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INFORMING ALCOHOL AND OTHER DRUG SERVICE PLANNING IN VICTORIA

Final report

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INFORMING ALCOHOL AND OTHER DRUG SERVICE PLANNING IN VICTORIA

Final report

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Executive summary

This report aims to inform future service planning for the alcohol and other drug (AOD) sector in Victoria by providing recommendations regarding a draft set of packages of care at a population level based on available evidence. The focus of the report is on packages of care for clients presenting for treatment with substance use disorders, particularly focussing on those with substance dependence, inclusive of associated complexities (such as mental or physical health problems, social or economic instability, or a history of previous treatment attempts). As per the Department of Health and Human Services' (DHHS) instructions, the scope of the current review was to develop packages of care and a population based planning model focussed on five currently funded major streams of activity (namely, withdrawal, counselling, care and recovery coordination, therapeutic day and residential rehabilitation). Nevertheless, a number of other treatment types have been included within the narrative part of this document, given existing evidence regarding their efficacy, so as to inform future planning models.

The review's recommendations were informed by a rapid review of the available Australian and international literature (both peer review and grey literature, with a focus on systematic reviews and meta-analyses where available) relating to treatment effectiveness, project work commissioned by the Victorian DHHS and Commonwealth Department of Health in the area of demand modelling, treatment outcomes and treatment pathways, as well as the Drug and Alcohol – Clinical Care Package (DA-CCP) model, a national population-based model for drug and alcohol service planning. Where the literature was limited, individual studies were included, and these were not necessarily selected on the basis of their methodological rigour, but rather to provide available evidence to inform potential treatment packages. It is recognised that in these instances, further research is needed to robustly demonstrate treatment effectiveness.

The review highlights key elements of an effective AOD service system, in particular one that increases the availability and accessibility of specialist services, yet also takes into account the varying needs of a complex population in which not all clients will require the same levels of care. Recognising the importance of comprehensive and continuous care as opposed to isolated treatment episodes, a key objective of the report was to examine the evidence base for 'packages of care' for substance dependent clients with differing levels of need. However, while the need for integrated care is well recognised in the literature, there is limited literature on how the treatment system should be configured, and a lack of evaluation of packages of care within that system. Moreover, where studies have examined

multi-component interventions (i.e., interventions involving a combination of treatments), it is not always possible to unpack the impact of treatments individually in regard to their effect on treatment outcomes. Nevertheless, there is an extensive literature examining the effectiveness of different individual components of AOD treatment, which was used to inform the packages of care recommended in this report. These components encompass currently funded treatment streams such as residential and non-residential withdrawal, counselling, care and recovery coordination, residential and therapeutic day rehabilitation, peer support/mutual aid, as well as other cost-effective and low-intensity sustainable treatments (such as telephone support).

It is important to note that the focus of the literature reviewed was on currently funded service streams within the existing Victorian AOD treatment system. This excluded specific forensic programs as these are funded separately, and there is currently a separate piece of work involving service planning underway. As such, our rapid review does not include all potential treatment options that have been used in the management of substance use disorders. Nevertheless, the review process did identify a number of other critical components of an effective treatment system that need to be considered in future models, the most relevant of which are briefly summarised. For example, other treatment approaches/activity that have a strong evidence base, but were not factored into the current model due to the specific aims of this project included brief interventions, pharmacotherapy, needle and syringe programs, addiction medicine and consultation-liaison services, and family interventions, which should be considered for future modelling and funding.

In addition to identifying individual components of an effective treatment system, the review highlighted the importance of continuity of care via horizontal integration with linkages to different treatment streams (e.g., residential withdrawal, outpatient counselling) and with vertical integration to different health and welfare systems for complex clients facilitated by care and recovery co-ordination (case management) and aftercare (peer support/mutual aid). While not a focus of this review, effective models of integration between programs where individuals with substance use disorders typically present (e.g., Emergency Departments, hospitals and the mental health system) require further investigation. However, integrated models have been subjected to scant evaluation, with the additional challenge of a dearth of research on effective packages of care. To date, the only model that has attempted to delineate the required treatment streams, while

recognising the need for longer-term engagement with the treatment system, is the Drug and Alcohol - Clinical Care Package (DA-CCP). The strengths of this Australian model of care include development through expert consensus, the inclusion of all drugs (except tobacco), the inclusion of a broad range of treatment settings as well as all AOD treatment services and sectors (public, non-government and private), and consideration of both standard (low co-morbidity) and complex (high co-morbidity) presentations. Treatment streams from the DA-CCP model were therefore utilised alongside the evidence gathered from the literature review in order to inform the final recommendations regarding treatment packages.

In determining the different levels of care likely to be required at a population level, a tiered framework was adopted that has previously been used to segment AOD treatment-seeking populations in Victoria. The framework segments treatment-seeking dependent populations into pre-defined categories based on substance use severity as well as a range of life complexity factors (e.g., comorbid mental health problems) that are likely to require more intensive treatment. The final treatment recommendations were based on a revised three-tier model, with each package specifying the type and duration of treatments to be provided over a 12-month period according to varying levels of addiction severity and complexity.

There are a number of caveats to this report that are important to consider. First, literature was identified as part of a rapid review process that focussed on systematic literature reviews and meta-analyses, and some individual studies may have been overlooked. Second, as no definitive model of the type proposed currently exists, assumptions have been made that require formal testing when data is available and/or justification by expert consensus. Third, the severity of complexity factors is critical in determining the level of care a client receives, and it is recommended that the identified treatment packages of care align with these. Fourth, we have focussed on broad population health models, and the packages of care therefore may not apply to specific populations, including culturally and linguistically diverse (CALD), Aboriginal and Torres Strait Islander, forensic, and youth populations. Fifth, while the literature highlights the need for programs targeting the needs of clients with serious mental illness/dependence as well as significant psychosocial issues, these are currently not available in the Victorian system, and as such have not been included in the model. Sixth, early intervention and prevention programs were also not within the scope of this report. Finally, addiction medicine services for clients with significant physical and mental health issues, while a key part of an effective AOD service system, have also not been included in the model. However, such services will need to be considered in future service planning and model development.

Thus, the three treatment packages identified, based on client need, are as follows:

- Standard (provided to clients with dependence plus one complexity factor)
- Enhanced standard (provided to clients with dependence plus two complexity factors, one of which is moderate mental health problems)
- Complex (provided to clients with dependence plus significant mental and/or physical health problems, or a history of previous treatment episodes)

These treatment packages of care are summarised in the table below. An overview of the literature that was used to guide these recommendations is provided in Section 6.

Treatment ^a	Standard (tier 3-4) (e.g., dependence plus one complexity factor only)	Enhanced standard (tier 4-5) (e.g., dependence plus two complexity factors, one of which is moderate mental health problems)	Complex (tier 5+) (e.g., dependence, plus significant mental/physical health problems, or previous treatment episodes)
Estimated % of treatment-seekers (± 5)	30%	45%	25%
Non-residential withdrawal	By exception ^{bc}	7-8 days ^d	By exception ^b
Residential withdrawal	By exception ^b	7-8 days ^e	7-8 days ^f
Counselling	5 x 60 minute sessions	5 x 60 minute sessions ^g	12 x 60 minute sessions ^g
Care and Recovery Coordination	By exception ^b	8 x 60 minute sessions	16 x 60 minute sessions ^h
Residential rehabilitation	By exception ^b	By exception ^b	8-26 weeks ⁱ
Therapeutic day rehabilitation	By exception ^b	25-30 days ^j	25-30 days ^k
Peer support/mutual aid	Assertive linkage	Assertive linkage	Assertive linkage

^a Assertive telephone support post-discharge provided to 100% of clients

^b If clinically indicated or in accordance with client preference

^c Withdrawal support for this group is primarily provided within primary care

^d Provided to approximately 50% of clients receiving this package of care

^e Provided to approximately 50% of clients receiving this package of care

^f Setting may vary depending on client preference

^g Provided in either group or individual therapy settings

^h For complex clients who are difficult to engage in treatment, this may include assertive outreach

ⁱ Provided to 50% of clients receiving the complex package of care

^j Provided to 10-20% of clients receiving the enhanced standard package of care

^k Provided to clients receiving the complex package of care who do not require residential rehabilitation (50%)

It is recommended that the above table is applied to all substance use disorders, although it is expected that complex/tier 5 would primarily be required by clients with alcohol, opioid, and methamphetamine problems. Nonetheless, clients with other disorders (e.g., cannabis use disorder), who are also experiencing severe social, mental, or physical health problems may still be candidates for complex packages of care. Indeed, polydrug use is the norm amongst treatment-seekers, and therefore substance-specific packages of care have little justification based on current evidence. While those with alcohol/opiate dependence are likely to also require pharmacotherapy (given the available evidence), this has not been

included in the current model. Finally, it is important to emphasise that the recommended packages of care are for population planning purposes and are based on the 'average' or typical client, and that in the real world, there will be 'exceptions', where due to clinical judgement and/or client preference, clients will require less intensive or more intensive treatments to meet their needs.

Introduction

This report aims to inform a broader alcohol and other drug (AOD) service planning project, which seeks to forecast the future demands for state funded drug treatment in Victoria. The primary objective of the report was to examine the evidence base for packages of care for AOD clients with differing levels of need. As per the Department of Health and Human Services' (DHHS) instructions, the scope of the current review was to develop packages of care and a population based planning model focussed on five currently funded major streams of activity (namely, withdrawal, counselling, care and recovery coordination, therapeutic day and residential rehabilitation). Nevertheless, a number of other treatment types have been included within the narrative part of this document, given existing evidence regarding their efficacy, so as to inform future planning models.

The report describes the findings from a rapid review of empirical and grey literature on treatment effectiveness across different treatment streams (treatment types) and approaches (principally focussing on psychosocial interventions). The focus was on adults with alcohol or drug dependence with/without other complexities, with specific populations (e.g., older adults, youth, indigenous, culturally and linguistically diverse, forensic, pregnant women) considered out of scope. While the focus for informing population-based package of care were on clients presenting with substance dependence, we acknowledge that at times, non-dependent clients presenting with risky levels of AOD use may require treatment within the Victorian AOD system. The report draws heavily on the findings of project work commissioned by the Victorian DHHS as well as other funders (e.g., Commonwealth Department of Health) around demand modelling, treatment outcomes and treatment pathways and describes the Drug and Alcohol – Clinical Care Package (DA-CCP) model, a national population-based model for drug and alcohol service planning.

A rapid literature review of Australian and international treatment outcome studies was conducted to provide evidence for treatment effectiveness. This included (i) literature on effective components of the AOD treatment system by examining individual treatment streams (i.e., withdrawal management, rehabilitation, counselling, care and recovery coordination (often referred to in the literature as case management), assertive outreach, aftercare/peer support and mutual aid, and pharmacotherapy); (ii) systematic reviews and meta-analyses of psychosocial interventions; (iii) examining individual studies focussing on discrete populations of interest (e.g., clients with comorbid mental health disorders); (iv) studies examining outcomes among clients with other complexities (e.g., homeless populations); and (v) factors influencing treatment outcomes (e.g. mental health, social

stability [i.e., homelessness/unemployment], treatment duration, severity of dependence, and treatment history, continuity of care and therapeutic alliance). Literature on models of care are also discussed (i.e., stepped-care models and integrated care) as well as models that have attempted to segment populations according to their level of severity and complexity. Recognising the need for a paradigm shift away from discrete, treatment episodes to more comprehensive/continuous care, we have developed recommendations for 'packages of care' to be provided over a 12-month period for AOD clients with varying levels of severity of dependence and complexity. However, it is important to acknowledge that the evidence base is built on a disproportionate number of studies of clients with alcohol dependence, and to a lesser extent clients with opiate dependence, and thus there are limitations when extrapolating to other illicit and emerging drugs of concern (e.g. methamphetamine, prescription opioids).

1. Does alcohol and other drug (AOD) treatment work?

Early reviews of treatment outcome research identified a wide gap between science and practice, whereby there was minimal overlap between what was delivered within the treatment system and what was supported by research as effective (Miller, 2016). This has gradually improved with the increasing publication of clinical trials and improved research methodologies, with evidence now supporting numerous treatment alternatives with reasonably strong evidence of efficacy. Indeed, a substantial evidence base now indicates that once in specialist treatment for alcohol and/or drug problems, many individuals with alcohol and drug dependence improve (i.e., reduce or cease use). However, the treatment outcome literature is almost entirely dominated by research findings from the US and UK (see Appendix Table 1 for a summary). A review of the international literature on drug treatment effectiveness undertaken for the Scottish government (Best, Rome et al. 2010) concluded that:

- Significant improvements in the wake of treatment are seen across a range of indicators, including health, offending, risk-taking, substance use and social functioning;
- A range of treatment modalities demonstrate value for money, with the most recent estimate (from the Drug Treatment Outcome Research Study) of a cost effectiveness ratio of 2.5:1 for savings in health and social care relative to treatment costs;
- Therapeutic relationships and overall service quality are important predictors of treatment engagement and outcomes for clients;

- Retention in treatment for at least 90 days has been shown to be the threshold for 'treatment gain' in community settings;
- Continuity of care is a critical component of effective treatment systems;
- A strong evidence base exists around linkage to peer and community 'aftercare' support.

Nevertheless, there remains a paucity of longitudinal studies evaluating outcomes largely because of the high cost of money, effort and organisational commitment necessary to implement, coordinate and sustain such data collection systems over many years. To date, only three longitudinal outcomes studies have been conducted in Australia. However, all three have shown positive benefits associated with treatment, and are summarised below.

ATOS (2008)

The Australian Treatment Outcomes Study (ATOS) recruited 825 heroin users upon entry to maintenance therapies (methadone or buprenorphine), residential rehabilitation and withdrawal management services in Sydney, Melbourne and Adelaide. The sample was followed up at one and three years (Teesson, Ross et al. 2006, Teesson, Mills et al. 2008), and a further sample was recruited of 80 heroin users who were not currently in treatment.

At one-year follow-up ATOS participants had received a median of two treatment episodes since their baseline interview. There were reductions in heroin use in the past month from baseline to 12-month follow-up (99% to 41%), which were sustained at two-year (35%) and three-year follow-up (Teesson, Mills et al. 2008). Reductions in heroin use were accompanied by reductions in needle sharing and injection-related health problems.

There were also substantial reductions in criminal involvement and improvements in general physical and mental health. Positive outcomes were associated with more time in maintenance therapies and residential rehabilitation and fewer treatment episodes (where multiple episodes were suggestive of fragmented care rather than continuity of care).

MATES (2012)

The Methamphetamine Treatment Evaluation Study (MATES) recruited 360 methamphetamine or amphetamine users from Sydney and Brisbane community-based withdrawal management and residential rehabilitation services (McKetin, Najman et al. 2012), with both 1 and 3 year follow-ups, and reported similar findings to ATOS.

Almost half of the MATES participants received additional treatment in the three months following their index episode. Recovery in the MATES study was defined as continued

abstinence, with reported rates of 33% at the three-month follow-up, 14% at the one-year follow-up and only 6% at the three-year follow-up (McKetin, Najman et al. 2012). While the greatest changes were seen for abstinence, the residential rehabilitation group also demonstrated large reductions in methamphetamine use at the 3-month follow-up assessment and, to a lesser extent, at the 1- and 3-year follow-up assessments.

Patient Pathways (2015)

The Patient Pathways project explored treatment systems and pathways through specialist and linked services, and included not only a large cohort study of clients entering alcohol and other drug (AOD) treatment (with quantitative and qualitative components), but also a linked analysis of acute harms before and after engagement with AOD treatment in Victoria (Lubman, Garfield et al. 2016).

The project recruited 796 clients from 20 AOD specialist services in Victoria (VIC) and Western Australia (WA), of which 29% were in long-term residential treatment, 44% in acute withdrawal services, and 27% in outpatient delivered treatment. Marked improvements in AOD use were observed at the 12-month follow-up with just over half of the sample (52%) achieving treatment success (i.e., reliably reduced the frequency of their Primary Drug of Concern [PDOC] in the month prior to assessment, or had been abstinent over this period). A third (30.5%) of the retained sample achieved abstinence from all PDOCs (Manning, Garfield et al. 2016).

Predictors of treatment success included completion of the primary index treatment (PIT), mutual aid attendance, and having a primary meth/amphetamine problem relative to alcohol (61% of those with meth/amphetamine as their PDOC achieved abstinence compared to 28% of those with alcohol). Mutual aid attendance and community service engagement were significant predictors for clients with a primary alcohol problem, while PIT completion and continuity of specialist AOD care were significant predictors for those with a primary drug problem, with no predictor being significant in both groups.

Patient Pathways – linkage component (2015)

The linkage component of the Pathways Project involved linking Victorian alcohol and drug treatment service data (the Victorian Alcohol and Drug Information System; ADIS), emergency department presentations data (the Victorian Emergency Minimum Dataset; VEMD), and hospital admitted episodes data (the Victorian Admitted Episodes Dataset; VAED) across three years. The aim of the data linkage component was to provide evidence

on people's engagement with medical and clinical services prior to and following engagement with specialist AOD treatment, and to obtain a better understanding of service utilisation by clients prior to, during and following AOD treatment engagement.

The linkage component identified significant decreases in service utilisation across emergency department (ED) and hospital inpatient settings in the year following treatment engagement. More than half (52%) of the clients did not present to ED over the follow-up period (Lubman, Manning et al. 2014). These reductions in acute service use were found across most participant demographic characteristics, treatment types and drug use characteristics, though were most evident among those who had received long-term residential treatment as their PIT. This provides evidence that investment in the specialist AOD treatment system generates cost savings in terms of reduced use of acute healthcare services.

2. What are the components of AOD treatment that work?

AOD treatment can encompass a wide range of approaches, including withdrawal management, rehabilitation, counselling, care and recovery coordination, as well as brief interventions. The following sections describe these forms of treatment and summarise the evidence that supports their effectiveness. It should be noted that the bulk of the literature to date has focussed on treating alcohol use disorders, and to a lesser extent opiate use disorders. Less is known about the types of treatment that are successful in treating abuse or dependence on other substances (e.g., amphetamines), although the few studies that have been conducted are broadly consistent with the remaining literature.

Withdrawal management

Withdrawal management refers to a period of medical treatment during which an individual is helped to overcome physical dependence to a drug. The aims are to achieve a substance-free state and relieve the immediate symptoms of withdrawal, as well as treat any comorbid medical or psychiatric disorders (Hayashida 1998).

Withdrawal management can be completed in both inpatient (i.e., residential withdrawal) and outpatient (i.e., non-residential withdrawal) settings. Research indicates that treatment outcomes may be more closely linked to patient characteristics (and other mediating and moderating factors, such as treatment intensity, length of stay, and the linking of withdrawal

management with rehabilitation and aftercare) than the withdrawal setting alone (Finney, Hahn et al. 1996, Hayashida 1998, Day 2005).

While non-residential withdrawal is effective, it is not necessarily appropriate for all patients (e.g., those with alcohol dependence at risk of life-threatening withdrawal complications (Hayashida 1998). Residential withdrawal is considered to be most useful for patients with severe dependence who have a high number of adverse or complex characteristics (Day 2005).

It should be noted that current models of withdrawal management do not consider recent increases in demand on acute health settings in terms of presentations requiring high acuity inpatient admission (including ICU and psychiatric units). While there is limited evidence to inform alternate approaches, some consideration is needed in terms of whether current models of withdrawal management can be modified to better support such presentations (e.g., development of step-down beds/units with appropriate staffing) across the health care system.

Rehabilitation

Rehabilitation encompasses the delivery of counselling/psychosocial interventions in group or one-on-one settings, typically including relapse prevention and skills-based training. Rehabilitation can occur in a residential (i.e., inpatient) or non-residential (i.e., outpatient) treatment settings. The primary therapeutic approaches include the 12-step model, therapeutic community, and cognitive-behavioural therapy-based interventions (EMCDDA 2015).

As with the literature on withdrawal management, early reviews comparing inpatient and outpatient rehabilitation found limited support for the use of one setting over the other (Mattick and Jarvis 1994, Finney and Moos 1996), however client characteristics have again been found to moderate the effects of setting. For example, Rychtarik and colleagues found that clients with more severe alcohol problems benefited more from inpatient than outpatient care; the opposite was true for those with low levels of alcohol problems (Rychtarik, Connors et al. 2000). Similarly, Tiet and colleagues found evidence that intensive treatment may be differentially beneficial for some subgroups of patients, such as those who exhibited more severe symptoms and were less socially stable (Tiet, Ilgen et al. 2007). These results provide some support to the hypothesis that for patients who have higher

levels of substance use severity at intake, treatment in inpatient/residential treatment settings is associated with better outcomes than outpatient treatment.

Research has found improved outcomes to be more likely among clients who spend longer periods of time in treatment. Episodes of at least three months are more likely to be associated with positive outcomes (Simpson 1997), however longer periods in treatment, up to one year or more, show continuing improvement in outcomes (Simpson, Joe et al. 1997). Long stay residential rehabilitation programmes, usually between six and 12 months in duration, (NSWHealth 2000) suggests that longer-term services should be targeted to:

- People with severe alcohol and drug use problems, where these problems pose a significant risk to the health and welfare of the person themselves and others
- People for whom non-residential or short term treatment options have failed to address their treatment needs in the past
- People whose home setting or social circumstances are not supportive of non-residential treatment options, to the extent that such treatment options are unlikely to succeed
- People with significant co-morbid disorders, requiring longer stabilisation. Longer long-stay programmes are generally better suited to clients who are chaotic and socially excluded and who may be characterised by poor educational and social skills attainment, unemployment, severe housing need, and persistent and prolific offending.

Rehabilitation can include therapeutic communities (TCs), which are alcohol and non-prescribed drug-free environments in which people with addictive problems live together in an organized and structured way to promote change toward recovery and reinsertion in society. While holding a strict no-drug policy in relation to illicit substances, an increasing number of TCs include pharmacotherapies in both maintenance and withdrawal programs, and clients entering treatment may also be on prescribed medications for a range of mental health issues (De Leon 2000, Vanderplasschen, Colpaert et al. 2013). While relatively new in Australia, therapeutic communities have been in operation internationally for many years. Systematic reviews of the effectiveness of TCs in recovery have found significant reductions in substance use in addition to significant improvements in psychological functioning, employment, and legal outcomes, although length of stay in treatment and participation in subsequent aftercare were important variables in determining recovery status (Vanderplasschen, Colpaert et al. 2013). Current work in this area is concentrating on increased wellbeing and social

connectedness following treatment, in addition to reduced substance use (Best, Best et al. 2016)

Therapeutic day rehabilitation programs are playing an increasingly important role in expanding the range of treatment options, offering an alternative to costly residential rehabilitation, of which there are limited places. These programs offer intensive psychosocial rehabilitation while the client attends a full-day Monday-Friday program while remaining in their own residence. As with TCs, day rehabilitation programs are relatively new in Australia, yet have formed part of the treatment environment overseas for many years. While there have been few rigorous studies examining their effectiveness in Australia, there is some preliminary evidence that they may improve outcomes. For example, the ReGen Catalyst Program in Victoria is a 6-week non-residential alcohol rehabilitation day program that builds on recovery capital and motivation for change, aiming to strengthen family relationships and connections to other services, and is based on Cognitive Behavioural Therapy, mood and anger management, and Motivational Enhancement Therapy. An evaluation of outcomes showed significant improvement across 6 key domains at 6 and 12 months (Kiehne and Berry 2012). A similar therapeutic day rehabilitation program for AOD clients involved in the criminal justice system is Torque (LeeJenn 2015), which also demonstrated positive outcomes and high treatment satisfaction in a recent evaluation.

Supported housing

While AOD treatment has been found to be helpful, treatment alone does not guarantee recovery. The period immediately following formal treatment is an exceptionally high risk period for relapse, as people typically return to their former using environments and peer networks, with minimal or no aftercare or support from services. Unlike specialist AOD treatment where the focus is on supporting an individual to abstain or reduce harm from their AOD use, supported housing services can help individuals to achieve the longer-term goals recognising that recovery is more than the absence of problematic AOD use.

An example of supported accommodation in Victoria is Oxford House, run by the Self-Help Addiction Resource Centre (SHARC). Oxford House aims to provide stable accommodation, opportunities for employment and support for abstinence through a peer-driven support system. Turning Point has recently conducted an evaluation of the impact of the Oxford Houses program on key outcomes including AOD use, recovery capital, connectedness,

wellbeing, and engagement in meaningful activity (e.g. employment, education etc.). Baseline results indicate that clients experience considerable improvements in a range of wellbeing and life areas – including health, finances, legal issues, meaningful activities and family and social connectedness – when they are in the Oxford Houses program. Not only do they report improved wellbeing, they also report decreased usage of costly acute health care services and the criminal justice system. A 6-month follow-up survey is currently being undertaken in order to determine whether these outcomes are sustained longer-term.

A qualitative study examining client perspectives on recovery post treatment plans found that supported housing was considered a critical issue, with concerns raised about the ability to afford to live independently with financial stability and welfare availability (Duffy and Baldwin 2013). Overall, international research has indicated that supported housing has been associated with a range of positive treatment outcomes, including reductions in substance use, fewer arrests, and an increased likelihood of obtaining permanent housing and employment (Fisk, Sells et al. 2007, Polcin 2009, Polcin, Korchia et al. 2010, Majer, Jason et al. 2011). Residential programs have also emerged as a popular intervention strategy for clients with severe comorbid mental health issues, as dual diagnosis is strongly associated with unstable housing and homelessness (Brunette, Mueser et al. 2004).

Assertive outreach

The assertive community treatment (ACT) model is an intensive mental health program involving a multidisciplinary approach to patient care that differs conceptually and empirically from traditional case management. A team of professionals service patients who are at risk of psychiatric hospitalisation, but who do not readily use clinic-based services, with contact typically occurring in community settings. In 2001, Bond and colleagues (Bond, Drake et al. 2001) noted that ACT was one of the most comprehensively researched models of treatment in regard to mental health disorders, with 25 randomised controlled trials evaluating its effectiveness. The results of these trials indicate that ACT can substantially reduce psychiatric hospital use, increase housing stability, engage patients in treatment, and result in a moderate improvement in symptoms and quality of life. While costly, this is offset by the reduction in hospital use amongst high-needs patients.

Although implemented primarily in the mental health field, assertive community treatment has been recommended for patients with comorbid serious mental health and substance use disorders, particularly when integrated with other treatments or interventions (e.g., long-term rehabilitation or motivational interviewing). In particular, it is a potential treatment model for patients with severe substance dependence and comorbid medical disorders who are difficult to engage in treatment (such as those with alcohol dependence and liver cirrhosis). Indeed, a recent randomised controlled trial found that alcohol dependent clients who received ACT had better treatment engagement and less unplanned healthcare use than those who received treatment as usual (Drummond, Gilbert et al. 2016).

Drake and colleagues argue that assertive outreach is a critical component of treatment given that many patients with serious mental health and substance use disorders struggle to manage linkages between services and maintain participation in treatment (Drake, Essock et al. 2001). As such, assertive outreach is arguably of most benefit to a subgroup of patients who are severely ill and difficult to engage. A review of Australian mental health stakeholders' (mental health service providers and mental health non-government organisations) views on such clients revealed that over 80% believed assertive outreach to be moderately to very effective (Table 1) (Cleary, Hunt et al. 2009).

Table 1: (Cleary, Hunt et al. 2009): Perceived effectiveness of treatment options for reducing substance use by clients with comorbid serious mental health and substance use disorders (rank ordered)

Treatment option	Very effective (%)	Moderately effective (%)	Only a little effective (%)	Not effective (%)
Motivational Interviewing	33.3	47.6	15.9	3.2
Assertive Outreach	28.1	51.6	18.8	1.6
Case management	25.4	54.0	19.0	1.6
Residential treatment	25.4	52.4	21.2	0
Opioid maintenance therapy (e.g. methadone)	21.0	48.4	27.4	3.2
Family education	16.9	53.8	29.2	0
Skills training	14.3	60.3	25.4	0
Cognitive Behavioural Therapy	14.3	57.1	27.0	1.6
Education/information regarding the effects of substance misuse	14.1	57.8	25.0	3.1
Twelve step recovery (e.g. Alcoholics Anonymous)	11.1	46.0	39.7	3.2
Group therapy	11.3	40.3	43.5	4.8

A study comparing assertive case management and standard case management amongst clients with serious mental health and comorbid substance use disorders found that participants in both conditions improved over time, with greater decreases in substance use

than would have been anticipated without treatment. They concluded that integrated treatment can be delivered successfully by either method of care (Essock, Mueser et al. 2006). However, qualitative evidence suggests that building trust through ongoing involvement as well as a feeling of personal responsibility for taking part in treatment may be crucial elements of successful ACT amongst clients with comorbid serious mental health and substance use disorders (Pettersen, Ruud et al. 2014).

Care and recovery coordination

The definition of coordinated care can vary between services, including case management as well as shared or multidisciplinary care. The core elements involve the coordinated delivery of individual services across multiple sectors, encompassing comprehensive assessment of the client's needs, a case manager who manages engagement with individual services, the development and delivery of a care plan, and coordination and organisation between and within services. For people with complex needs, care and recovery coordination is available to assist the person navigate services and to support them throughout their treatment journey. It also supports a person to plan for exit from treatment and to access other services that can help the person with housing, training, education, employment, or other support that can help prevent relapse (Services 2016).

While a systematic review found inconsistent results regarding substance use and mental health outcomes following the evaluation of care and recovery coordination (Drake, O'Neal et al. 2008), this is likely influenced by a lack of consistent research. The authors identified aspects of study design such as the provision of integrated treatment to all participants (where the experimental manipulation was intensity of case management), which could have led to weak results on substance use outcomes. Nonetheless, they note that the studies reviewed consistently demonstrated the positive outcomes traditionally associated with case management (e.g., increasing quality of life, decreasing hospital use) suggesting that the relationship between care and recovery coordination and substance use outcomes are likely to be dependent on the specific interventions within the model.

Opiate users engaged in opiate substitution therapies may be good candidates for case management or care and recovery coordination, as there is emerging evidence that counselling/psychosocial interventions can have limited effectiveness within this population (Day and Mitcheson 2017). It has been proposed that this is due to their greater complexity, including poorer physical/mental health, social/familial problems, and greater

unemployment, stigma, legal problems, and cognitive impairment, which can compromise engagement and response to psychosocial interventions. This means that such clients are likely to benefit from more integrated treatments where such issues can be addressed by other specialist services. This has been demonstrated in a study by McClellan and colleagues, where standard counselling was enhanced by other clinical services (psychiatrists, employment counsellor, family therapist)(McClellan, Arndt et al. 1993).

Counselling/psychosocial interventions

There is a range of psychological treatment approaches that are used in the treatment of substance use disorders. The dominant psychosocial approaches that have been most widely applied are Cognitive Behavioural Therapy (CBT), relapse prevention, and Motivational Interviewing (MI). As a consequence, these interventions (which are defined and discussed in more detail in the following sections of this report) have been subjected to the greatest empirical testing generating the largest evidence base to date. However, while clinical trials deliver interventions in their purest form (i.e., in isolation and without other interventions), in real world clinical settings, clinicians tend to adopt a more eclectic approach, drawing on a broader 'tool box' of multiple techniques and interventions (e.g., MI during the early stages to increase treatment readiness, followed by CBT or mindfulness to strengthen thought processes and related behaviours, followed by relapse prevention to help maintain positive behaviour change). Moreover, despite their clear effectiveness, these techniques are only successful if staff in AOD settings have appropriate training and supervision. Traditionally, a lack of formal training in the AOD field was argued to have led to a gap between research knowledge and clinical practice (O'Brien 1997), however over the past two decades a focus on workforce development and postgraduate education has led to the inclusion of a growing number of appropriately-trained professionals in the AOD field.

The effectiveness of any intervention depends on fidelity of practice (to a given intervention or manualised approach), as well as issues such as quality assurance, accountability, and organisational capacity to support a shared learning environment that promotes observed practice, supervision and skill development (Miller et al, 2016). Indeed, clinician training and proficiency is an important factor in determining client outcomes. For example, while it has been argued that MI is simple, researchers have identified that it is not necessarily easy to learn (Miller, Yahne et al. 2004, Miller and Rollnick 2009). Consistent with this notion, a recent systematic review by Hall and colleagues (Hall, Staiger et al. 2016) found that existing

research studies identified difficulties in sustaining practice change in MI following training. They estimated that it was unlikely that 75% of clinicians could achieve beginning proficiency in MI unless they received ongoing training and monitoring, and their competency was benchmarked. Such findings highlight the importance of ensuring relevant quality standards and appropriate performance indicators are in place to ensure the delivery of effective AOD interventions.

It should be noted that much of the evidence evaluating psychosocial interventions comes from studies that have included participants with dependence, but without other complexity issues (typically, trials of psychosocial interventions exclude those with complexity issues such as homelessness). However, in line with the high rates of comorbidity between substance use and mental health disorders, there is a growing body of literature on psychosocial interventions specifically for dual diagnosis clients. While the primary focus of the following sections is on the effectiveness of psychosocial treatments in treating AOD disorders, a comparison of studies examining treatment types for substance use disorder only versus dual diagnosis clients is provided in Appendix Table 2, while findings specific to different substances are summarised in Appendix Table 3.

Furthermore, attempts to match clients to specific psychosocial interventions point to equivocal findings, suggesting no one approach is superior (Imel et al. 2008; Miller and Manuel; 2008). For example, Project MATCH (Project MATCH Research Group, 1993), the largest matching study to date, matched alcohol clients to one of three therapeutic approaches (CBT, motivational enhancement therapy, and 12-step facilitation) and found no difference in outcomes. Subsequent research has produced similar findings and it has been argued that even a single session of brief and empowering counselling and self-help material is robustly more effective than no intervention or a waiting list (Miller 2016).

Finally, the majority of outcome studies evaluating psychosocial interventions have focussed on alcohol (the primary drug that clients seek treatment for in Australia (AIHW 2016)), although studies examining other substance use disorders are also summarised below. Of note, a systematic review and meta-analysis of all illicit drug use disorders (encompassing 35 treatment trials) evaluated contingency management, relapse prevention, CBT, and treatments combining CBT and contingency management, and found an overall moderate effect size for all drugs (with a large effect size [.81] for cannabis, a medium effect size for cocaine [.62] and a small effect size for opiates [.39] and polysubstance use disorders [.24])(Dutra, Stathopoulou et al. 2008). However, it is also

important to note that poly-drug use is the norm in treatment rather than the exception, which complicates the evaluation of outcomes, particularly when a binary relapse model is applied (Miller 2016). Moreover, people attending AOD services often present with long trauma histories in addition to high rates of comorbidity, which need to be addressed as part of the treatment process. These underlying issues both contribute to the development of, as well as perpetuate, AOD problems, and as such, need to be addressed through a range of evidence-based interventions (including specific trauma-focused therapies which are out of scope for the current review).

Cognitive Behavioural Therapy (CBT):

CBT emphasises the role of maladaptive thought processes and behaviours in the development and maintenance of psychological disorders. A number of CBT techniques can be used in the treatment of AOD problems, including cognitive restructuring (identifying and disputing maladaptive thoughts), pleasure and mastery events (recognising partial successes to counter all-or-nothing thinking), goal setting, and problem solving (Marel et al., 2016). As noted, the majority of research evaluating psychosocial treatments for AOD problems has focussed on CBT, and the evidence base for this treatment is arguably stronger than that for other psychosocial interventions (NSWHealth 2008, Haber, Lintzeris et al. 2009).

In addition to a strong evidence base in the treatment of alcohol use disorders (NDARC 2003, Haber, Lintzeris et al. 2009), there is also evidence of the efficacy of CBT for cannabis dependence (Ductra, 2008). Indeed, a meta-analysis of CBT with adult AOD users found a small but statistically significant treatment effect across studies, with the strongest effects in cannabis users compared to users of other substances (Magill and Ray 2009). CBT has demonstrated effectiveness within relatively short timeframes; for example, a review of studies examining cognitive and behavioural therapies for methamphetamine dependence found that CBT was associated with reductions in use even over very short treatment periods (i.e., two and four sessions)(Lee and Rawson 2008). However, longer treatment may confer additional benefits, particularly amongst dual diagnosis clients. A recent systematic review found that CBT was associated with reductions in alcohol consumption amongst people with psychosis, with lengthier sessions conferring additional benefits for depression, overall functioning, and other alcohol-related outcomes (Baker, Thornton et al. 2012).

Modified CBT for those with co-occurring mental health problems:

CBT delivered in conjunction with other interventions has shown efficacy amongst clients with co-occurring mental health and substance use disorders. CBT with motivational interviewing (MI; see below) has been shown to improve alcohol problems among clients with comorbid depression (Baker, Kavanagh et al. 2010), and CBT alongside contingency management has been shown to reduce substance use and psychiatric symptoms among those with PTSD (Hien, Cohen et al. 2004, Lester, Milby et al. 2007).

Cleary et al.'s (2009) review of another four RCTs revealed that a combination of MI and CBT over a longer period improves substance abuse and mental health outcomes of clients with co-occurring disorders, including clients with comorbid schizophrenia and substance use disorders (Cleary, Hunt et al. 2009). Their review further showed inconsistent support for the application of stand-alone CBT to help individuals with co-occurring disorders - a 16- to 20-session round of CBT targeting clients with bipolar disorder appeared to be effective, whereas a 6- to 12-session round of CBT working with clients with schizophrenia created no significant differences compared with a control group.

Motivational Interviewing (MI):

Motivational Interviewing is based on the stages of change model (Prochaska and DiClemente 1986), which proposes that people will progress through a series of five stages when aiming to change a problematic behaviour (precontemplation, contemplation, preparation, action, and maintenance). MI for AOD use disorders is client-centred and collaborative (emphasising the client's right to select their own solutions), and explores the various impacts of problematic AOD use with the aim of increasing awareness, motivation, and commitment to change harmful behaviours (Marel, Mills et al. 2016).

In systematic reviews of the use of MI with clients with alcohol and/or drug use disorders, MI appears equivalent to other active treatments and superior to no treatment and placebo comparison conditions (Dunn, Deroo et al. 2001, Burke, Arkowitz et al. 2003). Overall, the evidence suggests that MI is effective as a stand-alone treatment in increasing treatment engagement and adherence for people with problematic AOD use (NSWHealth 2008, Haber, Lintzeris et al. 2009). As such, this approach is strongly recommended in all phases of assessment and treatment for clients with AOD issues.

Dialectical Behavioural Therapy (DBT):

DBT aims to change unhelpful patterns of behaviour by combining behavioural strategies from CBT with acceptance and mindfulness strategies. DBT emphasises client validation and has been found to be efficacious in treating personality disorders (including those with comorbid AOD use (Lubman, Hall et al. 2011, Pennay, Cameron et al. 2011). A modified version directly targeting problematic alcohol and drug use has been developed, which has demonstrated promising results, albeit without the same strength of evidence as CBT or MI (NSWHealth 2008). Two randomised controlled trials of the modified version of DBT found significant improvements in AOD outcomes (Linehan, Schmidt et al. 1999, Robins and Chapman 2004)

Relapse prevention:

Relapse prevention aims to maintain abstinence or reduction in AOD consumption and to decrease the severity of relapse, if it is to occur. It includes a set of cognitive and behavioural strategies that aim to assist the client in maintaining treatment gains, and can be assisted through the use of medication (either for reducing substance use or for addressing psychological problems that may be contributing to lapses). Conceptually, relapse prevention considers relapse to be part of the process of change, whereby lapses are viewed as opportunities for clients to understand their behaviour and triggers and develop or enhance their skills to deal with high-risk situations in the future (Haber, Lintzeris et al. 2009).

Mindfulness-based interventions:

Mindfulness is a psychological process based on meditative techniques that focuses on consciously and non-judgementally bringing the individual's attention to the present moment. Amongst AOD clients, mindfulness based stress reduction techniques can be used as a treatment for urge management and relapse prevention (NSWHealth 2008). A recent systematic review identified 24 studies evaluating mindfulness-based interventions in the treatment of substance use disorders, and concluded that they can reduce participants' consumption of a range of substances (including alcohol as well as cocaine, amphetamines, cannabis, and tobacco) to a greater extent than those in waitlist and other control groups. However, the same review noted that the generalizability of the present findings is limited by a range of factors (including small sample sizes and a lack of consistency in outcomes),

and that larger and more rigorous RCTs are required in order to determine the effectiveness of mindfulness-based interventions in AOD treatment (Chiesa and Serretti 2014).

By promoting greater awareness of automatic thinking patterns, mindfulness can be a useful practice for clients with comorbid substance use and mental health disorders. Allowing the mind to wander can lead to a cycle of negative thinking which triggers cravings and maintains the relationship between poor mental health and AOD use (Marel, Mills et al. 2016).

Acceptance and commitment therapy (ACT):

Acceptance and commitment therapy (ACT) is a relatively new behavioural treatment that aims to change unhelpful behaviours through utilising mindfulness and acceptance techniques. As with mindfulness, it emphasises removing the desire to avoid painful personal experiences, and instead encourages the individual to be conscious, mindful, and accepting of their current situation (Hayes 2004).

ACT may be effective in the management of alcohol dependence. For example, Zgierska and colleagues found that alcohol-dependent clients who participated in an 8-week ACT intervention were able to use mindfulness practices to reduce stress and anxiety, thereby minimising the likelihood of relapse (Zgierska, Rabago et al. 2008). Similar findings were reported by Brewer et al. (2014), who found that ACT also led to significant reductions in alcohol and drug use amongst prison inmates following their release (Brewer, Sinha et al. 2009). However, it should be noted that a later systematic review by Zgierska and colleagues found that conclusive data for mindfulness-based therapies was lacking, and overall there has been limited research into the use of ACT to treat dependence on other substances (e.g., methamphetamine) (Zgierska, Rabago et al. 2009).

Contingency management:

Contingency management involves rewarding or reinforcing helpful behaviours. Examples of contingency management for AOD users include vouchers or other incentives for negative urine samples, medication compliance, or the achievement of other treatment-related goals. Conversely, withholding incentives or introducing forms of negative reinforcement can be utilised as a means of discouraging behaviours that are undesirable or that the client wishes to discontinue (NSWHealth 2008, Marel, Mills et al. 2016).

There is evidence that contingency management techniques can be used successfully to treat problematic AOD use, particularly in regard to maintaining abstinence from alcohol (see NSW Health, 2008, for a review). In addition, a meta-analytic review of psychosocial interventions for illicit substance use disorders (Dutra, Stathopoulou et al. 2008) found that treatments incorporating both contingency management and CBT had the greatest effect sizes (compared to either treatment in isolation; Figure 1), however they note that this finding should be interpreted with caution given the lack of studies that fell within this category. Contingency management alone produced moderate-high effect sizes ($d=0.58$, 95% CI=0.25 to 0.90), while CBT alone and relapse prevention evidenced low moderate effect sizes: $d=0.28$ (95% CI=0.06 to 0.51) and $d=0.32$ (95% CI=0.06 to 0.56), respectively.

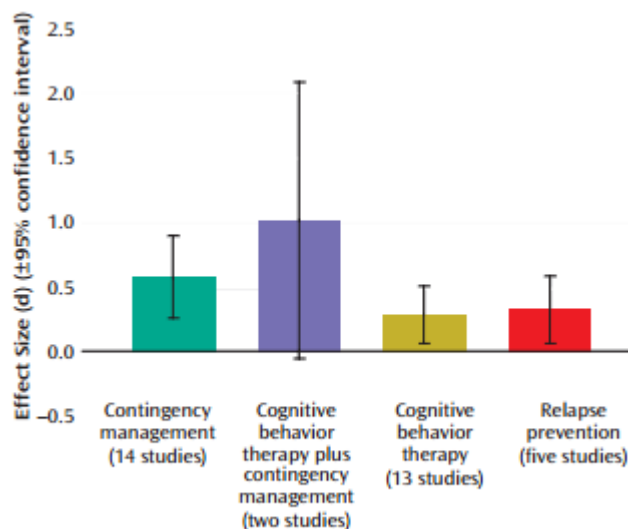


Figure 1. Effect sizes of different treatment types (Dutra, Stathopoulou et al. 2008)

Contingency management for AOD problems has also been found to be effective in populations with comorbid mental health disorders and other complexities (Marel et al., 2016). Marel and colleagues note that contingency management can promote abstinence or a reduction in substance use amongst AOD users with severe comorbid mental disorders (Gonzalez, Feingold et al. 2003, McDonell, Srebnik et al. 2013) as well as those experiencing mental illness in addition to homelessness (Milby, Schumacher et al. 2000).

Group therapy

Group therapy is a therapeutic approach that is used widely in AOD treatment, particularly for the treatment of alcohol use disorders. It can be delivered from a number of perspectives, including professionally-facilitated groups based on Prochaska & DiClemente's (1986) stages of change model (e.g., developing motivation to change substance use behaviours; actively attempting to change substance use; maintaining change by preventing relapse), as well as self-help groups such as alcoholics anonymous (AA). It is important to note that many of the psychosocial treatments reviewed above can be applied within a group setting as well as individually, potentially providing a more cost-effective means of treatment (McCrary, Owens et al. 2014). Professionally-mediated group therapy can also encompass social skills training that focusses on developing a healthier lifestyle and more effective interpersonal skills, as well as dealing with the temptation to use substances within social settings (Mueser, Pierce et al. 2007).

The training of the group facilitator is of importance in determining the effectiveness of group therapy. Originally established in order to increase self-awareness and improve interpersonal relationships between group members, group therapy programs have been criticised on the basis that they may have potentially damaging effects if not led by an appropriately trained facilitator. However, many counselling courses (including Masters level psychology programs) focus on individual therapy while neglecting training in group therapy. As the aim of group therapy is to enable the group itself to become the agent for change, and fulfil a number of key roles (i.e., (i) helping the person realise that they are not alone; (ii) facilitating giving and receiving support; (iii) helping the participant find their voice; (iv) teaching participants how to relate to others in a healthy way; and (v) providing a safety net), the literature highlights that it is vital that a trained facilitator manages this process.

Sobel and Sobel (2011) reported that group therapy produces comparable outcomes to individual therapy. Their review of RCTs comparing the same treatment delivered in a group versus individual context found that both were associated with significant improvements in client outcomes. However, group programs can also offer important advantages that do not exist in individual therapy settings. For group members, the group experience is a key part of the learning process in which they can receive social support and benefit from interactional processes, including learning from other members through observation, practicing behaviours and newly acquired skills, seeing how they are perceived themselves, and receiving feedback from other members (both positive and negative) (Sobell and Sobell

2011, McCrady, Owens et al. 2014). Given that there are a range of ways in which these processes can be disrupted by difficult clients (Sobell and Sobell 2011), clients with more severe mental health disorders (e.g., schizophrenia, where they may be experiencing delusions or paranoia) may be more suited to individual over group counselling settings.

Overall, there has been a paucity of research examining the effectiveness of group therapy, which is surprising given its popularity in clinical practice (Sobell and Sobell 2011). However, it has been acknowledged that group therapy programs can be difficult to evaluate, as drop-out rates are high, and groups can vary substantially in regard to objectives and techniques as well as underlying mechanisms that may contribute to outcomes (Anderson 1983, Besson, Barrias et al. 1992, Sobell and Sobell 2011),

Group therapy is often used to treat comorbid AOD and mental health problems. Integrated group therapy focuses on topics relevant to comorbid disorders, employing a cognitive behavioural relapse-prevention model. Group interventions are usually delivered once or twice a week, typically lasting 6 months or longer. When group therapy is aimed at targeting specific comorbidities, they show consistently positive outcomes on symptoms of substance use and mental illness (Drake, O'Neal et al. 2008). Integrated treatment has been shown to be superior to individual substance-focused group therapies, for example, substance abusing bipolar patients have shown significantly fewer days of substance use following integrated compared to standard groups (no reductions in mental illness symptoms were observed) (Weiss, Griffin et al. 2007, Weiss, Griffin et al. 2009).

In a review of group interventions for co-existing mental health and AOD use problems, Mueser and colleagues (2007) note that the rationale for using group interventions rests on the assumption that drug and alcohol use is fundamentally a social behaviour, and that group settings can provide opportunities for increasing connections with others that do not use alcohol or other drugs problematically (thereby replacing substance-abusing networks) as well as opportunities for healthy role modelling. Evidence suggests that clients who attend groups consistently and for a longer time period achieve the best results (e.g., for a year), although positive outcomes can nonetheless be achieved by attending shorter-term groups (Mueser, Pierce et al. 2007).

Aftercare/peer-support and mutual aid

Aftercare refers to ongoing follow-up and support post-specialist AOD treatment. This could include low-cost stepped-down distance-based support (e.g., telephone or online counselling) or linkage with a peer support group. In their review of psychosocial

interventions in OST services in the UK, Day & Matheson (2017) note the shift in substance use disorder treatment from an acute care model of biopsychosocial stabilisation, to a model of sustained recovery management, nested within a broader recovery-orientated systems of care. This system more broadly includes free and widely available peer-support and mutual aid, such as 12-step groups, which are thought to offer social support, positive role models and a sense of meaning and purpose. Evidence-based guidelines emphasise the benefits of mutual self-help (Day and Mitcheson 2017).

Alcoholics Anonymous has received by far the greatest research attention in the mutual aid area, with a recent review (Kaskutas 2009) concluding that the evidence for AA effectiveness is strong in terms of the magnitude of its dose-response, consistency, temporal relationship (attendance being predictive of abstinence) and plausibility (mechanisms of action predicated on theories of behaviour change). Kelly and colleagues reviewed the research on mechanisms of behaviour change in AA and concluded that involvement helps individuals recover through common processes such as enhancement of self-efficacy and coping skills, improved motivation, and adaptive social network changes (Kelly, Magill et al. 2009). Other non-12-step peer support groups such as SMART recovery or New Life have received little research attention to date.

Recognising the value of lived experience, peer support is being increasingly utilised as a valuable community resource. The Peer Support Capacity Building Project commissioned by DHHS and run by the Self-Help Addiction Research Centre (SHARC) is a 2-year project to assist AOD agencies to build peer support activity for both users and families. SHARC have supported the establishment of 15 peer support groups state-wide, which included training, networking and supervision opportunities for peer leaders and agencies to develop expertise in establishing and sustaining peer support. A survey of peer support group members and focus groups with peer leaders and agency liaison staff formed part of an evaluation by Turning Point. The findings demonstrated the positive impacts of the initiative, such as increased empowerment, self-efficacy, and the benefit of positive role models (Manning, Savic et al. 2016).

While most studies on the benefits of mutual aid have been conducted in the US and UK, in the Australian Patient Pathways study, clients with alcohol but not illicit drugs as their primary drug of concern (PDOC) were two and half times as likely to be abstinent or to have reliably reduced their drinking if they attended AA/NA/SMART or other recovery meetings following specialist AOD treatment. There was also a trend for higher rates of treatment success among those attending more meetings in the previous 12-months, with more than

50% of those attending at least monthly on average responding to treatment (Manning, Garfield et al. 2016). While it is not possible to extrapolate from this a recommended duration and frequency of attendance, assertive linkage to mutual aid during specialist AOD treatment is likely to be beneficial, particularly for clients with alcohol dependence. Trials of assertive linkage, where a peer in mutual aid meets with AOD users in treatment, have successfully increased attendance at mutual aid meetings as well as led to improved substance use outcomes (Sisson and Mallams 1981, Blondell, Looney et al. 2001, Timko, DeBenedetti et al. 2006, Manning, Best et al. 2012).

Finally, Miller et al. (2016) note that while there is enduring consensus that aftercare (i.e., outpatient treatment and mutual help groups) is crucial, the very term 'aftercare' implies that the 'real' treatment has already happened and is a remnant of a care model that incorrectly presumes substance use disorders are acute illnesses, and can be treated effectively with a single episode of treatment (Miller 2016).

Treatments that are out of scope of the current review

There are a number of additional treatments and programs beyond those described above that form important components of an effective AOD treatment system. These include brief interventions, pharmacotherapy, needle and syringe programs, and family support services. A brief summary of the evidence relating to these is provided below.

Brief interventions

Brief interventions aim to support behaviour change, and can range in length from a few minutes of simple, but structured, advice to 60 minutes of counselling, often with repeat (usually up to 4 or 5) consultations. Brief interventions typically include psychoeducation, motivational interviewing and CBT approaches (Moyer, Finney et al. 2002, Kaner, Beyer et al. 2007). Brief interventions can be delivered by different practitioners in community settings (e.g., GPs, practice nurses and other primary health care professionals in the normal course of their work as well as AOD clinicians). The literature indicates that brief interventions are less effective with comorbid clients, who typically require longer, more intensive treatment options (Kaner, Brown et al. 2011).

Pharmacotherapy

It is important to note the important role that pharmacotherapy plays in treatment outcomes. Maintenance pharmacotherapy for the treatment of opiate dependence (i.e., methadone and buprenorphine) has been described as 'the foundation of recovery' (Bart 2012), with Cochrane reviews strongly supporting their effectiveness in the treatment of

heroin dependence (Mattick, Breen et al. 2014). In reviewing this literature, Bart (2012) found extensive evidence that opiate maintenance pharmacotherapy was associated with retention in treatment, as well as reduction in use of illicit opioids and improved social functioning. However, successful opiate pharmacotherapy programs involve more than just prescription of medication, with adjunctive counselling/psychosocial interventions a core part of international treatment guidelines (WHO 2009, Gowing, Ali et al. 2014, Kampman and Jarvis 2015, EMCDDA 2017).

In regard to alcohol, Jonas and colleagues conducted a systematic review on the use of pharmacotherapy in outpatient settings and concluded that acamprosate and naltrexone were associated with a reduction in return to drinking (Jonas, Amick et al. 2014). A Cochrane review of the use of opioid antagonists for alcohol dependence also concluded that it was an effective and safe strategy, and that even though studies had produced moderate treatment effect sizes, these should be valued against the limited therapeutic options currently available for treatment (Rösner, Hackl-Herrwerth et al. 2010). Similar to opiate maintenance treatment, pharmacotherapy for alcohol use disorders is most effective when used in conjunction with psychosocial interventions (Starosta, Leeman et al. 2006). Unfortunately uptake of such pharmacotherapies in primary care remains poor, and prescribing of the three medications approved in Australia for maintenance of abstinence in alcohol dependent patients, naltrexone, acamprosate and disulfiram, has continued to be disappointing (Doran, Fawcett et al. 2003), highlighting the need for greater access to medical specialist support for those with significant dependence.

Addiction medicine support

Given the physical and psychiatric comorbidities that commonly accompany substance dependence, the literature identifies a key role for addiction medicine specialists in providing clinical governance, expertise, supervision and support to the AOD non-medical workforce, as well as delivering specialised pharmacotherapy and psychotherapies to clients with complex needs. Specialists are also able to provide support and expert advice to other health professionals, including primary care physicians. In particular, addiction medicine specialists are vital to providing safe and effective specialist pharmacotherapy services to individuals with alcohol/opioid dependence (including pharmaceutical drug dependence) and complex needs. There is also an opportunity to provide training and mentoring to GPs, GP registrars and other medical specialists (such as physicians and psychiatrists) who wish to build their addiction medicine competence. Doing so is necessary to improve access

to and delivery of a workforce to deliver specialist addiction services within the Victorian public health system.

Consultation-liaison (C-L) services in Addiction Medicine were conceptualized in the 1970s, and now form a core part of service provision in many general hospitals internationally, given the common presentation of alcohol and drug-related harms to emergency departments and inpatient hospital services. However, there are few C-L services within Victorian hospitals that are involved in service delivery across emergency departments and acute general hospital wards. Services that do exist are primarily staffed by addiction-trained nurses, with limited access to addiction medicine specialists. C-L services have two primary purposes: to provide advice on the optimal clinical management of patients with alcohol, tobacco, illicit drug or prescription medication problems with the aim of preventing significant medical complications; and secondly, to enhance the knowledge base, literacy and capacity of general hospital and acute health staff to recognize and treat substance use disorders, including the provision of brief interventions, as well as facilitate linkage to available AOD services (Saunders et al., 2016).

Needle and syringe programs

Needle and syringe programs play an important role in reducing the harms associated with injecting drug use. A recent systematic review and meta-analysis of the effectiveness of pharmacy-based needle/syringe exchange programs (NSPs) found that pharmacy-based NSPs were effective in reducing risk behaviours among injecting drug users, most clearly in relation to reductions in syringe sharing behaviour (evidence regarding their impact on safe syringe disposal was less clear) (Sawangjit, Khan et al. 2016). Other reviews have found NSPs to be an effective form of preventing the transmission of blood-borne viruses such as HIV and hepatitis C (Wodak and Cooney 2006, Abdul-Quader, Feelemyer et al. 2013), and there is emerging evidence that supervised injecting rooms are of particular benefit to homeless injecting drug users (Wright and Tompkins 2006). It has been argued that within Australia, NSPs are a cost-effective public health strategy and that financial investment between 2000-2010 will be fully recovered in healthcare cost savings by 2032 (Kwon, Anderson et al. 2012).

Family support

In a review of family interventions in the treatment of drug and alcohol problems, Copello and colleagues noted that interventions could be broadly grouped into three types: (i) working with family members to promote entry and maintenance of treatment; (ii) joint involvement with family members and substance abusing relatives in treatment; and (iii) interventions that respond to the needs of family members specifically. Their review found

robust evidence that working with family members could trigger treatment entry for loved ones with AOD problems, and that family involvement in treatment can be very effective. Interventions alleviating the problems caused to family members were also found to reduce symptoms of stress and ill-health (Copello, Copello et al. 2005).

There is increasing recognition that services need to engage family members as valid help-seekers in their own right, regardless of whether the AOD user seeks help. One approach with growing evidence is the 5-step method, which includes (1) listening, reassuring, and exploring concerns; (2) providing relevant and specific information; (3) exploring coping strategies; (4) discussing social support, and (5) exploring further needs (Copello, Templeton et al. 2010). The aim of this approach is to utilise existing resources available to family members, so that they are able to support themselves as well as the individual with problematic AOD use. The 5-step method has been found to reduce physical and psychological symptoms for family members as well as increasing coping skills (Copello, Templeton et al. 2010, Velleman, Orford et al. 2011). In Victoria, there is a dedicated counselling and support service (Family Drug Help) run by SHARC, which provide a specialist service to support family members and friends concerned about a loved one's AOD use. Through support groups, family counselling, and a family drug helpline, Family Drug Help aims to strengthen family members' physical and mental health and coping skills. An evaluation by Turning Point concluded that the suite of programs in Family Drug Help is effective in improving the wellbeing of family members, and that it provides a valuable service to the community (Mackenzie, Best et al. 2015).

Involvement of family members can improve engagement and retention of substance users in treatment. Research also suggests that long-term outcomes are more positive when families are included in the treatment approach. One well-researched family intervention used in the AOD field is systemic motivational interviewing (Steinglass 2009), which incorporates motivational interviewing with a family systems approach, where the family as a whole is targeted for intervention. This approach draws on generic principles inherent in family systems theory: that one's identity is achieved in relation to others, that problems are linked to families, communities, and societies rather than individuals, and that families need to re-negotiate people's identities and roles in the context of their interactions, so that change occurs in multiple people, not just the AOD user. A review by Stanton (2004) also identified 11 separate family oriented programs and reported a powerful impact of these on treatment engagement when compared to waitlist control groups (Stanton 2004)

Distance-based interventions

Telephone and other technology-based interventions have been developed as a means of overcoming barriers such as accessibility and the high financial costs of treatment (Marsch, Carroll et al. 2014). There is evidence to suggest that distance-based interventions can provide 24/7 accessibility, and greater anonymity and convenience to a broader client base (reaching under-resourced regional and rural areas as well as clients who may not be willing or able to access face-to-face services), as well as cost-effectiveness (Best, Hall et al. 2015, Garde, Manning et al. in press). Distance based interventions can be used as standalone treatments, and can provide opportunities for referral and brief interventions to optimise engagement in the treatment system. With many operating around the clock, they offer support to users and family members/carers, serve as an adjunct to specialist AOD treatment, and can assist with relapse prevention post-treatment. Indeed, a recent review of studies examining telemedicine interventions for the treatment of substance use disorders (which included 17 studies exclusively examining telephone-delivered interventions) concluded that the majority of studies supported the efficacy of this approach for reducing substance use (Young 2012).

More broadly, there is a growing body of recent research that highlights a promising role for technology in assessing, treating, and supporting individuals attempting to recover from substance use disorders (Marsch, Carroll et al. 2014). Marsch and colleagues note that technology has the potential to play an important role in aftercare, for example by mobile-phone delivered interventions aimed at preventing relapse during the early stages of recovery, or at times when clients may be at greatest risk. The rapid increase in access to the Internet and mobile devices is promising in this regard, as it allows traditionally vulnerable populations to access a wider range of services than would have previously been available to them (McClure, Acquavita et al. 2013). Technology-based interventions can be implemented in a range of settings and have been developed to serve a number of purposes, from brief interventions to aftercare and long-term recovery. However, while promising, it should be noted that further research is needed given that such interventions are relatively new within the substance use disorder field (Marsch, Carroll et al., 2014).

3. Factors influencing treatment outcomes

A range of factors can influence the outcomes of AOD treatment. While the extent to which these have been investigated has varied, they include individual characteristics such as the

presence of comorbid mental health problems, factors related to social stability (e.g., homelessness and unemployment), severity of dependence, past treatment history, and duration of treatment. Therapeutic alliance has also been highlighted as an important factor in treatment success.

Mental health/psychiatric history

It is well recognised that comorbid mental health conditions are highly prevalent amongst individuals with substance use problems, particularly among those seeking treatment where up to around 75% have a mental health disorder (most commonly anxiety or mood disorders; (Marel, Mills et al. 2016). High rates of depression (38%) and panic disorder (29%) were found in the MATES project (McKetin, Najman et al. 2012), while ATOS also reported a high proportion of participants with depression (25%) as well as anti-social (72%) and borderline personality disorders (47%), along with high rates of attempted suicide (37%; Teesson et al., 2008). In the Patient Pathways project, nearly half the sample had accessed mental health services in the year prior to the baseline assessment (Lubman, Garfield et al. 2016).

Such high rates of comorbidity present a significant challenge for the treatment system. Comorbidity impacts treatment outcomes, as while individuals with and without comorbid conditions may both improve, those with co-occurring conditions are more likely to drink more, have more severe physical and mental health outcomes, and display poorer psychosocial functioning following treatment (Hirschfeld, Kosier et al. 1989, Bruce, Yonkers et al. 2005, Mills, Deady et al. 2009). Comorbidity has also been found to influence the likelihood of relapse. Bottlender & Soyka (2005) found that patients with a higher degree of psychopathology (depression and anxiety) relapsed more often, with more favourable outcomes found amongst patients with less depression and anxiety who were attending an intensive outpatient rehabilitation program (Bottlender and Soyka 2005).

More intensive treatment has been found to improve outcomes amongst clients with comorbid AOD and mental health problems. Baker and colleagues (2010) reviewed the literature on treatment of cannabis use among people with psychotic or depressive disorders and concluded that while there was a paucity of research in the field, longer and more intensive psychological interventions (as opposed to brief interventions) are required to treat those with more chronic mental health symptoms (Baker, Hides et al. 2010). Similarly, alcohol dependent clients with co-morbid psychiatric disorders have been found to have better outcomes in longer-duration, high-intensity alcohol-related treatment programs

(Alterman, McLellan et al. 1993, Timko and Moos 2002). Timko & Moos classified dual diagnosis patients into low, moderate, and high severity groups and found that while higher severity patients did not receive adequate duration of care and were less likely to receive outpatient treatment, both variables were associated with improved outcomes (Timko and Moos 2002). They concluded that dual diagnosis patients with a higher severity of symptoms would likely benefit from longer episodes of care that include outpatient treatment for both substance use and mental health disorders.

The prevalence of physical and sexual abuse amongst individuals who seek AOD treatment is high, and has also been found to impact treatment outcomes (Pirard, Sharon et al. 2005). Pirard and colleagues followed up 700 clients with substance use disorders to clarify the relationship between lifetime physical and/or sexual abuse and AOD treatment outcomes. In total, 47.3% reported abuse, and abused participants were significantly more impaired at baseline on clinical dimensions including family/social severity and psychiatric severity, and general level of functioning, and reported more prior medical and psychiatric treatments. Lifetime physical and/or sexual abuse was significantly associated with worse psychiatric status and more psychiatric hospitalisations and outpatient treatment at 1-year follow-up despite similar intensive addiction treatment. Given these findings and other literature, it is now increasingly recognised that clients presenting with more complex comorbidities will most likely have experienced trauma, which further complicates treatment. As noted earlier, issues such as trauma are likely to both precipitate and maintain substance use disorders, and treatments therefore need to be tailored to meet the needs of the client (potentially through interventions that are not generally noted as treatment for substance use disorders, but which target complex trauma and PTSD).

Social stability factors (e.g., homelessness, unemployment)

Rates of homelessness, unemployment, and other factors related to social instability are also high amongst individuals seeking treatment for alcohol and drug dependence, and affect treatment outcomes. For example, the Patient Pathways project found that 64.4% of participants reported unemployment over the past 90 days, while 20.8% were homeless, 39.8% were on unemployment benefits, 28.7% were currently receiving disability benefits, and 28.4% were experiencing a current criminal justice issue over the same timeframe (Lubman, Garfield et al. 2016). These factors were found to influence acute service use, treatment engagement and outcomes. Specifically, participants who were unemployed were

more likely to have multiple ED presentations than those who were employed (26.0% vs 18.2%), while more participants who were homeless had multiple presentations than those who were not homeless (32.9% vs 22.8%). Participants who were homeless also had a lower rate of completion of treatment (60%) than the overall treatment cohort, however following completion of the PIT, a significantly lower percentage of the overall sample (17.9%) reported being homeless or experiencing housing issues.

Duration rather than intensity of treatment may be of greater importance to socially unstable clients (i.e., those who are unemployed, homeless or have unstable housing, or have strong social support for drinking). Studies have reported better outcomes when these clients are engaged in treatment of longer duration (Kissin, Platz et al. 1970, McLellan, Arndt et al. 1993, Guydish, Sorensen et al. 1999, Rychtarik, Connors et al. 2000), while there is evidence that more intensive counselling/psychosocial interventions early on can be counter-productive (Drake, O'Neal et al. 2008). In homeless populations, it appears to be lower demands (i.e., no need for complete abstinence), and less intense counselling/psychosocial interventions during the first year of residential treatment that is effective in reducing substance use and dropout rates, as well as improving mental health symptoms and increasing employment, compared to higher-intensity interventions that require high exposure to psychosocial treatments (Leon, Sacks et al. 2000). Overall, homeless treatment-resistant/homeless adults tend to respond best to low-intensity, integrated, longer-term residential rehabilitation programs, relative to higher-intensity traditional (non-integrated) residential programs (Blankertz and Cnaan 1994, Aguilera, Anderson et al. 1999, Brunette, Drake et al. 2001).

For offenders, the unemployed or the homeless, modified therapeutic communities (MTC) have shown effectiveness, with significant treatment effects in substance use, mental health, employment, crime and housing (Coldwell and Bender 2007, Sacks, Banks et al. 2008, Sacks, McKendrick et al. 2010). These programs provide rapid stable housing/ stable living arrangements, concurrent treatment for mental health and substance use disorders, address trauma, and provide a judgement free community that acknowledges achievements and special developmental needs; increases rewards (contingency management) and diminishing sanctions and confrontation within the treatment program. Once clients have their basic housing needs addressed and have adjusted to living in housing, they are then able to turn to therapeutic and substance use issues, often with the help of motivational techniques appropriate for homeless clients in early recovery (Mares and Rosenheck 2010).

There are a number of ancillary or secondary interventions that may be helpful for individuals who do not respond well to basic approaches. Although only residential treatment has been studied extensively with controlled research, a number of other interventions have been used: money management (Ries and Dyck 1997, Rosen, Rosenheck et al. 2002), contingency management (Shaner, Roberts et al. 1997, Sigmon, Steingard et al. 2000), conditional discharges (O'Keefe, Potenza et al. 1997), and in the Brunette et al. (2001) study, clients were encouraged to have a job in the community before leaving the residential program, leading to higher employment rates post-discharge.

Treatment duration

Length of stay has repeatedly been found to influence treatment outcomes. In a review of residential treatment for drug use in Europe, EMCDDA (2015) found that length of time in treatment was related to favourable post-treatment outcomes in studies of residential and outpatient settings, and with clients dependent on opiates or cocaine (Gossop, Marsden et al. 2000, Moos, Finney et al. 2000). They state:

“There is evidence that treatment outcomes improve as retention increases from three months up to 12 to 24 months or more (Simpson, 1997; Simpson et al., 1999). Such findings have been used to support the concept of ‘minimum retention thresholds’ for effective opiate treatment, often defined as 90 days for residential treatment (Simpson, 1981).”

However, other studies have found a more linear relationship between the time spent in treatment and improved outcomes, with a stronger relationship between treatment duration and improvement for long-term residential treatment (EMCDDA 2015). For example, Moos and colleagues found that clients with alcohol dependence who entered treatment quickly and had a longer duration of treatment reported better alcohol-related outcomes (both short and long term), while treatment intensity did not appear to be a significant factor in determining outcomes. They concluded that duration of treatment for alcohol use disorders may be more important than intensity of treatment (Moos and Moos 2003). Similarly, Zhang and colleagues found positive linear relationships between outcome and the duration of treatment typically observed in single episodes (although unusually long retention, i.e., more than 3 months, appeared less steadily predictive of improvement) (Zhang, Friedmann et al. 2003). More broadly, it has been argued that for patients with substance use disorders the duration of care is more important in determining outcomes than amount of care (Moos 2003). Indeed a recent paper on the MATES cohort found a

longer stay in residential treatment (where the median was 8 weeks), significantly increased the likelihood of achieving abstinence from methamphetamine by 20% one-year later (McKetin et al, 2017).

However while lengthier treatment may lead to improved outcomes, the initial stages of treatment may have a greater influence overall. The Drug Treatment Outcomes Study (DTORS) (Jones, Donmall et al. 2009) and a study by Manning et al (2013) on alcohol dependent patients found that the majority of improvement in outcomes was achieved within 12 weeks of treatment. The rate of improvement continued between three and six months, with no significant changes found following this period.

Day (2005) suggests that the extent of the association between length of stay and inpatient treatment outcome is less clear in regard to opiates, although it does appear to be related to treatment success (Day 2005). In the inpatient and short-stay rehabilitation programmes, a period of 28 days was associated with the greatest chance of abstinence and this was strongly related to the likelihood of overall improvement (Gossop, Marsden et al. 2000). The odds of abstinence from all of the target drugs at follow-up were about five times greater for those clients who remained in treatment for this length of time.

Treatment history

Evidence supports the importance of past treatment history in determining outcomes. Merkx and colleagues highlight treatment history (defined as the number of previous treatment episodes that encompassed professionally guided attempts by the patient to change their addictive behaviour) as an important component in determining the level of care a patient should receive. Their stepped-care model (discussed in more detail in section 4) allocates those with the greatest number of past treatment episodes (>5) to the highest level of care, and those with the least (0-1) to different levels of care depending on the presence of other complexities, including severity of dependence, psychiatric impairment, and social stability (Merkx, Schippers et al. 2007, Merkx, Schippers et al. 2011).

There is evidence from Australian treatment outcome research that repeated access of services is associated with need for future treatment in addition to more complex presentations. For example, analysis of data by Turning Point from two Melbourne catchments (service provider A and service provider B) found that 53% and 59%, respectively, were defined as repeat service users (i.e., they had used AOD services

previously). The service provider A report found that while nearly three quarters (72%) of new treatment-seekers were identified as likely dependent, rates of dependence were higher among repeat treatment-seekers (89%). Similarly, in the Patient Pathways study, 68.8% had received specialist AOD treatment in the year prior to the PIT (Manning, Garfield et al. 2016), while in the MATES study, most participants were found to have an extensive history of drug treatment (Table 2) (McKetin, Najman et al. 2012).

Table 2 (reproduced from McKetin et al., 2012): Characteristics of participants by treatment modality

	<i>Quasi-control (n=101)</i>	<i>Withdrawal management (n=112)</i>	<i>Residential rehabilitation (n=248)</i>
Previous drug treatment (%)			
Nil	25	30	30
1-4 episodes	36	40	42
5+ episodes	40	29	28
Previous treatment for methamphetamine use (%)	20	42***	46***

*** $P < 0.001$; ** $P < 0.05$, compared to the quasi-control group

Further evidence that past treatment history is related to complexity of patient presentation is highlighted by another study conducted by Turning Point (Demand Modelling), which linked data from Ambulance Victoria (AV) and the Alcohol and Drug Information System (ADIS) datasets. Specifically, individuals with entries in both databases were more likely to report the presence of mental health problems in addition to other complexity factors (e.g., unemployment and homelessness). Overall, there was a strong positive relationship between reporting these factors and previous AOD treatment episode (76% versus 54% in the ADIS database and 32% vs. 15% in the AVIS database). In other words, AOD dependent individuals experiencing mental health problems as well as unemployment and/or homelessness were more likely to have required treatment on multiple occasions. While this study did not measure treatment outcomes, it can be presumed, based on the literature summarized above, that these factors would be associated with worse treatment outcomes.

Conversely, Adamson and colleagues reviewed predictors of alcohol treatment outcome and identified 15 studies that had included treatment history, with significant variability in the direction of outcomes. When included as a univariate predictor, better outcomes were predicted by less treatment in five studies, and by more treatment in three studies. When included in multivariate analyses, three of four studies found better outcomes predicted by

more treatment, while one found better outcomes predicted by less treatment. Nevertheless, they note that treatment history is amongst the most intuitive predictors of treatment outcomes (Adamson, Sellman et al. 2009).

Severity of dependence

There is strong evidence that a greater severity of dependence is associated with worse treatment outcomes. In a systematic review of predictors of alcohol treatment outcomes, Adamson and colleagues found that the most consistent predictor overall was baseline severity of dependence (along with psychopathology ratings and client goals and motivations), most commonly measured by the Severity of Alcohol Dependence Questionnaire (SADQ), the Alcohol Dependence Scale (ADS), and the Addiction Severity Index (ASI). The two variables that accounted for the greatest variance in predictive models were baseline alcohol consumption and severity of dependence (Adamson, Sellman et al. 2009).

Severity of dependence has been measured in a number of ways by studies demonstrating its relationship with treatment outcomes. Consistent with the findings of the Adamson review, Manning et al. (2013) also found baseline drinking days was a significant predictor of 3-month drinking behaviours. Bottlender & Soyker (2005) included measurements of longer duration of dependence, higher number of prior treatments, and stronger alcohol craving, and found that severity of dependence was associated with poorer 6-month outcomes (i.e., non-abstinence). Greater intensity of craving at baseline has also been found to predict less favourable outcomes amongst alcohol-dependent patients, including relapse (Bottlender and Soyka 2004, Soyka, Helten et al. 2010). Kranzler et al. also demonstrated that craving intensity was predictive of outcome using the Obsessive Compulsive Drinking Scale (OCDS) (Kranzler, Mulgrew et al. 1999).

Severity of dependence can also be reflected in method of consumption, which has also been found to demonstrate a relationship with treatment outcomes. For example, the Patient Pathways study found that clients who reported injecting drug use at baseline had a lower rate of completion of treatment than the overall cohort (69.0% vs 74.1%). As noted earlier, more severely dependent clients have been found to report better outcomes following more intensive (i.e., inpatient) treatment (Rychtarik, Connors et al. 2000, Tiet, Ilgen et al. 2007).

Continuity of care

Continuity of care refers to a package of specialist AOD treatment that entails different treatment streams that occur sequentially (e.g., residential withdrawal followed by rehabilitation followed by outpatient counselling), as opposed to an isolated episode of care. Delivering continuity of care can encompass a wide range of follow-up treatment, after the initial treatment has concluded. In a review of the implementation of evidence-based substance use disorder continuing care interventions, Lash and colleagues define continuing care as:

“...interventions that are provided for some period of time after discharge from an initial, more intensive treatment experience. A typical example of a continuing treatment is weekly group counselling after residential or intensive outpatient treatment, but continuing treatment interventions also include other modalities such as individual therapy, case management, home visits, telephone calls, and couples therapy...continuing care research supports increasing the duration of care, ongoing monitoring of clients, reaching out actively to engage and link clients to care, and using incentives to improve treatment outcomes” (Lash, Timko et al. 2011)

There is increasing recognition that continuity of care is of importance in AOD treatment. However, substance use disorders have historically been treated using an acute care model that ignores the fact that addressing chronic illnesses involves a process that occurs over time, rather than in a single episode of specialist care (Miller 2016). Accordingly, they have been labelled the only “chronic disease” for which there is no ongoing primary care (McClellan et al., 2000). While research has highlighted the importance of continuity of care in AOD treatment (Moos 2003, Miller 2016), the overall evidence base remains limited. For example, a recent review of continuing care for patients with alcohol use disorders by Lenaerts and colleagues found only six studies that were methodologically strong enough and included for further analysis. Effect sizes were limited and not consistent across all outcomes, and because of heterogeneity in the interventions and outcome measures, a meta-analysis could not be performed (Lenaerts, Matheï et al. 2014). Indeed, Lash and colleagues (2015) note that while the field of AOD treatment has placed increased focus on developing interventions that consider stages of treatment following initial, more intensive treatment, there have been few efforts to implement and evaluate these:

“Very few studies are relevant directly to implementation of continuing care, and even fewer studies specifically evaluated or tested strategies for this purpose. This pattern seems to be consistent with the substance use disorder treatment implementation literature in general...one of the most striking gaps in the research is

the lack of information on the relative advantages, disadvantages, and cost-effectiveness of the different evidence-based interventions. Further, little is known about the core elements of the specific interventions, and conversely what factors are amenable to modification without impacting overall effectiveness of the intervention” (Lash et al., 2015, p247-248).

The Patient Pathways study evaluated clients’ experiences of continuity of care in a qualitative study of their routes into treatment, pathways through specialist and other linked services, and their experiences of the treatment pathway. The findings indicated that while clients had considerable on-going involvement with a range of services, participants who did not receive care coordination perceived service systems as complex and hard to navigate, even though most had significant previous treatment experience. Moreover, only half of the participants reported that they received AOD-specific follow-up support after their index treatment episode. Participants who received residential treatment were more likely to report receiving or accessing further AOD specialist care (in some cases arranged as part of their treatment exit plan) however few participants reported receiving any follow-up contact from the service once their treatment had finished. A dominant theme in the qualitative analysis was around navigation and the need for continuity of care, care coordination and aftercare, particularly in the periods after completion of residential and non-residential withdrawal or rehabilitation. Where participants did receive appropriate follow-up (even in the form of telephone calls), this was regarded as welcome and beneficial, particularly for individuals who did not have strong family support or other forms of social capital. Access to continuing and integrated care was also limited by practical factors including geographical access, long waiting lists (particularly for residential rehabilitation) and lack of availability of services. The clear and dominant theme from the qualitative interviews was the need for support around system navigation and the perceived limitations of the workforce in meeting that need.

It is important to note that continuity of care can involve a range of modalities, including intensive follow-up treatments (e.g., rehabilitation), as well as other modalities (e.g., weekly group counselling or telephone support) (Lash, Timko et al. 2011). Telephone support is a relatively low-cost option of continuing care that has been found to improve outcomes for individuals with alcohol and drug dependence. For example, McKay and colleagues (McKay, Lynch et al. 2005) found that telephone-based continuing care was an effective form of ongoing treatment for patients with alcohol and cocaine dependence who had already completed an initial stabilisation treatment. Indeed, over a two-year follow-up period, the duration of the effects of telephone-based continuing care were found to be comparable to

individual and group face-to-face counselling, and resulted in higher rates of abstinence in the overall sample than face-to-face group counselling. In addition to being cost-effective, telephone-based continuing care offers additional benefits by being accessible to patients who may have limited access to transportation, as well as family or work responsibilities (or complexity factors, such as mental health problems) that preclude them from visiting treatment centres (McKay, Lynch et al. 2005, McKay 2009).

Therapeutic alliance/treatment satisfaction

Therapeutic alliance refers to the strength of the relationship between the client and psychologist/psychotherapist, and competent delivery of therapy and a strong therapeutic alliance between client and therapist has been identified as important in drug and alcohol treatment. Indeed, in a comprehensive summary of the effectiveness of alcohol treatment, it was concluded that approximately 10-50% of the variance in outcome could be attributed to the characteristics of the therapist (Raistrick, Heather et al. 2006).

As noted by Duncan and colleagues, over 1000 research findings support a positive therapeutic alliance as one of the best predictors of treatment outcome (Duncan, Miller et al. 2003). Another review noted that therapeutic alliance in the early stages of treatment was a consistent predictor of engagement and retention in drug treatment, in addition to early improvements, but was somewhat less consistent in predicting post-treatment outcomes (Meier, Barrowclough et al. 2005). Overall, it has been strongly argued that relational factors such as therapist empathy and a positive therapeutic alliance can exert significant influence on treatment outcome (Miller and Moyers 2015).

4. How do we put these findings together to construct an effective treatment system?

While the literature reviewed above provides evidence that AOD treatment works, it also highlights the difficulties in designing a system that takes into account the multiple, severe, and complex problems with which individuals accessing AOD services often present with. Indeed, while the nature of severe alcohol and drug dependence is characterised by cycles of treatment, recovery, relapse, and repeated treatments (Dennis and Scott 2007)), AOD treatment is often episodic, fragmented, and delivered in isolation. In other words, it is structured to provide episodes of care rather than a continuing, integrated program (O'Brien and McLellan 1996) that matches need to intervention.

Stepped and integrated models of care have subsequently been developed to address these issues, though neither has been extensively researched in relation to outcomes. These models, as well as issues surrounding their limited evidence base, are described below.

Integrated care (horizontal and vertical integration)

Savic and colleagues noted that broadly speaking, there are two types of integration - horizontal and vertical (Savic, Best et al. 2017). Horizontal integration aims to link parts within a single level/system of care or care context (Leichsenring 2004). Coordination between AOD services, such as residential and non-residential withdrawal and residential rehabilitation, is an example of horizontal integration and may ensure greater continuity of care within a client's treatment journey. In contrast, vertical integration attempts to coordinate the responses of different levels of care (i.e. primary, secondary and tertiary). Coordination between AOD and non-AOD services such as housing, mental health and community health is an example of vertical integration. However, due to a lack of connectedness within and between systems, navigation is often left to clients. This has led to calls for integrated care responses that guide treatment systems, agencies and clinicians in how best to implement integrated care between AOD services (VAGO 2011), although this is likely to require dedicated resourcing and system support to be effective.

Moreover, while the need for integrated models of care is well-recognised within the literature, very little high quality empirical research has been conducted evaluating their effectiveness. Indeed, the literature to date is limited in that outcome studies typically describe the response to an isolated episode of care within a particular treatment modality (e.g., residential withdrawal), which represents only a fraction of the overall treatment episode. While there is increasing recognition that specialist AOD services are merely one component of a larger interconnected system which includes health and welfare services, the extent of inter- and intra- sectorial linkage and the resulting pathways of care (including outcomes) for clients accessing AOD specialist services remain poorly understood.

To date, the primary focus of the literature on the effectiveness of integrated models has been around the integration of AOD and mental health care. Historically, treatment for people with AOD problems and co-occurring issues has fallen into two categories; serial treatment (where care for AOD problems is delivered before or after care for other problems in separate systems of care) and simultaneous/parallel treatment (where simultaneous/parallel care occurs in two separate and non-coordinated systems at the same

time; (Sterling, Chi et al. 2011). However, systematic reviews generally report that clients receiving integrated care report improved AOD and/or mental health outcomes (Donald, Dower et al. 2005, Drake, O'Neal et al. 2008) and higher satisfaction than clients receiving standard treatment (Schulte, Meier et al. 2011). Nevertheless, the benefits of integrated care may be somewhat inconsistent. In an early review of 26 studies of counselling/psychosocial interventions for clients with co-occurring severe mental illnesses and substance use disorders, Drake and colleagues concluded that the cumulative evidence supports integrating outpatient substance use and mental health treatments into a cohesive package (Drake, Mueser et al. 2004). However, a more recent review (Hamilton 2014) was less conclusive, and again highlighted a lack of quality studies evaluating integrated models for dual diagnosis clients:

“Despite most workers intuitively believing that integrated care works the research evidence has been inconclusive (Delgadillo et al., 2012; Brooner et al., 2013)...In a recent systematic review Hunt et al. (2013) found no evidence to support the use of an integrated model, reporting that the quality of the evidence that they reviewed was “low” overall. This might indicate a need to move from the current convention which requires research to produce evidence which is then translated into practice, instead the workforce should promote the case for integration based on practice-based evidence rather than evidence-based practice.”

Hamilton and colleagues propose that the lack of evidence for integrated care models that consider substance use and comorbid mental health problems is likely due to a wide range of factors, including: (i) co-occurring substance use and mental health disorders attracting limited research funding; (ii) difficulty recruiting suitable participants; (i) poor retention rates; (iv) restricted follow up periods (v) lack of consensus regarding outcome measures; and (vi) a tendency towards short-term rather than long term evaluation (Hamilton 2014).

The effectiveness of integration between AOD and social services (e.g., housing, employment, welfare etc.) is less well studied than the aforementioned area. Having said this, a clinical trial of coordinated case-management (integrated care) to treat AOD issues amongst clients of welfare agencies in the United States reported positive results (Morgenstern, Hogue et al. 2009). The study found that clients who received integrated care (and who were not enrolled in methadone maintenance programs) utilised more services than standard care clients, and had significantly higher abstinence rates. While on the whole, the evidence seems to support integrated care between AOD and non-AOD agencies, there is a need to better understand the mechanisms through which integrated care works, and how it can be improved in different contexts.

Stepped care models

The basic principle of stepped care is that the least intrusive and costly treatment likely to be effective is used initially, with progressively more intensive treatment used when the first (or subsequent) approach has been found to be insufficient in obtaining a positive outcome. Essentially, this involves the flexible matching of case severity with treatment intensity. This process is cost-effective because the resources required for more intensive treatments are not wasted on treatment seekers who would improve with a less intensive approach. The stepped care model is shown in schematic form in Figure 2 (Sobell and Sobell 2000).

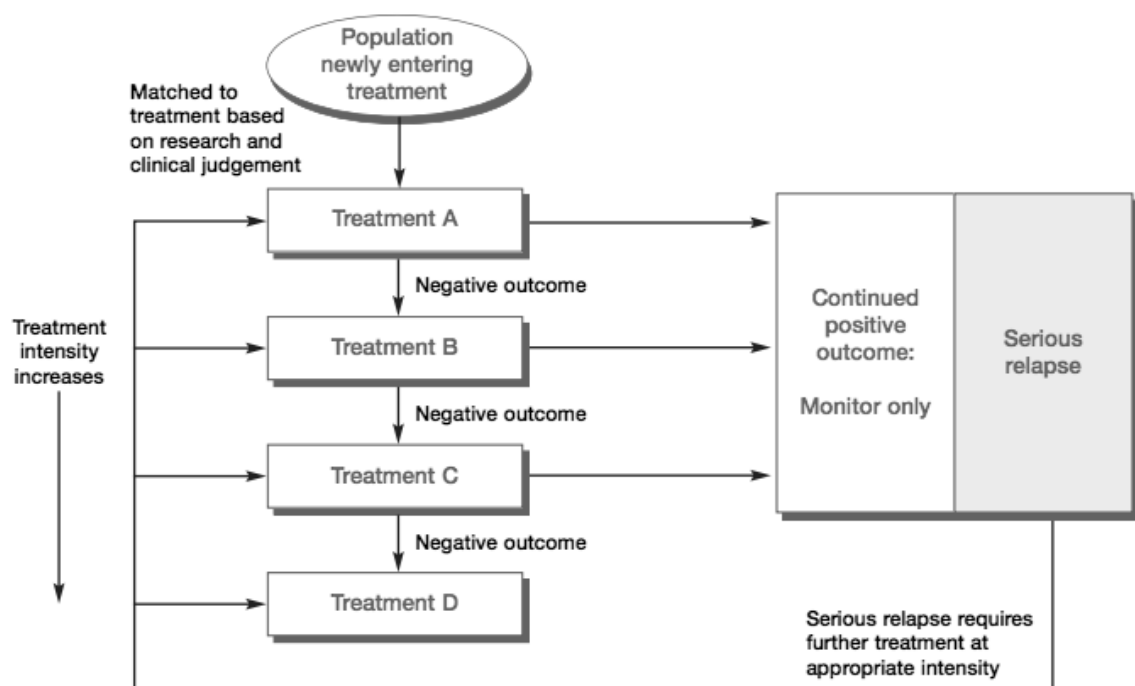


Figure 2: Components of the stepped care model

The National Treatment Agency (NTA) (2006) note that although the stepped care model is simple in principle, the following issues should be considered:

- The treatments included in the model should be of proven effectiveness.
- An efficient follow-up system or some other way of monitoring progress is essential.
- Depending on problem type and severity of dependence, service users can enter the stepped care model at any level – not necessarily the lowest point. This decision should be based on research evidence, where available, and clinical judgement.

- Although predetermined criteria may be helpful, clinical judgement is also required regarding the degree of improvement service users have shown following treatment and whether this indicates the need for further treatment of increased intensity.

Having a variety of treatment options is also important, as treatment cannot be individualised when only one approach is available. However, matching clients to treatments is complex and it is difficult to successfully predict outcomes when attempting to do so, even with the accumulated evidence base for treatment efficacy. For example, attempts to validate the ASAM criteria for matching clients to differing levels of treatment intensity have found minimal differences in outcome between matched and unmatched cases. It is proposed that a reasonable alternative is to assume the availability of a wide range of options (rather than a one-size-fits-all approach) whereby clients are encouraged to make informed choices from the existing evidence-based options (Miller 2016).

A variation of the stepped care model that encompasses treatment history in addition to individual complexity factors (specifically, the presence of comorbid mental health problems, severity of dependence, and social instability) was proposed by Merks and colleagues (2007), and is shown in schematic form in Figure 3 (Merks, Schippers et al. 2007). The model is informed by the strong evidence base supporting the role of treatment history in determining outcomes, in addition to the other complexity factors included. The model is based on the premise that outcomes will be improved if patients are matched to appropriate levels of treatment intensity, or levels of care (LOCs), in which multiple treatment modalities are combined. However, they note that at the time of publication there had been limited research examining patient-treatment-matching to LOCs.

5. In planning an effective AOD system, how do we decide who gets what treatment?

International research

International models have been developed that can segment the treatment-seeking population for the purpose of predicting outcomes, as well as ensuring treatment can be allocated in accordance with need (i.e., clients receive appropriate levels of care without being over- or under-served). Arguably the most well-known criteria are the patient-placement criteria (PPT) devised by the American Society of Addiction Medicine (ASAM) which assess severity of withdrawal symptoms, change motivation, relapse potential, and recovery environment (Mee-Lee 2001). The ASAM criteria allow the clinician to evaluate the severity of need for treatment across 6 dimensions, outlined in Table 3, before determining which of four levels of care a patient with a substance use disorder will respond to with greatest success (Level IV: medically managed intensive outpatient treatment; Level III: medically monitored intensive inpatient treatment; Level II: intensive outpatient treatment, or Level I: outpatient treatment (Turner, Turner et al. 1999). Studies examining the application of the ASAM criteria have estimated that approximately 15% of treatment-seekers are classified as Level IV, with the remainder (approximately 80%) classified as Levels III or II (Turner, Turner et al. 1999, Magura, Staines et al. 2003)

Table 3. Assessment dimensions of the ASAM

	Dimension	Dimension assesses
Dimension 1	Acute intoxication and/or withdrawal potential	Significant risk of severe withdrawal symptoms or seizures based on patient's previous withdrawal history, amount, frequency, and recency of discontinuation or significant reduction of alcohol or other drug use
Dimension 2	Biomedical conditions and complications	Any acute or chronic medical issues that might possibly interfere with the current treatment episode
Dimension 3	Emotional/behavioural conditions and complications	Any current psychiatric issues, including any behavioural or emotional problems that may impede the treatment process
Dimension 4	Treatment acceptance/resistance	Patient's openness to treatment, acceptance of addiction, readiness for change, motivation for compliance and feelings of coercion
Dimension 5	Relapse potential	Patient's ability to cope with cravings, comprehension of relapse triggers and ability to abstain
Dimension 6	Recovery environment	Current living situation, adequacy of social support network, financial resources, etc.

While widely used, the ASAM guidelines have been criticised on the basis of being administratively burdensome and unsuitable for assessing both risk and protective factors for recovery (Marsden, Eastwood et al. 2014). In the UK, the Addictions Dimensions for Assessment and Personalised Treatment (ADAPT) was designed to address these issues and provide clinicians with a means of assessing key indicators of severity of dependence, co-existing problems, and personal recovery strengths, as well as determining whether patient subtypes predict treatment outcome (Marsden, Eastwood et al. 2014). They found that Class 1 (46.9% of total cases) brought together those with a moderate level of severity, complexity and strengths on the factor scale (estimated means not different from zero). Patients in Class 2 (25.4%) had relatively low severity, low complexity and high strengths, and patients in Class 3 (27.7%) had a high severity, high complexity and low strengths profile (Table 4). The authors concluded that the ADAPT is a valid instrument for AOD treatment planning and outcome evaluation, although as it has only recently been developed no studies to date have been conducted evaluating its efficacy.

Table 4: indicators assessed by the ADAPT (assessed as ‘none’, ‘low’, ‘medium’, or ‘high’)

1. Tolerance and withdrawal symptoms (TOLERANCE)	9. Standard and stability of housing arrangements (HOUSING)
2. Urge to use substances and impaired consumption control (URGE)	10. Financial support and problems (FINANCE)
3. Overdose risk and harm (OVERDOSE)	11. Crime involvement (CRIME)
4. Physical health conditions (PHYSICAL)	12. Change motivation and engagement in treatment and supports (MOTIVATION)
5. Psychological health conditions (PSYCHOLOGICAL)	13. Self-management and outlook on life (OUTLOOK)
6. Personality characteristics and emotional regulation (PERSONALITY)	14. Family and social network support (SUPPORT)
7. Personal relationship functioning (RELATIONSHIPS)	15. Employment, volunteering and education (SKILLS)
8. Risk to self and others (RISK)	16. Contact with problem substance users (ENVIRONMENT)

Adapted from Marsden et al., 2014

Tiered Models

Recent needs-based planning work has used a tiered framework to model and segment help-seeking populations (Rush, Tremblay et al. 2012). The tiered framework is an approach that can be used to classify individuals into pre-defined tiers or categories of treatment need and provides information about the nature of a population of interest. This type of system-level modelling can enhance the ability of health planners to determine and design sufficient and appropriate AOD services based on treatment need and demand. This process provides information on who needs, seeks, accesses and receives treatment, and on who completes treatment or disengages with the AOD treatment system.

Rush and colleagues applied this logic to the substance use services and supports in Canada and developed a five-tiered model that describes a spectrum of substance use problem severity and life complexity issues defined by risks and harms in the general population. The five tiers are described as: low risk, moderate risk, active risk/harm, chronic harms, and complex/high severity. Recently, Turning Point sought to adapt this work within an Australian context, and develop a planning model that considers both severity of dependence and life complexities.

Following Rush et al., a tiered model was developed specifically for the Victorian context (Barker, Best et al. 2016). The model classifies individuals into one of five tiers based on their severity of substance dependence, as well as the presence of one or more additional life complexity factors, specifically (i) homelessness, (ii) psychological distress (a proxy for comorbid mental health problems), and (iii) lack of meaningful activities (i.e., unemployment) (see Figure 4). Severity of dependence was measured using the Alcohol Use Disorders Identification Test (AUDIT; (Babor, Higgins-Biddle et al. 2001) and Drug Use Disorders Identification Test (DUDIT; (Berman, Bergman et al. 2003).

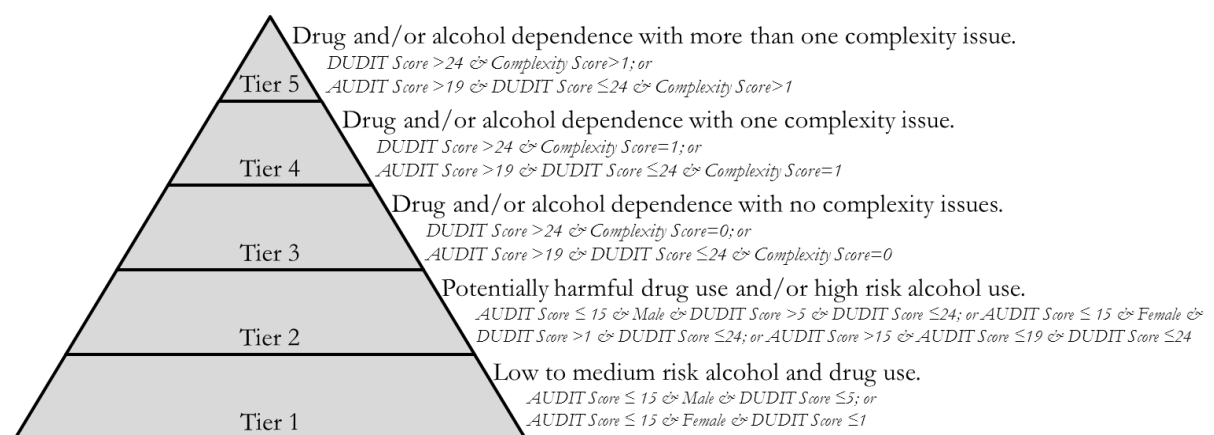


Figure 4. Victorian Tiered Model, where Complexity Score is a count of complexity issues including: high psychological distress (K10 score of 30-50), housing instability (homelessness or boarding house residence), and lack of meaningful activity (unemployment), generating an overall potential value between 0 and 3.

This model was validated in a sample of 2897 Victorian treatment-seekers accessing help either face-to-face (via AOD services) or online (Barker, Best et al. 2016). To our knowledge, this study reflected the first attempt to apply a tiered model to AOD treatment-seeking within Australia, and test the resulting tier allocation against measures of client wellbeing (i.e., the Australian Treatment Outcomes Profile [ATOP]). Analysis of the three items of the

ATOP (Ryan et al, 2014) assessing physical health, psychological health, and overall quality of life demonstrated a linear trend whereby clients in higher tiers had lower overall total scores (see Figure 5). When the three items were assessed individually, there was a moderate negative correlation between tier and psychological wellbeing ($r_s = -0.51$, $p < 0.001$), physical wellbeing ($r_s = -0.46$, $p < 0.001$), and overall quality of life ($r_s = -0.55$, $p < 0.001$).

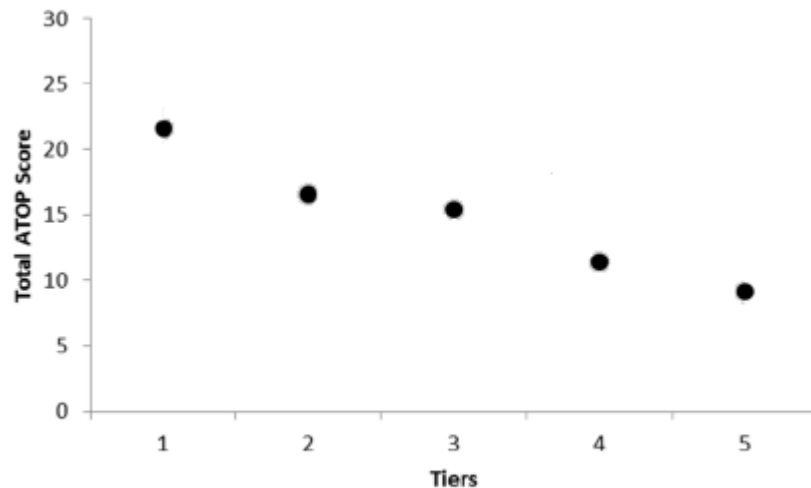


Figure 5. Relationship between tier ranking and total ATOP score. Solid dots represent mean values and grey shaded area represents ± 1 standard deviation

Validation of the Victorian Tiered Model

Version 1

Data were collected by Turning Point from service provider A and B catchments in order to validate the tiered model. In the service provider A catchment (Fig 6.), the majority of treatment-seekers were allocated to higher tiers. Of treatment-seekers allocated to tiers, one third (31%) was allocated to Tier 5 (suggesting likely dependence and 2 or 3 complex life issues), 41% were allocated to Tier 4 suggesting likely dependence and 1 complex life issues, 13% were allocated to Tier 3 likely dependence and no complex life issues, while 15% were allocated to Tiers 1 and 2 combined.

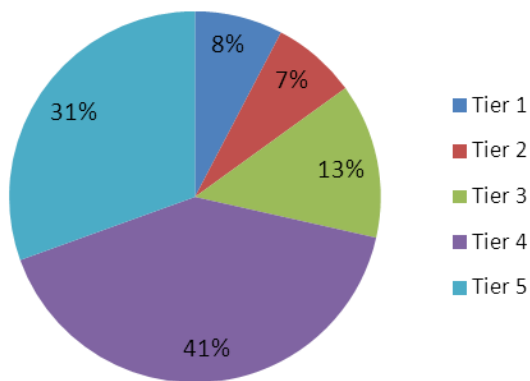


Figure 6. Proportion of treatment-seekers allocated to each tier (service provider A)

Similarly, in the service provider B data, the majority of treatment-seekers were allocated to higher tiers. Nearly two thirds (62%) were allocated to Tier 5 and a further quarter (23%) was allocated to Tier 4 (Figure 7). Combined, Tiers 1 and 2 accounted for the remaining 15% of treatment-seekers; no treatment-seekers were categorised as Tier 3, suggesting that dependence in this context does not exist in the absence of other life complexities amongst those seeking specialist AOD treatment.

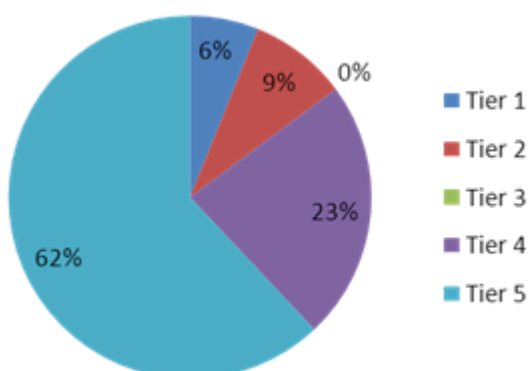


Figure 7. Proportion of treatment-seekers allocated to each tier (service provider B)

As part of the current report, we applied the tiered model to participants in the Patient Pathways study cohort (Table 5), and found a similar tier distribution to the consortia data. This provides further evidence that the majority of clients seeking treatment in specialist AOD services have additional complexities, which would allocate them to Tiers 4 and 5.

Table 5: Percentages allocated to each tier across the catchment and pathways projects

Study name	Tier 3 (%)	Tier 4 (%)	Tier 5 (%)
Patient pathways	22	48	29
Service provider A	13	41	31
Service provider B	0	23	62
Service providers A & B (version 2)	13	42	30

Version 2

In 2015, Turning Point amended the tier model by broadening the existing housing and employment items, adding additional factors to the complexity score (i.e. the complexity score was increased from a maximum of 3 factors to a maximum of 8 factors), incorporating a proxy measure of dependence based on previous AOD service use (risk of relapse), and revising the complexity score thresholds (Barker et al, 2015). This work was informed by the results of the literature review and a survey with clinicians. The complexity score and cut-offs for each tier were revised to include the 8 variables that take account of a broader range of issues that affect the lives of people with alcohol and drug problems (see Table 6):

- Poor mental health (K10 \geq 30)
- Lack of meaningful activities (i.e. employment or training)
- Housing insecurity (homeless/boarded house accommodation OR homeless in last 4 weeks OR at risk of eviction OR live in a place that is not safe)
- Pregnancy
- Gambling concerns
- Legal problems (status other than “no” OR arrested in last 4 weeks)
- Care of or living with children
- Low satisfaction with physical health (ATOP physical wellbeing score <6)

Table 6. Revisions to tier definitions for Tiered Model Version 2.

Tier	Tiered Model Version 1 ^a	Tiered Model Version 2 ^b
1	Low to medium risk	Low to medium risk
2	Potentially harmful / high risk use	Potentially harmful / high risk use
3	Dependence + Complexity Score = 0	Dependence + Complexity Score = 0 - 1
4	Dependence + Complexity Score = 1	Dependence + Complexity Score = 2 - 3
5	Dependence + Complexity Score = 2+	Dependence + Complexity Score = 4+

^a Dependence defined by AUDIT and/or DUDIT scores and complexity score maximum of 3.

^b Dependence defined by AUDIT and/or DUDIT scores and/or previous use of AOD services and complexity score maximum of 8.

Version 2 of the Tiered Model provided additional segmentation amongst treatment seekers reporting likely dependence (i.e. Tiers 3, 4, and 5) by including additional complexity factors resulting in a decrease in the proportion treatment seekers allocated to Tier 5 (Figure 8). The resulting proportion of the population of treatment seekers in the highest tier is closer to that demonstrated in the international literature (Marsden, Eastwood et al. 2014), although still somewhat higher than in the US studies (Turner, Turner et al. 1999, Magura, Staines et al. 2003).

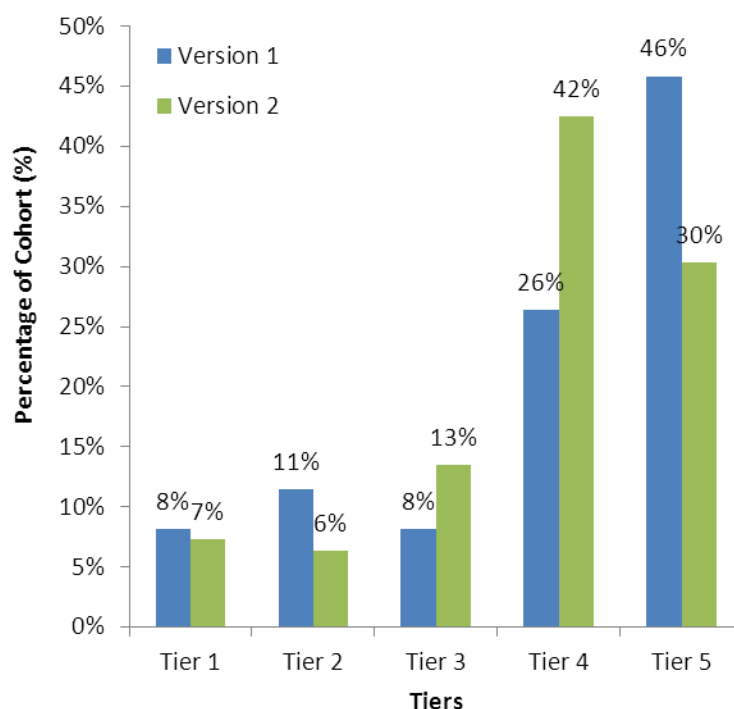


Figure 8. Segmentation of treatment-seekers using Version 1 and Version 2 of the Tiered model.

Limitations of the Victorian Tiered Model

Overall, this modelling work is at a relatively early stage of development. It is a young area of research in the AOD field and the work conducted in this phase of the project provides a significant contribution to the thinking around needs-based planning and system-level mapping of need and demand for AOD services. However, there are important limitations of the modelling work that should be considered.

The tiered model is a population planning tool fundamentally designed for developing information and tools for population-level analysis and needs-based planning, as opposed to treatment allocation at an individual level by treatment services.

The five tiers of version 1 of the model were based on the available data captured by a brief online AOD screen, and hence was limited to the complexity factors (i) mental health; (ii) homelessness; and (iii) unemployment. The Turning Point research reviewed above indicates that around 70% of the Victorian treatment-seeking population fall within Tiers 4-5, based on these complexity factors (in addition to dependence). Even with the revised tier model (version 2), these binary complexity factors (yes/no) provide no indication of the *degree* of complexity, for example, “care of children” does not necessarily equate to degree of risk. As a result, they are overly inclusive (i.e., a very high proportion of help-/treatment-seekers were found to have at least one complexity factor). For this reason, we also amended the complexity score threshold for Tier 3 to allow for up to 1 complexity factor. However, following these revisions to include a broader range of complexity factors, it remains a crude model for identifying clients in need of the most comprehensive packages of care.

As such the current 5–tier system is not sufficiently sophisticated to be able to differentiate the treatment packages for tier 5, being a rudimentary tool that considers only 3 complexity factors. To determine who needs which treatment package will likely require clinical judgement and consideration of other factors highlighted within this report, such as AOD problem severity, mental health and physical health severity, treatment history (past attempts, in line with a stepped care model) and psychosocial factors (e.g., we know that someone with homelessness is unlikely to maintain abstinence/or a reduction in drug use post-withdrawal).

However, the broader literature suggests that those requiring the most intensive/enhanced packages of care are those likely to have significant mental health and/or physical health problems, or have a history of previous treatment episodes. Given that most clients in the current system are Tier 3 and above (i.e., are dependent), based on version 2 of the tiered model and the international literature reviewed above, we estimate that 20-25% of clients with alcohol and drug dependence seeking treatment will require the most comprehensive package of care (i.e., a new Tier 5+).

How do we decide who gets what?

Drug and Alcohol – Clinical Care Package (DA-CCP)

The DA-CCP model provides a template for drug and alcohol service planning that can be used in conjunction with the tiered model to determine service demand for clients with differing needs. The aim of the DA-CCP project, funded by the Inter-Governmental

Committee on Drugs (IGCD) in 2009, was to develop a national population-based model for drug and alcohol service planning. Prior to the development of DA-CCP, there was no agreed national population-based model for this purpose.

The development of the DA-CCP model was governed by (i) a steering committee, which included one health representative from each jurisdiction and representatives from the Office of Aboriginal and Torres Strait Islander Health (OATSIH), the Alcohol and other Drugs Council of Australia (ADCA), and the Ministerial Council on Drug Strategy (MCDS), who provided final decisions on all matters related to the DA-CCP planning model, and (ii) an expert reference group, chaired by Professor Alison Ritter (National Drug and Alcohol Research Centre; NDARC), which included one health representative from each jurisdiction and representatives from the Chapter of Addiction Medicine, the Department of Health and Ageing (DOHA), the Australasian Therapeutic Communities Association (ATCA), ADCA, and the Australian National Council on Drugs (ANCD). The expert reference group provided expert advice on epidemiological and clinical aspects of alcohol and drug treatment, service delivery, and planning issues, assisted in the identification of literature reviews and other literature relevant to the DA-CCP project, and consulted within jurisdictions to supply information needed by the DA-CCP project team.

The scope of the DA-CCP model included all drugs except tobacco, and all alcohol and other drug services, including prevention as well as treatment (e.g., NSP, screening, assessment, drug withdrawal, OTP, counselling, relapse prevention, aftercare, rehabilitation, etc.). It encompassed a broad range of service settings (outpatient, community-based treatment; community outreach services; inpatient, both hospital and community based treatment; primary care services [e.g., GPs, youth], and prisons) all sectors (public, non-government, and private) and all alcohol and drug services regardless of funding source.

The DA-CCP model specifies the care for a person for a year with a specific need. Level of care is specified in terms of (i) community-based care (frequency and duration of service delivered for an individual or a group) and (ii) treatment facility (average length of stay in a facility which may range from days to weeks). The focus of the expert working group was the development of care packages for different age groups by different drug problems by severity of problem (mild, moderate, severe). The following framework conceptualises the DA-CCP model (Fig. 9):

DA-CCP SCHEMA

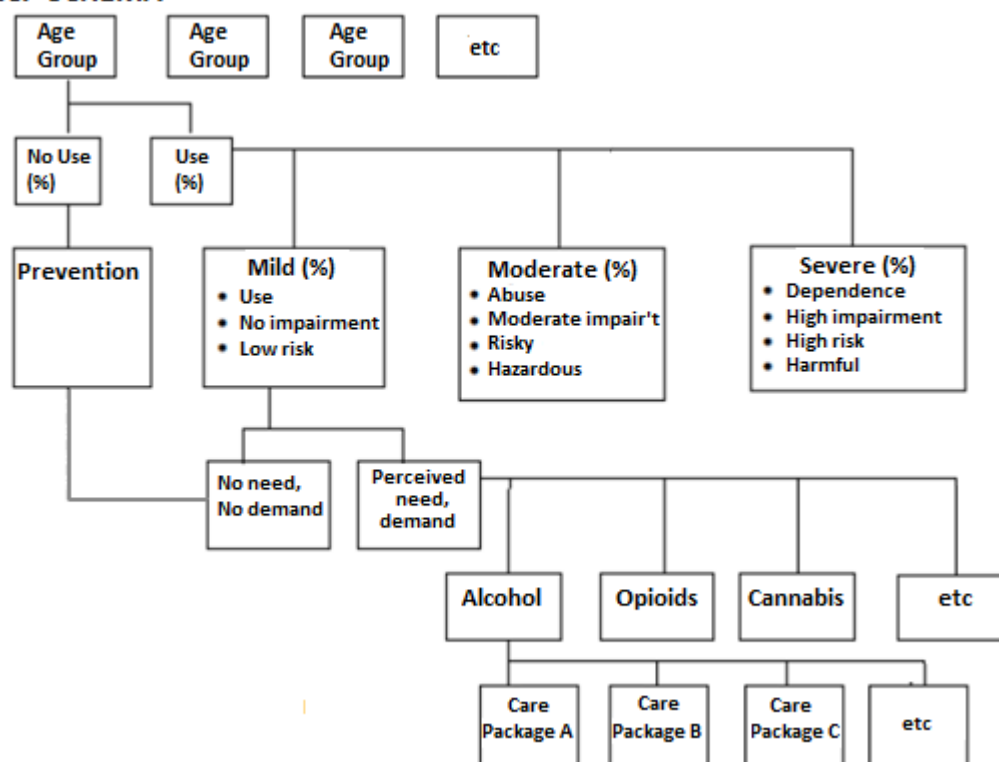


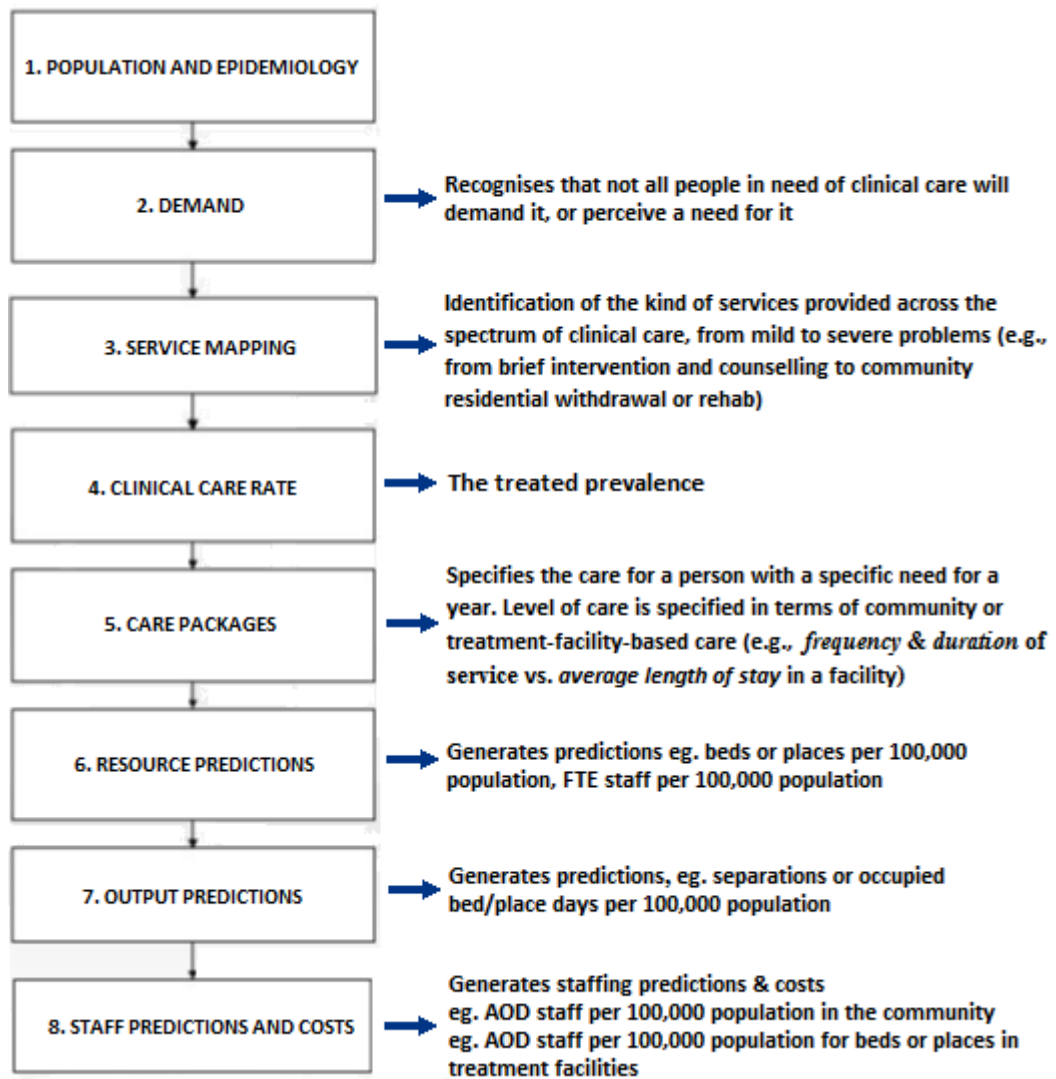
Figure 9. Framework of the DA-CCP model.

For each drug, the care for a person with a specific need for a year was defined in terms of age group and severity of presentation, detailing the frequency and duration of sessions (outpatient treatments) and number of bed days (for inpatient/residential treatments) for each.

The DA-CCP project used 2006 census data to estimate resources needed for the Australian population. The DA-CCP report provided an estimate of the resources needed in such a model (e.g., FTE staff/beds per 100,000 population), as well as a tool to calculate these. The potential benefits of this model for service planners include:

- Consistency and transparency across all jurisdictions for estimating the need for adequately resourced drug and alcohol services (prevention/early intervention to intensive treatment)
- An estimate of the gap between current need being met, and the resources to fill that gap
- Resource and output costs (external) can then also be applied

THE DA-CCP TEMPLATE



The DA-CCP model outlines care packages which specify the care for an individual with specific needs over a 12-month period. It outlines packages of care for clients with a standard presentation (i.e one with low co-morbidity) and with a complex presentation (i.e one with high co-morbidity). A key feature is that there are many care packages in the model, differentiated on the basis of frequency and duration, as well as location (i.e., care in the community versus at a treatment facility). For example, care delivered in the community for an individual may include 1 x 60 minute assessment, 6 x 30 minute

consultations, 1 x 30 minute reviews, etc; care delivered in a treatment facility may vary in length of stay from a few to days to several weeks.

6. Summary of literature and recommendations for service planning

Summary of the literature

In this report, we have provided a rapid review of the available Australian and international literature relating to treatment effectiveness across different treatment streams (treatment types) and with various treatment approaches (especially psychological approaches). While the focus of this review was on treatment streams that are currently funded within the existing Victorian AOD system, it is important to note that a number of other critical components of an effective system were identified that should be considered in any future planning models. It is also recommended that all clinical workforces are aware of this evidence and its relevance to treatment decision making, as this review has highlighted numerous strengths of AOD treatment and it is important that this is disseminated to the frontline workforce.

We have synthesised this rapid review of the literature with local data and existing models of care to inform the development of treatment packages to assist with service planning activity. A key observation from undertaking this literature review is the marked paucity of literature on how the treatment system should be configured, and lack of evaluation of packages of care within that system. This is in stark contrast to the extensive literature and evaluation of treatment systems for other chronic conditions such as heart disease, diabetes, asthma etc. Nevertheless, there are important lessons from the literature that directly inform service planning. Firstly, data from the three large Australian treatment outcomes studies (ATOS, MATES, and Patient Pathways) consistently highlight that treatment leads to significant reductions in AOD use, AOD problem severity, and in the use of acute health services. In addition to improved AOD outcomes, these studies demonstrate that treatment significantly improves mental and physical health, quality of life, and psychosocial functioning, while reducing involvement in the criminal justice system. However, findings also indicate that the effective components of treatment vary according to the primary drug of concern (PDOC) as well as a range of client complexity factors. Together, the results of these three studies highlight the need for a system that increases the availability and accessibility of particular specialist services (e.g., residential

rehabilitation), yet also takes into account the varying needs of a complex population in which not all clients will require the same levels of care. More broadly, they also highlight the need for enhanced efforts around case coordination and assertive and timely referral to appropriate services to aid transition through the AOD treatment system.

Secondly, there is international evidence in support of the effectiveness of different treatment type/streams (i.e., residential and non-residential withdrawal, rehabilitation, community-based counselling), however there is increasing recognition of the need for the delivery of packages of treatment involving multiple streams (i.e., packages that are inclusive of not just one treatment type, but others that may occur sequentially and/or simultaneously rather than single/isolated episodes of care). There is consensus that the delivery of care should be based on client severity (which can encompass frequency and intensity of AOD use and associated mental and physical health problems, and other risk factors [e.g., injecting drug use]) and complexity (e.g., the presence of comorbid psychopathology, social instability factors such as homelessness or unemployment, poly-substance use, or other factors that are likely to complicate treatment outcomes). There is also strong evidence that those with more severe drug and alcohol problems benefit more from inpatient than outpatient care, while clients with severe comorbid mental health problems benefit from intensive psychosocial therapy as well as residential programs such as supported housing.

AOD Service Models

Given the increased recognition that AOD services are often delivered in isolation and pathways through the treatment system can be fragmented, in recent years there has been growing interest in the development of models that address these limitations. However, while stepped care models (in which the least intrusive and costly treatment likely to be effective is used initially, with progressively more intensive treatment used if this approach is insufficient in obtaining a positive outcome), integrated care models (in which AOD services are coordinated horizontally, such as between withdrawal services and residential rehabilitation, and vertically, through different levels of care), and care coordination (i.e., the coordinated delivery of individual services across multiple sectors) are generally regarded as best practice, the empirical evaluation of these models is severely lacking.

Counselling/psychosocial interventions are the cornerstone of most substance use disorder treatments and while Cognitive Behavioural Therapy and Motivational Interviewing have been the most rigorously evaluated approaches (with the strongest evidence in support of

their effectiveness), there is a growing evidence base for others, such as Dialectical Behavioural Therapy, mindfulness-based interventions, Acceptance and Commitment Therapy, and contingency management. There is strong evidence that these approaches can be applied within group programs as well as individually, which may offer a more cost-effective means of delivering treatment. However, much of the literature comparing different forms of counselling/psychosocial interventions suggests no one approach is superior, and in real world clinical settings, clinicians tend to draw on a broader 'tool box' of multiple approaches. The importance of counselling in AOD treatment is highlighted by research indicating that even very short treatment periods are more effective than no intervention (although longer treatment is likely to confer additional benefits, and should be standard for more complex clients). However, it is critical to note that clinician training and proficiency is an important factor in determining client outcomes. The effectiveness of any form of counselling depends on fidelity of practice, as well as quality assurance, accountability, and organisational capacity to support a shared learning environment that promotes observed practice, supervision and skill development. There is also robust evidence that peer support/mutual aid improves treatment outcomes and linkage to these programs as a form of aftercare needs to be a core part of any service delivery model.

For more complex clients, assertive outreach programs that facilitate access to clinic-based services are a critical component of treatment. Given that many clients with serious mental health/physical health and substance use disorders struggle to access multiple services and to actively participate in treatment, these programs are likely to be of particular benefit to those with more severe illnesses. The costs of assertive outreach, while high, are offset by the reduction in hospital and other unplanned healthcare use amongst this population. For these populations, access to specialist medical support and review are also critical in providing effective treatment responses and supporting primary care as well as the AOD sector more broadly.

Outcomes

A range of factors can influence the outcomes of AOD treatment. These include: severity of dependence (defined above); mental health/psychiatric history (i.e., current and past history of mental health problems, which is highly prevalent amongst individuals with substance use problems); social stability (including homelessness and unemployment); treatment duration (the length of time in which the client is engaged in continuing treatment); AOD treatment

history (past engagement with the treatment system); therapeutic alliance (the strength of the relationship between the client and psychologist/psychotherapist); and continuity of care (specialist AOD treatment entailing different treatment streams that occur sequentially). Such factors should be considered when allocating clients to different packages of care as there is evidence that better outcomes are obtained for more complex clients (e.g., those with a history of more severe dependence or serious mental health symptoms) when longer and more intensive psychosocial treatments are undertaken. Conversely, socially unstable clients are likely to gain particular benefit from longer inpatient treatment (as opposed to simply greater treatment intensity). In regard to treatment history, the existing evidence supports assigning clients to different levels of care based on past treatment episodes, with multiple (e.g., >5) past treatment episodes justifying the most comprehensive package of care available.

A number of research groups have attempted to segment AOD using populations to inform the required level of specialist AOD treatment. This is necessary in order to provide health service managers, policy makers, and commissioning bodies with the ability to assess the composition of needs across the populations they serve, and to ensure that adequate resources are available to meet these needs. The 5-tier Canadian model was adapted to the Australian context to develop a population planning model that considers both severity of dependence and life complexities (housing, unemployment, and mental health). While the tool has been validated with both treatment and non-treatment-seeking populations, its usefulness as a service planning tool among treatment-seekers is limited. As demonstrated using data from two metropolitan consortia, the majority of the treatment-seeking population fall into tiers 4 and 5, and would therefore require the most comprehensive packages of care. The rudimentary tiered model requires considerable revision to be used for this purpose, including a more sophisticated and nuanced assessment of mental and physical health morbidity, social stability, and previous treatment episodes.

Recommendations for a service planning model

The literature review highlights key elements of an effective AOD service system. These are continuity of care via horizontal integration with linkages to different treatment streams (e.g. residential withdrawal, outpatient counselling) and with vertical integration to different health and welfare systems for complex clients facilitated by care and recovery co-ordination (case management), and aftercare (peer support/mutual aid). However, as many clients with significant AOD issues frequently present to acute health settings (e.g.,

ambulance, emergency departments), there is a need to consider the important role that hospital consultation-liaison services play in linking clients to treatment, and minimising costs associated with extended hospital stays.

Given the importance of continuity of care in the literature in terms of outcome it is important to also consider the availability and cost-effectiveness of low intensity sustainable models (e.g., telephone-based continuing care following face-to-face service delivery; engagement with AA/NA/Smart Recovery). At a minimum, this should entail at least one assertive telephone follow-up call post-discharge to determine the need for further treatment or support.

While there is broad consensus on the merits of stepped care, integrated, and continuing care models, they have been subjected to scant evaluation, with the additional challenge of there being a dearth of research on effective packages of care. To date the only model that has attempted to delineate the required treatment streams, recognising the need for longer term engagement with the treatment system, is the Drug and Alcohol - Clinical Care Package (DA-CCP). The strengths of this Australian model of care include development through expert consensus, the inclusion of all drugs (except tobacco), the inclusion of a broad range of treatment settings as well as all AOD treatment services and sectors (public, non-government and private), and consideration of both standard (low co-morbidity) and complex (high co-morbidity) presentations. DA-CCP specifies the care for a person for a year with a specific need. Level of care (care package) is specified in terms of (i) community-based care (frequency and duration of service delivered for an individual or a group) and (ii) treatment facility (average length of stay in a facility which may range from days to weeks).

Determining the different packages of care for those in tiers 3, 4 and 5 was a key objective of this work, however reconciling the existing Victorian AOD tier model with other models which aim to segment the treatment-seeking populations has proven particularly challenging. As discussed earlier, the Victorian tier model was developed as a population planning tool, rather than a treatment allocation tool. In its current form, the tier model is limited in its capacity to identify required packages that are likely to be effective for different client groups. While the tier includes an assessment of severity of dependence (broadly indicated via scores on the AUDIT, DUDIT, and Alcohol, Smoking, and Substance Involvement Screening test [ASSIST] (WHO 2002)), psychiatric impairment (broadly indicated via the K10 score) and social stability (broadly indicated via homelessness and unemployment/lack of meaningful activity), a more nuanced and detailed assessment of these domains are needed given the binary measurement of the many complexity factors

assessed in the revised tiered model. This could include measures of severity (e.g., mild, moderate, severe) as opposed to a simple present/absent variable, as well as consideration of the number of previous treatment episodes (treatment history). Indeed, applying the current tier model to local consortia data and patient pathways indicates that around 75% (72-85%) of treatment seekers are tier 4 or 5 clients, thus requiring more than standard care. Given the high costs of rehabilitation and care and recovery co-ordination, economically this is simply not feasible. The proportion identified as needing the most complex packages of care (tier 5) using the current model are 29-62%, although the revised tier model (version 2) which assesses 8 instead of 3 complexity factors reduced the proportion in tier 5 to just 30%.

Proposed modified tier system

Based on this work, we propose a minor modification of the tiers so that they align with the literature and DA-CCP recommendations in determining packages of care at a population level, however it must be emphasised that comprehensive assessment, frequent review, and clinical judgement (along with client preference) are critical components for such decision-making in clinical settings. We propose offering a '*standard*' package of care for clients in tier 3 and some clients in tier 4, characterised by dependence plus at least one complexity factor - recognising that dependence rarely exists in isolation within the specialist AOD treatment system. We propose offering an '*enhanced*' package of care for clients in tier 4 and some clients in tier 5 characterised by dependence and at least two complexity factors (one of which is mental health impairment). Finally, we propose offering a '*complex*' package of care for clients in tier 5 where there are multiple complexities as well as dependence (i.e., serious mental or physical problems and/or multiple previous treatment episodes).

To inform the components of each package of care we used the patient pathways cohort (Lubman, Garfield et al, 2014) to test the DA-CCP packages of care (where possible) and treatment duration/sessions associated with positive outcomes that are reported in the literature for different treatment streams by tier. We first tested whether receiving a package of care (i.e., continuity in specialist AOD treatment) was associated with better outcomes. The analyses indicated that participants who experienced continuity in their care pathway (i.e., horizontal integration) by being referred to or from a specialist AOD service to additional treatment were significantly more likely to achieve abstinence than those who had an isolated treatment episode (41.2% versus 30.8%, $p < .05$).

Further analyses suggest that continuity of care benefits some clients more than others. Study participants were allocated to a tier based on the current Victorian model (when info on complexity factors were available), with 22% in tier 3, 48% in tier 4 and 29% in tier 5. Better outcomes (higher rates of PDOC abstinence or a reliable reduction in PDOC use) at one-year follow-up were observed when withdrawal was followed by another treatment stream (i.e., counselling or rehabilitation) and were significantly higher for tier 5 clients (see Appendix Table 4). This suggests that clients, particularly those with the greatest severity and complexity benefit from receiving continuity of specialist AOD care rather than single/isolated episodes of care. However, when rehab was the PIT this relationship was not observed (see Appendix Table 5). Together with existing studies summarised in sections 3-4, these findings support the existing approach echoed in the literature and DA-CCP, that the most intensive/costly and intrusive treatment packages are most suited and therefore best reserved for those with the greatest complexity and severity (higher tiers).

We then used the patient pathways data to examine outcomes (both abstinence and reliable reduction in use of their PDOC) with the recommended/indicated duration of outpatient counselling (for details see Appendix Table 6) by tier. When applying the current Victorian definitions of 'standard' and 'complex' counselling (i.e., 5 or 12 sessions) to the data, we observed slightly better outcomes with <5 weeks relative to ≥ 5 weeks for Tier 3 and 4, while ≥ 12 weeks was associated with better outcomes than <12 weeks for those in Tier 5 (see Appendix Table 6). Again, in line with the stepped care model there is evidence that there are clients (especially those in tier 3 and 4) that respond to brief periods of counselling and achieve no further gain (and indeed a deterioration) with longer episodes of counselling, while others (tier 5) achieve the best outcomes (both abstinence and reliable reduction in drug use) with 12 or more weeks of counselling.

Proposed packages of care

We have drawn on the literature reviewed in this report as well as the recommendations of the DA-CCP model on packages of care indicated over the course of 1 year for standard and complex clients, and have developed a draft set of standard, enhanced, and complex packages of care for AOD clients seeking specialist treatment in Victorian AOD services. It is again important to emphasise that these recommendations are for population planning purposes, in line with the tier model from which they have been developed, and have not been designed to directly inform client allocation models in clinical services. Nevertheless,

the delivery of a treatment package over the course of one-year aligns with established outcomes following different treatment streams in the ATOS, MATES and Patient Pathways Australian treatment outcome studies. However, there are a number of caveats that should be noted in regard to the development of the treatment packages.

First, while the evidence presented was broadly consistent across the studies described, it is important to note that the literature was identified as part of a rapid review process that focussed on systematic literature reviews and meta-analyses rather than identifying all individual studies (although some have been included where relevant), and additional studies may have been overlooked. Second, no definitive model of the type proposed currently exists, and in using the literature to inform our recommendations, assumptions have been made that will require formal testing when data are available and/or justification by expert consensus. In particular, it is difficult to estimate the percentages that should receive particular packages of care, or particular treatments within each package. While we have provided recommendations below based on the available evidence, these percentages may need to be revised in response to additional data. Third, the severity of complexity factors (rather than simply their presence or absence) is critical in determining the level of care a client receives, and it is recommended that the standard, enhanced standard, and complex packages of care align with these (for example, the three packages are allocated to clients with mild, moderate, and severe mental health problems, respectively). Fourth, we have focussed on broad population health models, and the recommended packages of care therefore may not be applicable to specific populations with unique needs. Thus, the model needs to be tested and validated within culturally and linguistically diverse (CALD), Aboriginal and Torres Strait Islander, and youth populations, among others. Similarly, while criminal justice involvement is a common comorbidity, the model has not been developed for forensic clients (as the forensic system is funded separately), and has therefore not taken into account direct referrals from the justice system and the differing requirements that may be mandated for this population. The model does also not take into account the specific needs of an ageing population. Fifth, despite evidence for the effectiveness of pharmacotherapy, addiction medical specialist services, family support and interventions, telephone-based continuing care, and supported housing, these have not been included in the current model (given the predefined scope of the project), and further work will need to be done in order to incorporate them into the recommended packages of care. Finally, while the literature highlights the need for intensive integrated programs specifically targeting the needs of clients with serious mental and/or physical illness/severe dependence as well as

significant psychosocial issues (a subset of the tier 5+ group; e.g., clients who are eligible for the Multiple and Complex Needs Initiative [MACNI]), we are aware that this is currently not available in the Victorian system, and as such have not included these in the model. Further work is needed to identify the appropriate care package for this most severe and complex client group.

The recommendations (and literature supporting them, where applicable) are as follows, and are summarised in Table 7, below:

- The percentages allocated to each tier are recommendations that have been estimated based on the international literature, local consortia data, and patient pathways data. Specifically, it is expected that approximately 20-25% of treatment-seekers will require the most comprehensive packages of care over 1 year (complex care), while the remainder will require standard care (incorporating those from Tier 1 or 2 who are identified as having risky substance use that requires specialist clinical intervention), with 25-30% requiring standard care only and 40-45% requiring enhanced standard care. These estimates have been based on the international literature (specifically, UK and US literature evaluating the ADAPT tool and ASAM treatment guidelines, respectively), as well as findings using the revised tier model to segment Victorian treatment-seekers, summarised in section 5 of this report.
- The recommended duration of residential and non-residential withdrawal is 7-8 days based on DA-CCP (expert consensus) and the studies conducted by Carol et al. (2009) and Hayashida, et al. (1989). However, these estimates are based on longstanding models of care, which may not reflect the changing profile of AOD presentations or the current needs of the broader healthcare system and its integration with the AOD sector. Residential withdrawal is not included for the standard package of care (tiers 3-4) as dependence without multiple or severe complexities can be managed on an outpatient basis, and the majority will receive withdrawal support through their primary care providers. Conversely, given the greater complexity and severity required for allocation to tier 5+, non-residential withdrawal has not been included for the complex package of care, with generally all clients who are allocated this package receiving residential withdrawal (see Table 7 for potential exceptions). The enhanced standard package (tiers 4-5) includes both residential and non-residential withdrawal options, as the largest proportion of treatment-seekers will receive this package, and some of those may have more

severe complexities that will require residential withdrawal. While this decision will need to be made on a case-by-case basis (i.e., informed by clinical judgement in addition to client preference), it is estimated that approximately 50% of clients receiving the enhanced standard package will require residential withdrawal. However, it should be noted that there are currently no data available to inform this recommendation.

- The recommended duration of outpatient counselling for those requiring a standard or enhanced package of care is 5 x 60 minute sessions, based on DA-CCP and is supported by the literature suggesting positive outcomes are achieved with 3-8 sessions of counselling (see Appendix Table 2). The recommended duration of outpatient counselling for those requiring complex care is also based on DA-CCP and new findings from the patient pathways data suggesting that around 12 or more sessions are beneficial for those in high tiers (i.e. with greater complexity). The increased duration of outpatient counselling for the complex care package is also based on research indicating that clients with more severe comorbid mental health problems benefit from more intensive psychosocial therapy. Psychosocial interventions are included for 100% of clients receiving each treatment package, and may be delivered within group as well as individual settings. However, group-based therapy is likely to be less appropriate for more complex clients whose presentation and interaction with the group could be disruptive.
- The recommended duration of care and recovery coordination is 8 sessions for those requiring enhanced standard packages of care based on DA-CCP. This comprises sessions of assessment, families/carer involvement, active care and recovery coordination, case conference planning, and discharge /transfer of care. For complex clients, the recommended duration is 16 sessions, based on DA-CCP, comprising a similar mix of sessions. Care and recovery coordination is included for 100% of clients receiving the enhanced standard and complex treatment packages. Given the evidence that specialised assertive outreach programs (as defined in section 2) offer particular benefits to clients with more severe comorbid substance use and mental health/physical health problems, this should be considered on a case-by-case basis as an approach for engaging complex clients who are difficult to engage in treatment. In light of its high cost and high demand, residential rehabilitation should feature only as part of a complex package of care. However, not all clients receiving this package of care will require residential rehabilitation.

Data collected on alcohol and other drug treatment services in Australia (AIHW 2016) indicate that approximately 10-15% of treatment-seekers receive rehabilitation, therefore it is recommended that a similar proportion is provided as part of a complex package of care. For those that receive rehabilitation, it is recommended that the duration is 8-26 weeks, based on DA-CCP and the Brunette et al (2004) review, which demonstrated positive outcomes following 3 months and 6 months of residential rehabilitation. However, the length of residential rehabilitation provided to a specific client will need to be based on clinical judgement, and it is likely for some clients, longer periods of residential rehabilitation will be warranted (Simpson, Joe et al. 1997). It should be noted that continuing care should be part of the costing for residential rehabilitation (i.e., residential rehabilitation should include an aftercare component).

- For therapeutic day rehabilitation, a 25-30 day program is recommended for those requiring complex care packages who do not require residential rehabilitation. This is based on DA-CCP and the review conducted by Brunette et al. (2004), the evaluation of the Catalyst program by Kiehne & Berry (2012) and the Torque evaluation conducted by (LeeJenn 2015). Based on existing evidence, day programs are not included for those with severe psychiatric impairment (i.e., those requiring complex packages of care), other than as 'stepped down' care following successful completion of residential rehabilitation. In addition, it is estimated that a small proportion (10-20%) of those receiving the standard enhanced package of care will require therapeutic day rehabilitation. It is important to acknowledge that this is an estimate as we currently have limited empirical evidence on the efficacy of these programs, which to date have had limited evaluation within Australia.
- Given the value of aftercare including free and widely available forms of mutual aid and peer-support programs, assertive linkage to aftercare is recommended for enhanced and complex clients based on the findings of patient pathways and other assertive linkage studies (Timko, DeBenedetti et al. 2006, Manning, Best et al. 2012).
- Given the benefits and cost-effectiveness of distance-based interventions, it is recommended that 100% of clients receive telephone support post-discharge. Telephone support is recommended as part of each package of care as its broad benefits (e.g., optimising engagement in the treatment system, assisting with

relapse prevention) are likely to be of benefit to a wide range of clients, as well as offering a potential means of support for family members and carers.

Table 7. Population-based model of standard, enhanced, and complex packages of care for AOD clients seeking specialist treatment in Victorian AOD services

Treatment ^a	Standard (tier 3-4) (e.g., dependence plus one complexity factor only)	Enhanced standard (tier 4-5) (e.g., dependence plus two complexity factors, one of which is moderate mental health problems)	Complex (tier 5+) (e.g., dependence, plus significant mental/physical health problems, or previous treatment episodes)
Estimated % of treatment-seekers (±5)	30%	45%	25%
Non-residential withdrawal	By exception ^{bc}	7-8 days ^d	By exception ^b
Residential withdrawal	By exception ^b	7-8 days ^e	7-8 days ^f
Counselling	5 x 60 minute sessions	5 x 60 minute sessions ^g	12 x 60 minute sessions ^g
Care and Recovery Coordination	By exception ^b	8 x 60 minute sessions	16 x 60 minute sessions ^h
Residential rehabilitation	By exception ^b	By exception ^b	8-26 weeks ⁱ
Therapeutic day rehabilitation	By exception ^b	25-30 days ^j	25-30 days ^k
Peer support/mutual aid	Assertive linkage	Assertive linkage	Assertive linkage

^a Assertive telephone support post-discharge provided to 100% of clients

^b If clinically indicated or in accordance with client preference

^c Withdrawal support for this group is primarily provided within primary care

^d Provided to approximately 50% of clients receiving this package of care

^e Provided to approximately 50% of clients receiving this package of care

^f Setting may vary depending on client preference

^g Provided in either group or individual therapy settings

^h For complex clients who are difficult to engage in treatment, this may include assertive outreach

ⁱ Provided to 50% of clients receiving the complex package of care

^j Provided to 10-20% of clients receiving the enhanced standard package of care

^k Provided to clients receiving the complex package of care who do not require residential rehabilitation (50%)

It is recommended that the above table is applied to all substance use disorders, although it is likely that clients with alcohol, opioid, and methamphetamine problems would be over-represented in complex/tier 5+ (and would account for 64% of all treatment episodes, based on the most recent data available (AIHW 2016)). Nonetheless, clients with cannabis use disorder (for example), who are also experiencing severe social, mental, or physical health problems may still be candidates for complex packages of care. Indeed, while clients often have a primary drug of concern (PDOC), polydrug use is the norm amongst treatment-seekers (Miller, 2016; Lubman, Garfield et al., 2016), and therefore substance-specific

packages of care have little justification based on current evidence. While those with alcohol/opiate dependence are likely to also require pharmacotherapy (given the available evidence), this has not been included in the current model. Finally, it is important to emphasise that the recommended packages of care are for population planning purposes and are based on the 'average' or typical client, and that in the real world, there will be 'exceptions', where due to clinical judgement and/or client preference, clients will require less intensive or more intensive treatments to meet their needs.

Appendix

Appendix Table 1 Summary of the major international AOD treatment system outcome studies to date

Name	Country	Dates	Sample	Study population drawn from these modalities:
Drug Abuse Reporting Programme (DARP) ¹	USA	1968-1980 (12 year follow-ups)	44,000 at intake; over 6,000 followed up; 697 at 12 years	Methadone maintenance, therapeutic community, out-patient drug free, out-patient withdrawal management
Treatment Outcome Prospective Study (TOPS) ²	USA	1979 – 1986 (2 waves with 3-5 year follow-up)	11,750 patients at enrolment	Methadone maintenance, residential treatment and outpatient drug-free treatment
Drug Abuse Treatment Outcome Study (DATOS) ³	USA	1989 – 1991 (measures at 1 and 3 months in treatment and 12 months after)	10,010 at intake – 4,500 followed up at 12 months	Long-term residential; short-term inpatient; methadone maintenance and outpatient drug free
Project MATCH ⁴	USA	1989-1997	952 outpatients & 774 aftercare patients (recently completed inpatient or intensive day hospital treatment) followed up at 1 1 and 3 years	Alcohol dependent Undergoing Motivational Enhancement Therapy, Cognitive-Behavioral Therapy (CBT) or Twelve-Step Facilitation (TSF)
National Treatment Outcome Research Study (NTORS) ⁵	ENGLAND	Initiated in 1995 with one year, two year and five year outcomes	1,075 at intake from 54 programmes; 769 at one-year follow-up	Methadone maintenance; inpatient withdrawal and residential rehabilitation
Drug Treatment Outcome Research Study (DTORS) ⁶	ENGLAND	2006-2007, using a 12-month window;	1,796 baseline interviews; 886 interviewed at 3-5 months and	342 structured community or residential drug treatment services

			504 at 12 months	
Australian Treatment Outcome Study (ATOS) ⁷	AUSTRALIA	Baseline, 3 and 12 month follow-ups; 2 and 3 year outcomes in one site (2001-2002)	745 treatment sample and 80 non-treatment heroin controls	Methadone or buprenorphine maintenance; inpatient withdrawal and residential rehabilitation; small non-treatment control group
Drug Outcome Research in Scotland (DORIS) ⁸	SCOTLAND	Initiated in 2001 with 8, 16 and 33 month follow-ups	1,007 individuals from 28 specialist treatment agencies (community and residential) and five prisons delivering drug treatment	Substitute prescribing; non-substitute prescribing; counselling; residential rehabilitation and prison

Sources:

- 1 Simpson & Sells, 1983
- 2 Hubbard et al., 1989
- 3 Simpson & Brown, 1999
- 4 Project Match Research Group, 1998
- 5 Gossop, Marsden, Stewart, & Kidd, 2003
- 6 Donmall, Jones, Davies, & Barnard, 2009
- 7 Teeson et al., 2008
- 8 McKeganey, Bloor, Robertson, Neale, & MacDougall, 1996

Appendix Table 1: Summary of the major international AOD treatment system outcome studies to date
(continued)

Name	Country	Dates	Sample	Study population drawn from these modalities:
Research Outcome Study in Ireland (ROSIE) ⁹	IRELAND	Started in 2003 with a 6-month, 1-year and 3-year follow-up window	404 active treatment group with a subsample of 26 needle exchange users	Methadone maintenance /withdrawal management; structured withdrawal management; abstinence treatment
Methamphetamine Treatment Evaluation Study (MATES) ¹⁰	AUSTRALIA	Initiated in 2006 (Sydney & Brisbane) with 3-month, 12-month and 3 year follow-ups	300 entrants to methamphetamine drug treatment and 101 non-treatment comparison group	Residential rehabilitation, & withdrawal management
UKATT ¹¹	ENGLAND	Initiated in 1999, social behaviour and network therapy versus motivational enhancement therapy with three-month and 1-year follow-ups	742 clients with alcohol problems	Specialist community alcohol treatment services
COMBINE ¹²	USA	2001-2004 A double-blind, randomized placebo-controlled trial of naltrexone and acamprosate, both alone and in combination with medical management with and without a Combined Behavioral	1383 recently-abstinent alcohol dependent patients	Community and referrals from clinical services (withdrawal management)

Intervention (CBT,
MI & TSF).
Followed up to 1
year after
treatment

Appendix Table 2: Studies examining treatment types for substance use disorder only versus dual diagnosis

Treatment	Substance use disorder	Substance use disorder plus mental health diagnosis (dual diagnosis)
Detox-outpatient	<p>“For patients with mild-to-moderate alcohol withdrawal symptoms, and no serious psychiatric or medical comorbidities, <u>7-days of outpatient withdrawal management has been shown to be as safe and effective as inpatient withdrawal management</u>” (Hayashida et al., 1989)</p> <p>In one study, the average duration of treatment for outpatients was 6.5 days significantly shorter than the average duration for inpatient withdrawal management (i.e., 9 days; Hayashida et al. 1989)</p> <p>Length of withdrawal management <u>after 7 days matters very little</u>, rather, the speed of entry into further rehabilitation after detox leads to improved outcomes (Carroll, Triplett, & Mondimore, 2009)</p>	<p>Recommendations surrounding optimal days of inpatient or outpatient alcohol withdrawal depends on the severity of the patients dependence and co-morbid factors (low dependence can be effectively treated in an outpatient setting, whereas moderate to severe dependence should be treated in an inpatient setting; Asplund et al., 2004).</p>
Detox-inpatient	<p>In one study, <u>the average duration for inpatient withdrawal management for alcohol (i.e., 9 days;</u> Hayashida et al., 1989)</p> <p>The client should enter in the residential program and remain on the maintenance pharmacotherapy dose for an initial period of <u>at least seven days</u> for OPIOIDS (http://www.health.nsw.gov.au/mentalhealth/programs/da/Publications/drug-a-guidelines.pdf)</p>	<p>Length of withdrawal management after 7 days matters very little, rather, the speed of entry into further rehabilitation after detox leads to improved outcomes (Carroll, Triplett, & Mondimore, 2009)</p>
Counselling/ Psychosocial Interventions	<p>CBT: Lee and Rawson (2008): between <u>2-4 sessions</u></p> <p>“Length of treatment can vary greatly even within the rubric of CBT for SUD's (e.g. single session MI, 12-session BCT, etc.). Research on duration and intensity of treatment is mixed with some correlational studies indicating a positive relationship between longer duration and positive outcome and others indicating no differential effects of treatment</p>	<p>See Appendix table 3- different types and styles of treatment apply</p> <p>DBT: usually for BPD (Dual-diagnosis) Valentine et al., 2015: “The number and length of each session and the total number of hours of DBT skills training contact varied considerably across studies. The total number of hours of DBT training received across these studies is also less than the number of contact hours recommended in standard DBT (i.e., 24-week cycle of 2.5-hour weekly groups).”</p>

Treatment	Substance use disorder	Substance use disorder plus mental health diagnosis (dual diagnosis)
	<p>duration (McHugh, Hearon, Otto, 2010).</p> <p>Motivational Interviewing: <u>3-8 weekly one hour sessions</u> (Carroll et al., 2006)</p> <p>Mindfulness Training: <u>8 (sometimes 14) weekly two and a half hour individual sessions</u> (Chiesa & Serretti, 2014)</p> <p>Contingency Management: <u>Two sessions each week</u> (non-consecutive days) for 12 weeks (Roll, 2007)</p> <p>Psychosocial group therapy: Evidence suggests that clients who attend groups consistently and for a longer time period achieve the best results (e.g., for a year), although <u>positive outcomes can nonetheless be achieved by attending shorter-term groups (3 or 6-months)</u> (Drake, O’Neal, & Wallach, 2008; Knijnik et al., 2008).</p>	
Case management	Usually used for complicated dual-diagnosis clients	<p>Intervention participants were asked to attend <u>2 AHEAD clinic visits (90 minutes each), separated by 3 to 4 days each week</u>, receiving substance use, psychiatric, medical, and social assessments by all 4 clinicians for the entire follow-up period (<u>6 months in total</u>; Saitz, Cheng, & Winter, 2013).</p> <p>Among persons with alcohol and other drug dependence, CCM over 12-months compared with a primary care appointment but no CCM did not increase self-reported abstinence over 12 months. No significant differences were found for secondary outcomes of addiction severity, health-related quality of life, or drug problems (Saitz, Cheng, & Winter, 2013).</p>
Rehab residential	<u>3-months or 6-months</u> (Brunette, Mueser, & Drake, 2004).	3 months or 6-months (Brunette, Mueser, & Drake, 2004).
Rehab- day program	3-months or 6-months- -recommended (Brunette, Mueser, & Drake, 2004)	Not recommended for this population (Brunette, Mueser, & Drake, 2004)

Treatment	Substance use disorder	Substance use disorder plus mental health diagnosis (dual diagnosis)
	Uniting Care ReGen Catalyst Program (2009-2012) suggest day rehabilitation (6 weeks daily attendance) is appropriate in meeting the needs of clients who do not have serious instability in their lives, including serious mental illness, unstable accommodation, chaotic personal lives, or acquired brain injury	Not recommended for this population if mental health problems are severe

Appendix Table 3: Studies examining treatment outcomes for different substance use disorders.

Substance	Mental Illness	Treatment	Treatment Intensity
Cannabis	Chronic Mental Disorders	Longer, more intensive psychosocial treatments may be necessary for cannabis users with chronic mental disorders in order to produce enduring results at follow-up (>10 sessions of MI/CBT; Baker, Hides & Lubman, 2010)	More than 10 hour-long sessions of MI/CBT.
Cannabis	Depression	Compared with participants in the standard care (ST) group, those in the SC+CBT/MI group showed significant reductions in depression and cannabis use and increased social contact and motivation to change substance use at 3-month follow-up. However, at 6-month follow-up, the SC group had achieved similar improvements to the CBT/MI group on these variables. All young people achieved significant improvements in functioning and quality of life variables over time, regardless of treatment group. No changes in AOD use were found in either group at 6-month follow-up (Hides et al., 2011).	12 hour –long sessions of MI/CBT was used.
Cannabis	Schizophrenia	Contingency management is only effective while active. Counselling/psychosocial interventions, e.g. motivational interviewing and cognitive behaviour therapy (CBT), were ineffective in most studies with cannabis as a separate outcome, but effective in studies that grouped cannabis together with other substance use disorders (Hjorthoj, Fohlmann, & Nordentoft, 2009).	The individual cognitive behaviour therapy took place over approximately 18 weekly sessions, followed by six biweekly sessions (a total of 29 individual sessions, including the motivational interviewing).
Alcohol	Depression	Cognitive behavioural therapy for depression compared to standard treatment improved mood and prolonged abstinence in depressed alcohol dependant individuals (Brown et al., 2001).	8 weekly group sessions
Alcohol	Panic disorder	The specialised intervention had no effect on drinking or panic disorder symptoms (Bowen, D’Arcy, Keegan, & Senthilselvan, 2000).	Those in an inpatient alcoholism program received 12 hours of CBT for panic disorder plus the

Substance	Mental Illness	Treatment	Treatment Intensity
			standard program, or just the standard program.
Alcohol	Social Phobia	<p>Schade et al., (2004) randomly assigned 96 individuals with alcohol dependence and comorbid Social Phobia, and/or agoraphobia to receive relapse prevention (RP), or RP plus CBT for the anxiety disorder. Individuals who received the combined psychosocial treatment (alcohol + anxiety) had significantly greater improvement in anxiety symptoms than those who received treatment addressing alcohol dependence only. No significant differences between groups in alcohol use severity were observed.</p> <p>CBT works only when it doesn't expose people to feared social situations during early recovery (Randall, Thomas, & Thevos, 2001).</p>	Not indicated
Alcohol	PTSD	<p>Perhaps the most commonly used and well researched treatment designed specifically for individuals with PTSD and co-morbid substance abuse is 'Seeking Safety' (SS), a CBT approach for PTSD and substance disorders (Zlotnick, Najavits, & Rohsenow, 2003).</p> <p>Another pilot study found improvements in PTSD symptoms and alcohol use with the use of cognitive processing therapy-cognitive (CPT-C), enhanced to address heavy alcohol use, for the treatment of veterans diagnosed with PTSD and alcohol dependence (McCarthy & Petrakis, 2011).</p>	<p>SS: Treatment sessions were 90 minutes long and were held in a group format twice a week for just over 12 weeks.</p> <p>CPT-C: one-hour weekly sessions for 12-weeks</p>
Alcohol	Psychiatric Severity	Project MATCH: In the outpatient study, clients low in psychiatric severity had more abstinent days after 12-step facilitation treatment than after cognitive behavioral therapy. Neither treatment was clearly superior for clients with higher levels of psychiatric severity. Two other attributes showed time-dependent matching effects: motivation among outpatients and meaning-seeking among aftercare clients. Client attributes of motivational readiness, network support for drinking, alcohol involvement, gender, psychiatric severity and sociopathy were prognostic of drinking outcomes over time (Project MATCH Research Group).	12 weekly sessions
Methamphetamine/ cocaine	Mental Illness	<p>"No evidence for a differential treatment effect of any psychosocial treatment in the management of these disorders" (Vocci & Montoya, 2009).</p> <p>"No research on the effectiveness of mental health interventions for methamphetamine users" (Lee & Rawson, 2008).</p>	Not indicated
Methamphetamine/ cocaine	Depression	Methamphetamine only 'brief (two sessions) CBM intervention' had some short-term effect on depression symptoms (but no long-term effects) along	2-sessions

Substance	Mental Illness	Treatment	Treatment Intensity
		with reduced drug use in the short-term (Baker et al., 2005).	
Cocaine	Depression	<p>“Concerning differential treatment effects of the four psychosocial interventions under consideration (IDC, CT, SE, and GDC), there were no significant differences between the treatments, neither with respect to the development of drug use nor in terms of the progression of depression severity during treatment. Thus, interestingly, professional psychotherapies (CT and SE) did not perform better than drug counselling approaches in terms of reducing depression symptoms (Stulz, Thase, Gallop & Crits-Christoph, 2011).”</p> <p>“Motivational therapy patients attended significantly more treatment sessions during month 1, completed 30 and 90 days of outpatient care at higher rates, and experienced fewer psychiatric rehospitalisations and days in the hospital during the first year from entry into outpatient treatment (Daley, Salloum, Zuckoff, Kirisci, & Thase, 1998).”</p>	Depressed cocaine patients, stabilized with antidepressant medications on an inpatient psychiatric unit, were consecutively assigned on discharge to motivational therapy (N = 11) or treatment-as-usual (N = 12) during the first month of outpatient care.
Cocaine	PTSD	Concurrent Treatment of PTSD and Cocaine Dependence (CTPCD) was originally developed and found to be effective for the treatment of PTSD and co-morbid cocaine dependence (Brady, Dansky, Back, Foa & Carroll, 2001). CTPCD involves a combination of empirically supported cognitive-behavioural treatments and prolonged exposure.	16 hourly sessions
Opiates	Anxiety	<p>“In the case of true comorbid anxiety disorder, specific management of anxiety has to be combined with therapeutic interventions aimed at achieving maintenance of long-term abstinence from opiates” (Fatseas, Denis, Lavie, & Ausriacombe, 2010).</p> <p>Current recommended treatments for comorbid opiate and anxiety disorders are antidepressants + cognitive and behavioural psychotherapy (Swinson, 2006).</p>	Not indicated
Opiates	Depression	Evidence for the effect of antidepressants and behavioural therapies on affect in opiate dependence comes from studies of methadone-maintained opiate addicts, only some of which enrolled patients with a diagnosis of depression (Nunes, Sullivan, & Levin, 2004).	Not indicated
Substance use	Anxiety	Several studies of integrated treatment for anxiety and substance use disorders reported that patients assigned to substance use treatment only fared better (Hesse, 2009).	Not indicated
Substance use	Depression	Psychotherapeutic treatment for co-morbid depression and substance use disorders is a promising approach, but is not sufficiently empirically	Not indicated

Substance	Mental Illness	Treatment	Treatment Intensity
		supported at this point (Hesse, 2009).	
Active injection drug users	Depression	The combination of citalopram and CBT in intravenous drug users who adhered to treatment resulted in improved rates of remission (Stein et al., 2004).	A total of 8 individual psychotherapy (CBT) visits (during the course of 3months) and 3 pharmacotherapy visits (monthly for 3 months). After this acute, combined 3-month phase, subjects were offered continuation pharmacotherapy alone for study months 3 to 6
Substance use	Depression	Hesse (2009):“The meta-analyses conducted for integrated non-somatic treatment for co-morbid substance use disorders and depression indicated that while in general, outcomes favoured an integrated treatment, the difference was statistically significant for only one out of four selected outcomes (percent days abstinent at follow-up). Thus, while integrated treatment for depression and substance use disorders are promising, additional studies are needed. Also, given the small sample sizes in the studies, a risk exists that negative studies of similar have gone unpublished.”	Not indicated
Substance use	Bipolar	“Behavioral interventions for those with co-occurring disorders have rarely been studied” (Weiss et al., 2000).	Not indicated
Substance use	Bipolar	Integrated Group Therapy (IGT) is a promising treatment for patients with bipolar disorder and substance dependence, who have traditionally had poor outcomes (Weiss et al., 2000).	20 hour-long group sessions
Substance use	Schizophrenia	Regarding specific aspects of care, motivational interviewing, cognitive behavioural therapy and contingency management have an emerging supportive literature, as do family interventions. However, there is no 'one size fits all' and a flexible approach, with the ability to apply specific components of care to particular individuals, is required. Group-based therapies and longer-term residential services have an important role for some patients, but further research is required to delineate more clearly which patients will benefit from these strategies (Lubman, King, & Castle, 2010). Integrated treatment models result in reduced substance use, psychiatric hospitalization, arrests and homelessness (Dixon et al., 2009). Motivational Interviewing: while Kavanagh et al. (2003) found efficacy for a	Not indicated

Substance	Mental Illness	Treatment	Treatment Intensity
		brief (three hours over six to nine sessions) MI intervention at 12 months in a small group (n ¼ 25) of inpatients, the results were not replicable in a larger, more generalized sample (see Barrowclough, Haddock, Fitzsimmons, & Johnson, 2006).	
Drug dependence (cocaine, heroin, cannabis)	Schizophrenia, Major affective disorders, severe and persistent mental illness	“The Behavioral Treatment for Substance Abuse in Severe and Persistent Mental Illness (BTSAS) program is a social learning intervention that includes motivational interviewing, a urinalysis contingency, and social skills training. The control condition, Supportive Treatment for Addiction Recovery (STAR), is a supportive group discussion treatment. The BTSAS program was significantly more effective than STAR in percentage of clean urine test results, survival in treatment, and attendance at sessions. The BTSAS program also had significant effects on important community-functioning variables, including hospitalization; money available for living expenses; and quality of life” (Bellack, Bennett, Gearon, Brown, & Yang, 2006).	Trained health care professionals in small groups, twice a week for 6 months.
Substance use	PTSD	“Najavits and colleagues (2005) examined the use of Seeking Safety and a revised version of prolonged exposure, finding improvements in multiple areas of functioning (McCarthy & Petrakis, 2010).” “PTSD severity reductions were more likely to be associated with substance use improvement, with minimal evidence of substance use symptom reduction improving PTSD symptoms. Results support the self-medication model of coping with PTSD symptoms and an empirical basis for integrated interventions for improved substance use outcomes in patients with severe symptoms” (Hein et al., 2010).	Participants were 353 women randomly assigned to 12 sessions of either trauma-focused or health education group treatment.
Substance use	Psychosis	“Integrated motivational interviewing and cognitive behavioural therapy for people with psychosis and substance misuse do not improve outcome in terms of hospitalisation, symptom outcomes, or functioning. This approach does reduce the amount of substance used for at least one year after completion of therapy” (Barrowclough et al., 2010).	Up to 26 therapy sessions over one year
Substance use	OCD	“Little research on the treatment of co-occurring OCD and SUDs has been conducted to date” (Back & Brady, 2008). Compared to those receiving only SUD treatment, or SUD treatment and attention control training, those who received integrated SUD and OCD treatment stayed in treatment longer, showed greater reductions in OCD symptom severity, and had higher overall abstinence rates at 12-month follow-up (Fals-Stewart, & Schafer, 1992).	Not indicated

Appendix Table 4: Outcomes for clients with detox as their primary index treatment (Patient Pathways)

	Detox NOT followed by counselling	Detox followed by counselling	Detox NOT followed by residential rehab	Detox followed by residential rehab	Detox NOT followed by either counselling or rehab	Detox followed by either counselling or rehab	Overall rate ^a
Reliable reduction in PDOC use (or abstinence from PDOC)							
Tier 3	40.9%	50.0%	i.d.	i.d.	38.1%	50.0%	44.2%
Tier 4	51.7%	61.1%	51.7%	64.0%	51.2%	61.9%	54.8%
Tier 5	i.d.	i.d.	47.9%	68.4%	44.0%	70.4%*	54.4%
total	49.6%	61.5%	48.6%	64.0%*	46.1%	62.4%*	52.3%
PDOC abstinence							
Tier 3	26.1%	41.7%	i.d.	i.d.	22.7%	37.5%	29.6%
Tier 4	26.7%	27.8%	23.1%	40.0%*	20.0%	35.7%	27.7%
Tier 5	i.d.	i.d.	30.6%	52.6%*	26.9%	51.9%*	36.2%
total	29.1%	38.5%	26.6%	44.0%**	22.6%	41.2%***	30.6%

i.d.: insufficient data (less than 10 participants in at least one category)

^atotals include some participants missing from other columns due to lack of data on combinations of treatments.

*p<.1 relative to category denoting absence of relevant follow-up treatment

**p<.05 relative to category denoting absence of relevant follow-up treatment

***p<.01 relative to category denoting absence of relevant follow-up treatment

Appendix Table 5: Outcomes for clients with rehabilitation as their primary index treatment (Patient Pathways)

	Rehab with no prior counselling	pre-rehab counselling	no post-rehab counselling	post-rehab counselling	rehab alone, no counselling	either pre- or post-rehab counselling	total ^a
Reliable reduction in PDOC use (or abstinence from PDOC)							
Tier 4	65.3%	66.7%	63.6%	60.0%	65.2%	64.1%	66.2%
Tier 5	66.7%	40.0%	62.5%	50.0%	73.3%	50.0%	55.0%
total ^b	61.8%	55.8%	60.3%	52.5%	62.5%	57.6%	60.0%
PDOC abstinence							
Tier 4	63.3%	58.3%	60.6%	52.0%	60.9%	59.0%	62.2%
Tier 5	60.0%	33.3%	58.3%	45.5%	73.3%	42.9%*	48.8%
total ^b	58.9%	48.8%	57.4%	46.3%	60.4%	52.2%	55.9%

^atotals include some participants missing from other columns due to lack of data on combinations of treatments.

^bthese totals also include tier 3.

*p<.1 relative to category denoting absence of relevant follow-up treatment

Appendix Table 6: Outcomes for clients with counselling as their primary index treatment by duration of counselling attended (Patient Pathways)

•	less than 5 weeks counselling	5 or more weeks of counselling	less than 12 weeks of counselling	12 or more weeks of counselling	total ^a
Reliable reduction in PDOC use (or abstinence from PDOC)					
Tier 3	58.3%	42.9%	47.4%	50.0%	45.7%
Tier 4	45.5%	42.9%	33.3%	50.0%	44.4%
Tier 5	i.d.	i.d.	36.4%	40.0%	40.6%
total	50.0%	40.0%	37.9%	46.5%	43.0%
PDOC abstinence					
Tier 3	46.2%	40.9%	40.0%	46.7%	40.5%
Tier 4	45.5%	28.3%	25.0%	35.0%	32.4%
Tier 5	i.d.	i.d.	18.2%	25.0%	21.6%
total	41.4%	29.2%	28.8%	34.2%	31.7%
Abstinence from all DOCs other than tobacco					
Tier 3	46.2%	31.8%	40.0%	33.3%	35.1%
Tier 4	27.3%	26.4%	16.7%	32.5%	26.5%
Tier 5	i.d.	i.d.	18.2%	20.0%	18.8%
total	34.5%	25.5%	25.4%	28.9%	26.8%

^atotals include some participants missing from other columns due to lack of data on combinations of treatments.

i.d= insufficient data

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