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Evidence Check

Comorbid mental illness and illicit substance use

An **Evidence Check** rapid review brokered by the Sax Institute for the NSW Mental Health and Drug and Alcohol Office

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December 2014

This report was prepared by:

Mark Deady, Emma L Barrett, Katherine L Mills, Frances Kay-Lambkin, Paul Haber, Fiona Shand, Amanda Baker, Andrew Baillie, Helen Christensen, Leonie Manns, Maree Teesson

December 2014

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Effective models of care for comorbid mental illness and illicit substance use

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1 Outline

This report was commissioned by the Mental Health and Drug and Alcohol Office (MHDAO) to summarise key components for consideration in developing a strategic, practical, coordinated and efficient approach to the clinical management of comorbid mental illness and substance use. It aims to support MHDAO in its review of the outcomes of the existing framework of care for this cohort across all relevant treatment settings in NSW and identify key areas for future action. As such, this report is intended for a diverse range of stakeholders as needed, including expert reference groups.

Three key questions were addressed in this report:

1. What are existing models of care for adults with comorbid mental illness and substance use?
2. What is the efficacy of existing models of care for adults with comorbid mental illness and substance use?
3. What are the key considerations and recommendations in the design and evaluation of best practice models of care for adults with comorbid mental illness and substance use?

A systematic review of the research literature was carried out by the research team to identify existing models of care for individuals with comorbid mental illness and substance use. A subsequent search of the grey literature was undertaken, with a priority focus on reports in the Australian context showing what works for whom, and quality reports from reputable stakeholders.

The review reports key findings pertaining to these questions and specific recommendations for a NSW setting on the basis of these findings.

2 Executive summary

Comorbidity of mental illness and substance use disorders is a significant challenge facing the Australian health system. Despite a great deal of work in this area in the past 10 years, single disorder treatment models remain dominant. The silo structure of the healthcare system has historically treated clients in sequence of disorder (based on which is considered primary), or in parallel by different treatment providers. Recent evidence suggests that integration of treatment is ideal for optimal client outcomes and to avoid clients falling through the gaps.

This Evidence Check sought to rapidly review the existing evidence for effective models of care for comorbid mental illness and illicit substance use. A number of limitations exist regarding the search strategy and the review itself, and are discussed in turn. Nevertheless, the review highlights the paucity of published work in this area.

Overall, 13 models were included in the review; however, evaluation data were available on only eight. Furthermore, where evaluation did occur, quality was mixed and often weak. Prime features of the models included holistic care; client empowerment; individualised, client-driven treatment; being comorbidity-prepared; and a 'no wrong door' approach. The most comprehensive models incorporated multidisciplinary teams, universal screening/assessment, relapse prevention and/or follow-up, and an integrated delivery model; were either inpatient services or involved outreach components; and included adequate program evaluation and quality improvement. Service structure and subgroup (e.g. homeless) resulted in significant variation between models. Due to the lack of evaluation data available, model success was difficult to interpret. Few models made use of telephones (e.g. advisory helplines) and technology (e.g. online, app-based) in treatment. This was a significant limitation of the models reviewed. The integration of eHealth treatment programs for addiction and mental health problems into care settings may be one strategy for fostering stronger links between systems of care and overcoming a number of barriers associated with treatment.[1]

In light of these limited findings, a comorbidity treatment service map[2,3] was modified for a NSW context (see Figure 1). This model included umbrella context and system structure domains, and framing service level components including a) policies/procedures and b) practices. Drivers at these two service level domains included guidelines/directives and best available evidence, respectively. At a service level, a system of service evaluation and quality improvement should exist as a performance indicator. The base of the model includes client and outcome domains, which collectively measure treatment fidelity and success on specific client wellbeing domains. Evaluation of these outcomes using validated assessment tools is a key indicator of model success.

As a core minimum set of critical model features, the review suggests mental health practitioners/services conduct universal screening, a thorough risk assessment and collection of rudimentary diagnosis of the symptoms. They should provide supportive therapies (motivational interviewing, CBT, withdrawal management, medications), prevention and psycho-education regarding substance use, and involve alcohol and other drug (AOD) services/GPs where appropriate. Finally, they should have policies and procedures in place for assertive follow-up and serve as the primary care coordinator until such time as an alternative service accepts the client.

In a NSW context, the specific recommendations of this review include:

Service/intake level

- A 'no wrong door' approach
- Screening to occur at all entry points for mental health and substance use problems
- Screening tools to be brief, easy to administer and have appropriate psychometric properties
- Adopt the principle of assertive care where appropriate to increase retention in treatment, especially in high-demand groups
- Identify and address problems leading to treatment dropout, particularly transfers between providers and especially between services and sectors
- A care coordinator to coordinate the provision of care, ensure continuity of care from screening through to discharge/referral, and manage effective communication between services and sectors.

Treatment level

- Focus treatment on the impairment and distress experienced by the client, rather than solely on diagnosis of primary/secondary substance use disorder
- Use a 'clinically integrated', evidence-based treatment approach, incorporating, where appropriate, psychosocial and pharmacotherapy strategies for both substance use and mental health problems into the same intervention
- Align treatment, care and psychosocial support with the best available evidence, and national and international standards and state guidelines
- Conduct a thorough assessment of all presenting conditions and manage the most severe symptoms first
- Use evaluated eHealth technologies to support treatment where appropriate, including using technologies for early intervention
- Ensure the development of good rapport to actively engage clients in treatment.

Workforce level

- Orient all staff entering employment to basic comorbidity practices including the administration of screening tools, preliminary assessment, and appropriate pathways for referral within and between services. Develop training/certification standards to provide evidence of achievement of these skills
- Develop a hierarchy of knowledge and skill levels in the workforce from baseline capability to advanced comorbidity practice delivering integrated treatment, psychosocial rehabilitation and recovery
- Provide comorbidity training for senior staff to promote leadership and comorbidity awareness at a managerial level
- Provide training that takes into account the requirements of staff in different service settings (community, residential, acute inpatient/withdrawal) and working with different age groups (youth, adults, aged persons)
- Use existing workforce development activities and programs to enhance comorbidity competency
- Create and/or strengthen career opportunities and academic recognition of education and training in both addiction medicine and mental health treatment.

Discharge/referral level

- Develop treatment systems that ensure assertive and comprehensive treatment to prevent falling through the gaps, with disengagement from both mental health and substance use treatment. These involve inter-relationships between services, defined shared case management of selected clients, periodic meetings, and establishment and monitoring of key performance indicators (KPIs). Assertive follow-up is particularly important when transferring between services and service sectors
- Develop and agree on referral pathways within and between services
- Identify and implement quality assurance activities in response to adverse events across the treatment sectors, including non-government and private sectors
- Set up memorandums of understanding with relevant external services for those requiring specialist treatment and care, or returning to primary care management
- Regularly monitor and evaluate compliance with, and the effectiveness of, agreed partnerships and pathways as part of quality assurance activities
- Develop and maintain collaborative service relationships that result in clients receiving integrated assessment, treatment and recovery
- Establish functional relationships with other service sectors that provide acute physical healthcare, housing, education and employment for this group of clients.

Evaluation level

- Identify and maintain resources to periodically evaluate services, particularly new services
- Develop links with research bodies for adequate model evaluation. There is a greater need for collaboration between researchers and services for evaluation and translation
- Use KPIs and levers of effectiveness in service delivery models in order to aid in evaluation
- Systematic collection of staff/client feedback/satisfaction, model fidelity and client outcome data
- Use these data to inform planning, development and further evaluation
- Establish mechanisms for the involvement of clients, families and carers in the planning, review and ongoing development of services
- Develop mechanisms whereby people with comorbidity, their families and carers have input into the education and training of staff in both sectors and primary care sectors.

3 Limitations of this review

The scope of this review reflects the literature that was able to be reviewed in the context of a rapid review, and may have resulted in the omission of some relevant studies. The studies that were reviewed consistently had limitations in research design that prohibits generalisation of the findings. There was only a small published or evaluated literature on models of care.

Definitions of what equated to a 'model of care' differed throughout the literature, and most available literature reported on only one component of a model. Furthermore, the majority of peer-reviewed work in the area describes models of treatment or evaluates individual treatments themselves. These knowledge gaps are highlighted by the resounding consensus in the literature for the need for more clinical and translational research on models of care. Further limitations are outlined in Appendix 4.

4 Background

The top 10 causes of burden of disease in young Australians (15–24 years) are dominated by mental and substance use disorders.[4] Every year, alcohol and drugs conservatively cost the Australian community $23.5 billion.[5] Governments take the lead in managing this problem, with investments in health, community and law enforcement interventions across Australia estimated at $3.2 billion per annum.[6] Comorbidity (see Appendices 1 and 2) is common, with 25–50% of people with mental health disorders experiencing more than one disorder.[7]

Once both mental and substance use disorders have been established, the relationship between them is one of mutual influence, with both conditions serving to maintain or exacerbate the other. Such comorbidity leads to poor treatment outcomes and severe illness course.[8] In the longer term, mental disorders and substance use disorders are themselves associated with increased rates of cardiovascular disease and cancer.[9] Cardiovascular disease and cancer are the leading causes of mortality for people with a history of mental health treatment. Average life expectancy is 20–30 years shorter among people with mental health disorders[10] or substance use disorders[11] compared to those without such problems, with the last 10 years of life spent living with chronic illnesses.[10] Despite significant public concern leading to a major government initiative (National Comorbidity Initiative), comorbid mental health and substance use remain major causes of disability among young people and, in the longer term, are associated with poor quality of life and early mortality.

Comorbid mental health and substance use disorders are one of health's most significant challenges. The prevention and treatment evidence base is limited by traditional single disorder models and treatment silos.

In the past 10 years, Australia has responded to the gap and has begun to build an internationally renowned evidence base in comorbidity. The synthesised evidence[12–16] has found that interventions in comorbid populations can be effective. The translation[17] and policy responses are also increasing, but traditional single disorder models remain dominant in research and clinical practice. It is critical that we develop capacity and translate models to ensure a better response to comorbidity.

Historically, several models of treating comorbid mental health and substance use problems (MHSUP) have been used, guided by different aetiological models of comorbidity. These include 'sequential', 'parallel', 'integrated' and 'stepped care' treatment approaches. There has been much contention about the benefits of using one model of care over another for individuals with comorbid MHSUP and, until recently, very little available research to guide these debates.[18]

- *Sequential treatment* – The individual is treated for one condition first, which is followed by treatment for the other condition. With this model, the substance use is typically addressed first, then the mental health problem, but, in some cases, it may be whichever disorder is considered to be primary (i.e. the one that came first). It is frequently difficult to disentangle the temporal sequence of comorbid MHSUP, and once both conditions have arisen, the relationship is one of mutual influence.
- *Parallel treatment* – Both the individual's substance use and mental health condition are treated simultaneously, but the treatments are provided independent of each other. Treatment for substance use is provided by one service, while the mental health condition is treated by another. The onus is on

the person with comorbid MHSUP to synthesise treatment messages on their own, often in the context of differing treatment philosophies from each service.

- *Integrated treatment* – Both the individual's substance use and mental health condition are treated simultaneously by the same treatment provider or service. This approach allows for the exploration of the relationship between the individual's substance use and mental health condition under guidance from the treating team.
- *Stepped care* – The flexible matching of treatment intensity and focus (integrated/single) with case severity. The least intensive and expensive treatment is initially used, and a more intensive or different form of treatment is used when the less intensive form has been insufficient, or according to client/practitioner preference.

5 Current trends in comorbidity treatment

Treatment for mental conditions, as for physical problems, is typically organised around a primary individual condition. This treatment philosophy has generally been applied to mental health and substance use settings, where treatment is segregated according to different diagnostic groupings based on primacy (the dominant condition considered to predate and thus cause all other conditions).[19,20] The majority of treatment service systems for mental health and substance use problems (MHSUP), both nationally and internationally, are designed in this way. This results in individuals with acute comorbid substance use issues often being refused entry to mental health programs, with the advice to seek treatment for their substance use problem before mental health treatment can be offered.[21]

However, there are practical difficulties in reliably diagnosing primary and secondary conditions.[22] Once both conditions are established, the relationship between them is often one of mutual influence, with each condition maintaining or exacerbating the other.[23] In practice, even if an individual with comorbid MHSUP completes treatment for substance use, they are unlikely to receive subsequent treatment from mental health services over and above medication, unless the disorder is in a severe or acute phase.[24,25] This is a concern given that the risk for relapse increases if the co-occurring disorder is not addressed. For example, a recent study found that among individuals admitted to NSW public hospitals with first-episode psychosis, untreated and ongoing cannabis and stimulant use was significantly associated with readmission for psychosis within two years.[26] Conversely, psychological treatments that address comorbid MHSUP have frequently been shown to reduce risk of relapse for both conditions.[23]

The idea of combining treatment for multiple disorders has considerable appeal and presents a number of advantages over sequential or parallel approaches. Although early reviews comparing integrated and non-integrated models were equivocal due to study limitations[27], it has been suggested that treatment integration is essential for effective management of co-occurring conditions.[28–31] Integrated treatment by a single service helps to ensure internally consistent treatment with common objectives, which can explore the complex relationship between conditions. This single point of contact reduces burden on the individual, along with potential communication problems and discordant treatment philosophies, reducing the chance of clients falling through the gaps when it comes to treatment.[32] Nevertheless, much more research is required. Most evidence to support the use of integrated MHSUP treatment has been in the area of psychotic disorders[33] and, in practice, integrating across service settings has proven difficult. There is also growing support for the use of a stepped care approach to treating comorbidity.[34] A number of studies examining the efficacy of this approach are currently underway.

Another option with emerging evidence is eHealth. The evolution of eHealth means that sequential, parallel, integrated and stepped care treatment approaches can be efficiently offered to people with comorbid mental and addictive disorders within the one service setting. This can occur at any point in the treatment seeking and engagement process, and with little change to clinical practice. eHealth also offers a unique opportunity to provide after-care and self-management. Over 100 different internet-based interventions have been shown to be effective and cost-effective in the treatment of a number of common mental

disorders.[35–46] Australia has been the leader in this area for both prevention and treatment programs.[47] Evidence is emerging to support the benefits of enhancing treatment approaches for comorbid problems via the use of technology, but more clinical and translational research is required, along with (or including) models of integration between online and traditional face-to-face services.

Current Australian policies and systems

Australian governments have made significant policy funding commitments to improve mental health treatment and, to a lesser degree, treatment of substance use. Unfortunately, such systems are characterised by fragmentation and poor coordination.[48] The Australian health system is built in specialty silos which, historically, inhibit collaboration and integration between services.[49] This style of system imposes sequential (or, at best, parallel) treatment of comorbid MHSUP. Kavanagh and colleagues[50] found that treatment staff report a number of difficulties which can be seen as a direct consequence of this segregation. These difficulties include organising joint case conferences, appropriateness of secondary treatment, case management and duty of care issues, and problems in accessing assessment and treatment services. In reality, most individuals with comorbid MHSUP will be unlikely to receive adequate care for either condition. The nature of these conditions (particularly where they co-occur) tends to lead to frequent interaction with multiple parts of the healthcare system and broader social services (e.g. employment services), compounding the difficulties caused by this segregation. As a result, carers and individuals are responsible for organising care and navigating these fragmented and uncoordinated systems.[51]

In 2008, NSW Health released *Comorbidity framework for action* to respond to the issues associated with comorbidity in health settings.[52] This report identified four priority areas for action to address gaps of concern and improve responses to mental health and substance abuse comorbidity. These priorities included focusing on workforce planning and development; improving infrastructure and systems development; improving the response in priority settings for priority clients; and improving promotion, prevention and early intervention strategies. More recently, the Australian Government's National Mental Health Commission highlighted the importance of integrating care for this population and the barriers to care in its *National Report Card on Mental Health and Suicide Prevention*.[53] Specifically, it is stated that individuals with co-occurring mental illness and substance misuse *"must be responded to in a comprehensive, integrated way wherever they present"* (recommendation 11). The report acknowledged that *"workers are often not supported to work in this way"* because of *"siloed structures, inadequate funding, or constraints on professional development and supervision"*. In conclusion, the Commission calls for mechanisms to test compliance with 'no wrong door' practices, innovative and non-discriminatory responses encouraging the integration of services, and for funding and policy to facilitate these actions.

6 Best practice in comorbidity treatment

The overall consensus of research evidence and clinical expertise is that psychiatric or addiction-focused treatments on their own are not sufficient to manage comorbid mental health and substance use problems (MHSUP).[54] It is clear that more research is needed before definitive practices can be prescribed that will improve outcomes for people with both MHSUP. While evidence (particularly that pertaining to integrated interventions) is promising, further development and evaluation of treatments is required.[27]

Although forms of integrated treatment are generally viewed as best practice in Australia[55], it is not yet known whether such care is associated with significantly better outcomes for individuals, their families, or the healthcare system compared to other forms of treatment. Rigorous trials are required to address this gap in the literature; however, such trials require considerable resources. Indeed, just determining whether such an approach is superior to the individual alone requires an exploration of a number of social-, treatment- and disorder-related outcomes. Nevertheless, what the existing research has shown is that integration appears feasible and is likely to overcome some of the barriers present when co-occurring disorders are treated separately. Integrated treatments can be tailored to the particular needs and treatment readiness of the client, targeting areas of high distress and priority, addressing both acute and non-acute symptoms. Combinations of different therapeutic styles and modalities, such as various psychotherapies, pharmacotherapies and behavioural treatments, can often exert a synergistic effect on treatment[56], while time spent in treatment moderates improvement regardless of substance used.[57,58]

7 Models of care

The models of care generated via the search strategy outlined in Appendix 4 are presented in Table 1. The quality of scientific evidence supporting statements concerning clinical practice is rated by the following indications of 'level of evidence'. This system of rating the level of evidence draws on the system used by the National Health and Medical Research Council:[59]

- STRONG – Systematic review of multiple randomised controlled trials (RCT) or multiple RCTs with consistent findings
- GOOD – At least one RCT or multiple comparative (non-randomised) studies with consistent findings
- MODERATE – Any form of comparative (non-randomised) study
- SOME – Case series (single treatment group)
- NO RATING – No experimental studies. Any statements are based on single case reports or clinical opinion/expertise.

Table 1: Models of care

Integrated Dual Diagnosis Treatment (IDDT) model	
Originally developed in the 1990s[60] and designed for outpatient mental health centres, the model was widely adopted as a preferred model of care for comorbidity by Substance Abuse and Mental Health Services Administration (SAMHSA)	
Setting/sample	USA.[61,62] Adapted to the Netherlands[63] and Sweden.[64] More recently, the model has been adapted to inpatient[65] and addiction[66] settings. The model has been widely implemented and evaluated, particularly by the Ohio Department of Mental Health and the Ohio Substance Abuse and Mental Illness Coordinating Center of Excellence.
Components/ philosophy	Multidisciplinary, intensive case management teams; stage-appropriate treatment; integration of mental health and substance use treatment; individual and group modalities; time-unlimited services; assertive outreach; and a comprehensive service array
Assessment	IDDT Fidelity Scale and General Organizational Index[67], Timeline Followback[68], Brief Psychiatric Rating Scale (BPRS)[69], Global Assessment Scale[70]
Outcomes	Early work found the program was associated with significant reductions in client drug and alcohol use, hospitalisations, recidivism in the criminal justice system, homelessness, and improvement in symptom severity and overall life functioning.[60] There have been a number of implementation trials, but few report outcome data.
Evidence type	Controlled trial but with both groups getting different versions of the IDDT
Level of evidence	Moderate–good
Burnaby Treatment Center for Mental Health and Addiction	
A specifically designed comorbidity service with a structured, clinical pathway model	
Setting/sample	Canada[71], N = 92
Components/ philosophy	Recovery 1: Medication treatment by psychiatrists and GPs, one-to-one sessions with psychiatrists and counsellors, complementary therapies e.g. acupuncture and yoga. Group programs include motivational enhancement, anger management, early recovery – substances (matrix), early recovery – mental health, emotional boot camp (introductory), life skills, talking circle, recreational activities. Recovery 2: Continued medical follow-up, therapy sessions and complementary therapies. Group programs include emotional boot camp, anger management, seeking safety, cognitive behavioural therapy (for psychosis and affective disorders), mindfulness, relapse prevention (matrix), living free, life skills, talking circle, stages of change, hepatitis C treatment group, recreational activities and art therapy. Recovery 3: Continuation of Recovery 2 programs as well as life management, 'Stepping Up and Stepping Out'. Community activity and involvement is supported. Self-medication plans initiated.
Assessment	Mini-International Neuropsychiatric Interview Plus[72], Childhood Trauma Questionnaire Short Form[73], Trauma History Questionnaire[74], Brief Symptom Inventory (BSI)[75], Maudsley Addiction Profile[76]

Outcomes	A significant reduction in psychopathology symptoms from intake to 6 months across all BSI dimensions. Specifically, the rates decreased significantly for alcohol ($\chi^2(1) = 7.42$, $p = .006$), heroin ($\chi^2(1) = 4.97$, $p = .026$) and cocaine ($\chi^2(1) = 19.3$, $p < .0001$). The differences from baseline to follow-up were not significant for illicit methadone ($\chi^2(1) = 1.90$, $p = .168$), benzodiazepines ($\chi^2(1) = 1.79$, $p = .181$) and amphetamines ($\chi^2(1) = 1.79$, $p = .181$).
Evidence type	Single pre-post design
Level of evidence	Some
Case management/care coordination	
A treatment modality that utilises professional staff such as social workers to coordinate care for complicated or severely ill psychiatric patients. This model is used predominantly in homeless comorbid populations.	
Setting/sample	USA, N = 75.[77] Homeless population.
Components/ philosophy	Coordinated treatment plan, crisis triage, transportation coordination and treatment liaison
Assessment	Positive and Negative Syndrome Scale (PANSS)[78], Hamilton Rating Scale for Depression[79], Behavior And Symptom Identification Scale (BASIS-32)[80], Personal History Form[81]
Outcomes	The model was associated with significant reductions on the Hamilton Rating Scale for Depression at 3 and 6 months and significant improvement on the PANSS Negative Subscale and the PANSS average at 3 months. At 6 months, significant improvement was found on the Negative, Positive, Depression Subscales and PANSS average. On the BASIS-32, significant improvement was found at 3 and 6 months for BASIS-32 Average, along with relation to self and others, depression and anxiety, and daily living and role functioning subscales. Although few significant improvements were made by the standard care control group, differences between the two groups at follow-up were not significant. The model was also associated with significant improvements in housing stability (relative to control) at 6 months. Substance use outcomes were not reported.
Evidence type	Controlled trial
Level of evidence	Moderate
The Combined Psychosis and Substance Use (COMPASS) Program	
An 'integrated shared care' model was developed to complement the existing service provision within the UK's Northern Birmingham Mental Health Trust. The model aimed to achieve integration of treatment both at the level of the clinician and service.[82,83] Evaluation occurs predominantly via training of assertive outreach teams.	
Setting/sample	UK (N = 58 clients; 69 clinicians in 5 teams)[84]
Components/ philosophy	Guiding principles: Both conditions are addressed simultaneously by the mainstream mental health clinician. Where specialist input is required, shared care between services occurs using agreed protocols.

	A specialist multidisciplinary team (clinical psychologist, research psychologist, three senior community psychiatric nurses, a senior occupational therapist and a consultant psychiatrist) aims to train and support existing services in order to provide integrated treatment. This model is in opposition to the alternate approach of the creation of separate 'dual diagnosis' teams. The model components include training teams in the manualised Cognitive-Behavioural Integrated Treatment (C-BIT, a structured but flexible integrated psychosocial treatment approach) and the allocation of a 'change facilitator'. The C-BIT approach has an assessment phase and four main treatment phases: (1) engagement and building motivation to change; (2) negotiating some behaviour change; (3) early relapse prevention for substance use problems; and (4) integrated relapse prevention and management for psychosis and substance use problems. There are two additional treatment components that focus on building adaptive coping skills and incorporating families/social network members into the change process. The change facilitator is allocated to work alongside the trained team two days per week. This person serves as a 'product champion', modelling the approach in situ, providing ongoing training, co-working alongside the team and key workers, and facilitating case discussion/supervision sessions.
Assessment	Clinician indices of integration and change, BPRS[69], engagement as measured by the Substance Abuse Treatment Scale/Alcohol Use Scale/Drug Use Scale[85], units of alcohol consumed over 30 days, amount of cannabis used over past 30 days and substance-related beliefs
Outcomes	Staff within teams increased in self-reported confidence and skills to deliver C-BIT and these gains were maintained over time. No significant changes were reported on the BPRS. Client engagement improved over 3-year follow-up ($F(2,98) = 9.613$, $p < .001$) but did not differ between groups or interactions were reported. Positive alcohol-related beliefs significantly declined over time ($F(2,48) = 3.4$, $p < .05$) but did not differ between groups or interactions were reported. Clients treated by immediately trained COMPASS teams reported significantly lower alcohol use per week compared with clients treated by delayed trained teams ($F(1,21) = 6.234$, $p < .05$). Annual costs of the model to the Northern Birmingham Mental Health Trust were approximately £240 000 ($470,000).
Evidence type	Longitudinal time lag (18 months) with a 3-year follow-up. Overall, the trial lacked power.
Level of evidence	Moderate
Comprehensive, Continuous, Integrated System of Care (CCISC)	
Widely adopted as the preferred model of care for comorbidity among the homeless in residential care by SAMHSA	
Setting/sample	USA, N = 76.[86,87] Homeless populations.
Components/ philosophy	Philosophy of care: Dual diagnosis is an expectation, not an exception; the four-quadrant model for categorising co-occurring disorders can be used as a guide for service planning; provision of integrated treatment should be continuous; empowering clients can be achieved through a balance of caretaking and confrontation; both mental illness and substance disorders should be viewed as primary; a disease and recovery model should be used; individualised treatment should suit motivation and diagnoses of clients; and individualised care assessment should be conducted for each disorder. The model has the following four basic characteristics: (1) system-level change; (2) efficient use of existing resources; (3) incorporation of best practices; and (4) integrated treatment philosophy. Components include residential treatment, clients received medical care,

	counselling, psychiatric/psychological evaluation, recreational and vocational services, as well as comprehensive discharge planning.
Assessment	BSI[75], past month quantity/frequency of use, Residential Follow-Back Calendar[88] and Comorbidity Program Audit and Self-Survey for Behavioral Health Services[89] were used to assess fidelity to the CCISC model
Outcomes	From baseline to 6-month follow-up, the model was associated with significant improvements in housing status ($\chi^2 = 28.53$, $p < 0.001$), employment ($\chi^2 = 10.08$, $p < 0.01$), past month frequency of drug use ($t(75) = 2.37$, $p < 0.05$, $d = 0.50$) and past month use of illicit drugs ($\chi^2 = 4.65$, $p < 0.05$) and alcohol ($\chi^2 = 7.03$, $p < 0.01$). At 6 months, participants reported significantly improved mental health symptomatology in all measured domains except for hostility. Effect size indices indicated that these statistically significant improvements were of moderate magnitude for depression, obsessive-compulsive thoughts and behaviours, psychoticism, and global mental health. Small to moderate improvements were reported for anxiety, paranoid ideation, interpersonal sensitivity, somatisation and phobic anxiety. Staff scored 75% of the maximum points in all 14 domains of program fidelity (3 years post-training) and 92.1% of clients reported being satisfied or very satisfied with the program.
Evidence type	Pre-post design and controlled trial (using Assertive Community Treatment model mentioned below[90])
Level of evidence	Moderate
Assertive Community Treatment (ACT) model	
The ACT was developed more than 30 years ago[91] specifically targeting clients with severe psychiatric disorders with an extensive history of psychiatric hospitalisations	
Setting/sample	Most commonly used among homeless populations. Recent trials of the model have compared ACT to other treatment models, including standard case management (N = 198[92]), standard care and modified ACT (N = 149[93,94]; N = 191[95]), and CCISC (N = 129[90]).
Components/ philosophy	Multidisciplinary treatment team, low client-to-staff case loads of about 10:1, community-based services provided directly rather than being brokered to other agencies, and 24-hour coverage by the treatment team.[96] Additionally, others note that daily team meetings to discuss consumers are critical to ACT.[97]
Assessment	Residential Follow-Back Calendar[88], Timeline Followback[68], BPRS[98], Substance Abuse Treatment Scale/Alcohol Use Scale/Drug Use Scale[85], quality of life[99], BSI[75], Treatment Needed and Received Scale[100]
Outcomes	ACT in various forms has been consistently associated with significant improvements in psychiatric symptoms, substance use, hospitalisation and stable housing. However, in most studies, ACT is not associated with significantly better psychiatric outcomes than alternate models.[90,92–95,101,102]
Evidence type	A number of trials comparing ACT to other models of care for homeless individuals with co-occurring disorders have occurred. These range in quality and type.
Level of evidence	Good
Triple Care Farm	

Originally a drug and alcohol residential rehabilitation centre for young people, the centre has evolved into an integrated comorbidity service for young adults (16–24), where a holistic program occurs over a period of up to 12 months.	
Setting/sample	Australia. Young adult population (N = 160[103]; N = 172[104]).
Components/ philosophy	A vision of a holistic, integrated service delivery model with a strong philosophy of individual responsibility, clients (referred to as 'students') are required to actively participate in their own treatment and reflect on their own progress. Students progress through three residential stages (Gateway, Explorer and Outbound), followed by a 'stepping out' after-care stage. Program elements include residential – acquisition of life and living skills; therapeutic – medical, psychological and behavioural issues associated with mental illness and addiction; and engagement and wellbeing – encourage healthy living and physical fitness, and re-engage students with education, learning and work.
Assessment	Drug Use Disorders Identification Test[105], Alcohol Use Disorders Identification Test[106], BSI[75], Severity of Dependence Scale[107], World Health Organization Quality of Life[108], Brief Situational Confidence Questionnaire[109]
Outcomes	Evaluations of the student outcomes indicate improvements in drug and alcohol use, employment, psychological wellbeing and psychiatric symptoms, and quality of life. The program costs approximately $2 million per year.
Evidence type	In-house evaluation
Level of evidence	Some
Collaborative Early Identification Model	
A care pathway (with a specific focus on early identification) for clients with dual diagnosis. Developed by Deakin University and Southern Health and funded by the beyondblue Victorian Centre of Excellence in Depression and Related Disorders to address a number of service system barriers.[110]	
Setting/sample	Victoria, Australia. Adults with depression and/or anxiety and a concurrent substance use problem. The model was developed, implemented and evaluated at two specialist service sites in Victoria: the Mental Health Emergency Crisis Assessment Treatment Team, and the Outpatient Alcohol and Drug Services Intake System.
Components/ philosophy	The central elements include a 'no wrong door' approach; screening to occur at all entry points; screening tools to be brief, easy to administer and have excellent psychometric properties; a two-step approach to screening in order to enhance efficiency; services tailoring the strategy to suit their individual requirements; integration into existing intake/assessment procedures and protocols; an approach that facilitates client engagement; and clinical guidelines that direct client care after early identification to the most appropriate care pathway/referral.
Assessment	The Two-Item Conjoint Screen for Alcohol and Other Drug Problems[111], the Alcohol, Smoking and Substance Involvement Screening Test[112], the Patient Health Questionnaire-2[113]
Outcomes	Key findings from consultations • Services need to adopt a collaborative model/framework of screening, assessment, referral and treatment of dual diagnosis clients

	• All services need to be encouraged to implement an early identification strategy using validated tools. Standardised and systematic screening for dual diagnosis should occur at all entry points to the system i.e. primary care, community health, mental health, and alcohol and other drug (AOD) services • Support service linkages need to be established and/or strengthened. Strong linkages and referral protocols need to be developed with support services • Practitioner training needs to be increased to assist with identifying dual diagnosis via screening and assessment techniques; understanding the complexity of issues facing dual diagnosis clients; developing collaborative treatment plans; and adopting approaches which will reduce the stigma many clients currently experience • Change management approaches need to be adopted. Service changes need to involve shared visioning and planning, strong leadership and collaboration with all stakeholders • Greater emphasis needs to be placed on prevention, early intervention and education. Key findings from implementation • A high proportion of individuals seeking help from an AOD service screened positive for comorbid disorders (90%), and over half (53%) of mental health service clients reported problematic substance use • Clinicians reported that screening created a supportive and structured opportunity for clients to open up about their AOD or mental health issues, reflect on circumstances, and receive appropriate validation regarding difficulties faced in daily life. Clients responded positively (or neutrally) to the screening process • Screening results and subsequent discussions offered clinicians an appropriate context to offer information about risky substance use and/or treatment/referral options within the local community • Standardised screening procedures provided guidance and structure for less experienced clinicians.
Evidence type	Exploratory/observational study
Level of evidence	Some
Substance Use and Mental Illness Treatment Team (SUMITT)	
A program established in 1998 with funding from the Department of Human Services Mental Health Branch and Drug Treatment Services. It aims to provide clinical services to individuals who have a dual diagnosis to improve their health outcomes, upgrade the skills of clinicians in both mental health and drug and alcohol services, and to enhance the effectiveness of the service system in the provision of care and treatment to people who have coexisting disorders.	
Setting/sample	Victoria, Australia. Adults.

Components/ philosophy	The services include clinical services in collaboration with the primary case manager within a harm reduction framework; comprehensive biopsychosocial assessment of both disorders and treatment recommendations; secondary consultations; service development to address care and treatment barriers; education and training to mental health and drug and alcohol staff.
Assessment	
Outcomes	
Evidence type	
Level of evidence	No rating
Co-Exist NSW (multicultural state-wide comorbidity referral program)	
A program funded by NSW Health and run by the Transcultural Mental Health Centre. It is a specialist referral service for culturally and linguistically diverse (CALD) communities and health service providers.	
Setting/sample	NSW, Australia. Individuals from CALD communities with chronic illness, mental illness, drug- and alcohol-related issues, gambling problems and overuse of prescribed medications.
Components /philosophy	Co-Exist NSW provides a specialist complementary and cost-effective service to CALD communities that aims to provide a holistic, integrated and culturally informed approach to issues of mental illness and substance use. Co-Exist NSW aims to improve patient outcomes by working in partnership with other services to reduce the incidence of misdiagnosis across multiple health issues, decrease the need for readmission, increase compliance with co-ordinated treatment, and increase coordinated access to culturally relevant care.
Assessment	
Outcomes	
Evidence type	
Level of evidence	No rating
Hunter New England Mental Health & Substance Use Service	
The Mental Health & Substance Use Service operates a community facility for people with comorbid mental health and substance use problems	
Setting/sample	NSW, Australia
Components/ philosophy	The Mental Health & Substance Use Service is comprised of two inpatient units and a community team. Services provided include assessment, treatment and referral, as well as consultation to other health professionals around dual diagnosis issues. The treatment options include a range of group-based interventions suited to people who are at different stages in their recovery.
Assessment	

Outcomes	
Evidence type	
Level of evidence	No rating
Model for responding to dual diagnosis	
A Victorian Government initiative to delineate a more systematic implementation of integrated approaches across mental health and drug and alcohol services[114]	
Setting/sample	Victoria, Australia. Adults with comorbid mental health and drug and alcohol disorders.
Components/ philosophy	A three-tiered 'schema' was developed to guide dual diagnosis treatment and care, and to understand how service responses may be organised: • Tier 1 represents services for people experiencing lower severity mental health problems and lower severity drug and alcohol problems. It is recommended that dual diagnosis capable primary care service staff provide integrated responses to people experiencing low level mental health and drug and alcohol problems; collaborate with mental health and alcohol and other drug services in joint service provision; and refer those in need of more intensive services • Tier 2 represents services for people experiencing severe substance use disorders with lower severity mental health problems and disorders. It is recommended that dual diagnosis capable staff in alcohol and other drug services provide integrated treatment to clients who experience severe substance use problems and lower severity mental health problems; collaborate with mental health services in service provision; and provide secondary consultation regarding the treatment of problematic drug and alcohol use to other sectors • Tier 3 represents services for people experiencing severe mental health problems and disorders and problematic substance use. It is recommended that dual diagnosis capable staff in specialist mental health services provide integrated treatment to the majority of clients with severe mental illness and substance use disorders; collaborate with alcohol and other drug services in service provision for those whose needs are best met in this way; and provide secondary consultation to other sectors regarding the treatment of mental health disorders.
Assessment	
Outcomes	
Evidence type	
Level of evidence	No rating

Sydney Local Health District model of care for comorbidity	
The Sydney Local Health District model of care for people with significant comorbid mental health and substance use disorders is a recent initiative to help integrate care for complex addiction, physical health and mental health comorbidity	
Setting/sample	Sydney, Australia. Adults with comorbid mental health and drug and alcohol disorders.
Components/ philosophy	Principles: Services provided for people with mental health and drug health problems need to be flexible, wherever possible, to take account of the fluctuating nature of these comorbid problems Care is provided to address the range of client needs regardless of how they access the healthcare system, ensuring there is 'no wrong door'. The service where the client presents is the primary care coordinator until such time as another service agrees to accept the primary responsibility for coordinating the care of the client, and this arrangement is acceptable to the client. The model uses stepped care philosophy and the Levels of Care Quadrants (Appendix 5) to outline locus of care for different levels of comorbidity. The framework lays out local procedures for referral; assessment; allocation of lead clinician; integration of care planning; review, discharge and escalation procedure; systems for tracking those in shared care; and service delineation. Expectations of mental health practitioners include universal screening, thorough risk assessment, collection of rudimentary diagnosis of the symptoms, provision of supportive therapies (motivational interviewing, CBT, withdrawal management, medications), prevention and psycho-education regarding substance use, involve AOD services/GPs where appropriate, and serve as the primary care coordinator until such time as an alternative service accepts the client.
Assessment	
Outcomes	
Evidence type	
Level of evidence	No rating

8 Effectiveness outcomes

Model comparison

The review generated a variety of differing models of care for comorbidity. These models vary on a range of components, which make comparison difficult. The majority use an integrated approach to treatment, although some indicate using a parallel delivery model. A significant difference between models occurred at a service structure level. A number of models were structured around a specialised comorbidity service (e.g. Burnaby Treatment Center for Mental Health and Addiction, Triple Care Farm), while others worked to incorporate alcohol and other drug (AOD) treatment into mental health services (Co-Exist NSW, Mental Health & Substance Use Service). These differing models have very different capacity to deal with comorbidity. Similarly, the inpatient/outpatient distinction inherent to treatment services will alter the nature of service provided and the resources available to each service.

A number of other models were not service specific (e.g. Integrated Dual Diagnosis Treatment, Combined Psychosis and Substance Use Programme, Substance Use and Mental Illness Treatment Team), but provided an evidence-based comorbidity framework upon which services could be fitted and assessed. Although such models can be difficult to implement due to intensive restructuring of services and the use of outreach teams, they generally incorporate measures of quality assurance and evaluation, which are vital to the sustainability of any model of care.

Finally, specific subgroups were identified in the review. Among the models of care located, models for homeless populations were not uncommon (Assertive Community Treatment model; case management/care coordination, Comprehensive, Continuous, Integrated System of Care). This is likely due to the added complexities associated with this population. Such models are useful due to the high rates of homelessness in comorbid populations and the impact this has on treatment. There were also models of care designed specifically for young adult populations (Triple Care Farm), and culturally and linguistically diverse groups (Co-Exist NSW).

Key components

Due to the difficulties in comparison of models of care, philosophy around care appeared to be a critical component of any comorbidity model. This included concepts such as holistic care; client empowerment; individualised, client-driven treatment; being comorbidity prepared; and a 'no wrong-door' approach. The most comprehensive models incorporated multidisciplinary teams; universal screening/assessment; relapse prevention and/or follow-up; an integrated delivery model; were either inpatient services or involved outreach components; and included adequate program evaluation and quality improvement.

Few models made use of telephones (e.g. advisory helplines) and technology (e.g. online, app-based) in treatment. This is a significant limitation of the models reviewed. The integration of eHealth treatment programs for addiction and mental health problems into care settings may be one strategy for fostering stronger links between systems of care and overcoming a number of barriers associated with treatment.[1] One evidence-based program to date has used eHealth technology in the case of comorbid mental health and substance use problems (MHSUP).[115,116] SHADE (Self-Help for Alcohol/other drugs and DEpression) has been evaluated in two randomised controlled clinical trials and is associated with significant and sustained

reductions in depression, alcohol and cannabis equivalent to a therapist-delivered program, and greater than a brief intervention and a supportive counselling program.[115,116] A youth version of the program is also being evaluated.[117] Much more research is required in this area, particularly with a view to understanding how best to deliver and support these interventions in real world contexts.

Model success

Model success was seldom measured. Where measurement occurred, tools and methods varied widely. Some models focused on client engagement, while others focused on substance use, mental health and wellbeing outcomes. The most commonly used assessment tool for psychiatric symptoms was the Brief Symptom Inventory, while the Timeline Followback, Alcohol Use Scale and Drug Use Scale were the common measures of substance use, and the Substance Abuse Treatment Scale was used to measure engagement. Rarely were evaluations of high quality (e.g. RCT), thus comparison of variation in effectiveness outcomes across client subgroups, delivery modality, workforce and service mix is problematic. Overall, those models that did undergo evaluation were consistently associated with improvements over time in housing, substance use and psychiatric symptoms. For example, evaluation of the Integrated Dual Diagnosis Treatment (IDDT) model revealed associations with reductions in substance use, hospitalisations, mental health symptoms, criminal recidivism, homelessness and overall life functioning. Similarly, the 'integrated shared care' model implemented in the Combined Psychosis and Substance Use (COMPASS) Programme was associated with improvements in substance use and alcohol-related beliefs, and staff reported increased levels in confidence to deliver integrated care.

Model comparison, however, is difficult due to methodological limitations and study variation. Assertive Community Treatment (ACT) showed the most rigorous evaluation. Developed more than 30 years ago, ACT has been evaluated in a number of trials and has been compared to a range of other treatment models, including standard case management, standard care, and Comprehensive, Continuous, Integrated System of Care (CCISC). ACT has been consistently associated with significant improvements in substance use, hospitalisations and housing outcomes; however, psychiatric outcomes have rarely been shown to be superior to alternate models. A full list of the evaluations included in this review is provided in Appendix 3.

Assessment methods to evaluate success

The literature review revealed some useful and validated tools that can be employed by services to evaluate their comorbidity capability and associated treatment outcomes. These assessment methods are described below.

The DDCAT and the DDCMHT indices

In 2003, the Dual Diagnosis Capability in Addiction Treatment (DDCAT) index was created as a standard or benchmark instrument to assess capability and to guide substance use treatment providers in managing individuals with co-occurring disorders.[118,119] The DDCAT is based on the fidelity assessment methodology used to assess the implementation of the IDDT model and, as such, adopts a similar framework to the IDDT Fidelity Scale.

The DDCAT version 4.0 evaluates 35 program elements grouped into seven dimensions:

1. Program structure: Focuses on organisational factors associated with the development of integrated treatment

2. Program milieu: Focuses on the culture of the program and whether the staff and environment are receptive to individuals with comorbidity
3. Clinical process – Assessment: Assesses whether clinical activities achieve specific benchmarks for integrated assessment
4. Clinical process – Treatment: Assesses whether clinical activities achieve specific benchmarks for integrated treatment
5. Continuity of care: Examines the long-term treatment and care commonly associated with comorbidity
6. Staffing: Examines staffing patterns and operations that support integrated assessment and treatment
7. Training: Assesses the appropriateness of training and support provided to staff that facilitates capacity to treat comorbidity.

These seven dimensions are assessed by an external rater using a 35-item measure comprising a 5-point rating scale (1 = addiction only services, 3 = dual diagnosis capable and 5 = dual diagnosis enhanced). Information is collected via observation methods, open-ended interviews with staff and clients, and reviews of treatment records, policies, intake screening forms and other relevant materials.[119]

The psychometric properties of the DDCAT have been established and it has been widely adopted by treatment providers to evaluate the quality of substance use treatment.[118,119] The DDCAT has demonstrated good internal consistency (median r = 0.81), inter-rater reliability (0.76–0.84) and a moderate positive correlation with the IDDT Fidelity Scale (median r = 0,69).[118,120] Moreover, DDCAT scores have been shown to have a significant positive relationship with the length of stay in treatment, indicating that clients with MHSUP stay longer in programs with higher DDCAT scores.[121] A recent study examined the use of the DDCAT within 16 residential substance abuse treatment units in NSW, Queensland and the ACT.[122] Interestingly, the study revealed that only one of the 16 services was rated as dual diagnosis capable, and no services reached dual diagnosis enhanced. Results revealed that the services scored lowest in the dimensions of program structure and staff training. Staff reported that they believed they should be providing services for individuals with co-occurring illnesses, and training was viewed as the highest priority. Unit mangers also reported positive attitudes in relation to implementing the DDCAT. The authors concluded that there is substantial work required to improve the capability of existing residential substance use treatment programs.

The Dual Diagnosis Capability in Mental Health Treatment (DDCMHT) index was subsequently developed in 2004 for mental health treatment providers.[123] This index adopts a similar framework to the DDCAT to determine mental health treatment program capacity for persons with co-occurring mental health and substance use disorders. The DDCMHT has also demonstrated acceptable psychometric properties and has been widely implemented by service providers in the community.[123] The DDCMHT has been shown to have excellent internal consistency (total score reliability 0.95), high inter-rater reliability, and moderate construct validity when examined alongside the IDDT Fidelity Scale (r = 0.70).[124] The DDCMHT has also been shown to be effective in assessing change in capability over time.[120] The DDCMHT was recently implemented in the evaluation phase of the *No Wrong Door: Mental Health Drug and Alcohol Change Management Project 2008–2010*, funded by NSW Health Mental Health and Drug & Alcohol Office.[125] This report revealed that prior to the 'no wrong door' project, the NSW community-managed mental health sector was not yet operating as dual diagnosis capable or dual diagnosis enhanced. Areas for improvement included routine AOD screening or assessment, continuity of care, and staff training in AOD. Both the DDCAT and the DDCMHT are in the public domain and are available online.

The Integrated Treatment for Co-Occurring Disorders Evidence-Based Practices KIT

Published in 2010 by the Substance Abuse and Mental Health Services Administration (SAMHSA), the Integrated Treatment for Co-Occurring Disorders Evidence-Based Practices KIT was developed as part of the IDDT model. The Kit details information on how to best evaluate integrated treatment programs.[126] Two types of measures are recommended to comprehensively evaluate a service:

1. Process measures: To determine whether the program has been implemented as planned (using the IDDT Fidelity Scale and the General Organizational Index)
2. Outcome measures: To determine whether the program has resulted in the expected outcomes.

The process measures provide an indication of whether services are providing programs that are evidence-based, that is, whether they demonstrate fidelity to the evidence-based model. It is recommended that once a program demonstrates high fidelity, ongoing monitoring of fidelity will ensure that this is maintained. Outcome measures, on the other hand, illustrate how effective the program is in terms of consumer goals. While outcomes can vary between services, common outcomes for integrated treatment programs include reductions in substance use, improvement in psychiatric symptoms, decreased hospitalisation, increased housing stability, fewer arrests, and improvements in quality of life.

The Integrated Treatment for Co-Occurring Disorders Evidence-Based Practices KIT provides step-by-step guidance on how to successfully evaluate integrated treatment programs using these measures.[126] It is proposed that the collection of this information will allow comorbidity services to:

- Identify strengths and weaknesses
- Develop plans to improve programs
- Assist clients to achieve their goals
- Deliver mental health and substance abuse services efficiently and effectively.

As mentioned in Table 1, there is moderate–good evidence for the model on which the Integrated Treatment for Co-Occurring Disorders Evidence-Based Practices KIT is based. Research studies have shown that the IDDT Fidelity Scale has demonstrated good inter-rater reliability[127], and the General Organizational Index has also demonstrated adequate psychometric properties.[128]

Other useful frameworks to consider

At the service level, continuous quality improvement should occur to evaluate, sustain and improve quality care. Some other useful frameworks to consider include:

- The Comorbidity Capacity Building Toolkit (WA Network of Alcohol and other Drug Agencies)129
- Comorbidity Competencies: Improving Services to Support Recovery from Comorbidity in Tasmania (University of Tasmania)130
- Quality Improvement & Community Services Accreditation
- Quality Management System
- Quality Improvement Council for core in AOD standards
- Australian General Practice Accreditation Limited
- Australian Quality Training Framework.

9 Analysis and recommendations

Gaps in the literature

On the basis of this review, it became clear that evaluated models of care for comorbidity in mental health settings were rare. Furthermore, of the models available for review, a number were US-based models that may provide an inadequate fit to a NSW context. Similarly, the available literature tends to widely utilise Assertive Community Treatment teams and is heavily focused on homeless populations. This suggests either:

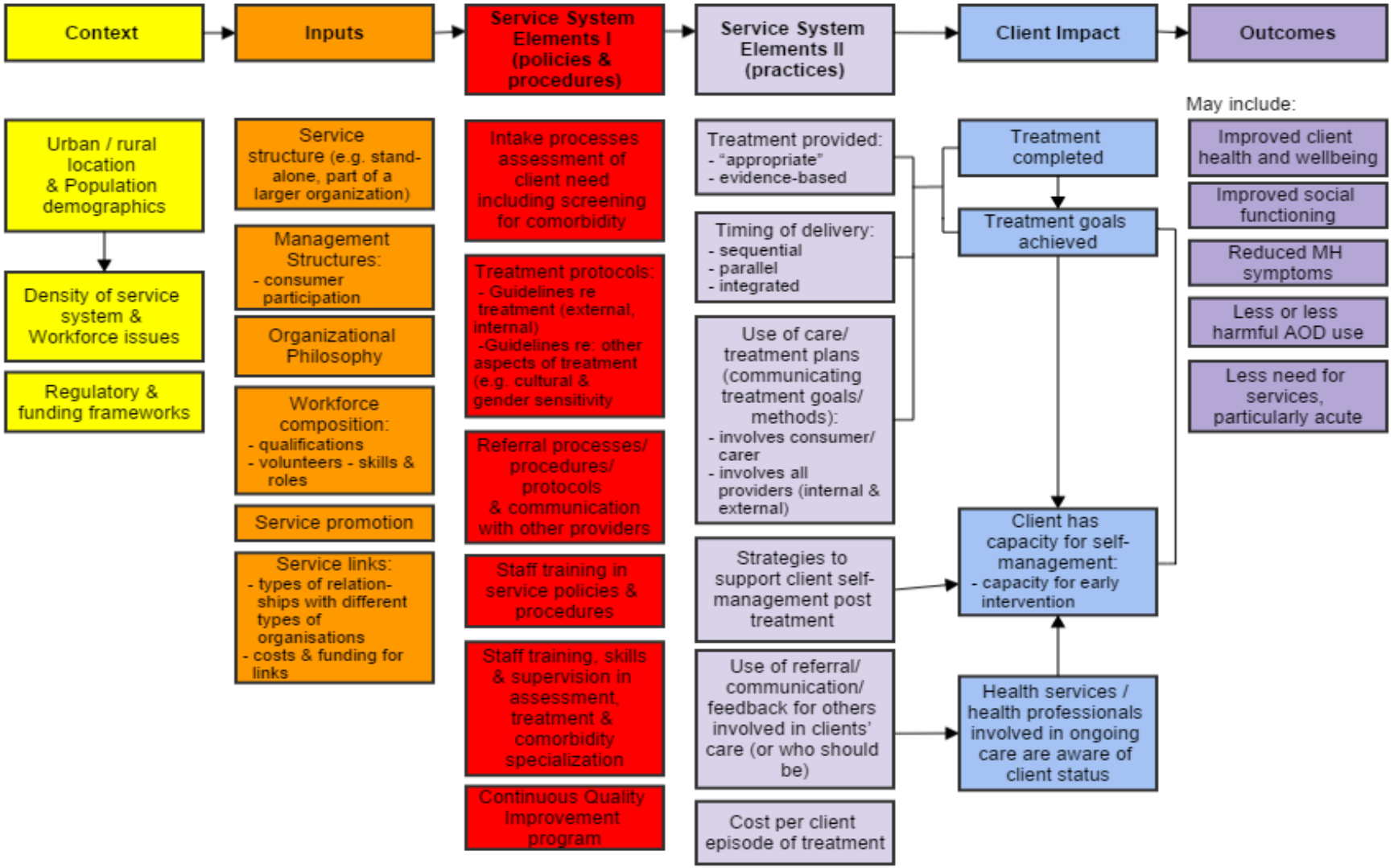
1. Services are using in-house models of care that are not evaluated or not available for review
3. Comorbidity is being dealt with on an individual case-by-case basis
4. Substance misuse within mental health treatment settings is not being screened for, or clients presenting with such comorbidity are being referred on to specialist services (in lieu of a model of care)
5. The major focus for comorbidity interventions has been among mental health patients. Interventions to address comorbidities of other populations have not been a priority (i.e., mental health symptoms among substance use treatment clients and those in primary care or those not engaged in treatment).

Holistically coordinated and integrated models of care for comorbid mental health and substance use problems (MHSUP) were rarely evaluated. There was little in the way of evaluation markers or levers such as KPIs, or policy directives such as memorandums of understanding or specific schemes targeting staff competencies and/or champions of care.

Considerations for best practice

In light of the review's limited findings, the authors sought to explore what might represent key elements of a best practice model of care outside of specific public mental health services. This included some alcohol and other drug (AOD) service models, and alternate proposed theoretical frameworks which might exist. The framework (see Figure 1) that shows the most promise was developed by Merkes and colleagues.[2,3] The model was originally proposed as a program logic map to determine the kind of information needed to reflect on the hypothesised effects of treatment service provision on the impacts and outcomes for clients.[131] A successful model of good practice regarding comorbidity will result in desired outcomes in health and wellbeing. These outcomes are presumed to depend on treatment completion and ability to subsequently appropriately self-manage (impacts). The processes, policies and practices in place at a service and system level regarding intake, treatment and referral are presumed to produce client impacts. Such processes, policies and practices are enabled by inputs, such as funding, workforce and service links, and occur within the wider geographical, social and political context in which treatment services are located.

Figure 1: Comorbidity treatment service model map[2,3]



Each of the core components is discussed in reference to a NSW mental health setting, and a 'minimum critical set' of features is suggested for model development and evaluation on the basis of the above review and author recommendations.

Context

The context in which treatment services operate is a relevant starting consideration in the development of any model of care. This includes the location of services and their catchment areas, the density of the service system and workforce, and state regulatory or other issues with funding sources. When considering models of care in a NSW public health setting, the variety of sites of care, and their ability to fit within any model of good practice in comorbidity treatment service delivery (or the need for the models to accommodate the variety of care settings), need to be considered. Broadly, settings of care include hospitals, community-based services and centres, aged care, general practices, private institutions, community residences, outreach services and prisons. These could extend to include educational institutions and the workplace. In Australia, comorbidity treatment or care may be administered by various levels of government and non-government organisations. Models of care vary between these different sectors as a result of resources and funding, management, policy and service structures.

It is important to consider these contextual factors in model development, as funding, population and workforce factors will impact on the abilities of services to provide good practice. Although the findings of the review suggest that integrated care, complete with reduced caseworker loads, is best practice, it is rare that services have the capacity to comprehensively treat complex clients. As such, quality networking, coordinating, cooperating and collaborating with a range of external services (e.g. employment and housing; culturally and linguistically diverse groups; Centrelink; criminal justice; financial counselling; welfare; and child, adolescent, indigenous and other health services) is crucial to good practice. In a successful model of care, memorandums of understanding are required and detailed in service policy and procedures.

Primary care is a crucial consideration at a context level of any model of care. Primary care is the principal point of contact for more than 50% of people with mental illness[132], with estimates indicating that two patients per day in an average Australian general practice are experiencing comorbid MHSUP.[133] The WHO has highlighted the integration of mental health into primary care as the most viable means of addressing the burden of mental health conditions.[134] The UK has identified integration of physical healthcare with mental health care as a priority to enhance delivery of both forms of healthcare.[135] Together, this demonstrates an increasingly important need to better support primary and community care providers to access and share relevant health information and treatment.[136] Brief, clinically integrated interventions delivered by primary care professionals may help to alleviate pressures placed on specialist services, and have been shown to be an effective means of intervening where more intense approaches are unavailable or impractical.[137] However, this alone will not be sufficient.[9] In this context, it is suggested that 'convenience sells', with inconvenience to both practitioners and clients posing challenges to integrated care.[132] Future work to enhance the delivery and convenience of accessing integrated treatment, particularly psychological treatments such as CBT, is needed. Models of shared care can define appropriate scope of practice for primary healthcare providers and secondary providers. For example, the Health Pathways Program is a web-based information portal developed for GPs and primary care providers to access information about specialist services in NSW. It also aims to increase the quality and timeliness of referrals, and creates clear referral pathways and links between services. This can ensure that GPs can refer challenging patients into secondary care and can receive back into primary care those patients who are sufficiently stable. The portal

was developed collaboratively by GPs, hospital specialists and community health providers, and an evaluation is currently underway.

Inputs

The sub-domains for the 'inputs' domain include service structure, funding sources and issues, workforce, organisational philosophy and service promotion. Currently, due to the 'silo' nature of Australian treatment, services tend to be set up in either the AOD or mental health sector. Although there is an argument for unique, stand-alone, integrated services to deal with comorbidity, it is the recommendation of this review that successful management of comorbidity can be achieved in either sector via a 'no wrong door' approach (no client is turned away from one service on the basis of a comorbid diagnosis). This organisation philosophy is a recommended approach to structuring any model of care in this area. Furthermore, people with comorbid MHSUP face a number of other health problems in addition to the direct health consequences of these disorders.[9,138] Cardiovascular disease, cancer and other tumours, and respiratory system diseases are the most common causes of death among this population, with people experiencing comorbid MHSUP reporting an average lifespan of 25 years less than the general population.[139] Contributing factors include the high rates of tobacco smoking, physical inactivity and poor diet in those with MHSUP[140], all of which are potentially modifiable. A multiple health risk behaviour approach to treating comorbid MHSUP represents an important new innovation in the treatment of coexisting MHSUP. It reduces stigma, is more appealing to clients, and avoids prematurely focusing on substance use and evoking client resistance. Moving away from treatment planning for MHSUP specifically, and towards consideration of the person in a broader health context that includes (but is not limited to) these domains, also means that treatment can be provided in any setting. A multiple health behaviour approach to coexisting MHSUP involves intervening across the range of health risk areas (smoking, poor diet, physical inactivity, mental health, alcohol/other drugs) within the one integrated treatment program.[140] It allows small changes across a number of health behaviours that increase self-efficacy for further behaviour change. Research has found that individuals are willing to target multiple problems simultaneously, and can make improvements in both mental health and substance use domains.[141–143] Specific behaviours, the number of behaviours targeted and the sequence in which they are targeted remain the subjects of future research. Such an approach is recommended in the development of a care model.

At a structural level, services may specialise in subgroups (e.g. youth, indigenous, culturally and linguistically diverse, women). The type of treatment service is also a major consideration at an input level (i.e. community-based services, residential services, outpatient care) and will affect the type of treatment offered (e.g. case management, group work, assertive outreach, day programs, family support, supported accommodation, clinical psychology, referral). These factors will also affect workforce composition (e.g. AOD worker, counsellor, GP, nurse, mental health nurse, psychiatrist, social worker, volunteer).

Service system elements I (policies and procedures)

The input and context domains are generally outside the scope of model of care development, but nonetheless require acknowledgement. At a service system process level, there are a number of considerations in developing an effective model of care for comorbidity in a NSW mental health setting. This includes intake processes and screening for comorbidity; clear treatment protocols; processes/procedures for referral to, and communication with, other providers; staff training in service procedures; staff training, skills and supervision in assessment, treatment and specialisation; and the use of measures for quality improvement feedback.

Policies and procedures at a service level are required for intake, screening and assessment; privacy; referral and external consultation; and discharge and re-intake. Service models should also detail the processes for monitoring quality of treatment at this domain level. This generally includes supervision and staff appraisal; case management reviews; case conferencing; team meetings; external accreditation or quality improvement (e.g. quality management services, evaluation and quality improvement program, peak body quality frameworks); and reports against KPIs. Finally, treatment protocols are also required and should be flexible but based on current evidence of best practice. The use of industry, government and organisation guidelines is likely to play a major role in development of policies, procedures and processes.

Staff training and supervision are two other service level sub-domains that a model of care needs to address. The frequency and nature for these two sub-domains is likely to depend on the budgets and capacities of different services, and on the individual needs of workers and complexity of individual cases. However, it is important that services have built-in processes in both these areas.

Service system elements II (practices)

This sub-domain includes the practice elements involved in service systems, such as appropriateness of treatment, care planning, use of referral/communication/feedback with internal and external care providers, and post-treatment preparation. This domain should be heavily driven by best available evidence for care.

At a service treatment model level, services may be set up to treat comorbidity in a parallel, sequential, or integrated way (discussed above). While different models will work for differing services and clients, it is suggested that combining treatment for multiple disorders presents a number of advantages over sequential or parallel approaches. Although early reviews comparing integrated and non-integrated models were equivocal due to study limitations[27], it has been suggested that integration of services is essential for effective treatment of co-occurring conditions.[28–31] However, a recent review of the limited evaluations carried out in this area has also suggested that integrated services are not as effective as treatment as usual (i.e. assessing for substance use in mental health services and referring to substance use treatment).[144] Nonetheless, integrated treatment by a single service helps to ensure internally consistent treatment with common objectives that can explore the complex relationship between conditions.

Treatment care plans are essential in the treatment of clients with complex problems, especially where referral occurs or a range of service providers are involved in client care. In the development of treatment care plans, all service providers, as well as the client themselves/carers, should be involved. Similarly, in cases of referral both to and from the service, communication should be maintained and services must incorporate this process of feedback and assertive follow-up into client care to avoid clients falling through the gaps of treatment. Finally, the concept of after-care and after-care planning, self-management and relapse prevention is an important consideration at a service practice level. There is a variety of means by which services can provide such care. At the intensive end of the spectrum, the utility of assertive outreach programs has been well documented. This may include home visits, individual counselling, support worker/group, family counsellor, intensive playgroups, supported accommodation, phone link, drop-in options and links to employment. Services often do not have the capacity for long-term after-care; nevertheless, studies show the programs that incorporate outreach, problem-solving, adherence and continuity of care have a positive effect on client wellbeing.[145] Where more complex after-care cannot occur, such as outreach, the teaching of skills (e.g. relaxation techniques, CBT and problem-solving strategies) and provision of information are useful. The integration of eHealth treatment programs for addiction and mental health problems into primary care settings may be one strategy for fostering stronger links between

systems of care.[1] However, this may still restrict treatment access and fail to fulfil the potential of eHealth interventions. The challenge is not only to model and implement services and systems of care that usefully integrate eHealth with existing programs, but to develop novel models of eHealth service provision that, for example, may exist entirely online.[47,146] The provision of funding and research that is focused on how best to disseminate and provide eHealth treatments outside of research settings is fundamental to meeting this challenge.

Of equal importance is to avoid replicating the siloed approach to designing and delivering eHealth interventions that has been taken in mental health and substance use research and practice. To date, the tendency has been for eHealth to be developed and delivered in silos, with components and programs emerging without regard for comorbidity.[147] As previously discussed, only one evidence-based program to date has utilised eHealth technology for MHSUP (i.e. SHADE[115,116]).

At the service level, continuous quality improvement should occur to evaluate, sustain and improve quality care. As discussed earlier, some useful frameworks to consider include:

- Quality Improvement & Community Services Accreditation
- Quality Management System
- Quality Improvement Council for core in AOD standards
- Australian General Practice Accreditation Limited
- External audit using the National Safety and Quality Health Services Standards
- Dual Diagnosis Capability in Addiction Treatment
- Australian Quality Training Framework.

At a practice level, the following pathway of care (see Figure 2) has been developed to facilitate clients through care. This is adapted from an AOD model proposed by Lubman and colleagues.[148]

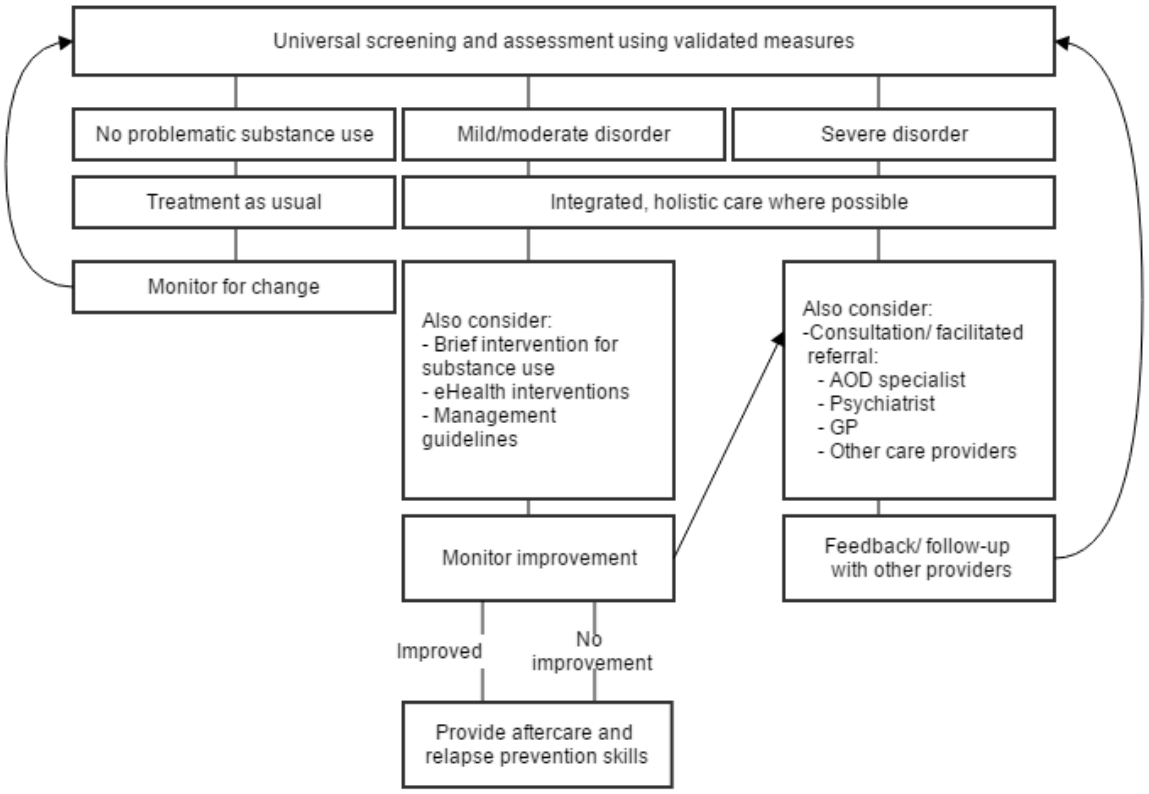


Figure 2: Possible pathway of care

Client impact and outcomes

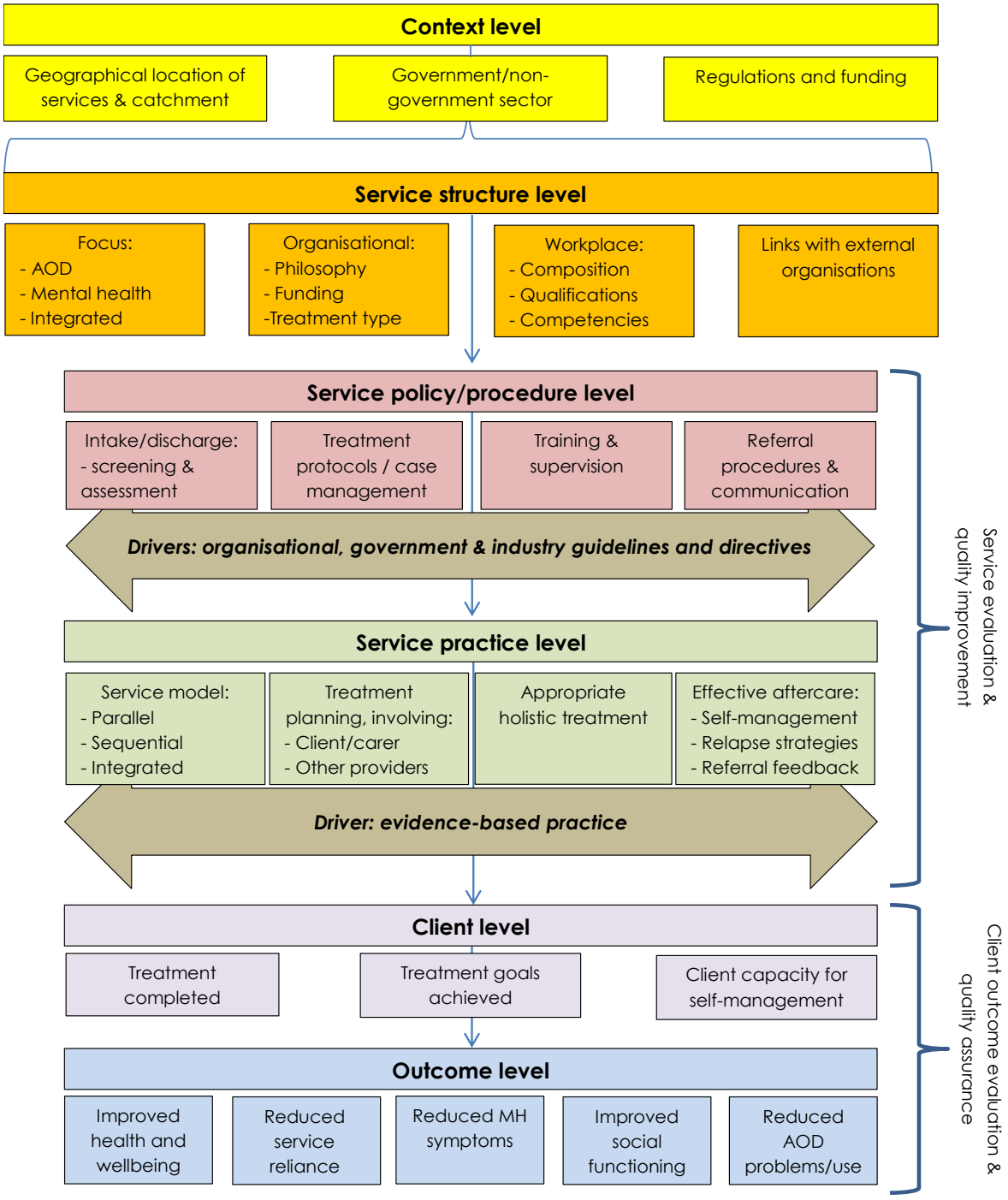
Client impact refers to the short-term impacts on clients across elements such as treatment completion, achievement of treatment goals, client self-management, and finalisation with referring/referred health professionals. At these domain levels, thorough client assessment should occur using appropriate, valid and reliable assessment tools. Furthermore, data collection should be systematic and consistent with intake, and records maintained using appropriate databases, management interfaces or information management systems. The outcome domain refers to long-term client outcomes. These data are rarely collected by services but can help to evaluate long-term effectiveness care.

10 NSW adaptation

In adapting an appropriate model of care for a NSW mental health setting, the authors generated a simplified version of this framework (see Figure 3) which we feel more adequately allows development and evaluation of a NSW model of care for comorbidity. This model includes context and system structure as umbrella domains, framing service level components including a) policies/procedures and b) practices. Drivers at these two service level domains included guidelines/directives and best available evidence, respectively. At a service level, a system of service evaluation and quality improvement should exist as a performance indicator. The base of the model includes client and outcome domains, which collectively measure treatment fidelity and success on specific client wellbeing domains. Evaluation of these outcomes using validated assessment tools is a key indicator of model success.

As a core minimum set of critical model features, the review suggests mental health practitioners/services conduct universal screening, a thorough risk assessment, and collection of rudimentary diagnosis of the symptoms. They should provide supportive therapies (motivational interviewing, CBT, withdrawal management, medications), prevention and psycho-education regarding substance use, and involve alcohol and other drug (AOD) services/GPs where appropriate. Finally, they should have policies and procedures in place for assertive follow-up and serve as the primary care coordinator until such time as an alternative service accepts the client.

Figure 3: Proposed framework for developing and evaluating models of care



Key recommendations for a NSW context

These recommendations are based on the above review and relevant external documents.[110,114,149] The focus of this review has not been on physical health. Nonetheless, physical health problems are critical and should be incorporated into models of treatment, service, and workforce development. Much of the health gap experienced by people with substance use and mental health disorders is attributable to untreated physical health problems. Non-behavioural physical health is not considered in this document but must play an important role in service design. This includes issues such as management of the common and life-threatening disorders seen in these populations, such as diabetes mellitus, cardiovascular disease and chronic viral hepatitis, especially their impact on cognition.

Service/intake level

- A 'no wrong door' approach
- Screening to occur at all entry points for mental health and substance use problems
- Screening tools to be brief, easy to administer and have appropriate psychometric properties
- Adopt the principle of assertive care, where appropriate, to increase retention in treatment, especially in high demand groups
- Identify and address problems leading to treatment dropout, particularly transfers between providers and especially between services and sectors
- A care coordinator to coordinate the provision of care, ensure continuity of care from screening through to discharge/referral, and manage effective communication between services and sectors.

Treatment level

- Focus treatment on the impairment and distress experienced by the client, rather than solely on diagnosis of primary/secondary substance use disorder[150]
- Use a 'clinically integrated' evidence-based treatment approach incorporating, where appropriate, psychosocial and pharmacotherapy strategies for both substance use and mental health problems into the same intervention
- Align treatment, care and psychosocial support with the best available evidence, and national and international standards and guidelines
- Conduct a thorough assessment of all presenting conditions and manage the most severe symptoms first
- Use evaluated eHealth technologies to support treatment, where appropriate, including using technologies for early intervention
- Ensure the development of good rapport to actively engage clients in treatment.

Workforce level

- Orient all staff entering employment to basic comorbidity practices, including the administration of screening tools, preliminary assessment, and appropriate pathways for referral within and between services. Develop training/certification standards to provide evidence of achievement of these skills
- Develop a hierarchy of knowledge and skill levels in their workforce, from baseline capability to advanced comorbidity practice, delivering integrated treatment, psychosocial rehabilitation and recovery
- Provide comorbidity training for senior staff to promote leadership and comorbidity awareness at a managerial level

- Provide training that takes into account the requirements of staff in different service settings (community, residential, acute inpatient/withdrawal) and working with different age groups (youth, adults, aged persons)
- Use existing workforce development activities and programs to enhance comorbidity competency
- Create and/or strengthen career opportunities and academic recognition of education and training in both addiction medicine and mental health treatment.

Discharge/referral level

- Develop treatment systems that ensure assertive and comprehensive treatment to prevent falling through the gaps, with disengagement from both mental health and substance use treatment. These involve inter-relationships between services, defined shared case management of selected clients, periodic meetings and establishment, plus monitoring of KPIs. Assertive follow-up is particularly important when transferring between services and service sectors
- Develop and agree on referral pathways within and between services
- Identify and implement quality assurance activities in response to adverse events across the treatment sectors, including non-government and private sectors
- Set up memorandums of understanding with relevant external services for those requiring specialist treatment and care, or returning to primary care management
- Regularly monitor and evaluate compliance with, and the effectiveness of, agreed partnerships and pathways as part of quality assurance activities
- Develop and maintain collaborative service relationships that result in clients receiving integrated assessment, treatment and recovery
- Establish functional relationships with other service sectors that provide acute physical healthcare, housing, education and employment for this group of clients.

Evaluation level

- Identify and maintain resources to periodically evaluate services, particularly new services
- Develop links with research bodies for adequate model evaluation. There is a greater need for collaboration between researchers and services for evaluation and translation
- Use KPIs and levers of effectiveness in service delivery models in order to aid in evaluation
- Systematic collection of staff/client feedback/satisfaction, model fidelity and client outcome data
- Use these data to inform planning, development and further evaluation
- Establish mechanisms for the involvement of clients, families and carers in the planning, review and ongoing development of services
- Develop mechanisms whereby people with comorbidity, their families and carers have input into the education and training of staff in both sectors and primary care sectors.

11 Conclusion

Despite strong progress in recent years, much more work and commitment is required in the area of comorbid mental health and substance use problems, systemically, clinically and in the development of a robust evidence base. This is especially true among high-risk groups. Very little published work exists detailing service models of care for comorbidity. Furthermore, the models which do exist are rarely adequately evaluated. Further tailoring and integration of therapeutic components, along with the use of different, flexible modalities and a move towards considering multiple health risk behaviours, is essential to better reach and assist those in need. Ideally, services should adopt a 'no wrong door' approach to comorbidity, and service capacity should be built along these lines. Although it is difficult to recommend a 'minimum critical set' of program features due to the diversity of services, all services should acknowledge the high prevalence of co-occurring disorders and screen/assess, treat or refer and follow-up as appropriate.

There is a greater need for collaboration between researchers and services, and consideration should be paid to strategies to best translate evidence-based research into practice, as well as working with services to evaluate model success. Integrated care has been found to be particularly promising. Ideally, however, integration should stretch beyond treatment for the specific conditions and into the broader social services system (e.g. housing, employment). New and emerging areas such as eHealth have the potential to help overcome a range of systemic barriers. In practical terms, development of new knowledge, new skills and new practices will only occur in response to significant resource allocation.

Australia has emerged as a world leader in the area of comorbidity, both clinically and in the field of research, and can potentially add enormous value to the community into the future to reduce the significant burden and harms caused by this group of issues.

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13 Appendices

1. Definition

'Comorbidity' in this review refers to the co-occurrence of a substance use disorder (SUD) with one or more other mental disorders. 'Substance use' encompasses licit (e.g. alcohol, tobacco) and illicit drugs (or extra-medicinal use of pharmaceuticals). For the purposes of this review, we have focused on illicit drugs. However, many service models and evaluations of treatment will use a sample of individuals with both alcohol and illicit drug disorders.

2. Prevalence

The 2007 Australian National Survey of Mental Health and Wellbeing found that one in five Australian adults (17.6% of men and 22.3% of women) met the criteria for an anxiety, mood, or substance use disorder in the past year, representing about 3,197,800 Australian adults.[151] About 25% of people with mental disorders were found to have two or more classes of mental disorder.[152] Table 2 shows the proportion of the population with one disorder class (14.9%), two disorder classes (4.4%), and three disorder classes (0.7 per cent). Although anxiety disorders and affective disorders are both highly comorbid in men and women, substance use comorbidity shows more pronounced rates in men, as depicted in Figure 4.

Table 2 : 12-month mental disorder comorbidity prevalence in the total population and in those with a 12-month mental disorder[152]

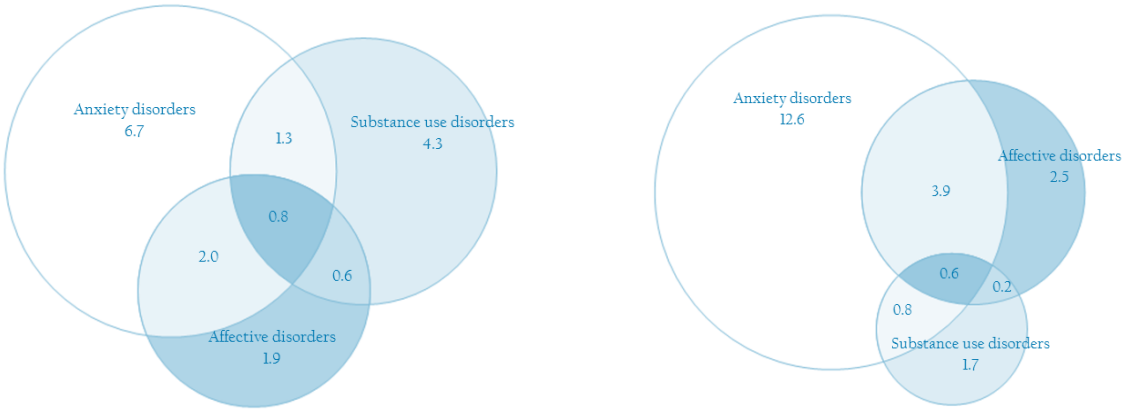
	Total population (%)	12-month disorder[#](%)
No disorder	80.0	-
One disorder class	14.9	74.6
Two disorder classes	4.4	21.9
Three disorder classes	0.7	3.5

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

Although the survey focused on SUDs, anxiety and affective disorders, rates of SUDs are also particularly high among individuals with psychotic disorders (e.g. bipolar, schizophrenia). The estimated treated prevalence of one-month psychotic disorders in Australian adults was 3.5 people per 1000.[153] However, this is likely to be an underestimate, as this survey excluded those treated in the private sector and those not treated at all. Nevertheless, 54.5% had a lifetime history of illicit drug abuse or dependence (63.2% for males and 41.7% for females), which is more than five times that of the general population.

The presence of co-occurring conditions increases the likelihood of treatment-seeking, as the risks of hospitalisation combine in those with more than one condition.[154] Prevalence rates for comorbidity in clinical samples tend to be even higher than those in population-based studies, ranging from 70% to 90% in substance use treatment services.[19,155–157] In mental health settings, rates of problematic substance use range from 11% to 71 per cent.[158–160] These rates vary depending on the treatment setting, disorder, demographics and method of assessment.

Figure 4: Prevalence (%) of single and comorbid affective, anxiety and substance use disorders among Australian males and females in the previous 12 months[152]



Males Females

Little research has been conducted comparing the rates of mental health disorders across different types of SUDs; however, there is some evidence to suggest that co-occurring disorders are higher among those who use stimulants and opioids[161,162], while the types of substances used most commonly by those with mental health disorders (alcohol, cannabis) generally mirror trends of the general population.[163,164]

3. Evaluations included in this review

IDDT model

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Burnaby Treatment Center for Mental Health and Addiction

- Schütz C, Linden IA, Torchalla I, Li K, Al-Desouki M et al. The Burnaby treatment center for mental health and addiction, a novel integrated treatment program for patients with addiction and concurrent disorders: Results from a program evaluation. BMC Health Serv Res 2013;13(1):288.

Case management/care coordination

- Karper L, Kaufmann M, Millspaugh G, Vega E, Stern G et al. Coordination of care for homeless individuals with comorbid severe mental disorders and substance-related disorders. J Dual Diagnosis 2008;4(2):142–57.

Combined Psychosis and Substance Use (COMPASS) Programme

- Graham HL, Copello A, Birchwood MJ, Orford J, McGovern D, Maslin J, et al. Cognitive-behavioural integrated treatment approach for psychosis and problem substance use. In: Graham HL, Copello A, Birchwood MJ, Mueser KT (eds). Substance Misuse in Psychosis: Approaches to Treatment and Service Delivery. London: John Wiley & Sons; 2003.
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- Graham H, Copello AG, Birchwood M, Orford J, McGovern D et al. A preliminary evaluation of integrated treatment for co-existing substance use and severe mental health problems: impact on teams and service users. J Ment Health 2009;15(5):577–91.

Comprehensive, Continuous, Integrated System of Care

- Harrison ML, Moore KA, Young MS, Flink D, Ochshorn E. Implementing the Comprehensive, Continuous, Integrated System of Care model for individuals with co-occurring disorders: preliminary findings from a residential facility serving homeless individuals. J Dual Diag 2008;4(3):238–59.
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Assertive Community Treatment (ACT) model

- Young MS, Clark C, Moore K, Barrett B. Comparing two service delivery models for homeless individuals with complex behavioral health needs: preliminary data from two SAMHSA treatment for homeless studies. J Dual Diagn 2009;5(3–4):287–304.
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Triple Care Farm

- Mission Australia. Triple Care Farm: A Safe Place for Change (1989–2009). Sydney: Mission Australia; 2011.
- Mission Australia. Triple Care Farm 2013 Impact and Outcomes. Sydney: Mission Australia; 2013.

Collaborative Early Identification Model

- Staiger PK, Thomas AC, Deakin University & Southern Health. Clients with a dual diagnosis: to what extent do they slip through the net? Victoria: Deakin University & Southern Health; 2008.

Substance Use and Mental Illness Treatment Team

- No evaluation available

Co-Exist NSW

- No evaluation available

Hunter New England Mental Health and Substance Use Service

- No evaluation available

Model for responding to dual diagnosis

- Department of Human Services. Dual Diagnosis – Key Directions and Priorities for Service Development. Melbourne, Victoria: Victorian Government Department of Human Services; 2007.

Sydney Local Health District model of care for comorbidity

- No evaluation available

4. Search strategy

Databases included in the peer-review search strategy included MEDLINE, PsycINFO, PubMed, EMBASE, Cochrane Library and Scopus. Keywords used for the search were (1) 'substance use' ('drug depend*', 'drug abuse', 'substance-related', 'substance abuse', 'substance depend*'); (2) 'mental health' ('mental disorder', 'mental illness'); comorbid* (co-occur*, 'dual diagnosis'); and (3) 'model of care' (initiative, 'treatment program', 'program evaluation', 'treatment outcome', 'clinical pathway', 'service framework', intervention, therapy, trial, random* 'pathway of care'). As per the scoping documentation, the peer-reviewed literature was limited to 2005 to September 2014. However, some models developed prior to this were included due to publications pertaining to these models that emerged during this period. Similarly, as per the scoping documentation, a focus was placed on 'severe' mental illness (e.g. psychosis and schizophrenia), illicit substances and public mental health service settings. The abstracts for each of these articles were reviewed for their congruence with the intent of the review. Articles that were not available in English were excluded from the review. The grey literature search followed a similar search strategy, but was limited to 2010 to September 2014 as per scoping document. A priority focus was given to reports in the Australian context showing what works for whom, and quality reports from reputable stakeholders. This also included direct searches pertaining to reputable stakeholders and the authors' own knowledge and expertise.

A significant challenge in undertaking the review was the definition of a model of care. This is not surprising, as there is no consistent definition of the term 'model of care'. Nevertheless, Davidson and colleagues[165] describe a model of care as:

> *"… an overarching design for the provision of a particular type of healthcare service that is shaped by a theoretical basis, evidence-based practice and defined standards. It consists of defined core elements and principles, and has a framework that provides the structure for the implementation and subsequent evaluation of care."*

It became apparent during the review process that the majority of 'models' of care presented in the published literature pertained to individual evaluations of treatment interventions (or interventions delivered and evaluated as part of an established model of care), or theoretical discussions of systemic approaches to comorbidity treatment (e.g. parallel vs integrated treatment). There was a dearth of available

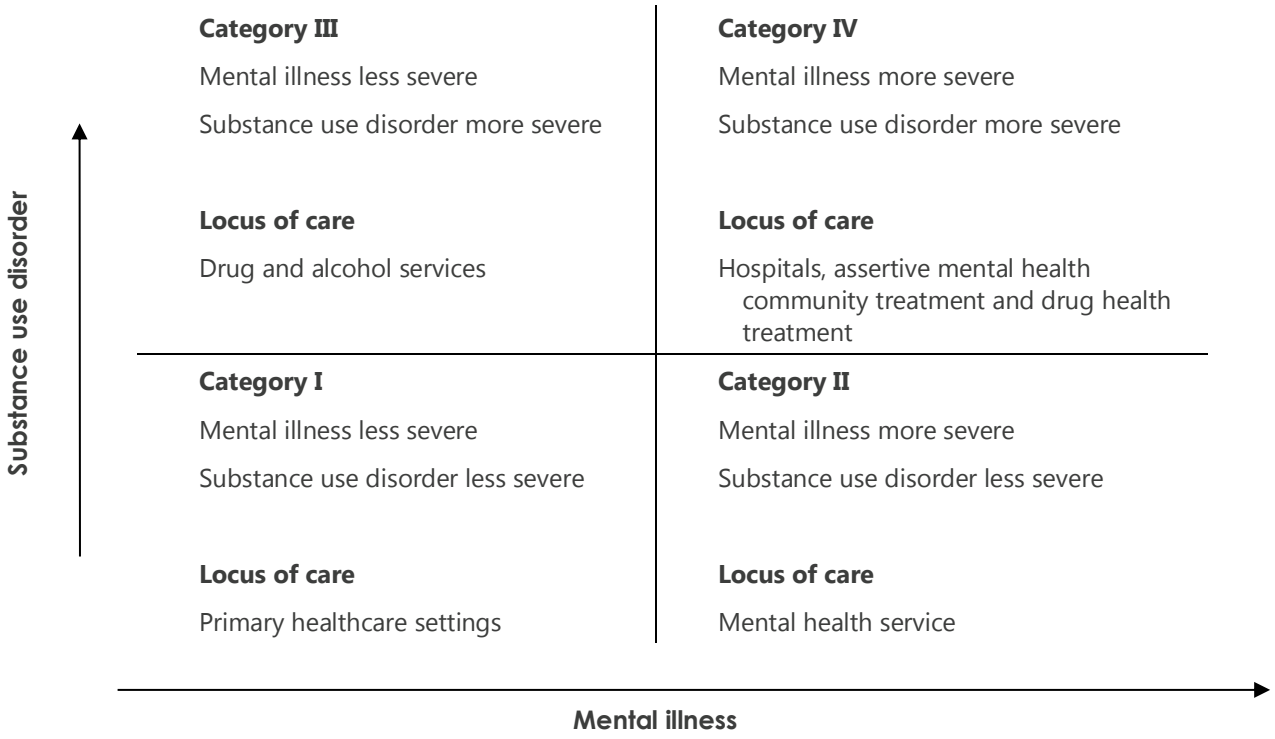
literature that presented a comprehensive model (as defined above), and less still that meaningfully evaluated such a model of care.

Although the literature which discusses the management of comorbidity provides descriptions of effective treatment options, there is comparatively little published evidence-based research which both describes models of care for comorbidity and evaluates the outcomes associated with aspects of a model of care. Furthermore, models are frequently described in insufficient depth (particularly in the peer-reviewed literature) to meet the rigorous scope of the review proposal.

5. Levels of Care Quadrants

The Levels of Care Quadrants (see Figure 5) provides a good basis for developing models of care and the locus of care.

Figure 5: Level of Care Quadrants[24]



1. People mildly to moderately disabled by comorbid mental health and substance use disorders may access both mental health and drug health services from time to time, but in most cases the primary care provider would be the GP. At the milder end of the spectrum, this group represents the majority of people affected by dual disorders (e.g. quadrant I).

2. People severely disabled by mental health problems and disorders, and adversely affected by problematic substance use disorders, would generally be the primary responsibility of mental health services, with extra support and assistance provided by drug health services as required (e.g. quadrant II).

3. People severely disabled by substance use disorders and adversely affected by mental disorders are generally the responsibility of drug health services, with input from specialist mental health services as required (e.g. quadrant III).

4. People severely disabled by comorbid mental health and substance use disorders will require a coordinated, integrated approach by both mental health and drug health services. Joint case management or an identified service provider with responsibility as care coordinator from the service most able to meet the current needs of the client will ensure continuum of care (e.g. quadrant IV).

A person may move between quadrants, and the locus of care may change accordingly. For example, the locus of care will change for a person treated in drug health who becomes acutely suicidal. In this example, a multiservice plan may be developed and the lead agency identified.