopt similar strategies in clients with comorbid SUDs. Behavioural techniques such as exposure and systematic desensitisation have been shown to be effective, and relaxation and supportive counselling may also be helpful [177]. It has been recommended that caution should be used when treating panic disorder with antidepressants such as TCAs and SSRIs

because these agents may cause an initial worsening of panic symptoms. As mentioned with regard to the use of TCAs in the treatment of depression, they are poorly tolerated, are potentially lethal in overdose, and cause significant adverse effects when combined with other central nervous system depressants. In contrast, SSRIs are associated with fewer side effects, have better tolerability (resulting in improved compliance) and they are safer in overdose [184]. It is recommended that a low dose be prescribed to start with to avoid activation of panic symptoms [177].

Comorbid posttraumatic stress disorder and substance use disorders

Due to the inter-relatedness of PTSD and substance use, experts recommend that these conditions should be treated in an integrated fashion [259-261]. A number of psychotherapies have been developed for the treatment of comorbid PTSD and SUDs, however, few have undergone rigorous evaluation.

Exposure therapy is a commonly used effective component of CBT for anxiety disorders, involving exposure to the feared object or situation (in this case traumatic memories, and reminders of past trauma). This form of therapy is the gold standard for treating PTSD [262]. Traditionally, exposure therapy for PTSD was considered inappropriate for people with SUDs based on beliefs that the emotions experienced may be overwhelming and could lead to increased substance use, or that the cognitive impairment associated with substance use could impair the person's ability to carry out the exposure tasks. However, increasingly this form of treatment has been found to be safe and effective amongst this population [263-265].

In Australia, the recently published COPE trial has evaluated prolonged exposure amongst individuals with PTSD and SUDs, provides further support for the use of exposure therapy in this population. This first RCT of its kind reported that compared with usual treatment alone, the addition of COPE resulted in improvement in PTSD symptom severity without an increase in severity of substance dependence [266]. Another Australian trial comparing integrated CBT (including prolonged exposure) for PTSD and alcohol use disorder (AUD), with CBT for AUD plus supportive counselling, found those participants who had received exposure therapy had a twofold greater likelihood of a clinically significant reduction in PTSD severity at follow-up. Although those in the supportive therapy group reported better alcohol use outcomes, they were also three times more likely to receive outside treatment [267]. It is generally recommended, that exposure therapy not commence until the client has demonstrated a reduction in substance use and the ability to use coping mechanisms other than substance use. It is important to note however, that abstinence is not required in order to obtain positive outcomes.

Another integrated treatment which appears promising in the treatment of PTSD and substance use is *Seeking Safety* [268]. *Seeking Safety* is a present-focused therapy aimed to help people attain safety

from trauma/PTSD and substance abuse. The treatment has been conducted in group and individual format in a variety of settings (outpatient, inpatient, residential). However, recent RCTs have suggested that although the treatment is associated with clinically significant reductions in PTSD symptoms and substance use, it is comparable to other therapies [269-271].

Australian guidelines on the treatment of PTSD [272] recommend psychotherapy as the first line treatment of adults with PTSD. They recommend that pharmacotherapies be used as an adjunctive treatment if the person has not gained benefit from psychological treatment; however, there is little evidence to suggest that combining psychological and pharmacological interventions leads to improved outcomes. Where pharmacotherapies are considered, SSRIs are the recommended first-line option. The use of mirtazapine and TCAs should be considered only as a second-line option, and phenelzine may be considered for people with treatment-resistant symptoms. However, as noted previously, extreme caution should be used when prescribing TCAs and MAOIs.

There have been only a few trials of pharmacotherapy for PTSD comorbid with substance abuse [273, 274]. In a placebo-controlled, double-blind study, the efficacy of sertraline in the treatment of co-occurring PTSD and alcohol dependence was studied. Alcohol use decreased significantly in both groups. However, significant interactions for alcohol-related outcomes depending on severity of dependence and onset of PTSD led authors to concluded that there are likely to be subtypes of individuals who respond differently [273].

In a 12-week study, Petrakis and colleagues [275] compared placebo, naltrexone, disulfiram, or a combination in 93 individuals with PTSD and alcohol dependence. Subjects with PTSD had better alcohol outcomes with active medication (naltrexone, disulfiram, or the combination) than placebo, and overall psychiatric symptoms improved. Finally, a recent RCT compared the efficacy of naltrexone, prolonged exposure therapy alone, and their combination, in the treatment of comorbid PTSD and alcohol dependence [276]. Naltrexone resulted in a decrease in drinking, and prolonged exposure therapy was found to be protective against relapse at follow-up [277].

Comorbid social phobia and substance use disorder

Early studies of psychological treatments for social phobia in clients with comorbid alcohol problems suggest that integrating treatments in this group may show no improvement over treating drinking alone [278], or it may even have a deleterious effect on drinking outcomes [279]. However, recent preliminary data suggest that integration may in fact be possible [280]. Currently the NHMRC-funded CASP (Combined Alcohol and Social Phobia) trial is underway in Australia [281].

Like exposure for PTSD, exposure therapy for social phobia involves gradual exposure to the feared object or situation (i.e. social situations). Again, where comorbid substance use exists, exposure can

be effective, but it cannot operate well, or at all, if the client is affected by substances [50]. Because exposure therapy can be anxiety inducing, it is recommended that the individual would have significantly reduced substance use and appropriate relapse prevention skills before exposure therapy is utilised [282]. Other research has found that it is important to assess and use the social supports available to clients with social phobia in order to improve treatment outcomes [283].

In terms of pharmacological treatment, a recent Cochrane review found that treatment with SSRIs is effective in the treatment of social phobia alone [284]. A recent RCT has also indicated paroxetine may improve social anxiety and self-reported reliance on alcohol for self-medication purposes, but not quantity or frequency of drinking, or the proportion of 'coping-related' drinking days [285, 286].

Comorbid Personality Disorders and Substance Use Disorders

Among those with SUDs the most common comorbid personality disorders are borderline personality disorder (BPD – most frequently occurring in females) and antisocial personality disorder (ASPD – usually male). The Cochrane collaboration recently reviewed psychological treatments for BPD and concluded that some psychological interventions show promise [287]. It reported that studies of dialectical behaviour therapy (DBT) have generally found few differences between DBT and treatment as usual in terms of BPD symptoms and hospitalisations. However, there have been some findings of decreased self-harm and suicidal behaviour due to DBT treatment and indications that it may impact positively on alcohol outcomes.

In general, research on psychological treatments for personality disorders is encouraging, but treatments are time consuming and technically demanding. For those with alcohol use disorders, it has been suggested that good outcomes are possible using alcohol-focused treatments alone. However, it is acknowledged that opiate and cocaine abusers with a personality disorder present a more severe client profile. Generally this more complex clinical profile may require more intensive psychological attention in order to promote the therapeutic alliance and maintain them in treatment [288]. Two programmes have been designed for these comorbid clients—Dual Focus Schema Therapy [289, 290] and DBT-S [291-293], both of which have shown promise.

A Cochrane review of pharmacotherapies for BPD found little support for the use of pharmacotherapies for BPD but concluded that more trials are needed, especially to ascertain the usefulness of antidepressants [294, 295]. One study found that naltrexone and disulfiram are also safe for clients with comorbid personality disorders and alcohol dependence, and one study suggests that naltrexone may selectively benefit people with alcohol use disorders with antisocial traits and a family history of problem drinking [296].

Very little research has been conducted to date regarding the pharmacological treatment of ASPD among people with SUDs. Studies that have been conducted have investigated the use of amantadine, desipramine [297, 298], bromocriptine, and nortriptyline [299, 300]. However, the conclusions that can be drawn from these studies are limited due to small sample sizes. Thus, there is currently no evidence of effective pharmacological treatments for people with ASPD and SUDs. One study does, however, provide some evidence to suggest that bromocriptine and nortriptyline may be beneficial for people who have comorbid alcohol use disorders and ASPD who also have a current mood and/or anxiety disorder, but not for those without a current mood and/or anxiety disorder [300].

Comorbid psychotic spectrum disorders and substance use disorders

Pharmacological interventions are the predominant form of treatment for psychotic spectrum disorders. Some of the newer antipsychotics have been studied for their impacts on substance use as well as severe mental illness. In particular, it has been theorised that the increased substance use found among those with psychotic disorders relates to dopamine dysfunction, which is better addressed by the newer (atypical) antipsychotic agents than the older (typical) agents. Nevertheless, these benefits must be weighed against the heightened metabolic side-effects of these medications [301]. There has been considerable research on the effects of clozapine on substance use with generally positive outcomes [209]. Results for other newer antipsychotics in terms of impact on substance abuse have been equivocal. These findings highlight the potential of further research on the range of medications used to treat singular psychotic disorders and their effects on comorbid SUDs.

Medication specifically targeting reduction of substance use has been useful in schizophrenia. For instance, naltrexone, disulfiram, and topiramate have demonstrated some efficacy in reducing alcohol use in individuals with schizophrenia, while buprenorphine has been shown to limit cigarette smoking and some tricyclics antidepressants have been shown to reduce cocaine use. However, these findings are preliminary and limited in scope and are counterbalanced by the liver toxicity and other side-effects associated with some of these medications [301].

A recent Cochrane review concluded that there is no good evidence so far regarding effectiveness of one psychosocial treatment over another for psychotic spectrum disorders comorbid with SUDs [302]. However, studies incorporating integrated psychosocial treatments have been showing promise [55, 303, 304]. In these programmes, individuals receive treatments addressing both disorders, including case management, vocational rehabilitation, family counselling and housing, as well as medications.

Preliminary work found MI to be effective in reducing substance use in clients with psychotic spectrum disorders [305-307]. However, recent studies on integrated MI/CBT have been equivocal. One study of MI/CBT plus a family intervention for clients with schizophrenia and comorbid

substance use, found significant improvements in negative symptoms, functioning, and relapse rate at 12-month follow-up compared to usual care [308, 309]. However, an Australian study which used a 10-session intervention comprising of both MI and CBT for this comorbid group found only limited short-term improvements in depression and substance use outcomes, but a significant improvement in functioning [310]. Similarly, Edwards and colleagues [311] found no effect of intervention in a sample of patients who had experienced a recent episode of psychosis and who also used cannabis. Kemp and colleagues [312] found a tailored, brief CBT intervention (*Stop Using Stuff*) was associated with significant improvement in frequency of cannabis and alcohol abuse in young people with co-occurring psychosis. A recently published UK-based trial found although MI and CBT for people with psychosis and substance misuse did not improve hospitalisation outcomes, symptom outcomes, or functioning, it did reduce the amount of substance used for at least one year after completion of therapy [313]. Bellack and colleagues [314] found MI and CBT to be particularly effective compared with usual care when combined with a CM condition. This intervention was associated with higher retention rates and a greater number of clean urine samples. However, it remains unclear which particularly components of the intervention were associated with the positive outcomes.

Other psychosocial interventions in this population have also been evaluated. Assertive community treatment—a structured, intensive approach to case-management of individuals with co-occurring SUDs and psychotic disorders which aims to enhance engagement, treatment, and retention [315]—has been associated with improvements regarding substance use outcomes, quality of life, and hospitalisation [316, 317].

A recent review identified several key components that encompass an integrated approach [196]. These include group counselling, contingency management, long-term residential treatment or assertive outreach, and CBT and MI approaches tailored to the patient's stage of change and offered over the longer term. However, bringing all these elements together in a coherent and pragmatic manner continues to be a challenge to the field. Nevertheless, evidence suggests that if consistently applied, individuals in integrated treatment programmes achieve long-term positive recovery and stable outcomes across substance use and psychosis, as well as hospitalisation and homelessness, and improved social and emotional outcomes and quality of life [318-320].

PART IV:
Specific Populations

Although those with co-occurring conditions have many concerns and difficulties in common, they are not a homogenous group. Consequently, some groups within the overall population will especially benefit from tailored programmes. Of special note in this context are young people, Indigenous Australians, and the homeless. In all cases the vast lack of evidence-based approaches prohibits discussion. Much more work is required in development and evaluation of comorbidity interventions for these populations.

Youth

Young people are an acutely at-risk population. Table 3 below indicates that at least five of the top ten causes of disability-adjusted life-years were directly related to either mental disorders or substance use in people under 25 years [20]. Comorbidity across the disorder classes is common [7, 10, 11, 321]. Furthermore, this population is acutely undertreated [322, 323]. Reavley and colleagues [324] found that although more than one in four Australians between the ages of 16 and 24 experienced a 12-month mental disorder, less than 25% of these affected young people accessed health services in a 12-month period.

Services have been slow to acknowledge that this phase of life has evolved with a unique culture, and thus requires treatment models that differ substantially from those suitable for children and older adults [325]. As such there is a lack of applicable youth-based treatments and services [326]. Traditionally, in addition to the problem of historical separation of substance use and mental health services [200], attention has been further split between the child and adult mental health system services [326, 327]. The attempts of child and adult-based services to provide for older adolescents and young adults have been largely unsuccessful, failing to engage and provide access to this high risk group [326]. Consequently, due to this systemic weak point many of those with the greatest need fail to receive treatment, and the ability of transition-age youth with mental health and substance use problems to successfully adopt adult roles and responsibilities is at serious risk [327-329].

Table 3: Main causes of DALYs (disability-adjusted life-years) for 15–24-year-olds [20]

	Males		Females		Total	
15–19 years						
	Cause	**Total DALYs (x1000) (%)**	**Cause**	**Total DALYs (x1000) (%)**	**Cause**	**Total DALYs (x1000) (%)**
1	Unipolar depressive disorders	34 (8·0%)	Unipolar depressive disorders	53 (11·7%)	Unipolar depressive disorders	86 (9·9%)
2	Road traffic accidents	33 (7·8%)	Schizophrenia	23 (5·2%)	Schizophrenia	46 (5·3%)
3	Alcohol use	30 (7·2%)	Bipolar disorder	22 (4·9%)	Road traffic accidents	46 (5·3%)
4	Schizophrenia	23 (5·4%)	Abortion	17 (3·8%)	Bipolar disorder	44 (5·1%)
5	Bipolar disorder	23 (5·3%)	Panic disorder	16 (3·5%)	Alcohol use	34 (4·0%)
6	Violence	21 (5·1%)	Maternal sepsis	14 (3·1%)	Violence	26 (3·0%)
7	Drug misuse	11 (2·7%)	Self-inflicted injuries	13 (3·0%)	Self-inflicted injuries	24 (2·8%)
8	Asthma	11 (2·6%)	Road traffic accidents	13 (2·9%)	Panic disorder	23 (2·7%)
9	Self-inflicted injuries	11 (2·6%)	Chlamydia	10 (2·3%)	Asthma	18 (2·0%)
10	Drownings	10 (2·5%)	Iron-deficiency anaemia	9 (2·1%)	HIV/AIDS	17 (2·0%)
20–24 years						
1	Road traffic accidents	44 (8·7%)	Unipolar depressive disorders	48 (9·9%)	Unipolar depressive disorders	79 (7·9%)
2	Violence	41 (8·1%)	HIV/AIDS	24 (5·0%)	Road traffic accidents	56 (5·6%)
3	Unipolar depressive disorders	31 (6·0%)	Abortion	24 (4·9%)	Violence	47 (4·7%)
4	Alcohol use	28 (5·6%)	Schizophrenia	21 (4·4%)	HIV/AIDS	44 (4·4%)
5	Self-inflicted injuries	21 (4·0%)	Bipolar disorder	20 (4·1%)	Schizophrenia	42 (4·2%)
6	Schizophrenia	21 (4·0%)	Maternal sepsis	18 (3·7%)	Bipolar disorder	40 (4·1%)
7	Bipolar disorder	20 (4·0%)	Tuberculosis	15 (3·2%)	Tuberculosis	35 (3·5%)
8	HIV/AIDS	20 (3·9%)	Self-inflicted injuries	14 (2·9%)	Self-inflicted injuries	35 (3·5%)
9	Tuberculosis	20 (3·9%)	Panic disorder	14 (2·9%)	Alcohol use	32 (3·2%)
10	War	14 (2·7%)	Road traffic accidents	11 (2·3%)	Abortion	24 (2·4%)

As young populations differ from adults in a number of fundamentally important ways, which are likely to affect treatment utilisation, adherence, and outcomes [330-333], simply replicating adult-oriented treatments for young people is likely to be inadequate. This group requires specialized treatment to meet their unique developmental and engagement needs [45, 334, 335]. Youth-focused mental health organisations such as Orygen Youth Health (OYH), Headspace, and ReachOut, along with a range of youth drug outreach programs play an important role in service provision, research, and education for this population. Treatment should be "youth friendly" and include follow-up for missed appointments, ease of access, prompt screening and assessment, drop-in capability, flexibility, strong links to other relevant agencies to ensure holistic treatment, and interventions that recognise different cognitive capacities, and developmental/maturational lags [180]. Due to advantages

regarding anonymity, accessibility, and empowerment, eHealth interventions are a particularly useful means to target this population [336-339].

There is a clear lack of evidence-based treatments available [33, 217]. The majority of rigorous RCTs are pharmacotherapy feasibility trials [217], while the psychosocial trials that do exist are of variable quality [340], do not adequately deal with comorbid MHSUP [341-343] or are not manualised or inadequately tailored [45]. Of those studies that do exist, an Australian integrated, youth-focussed programme was associated with significant improvements in depression, anxiety, and substance use outcomes [344]. In adolescents, Multidimensional Family Therapy has also been associated with a range of positive outcomes relating to substance use, and internalising and externalising problems, however, specific mental health outcomes are rarely reported [345-349]. CBT/MI-based programs have been found to be effective (in terms of substance use outcomes) in a cannabis-using youth population [350].

Indigenous Australians

The standards of physical and mental health among Indigenous Australians are poor in comparison with the wider Australian community. Research shows that although there are proportionately more Indigenous people than non-Indigenous people who refrain from drinking [351], those who do drink are more likely to do so at high-risk levels [352, 353]. Between 2000 and 2004, Indigenous men died from alcohol-related causes at a rate seven times higher than their non-Indigenous counterparts, while this rate was ten times higher for Indigenous women [352]. Other substances including opiates, cannabis, amphetamines, injecting drugs, and poly-drug use also present significant problems in Indigenous communities [354]. Furthermore, petrol-sniffing has been a major concern—particularly among adolescent males—in the remote areas of Central Australia [355].

Indigenous people are also over-represented in inpatient mental health care [356]. In the Northern Territory during 2002-2003, 84% of Indigenous mental health admissions were related to psychosis, depression, and substance-related disorders [357]. It has been suggested that the factors which contribute to increasing rates of psychiatric morbidity in Indigenous communities include the destruction of social infrastructure, rapid urbanisation and poverty, cultural, spiritual and emotional alienation, loss of identity, family dislocation, and increased drug and alcohol consumption [358-360]. The trauma suffered by the stolen generations as a result of the assimilation policies of the Australian government has direct relevance to the psychological adjustment of Indigenous Australians. This disruption and damage of early parent-child attachment has long been linked with depression, anxiety and other emotional concerns in later life [361, 362]. Indigenous people may be at increased risk of poor treatment outcomes due to poor physical health, social disadvantage, comorbid substance misuse, and a burden of grief through suicide, homicide, and incarceration [357].

Although only limited data exists regarding comorbidity specifically among Indigenous communities, rates are thought to be high [356, 363]. Previous studies have shown an association between depression, anxiety, suicide, and alcohol dependence in the Aboriginal community [364]. In addition, frequency of alcohol consumption in Indigenous communities has been found to be correlated with hallucinations, paranoia, self-mutilation and panic [358, 365]. In a recent study of 221 Aboriginals living in regional Western Australia reported almost universal trauma exposure (97%), while two thirds met criteria for an AUD [366]. Of those who met the PTSD diagnostic criteria (122 individuals), almost all also criteria for an AUD (91%).There is also evidence suggesting that substance use and self-harm behaviour are rising in the Indigenous community [367, 368].

Existing mainstream models of practice in this area have overwhelmingly been developed within non-Indigenous systems of knowledge and as a result, they are not necessarily generalisable. There are often a number of specific customary, spiritual, and cultural differences that require acknowledgement, respect, and understanding in order to effectively treat members of these communities [352, 369-372]. Furthermore, Indigenous Australia is a heterogeneous mix of diverse languages and customs, which requires specific tailoring of interventions to different communities.

The Indigenous Risk Impact Screen is a useful screening tool for identification of substance use and mental health risks in Indigenous populations [373]. Furthermore, a recent pilot study comparing a two-session motivational care planning programme to usual care showed promising results in three remote Indigenous communities. Although not specifically comorbidity-based, the intervention was associated with improvements on wellbeing, psychological distress, and substance use outcomes over time [374]. Nevertheless, much research and clinical intervention is needed in this area.

Homeless persons

There are considerably high rates of comorbidity in homeless persons [375, 376]. However, these problems are further compounded in this population by a range of physical, financial, housing, social, and cognitive problems, as well as reduced access to services and resources [375]. As such, a holistic and pragmatic approach is generally considered best practice with this population. Unfortunately, few evidence-based interventions for homeless persons have been established. Recent evidence suggests that specialist homelessness, substance use, and mental health services are all providing support in domains other than their direct area of specialization for homeless individuals [377]. Nevertheless, there is a desire on the part of both clients and service managers for greater levels of service integration and that service integration is associated with improved client integration. Much more attention is required in this population.

Concluding remarks

Despite strong progress in recent years much more work and commitment is required in the area of comorbid MHSUP, systemically, clinically, and in the development of a robust evidence base. This is especially true amongst high-risk groups. Further tailoring and integration of therapeutic components, along with the use of different, flexible modalities and a move towards considering multiple health risk behaviours is essential to better reach and assist those in need. Consideration should be paid to strategies to best translate evidence-based research into practice, increase access, and create sustainable treatment programmes. Nevertheless, driven by clinical urgency, this issue has received much greater attention over the last twenty years than ever before, and progress continues to be made. Integrated care has been found to be particularly promising, while new and emerging areas such as eHealth have the potential to help overcome a range of systemic barriers. Australia has emerged as a world leader in the area of comorbidity, both clinically and in the field of research, and this must continue into the future to address the significant burden and harms caused by this issue.

Part V:
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