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Treatment services for people with co-occuring substance use and mental health problems

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National Drugs Library

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Health Research Board

Treatment Services for people with co-occurring substance use and mental health problems. A rapid realist synthesis.

Health Research Board

HRB drug and alcohol evidence reviews

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Treatment services for people with co-occurring substance use and mental health problems.

A rapid realist synthesis

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HRB drug and alcohol evidence reviews

The HRB Drug and Alcohol Review series supports drug and alcohol task forces, service providers and policy-makers in using research-based knowledge in their decision-making, particularly with regard to their assigned actions in the National Drugs Strategy. Topics for review are selected following consultation with stakeholders to identify particular information gaps and to establish how the review will contribute to the selection and implementation of effective responses. Each study examines a topic relevant to the work of responding to the situation in Ireland.

HRB National Drugs Library

The HRB National Drugs Library commissions the reviews in this series. The library's website and online repository (www.drugsandalcohol.ie) and our library information services provide access to Irish and international research literature in the area of drug and alcohol use and misuse, policy, treatment, prevention, rehabilitation, crime and other drug and alcohol-related topics. It is a significant information resource for researchers, policy-makers and people working in the areas of drug or alcohol use and addiction. The National Drugs Strategy assigns the HRB the task of promoting and enabling research-informed policy and practice for stakeholders through the dissemination of evidence. This review series is part of the library's work in this area.

Health Research Board

The Health Research Board (HRB) is the lead agency in Ireland supporting and funding health research. We provide funding, maintain health information systems and conduct research linked to national health priorities. Our aim is to improve people's health, build health research capacity and make a significant contribution to Ireland's knowledge economy. The HRB is Ireland's National Focal Point to the European Monitoring Centre on Drugs and Drug Addiction (EMCDDA). The focal point monitors, reports on and disseminates information on the drugs situation in Ireland and responses to it and promotes best practice and an evidence-based approach to work in this area.

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HRB drug and alcohol evidence reviews to date

Munton T, Wedlock E and Gomersall A (2014) *The role of social and human capital in recovery from drug and alcohol addiction*. HRB Drug and Alcohol Evidence Review 1. Dublin: Health Research Board.

Munton T, Wedlock E and Gomersall A (2014) *The efficacy and effectiveness of drug and alcohol abuse prevention programmes delivered outside of school settings*. HRB Drug and Alcohol Evidence Review 2. Dublin: Health Research Board.

Nic Gabhainn S, D'Eath M, Keane M and Sixsmith JA (2016) *Scoping review of case management in the treatment of drug and alcohol misuse, 2003–2013.* HRB Drug and Alcohol Evidence Review 3. Dublin: Health Research Board.

Murphy L, Farragher L, Keane M, Galvin B and Long A (2017) *Drug-related intimidation. The Irish situation and international responses: an evidence review.* HRB Drug and Alcohol Evidence Review 4. Dublin: Health Research Board.

Bates G, Jones L, Maden M, Corchrane M, Pendlebury M and Sumnall H (2017) *The effectiveness of interventions related to the use of illicit drugs: prevention, harm reduction, treatment and recovery. A 'review of reviews'*. HRB Drug and Alcohol Evidence Review 5. Dublin: Health Research Board.

Minyard K, Manteuffel B, Smith CM, Attell BK, Landers G, Schlanger M and Dore E (2019) *Treatment services for people with co-occurring substance use and mental health problems. A rapid realist synthesis.* HRB Drug and Alcohol Evidence Review 6. Dublin: Health Research Board.

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Format of this report

The organisation of this report follows the outline recommended by Wong *et al.* (2013) for realist syntheses according to the Realist and Meta-narrative Evidence Syntheses: Evolving Standards (RAMESES) publication standards.

A full list of reviewed articles can be found in Appendix 5. When cited in text, these reviewed articles are referenced numerically. The citation numbers for articles with positive, negative, or neutral outcomes can be found in Appendices 6, 7, 8, and 9.

Executive summary

Purpose of the rapid realist review

Recent systematic reviews of effective treatments and approaches for co-occurring mental health and substance use disorders (SUDs) are limited by their focus on specific mental health conditions or substances. They do not respond to realist questions that unpack the contexts and mechanisms that may serve as facilitators or barriers to achieving positive outcomes in providing integrated care for mental health and SUDs. Understanding these facilitators and barriers is especially important in healthcare settings, including Ireland's, where funding for services and other administrative challenges may be at odds with ensuring equitable access to services. These characteristics must be considered in order to develop an in-depth understanding of what works for whom under what circumstances. With Ireland's 2017–2025 National Drugs Strategy (Department of Health, 2017), there is a need for information to further progress on goals to integrate mental health and substance use services.

Research questions

The scope of this rapid realist review was developed through a high-level review of relevant literature and early engagement of knowledge users in Ireland. The Health Research Board (HRB) proposed three research questions to guide the rapid realist review. Keeping in line with the realist approach, the research team carried out a process to refine these questions to ensure that they accurately reflected the needs of the knowledge users, including providers and users of dual diagnosis services in Ireland.

- Refined research question 1: What interventions improve treatment and personal functioning outcomes for people with co-occurring substance use and mental health problems and in what circumstances do they work?
- Refined research question 2: What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?
- Refined research question 3: What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?

Co-production guided the process at the first meetings in Ireland in November 2017. Detailed notes were taken in an effort to identify and draft theory statements that would guide the realist review. Notes were organised based on each of the discussions and activities facilitated with the groups. The research team carried out thematic analysis of this initial dataset of notes to generate 10 theory statements that ultimately guided the literature search, data extraction, and analysis processes. These 10 theory statements were brought back to the knowledge users for revision, validation, and finalisation during the second in-country meetings.

Final theory statements	
Number	**Theory statement**
1	Integration of existing services, particularly community-based services, supports access to care and minimises barriers faced with creation of new service lines.
2	Integrated treatment requires training and cross-training of substance use and mental health service providers at multiple levels.
3	Improved coordination between providers (substance use, mental health, and primary care) will break down administrative silos and improve access to timely diagnosis, care, and treatment.
4	Services must be tailored to the local context and the individual's needs and circumstances to be most effective.
5	Including service users and families in service and care decisions results in better outcomes for individuals and their families.
6	A knowledge of local efforts already in place and co-production with service providers and individuals with lived experience is needed to develop practice-informed strategies and policies that take known facilitators and implementation challenges into consideration.
7	Resources (financial and otherwise) must accompany strategy and policy to enable integration and improve service delivery and individual outcomes.
8	When treatment takes a holistic view and includes housing and social supports, individual outcomes are improved.
9	A holistic model to mental health is needed to improve mental health outcomes, particularly among individuals with co-occurring mental health and substance use disorders.
10	Peer support facilitates recovery and positive outcomes for individuals with co-occurring mental health and substance use disorders.

Methods

The HRB chose (and the Georgia Health Policy Center affirmed) the realist synthesis method for this review given the goal of gaining an understanding of why some interventions work (or do not work) for some people with dual diagnosis and under what conditions. The realist approach provides a strategy to identify characteristics, or mechanisms, that affect the successful implementation and outcomes of evidence-based treatments and their contexts. To answer the question of 'why does a programme work?', it is necessary to employ a theory-driven approach to evaluating the literature. Such a theory-driven explanation is the desired output of this review.

A two-round iterative search process led to the final set of articles reviewed. For Round 1, conducted during March 2018, the searching was carried out by each research question. The searches were limited to results published between 1998 and 2018 that were written in English. For research question 1, only articles that addressed mental health and substance use treatment in the title or abstract were chosen.

For research question 2, articles chosen addressed integration of programmes and services, including primary care. Search results for research question 3 were first scanned for those that addressed integrated dual diagnosis models of care. Additional articles were selected to broaden the final set to include other models and contexts for delivery of integrated care.

Once the data extraction and analysis of the articles from Round 1 was complete, the research team recognised several gaps in the literature. Gaps were identified in the following areas:

- Studies conducted in Ireland
- Peer support
- Consumer, client, service user, and family inclusion in service and care decisions
- Knowledge of local efforts and recognition of service providers and individuals with lived experience as experts.

After conversations and engagement with the knowledge users during a second round of in-person meetings (Round 2) to review initial findings, an additional literature search was deemed necessary to ensure that the findings of the review met the needs of the stakeholders.

From a pool of 10,971 unduplicated articles in the PsycINFO, CINAHL, MEDLINE, and Academic Search Complete databases, 151 were screened for review. Data analysis and synthesis of the final set of articles was informed by the synthesis steps outlined by Rycroft-Malone *et al.* (2012: 6–7). Data analysis began by organising the data collected utilising the data extraction form into EPPI Reviewer software. The software enabled the research team to systematically code all articles included in the review, as well as rapidly retrieve the context, mechanism, and outcome codes throughout data analysis. Across articles, reviewers paid particular attention to common themes in both the context and mechanisms present in the literature. These themes were then compared across articles and formulated into appropriate chains of inference.

Throughout the stages of data analysis and synthesis, reviewers, who included the research team and other experts in behavioural health, public health, and/or health systems, participated in iterative sense-making sessions. These sessions allowed each reviewer to provide concise summaries of emerging patterns and themes from their articles reviewed and describe whether the articles addressed the identified theories. A core member of the research team took detailed notes to support the identification of themes and patterns across reviewers and content-relevant articles for each research question.

Findings were synthesised in two rounds. The first round synthesised the context, mechanism, and outcomes found in the literature aligned with each research question, with attention given to the thematic areas of the theory statements and additional concepts that surfaced in the literature. This level of synthesis revealed the need for further synthesis, cutting across literature identified for each research question, and focusing on the outcomes aligned with the theory statements.

The 10 theory statements were grouped into outcome areas of **integration, access,** and **individual and family treatment outcomes**. These three outcome areas distil essential components of the three research questions, which address, in reverse order, 1) the conditions that affect individual treatment outcomes, 2) characteristics of integrative programmes that yield positive system outcomes (distilled into access here), and 3) successful integrated models of care. Each of the three outcome areas is associated with a different context. The mechanisms in improved integration are associated with the provider context. The context for the access mechanisms is the systems of mental health and substance use services. The context for individual and family outcomes is the care setting.

Main findings

The 151 articles selected for review included 118 empirical studies (n=22 randomised trials, 48 programme evaluations, 15 longitudinal analyses, 39 qualitative studies, 14 other), 16 syntheses or reviews (n=11 systematic reviews, 4 literature syntheses, 1 other), 16 brief reports, and 1 commentary. Findings aligned with the three outcome areas derived from grouping the theory statements are presented as follows.

Integration

Several resource and reasoning mechanisms serve as enablers and barriers to successful integration of co-occurring mental health and substance use service delivery. In summary, the organisational and financial resources must align with strategy and policy, but this alone will not ensure successful integration. Provider belief that change is possible and enthusiasm for implementing these changes serve as catalysts for implementing the necessary changes that integrated care requires. Provider belief and enthusiasm are influenced by a variety of factors, such as the climate in which they operate, the organisational partnerships involved, and their confidence in their skills and abilities to implement new services or implement services differently in coordination with other providers.

Access

Review of all articles revealed 19 that described context, mechanism, and outcome patterns broadly related to access. On the whole, these mechanisms were found to be operating at the organisational or staff levels rather than an individual level. For example, the predominant mechanisms identified related to staff changes in knowledge, skills, and attitudes associated with training; staff changes in thinking and reasoning associated with their inclusion

and/or co-production of services for co-occurring disorders; and changes in staff reasoning associated with the process of organisational integration. Additional mechanisms related to what one might consider changes in organisational reasoning such as organisational climate and readiness to change. Each of the mechanisms, in some way, helped to explicate three of the study's 10 theory statements that had been co-produced with local knowledge users. Further, the findings related to access helped to begin to unwind the complex story addressing the study's second research question: What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur? Based on the analysis, these aspects include, but are not limited to, changes in staff knowledge and skills associated with training that is, ideally, designed and/or delivered by individuals with lived experience, and organisational climates and readiness for change that facilitate successful integration of mental health and substance use services.

Individual and family treatment outcomes

The literature related to interventions that include service users and families in treatment reveals important mechanisms for building an integrated system for individuals with co-occurring mental health and substance use diagnoses. A dominant theme is the importance of engagement in treatment or recovery. We now know more about how these interventions can lead to engagement in treatment. Conditions that are associated with engagement in treatment paint a picture of a client who is embedded in a supportive social network, has mastered self-management behaviours, has stability in basic social and employment needs, and is motivated and has individualised incentives to engage in treatment and recovery. The care system and the individual have worked together to establish a secure and stable environment that supports recovery.

The literature also reveals three more difficult to observe mechanisms that are part of this complex system: trust, flexibility, and hope. The treatment approaches explored in this literature (including service users and families, holistic view, and peer support) lend themselves to triggering these mechanisms. Review of the detail of this literature creates a roadmap for the design of services that are most likely to trigger recovery. There are specific actions and orientations that contribute to trust. For example, creating an environment that is intentional about displaying simple acts of kindness will help build trust. Purposefully building flexibility into treatment through co-design will help build the conditions necessary for recovery. Building a culture of hope among providers, family, and clients through instilling confidence, self-esteem, and empowerment is critical to recovery. Also included in the system are a number of barriers to recovery such as isolation, intense emotions, and lack of trust in institutions that can trigger negative reinforcing loops away from treatment and recovery. Careful design of a system of care that leverages these mechanisms is more likely to create an environment of recovery.

Initial recommendations

The HRB seeks to contribute to the development of a standardised evidence-based approach to the identification, assessment and treatment of co-occurring mental illness and substance disorders. The results of this realist review and synthesis provide ideas regarding how integrated systems can be built to use evidence-based models of care to improve outcomes for individuals.

Knowledge users in Ireland described six dual diagnosis programmes in different communities (Waterford, Limerick, Cork, Clondalkin, Kilkenny, and Dublin) that engaged in locally driven integration efforts across the drug and alcohol task forces, mental health or psychiatric services, and a Recovery College. These programmes create vehicles for learning among the providers and consumers involved in these programmes. There are opportunities for learning about each other's programmes, as well as evidence for treatments, models, and integration produced by this project. Additionally, learnings from these programmes can be used to support the development of additional programmes.

These six local integrated programmes provide a starting place for learning and integrating knowledge about treatment and building a culture of co-production that supports putting the individual at the centre of the system. The wisdom gained from knowledge users and the literature synthesis reveals numerous ideas for building an integrated system. Content in each section of this report can be translated into evidence-based actions.

The four-level framework that emerged from this project provides a structure to organise potential steps. At the policy/system level, high-leverage steps may focus on the alignment of resources. At the organisation/provider level, a focus on building a knowledgeable workforce is important. Initial recommendations, included in the following table for each level, are focused on a few preliminary actions that may have high leverage and build on what currently exists. A next useful step could be a collaborative session with local Irish knowledge users to meaningfully mine the findings for appropriate actions and would be in keeping with the co-production recommendation.

Level	Potential action
Policy/system	» Create incentives in payment to providers for integrating care of individuals with co-occurring diagnosis » When developing service payment agreements, include deliverables that recognise the long path to recovery » Analyse the system as it relates to access to psychological services and align providers with service needs » Examine payment structure for peer mentors, coaches, and instructors » Explore how resources can be allocated to support a holistic approach to care (e.g. housing, supportive employment)
Organisation/provider	» Build a knowledgeable, integrated workforce that keeps the individual at the centre » Develop a common language among different provider types, consumers, and families » Examine training modes and build in time to support provider training and cross-training to build competence and confidence » Build a culture of hope
Service/treatment	» Create a learning community among the current integrated programmes » Conduct a realist evaluation of the current work and use the learnings to improve current programmes and build others » Allocate resources to support the creation of new integration pilot programmes that includes resources for programmes, technical assistance, and peer support from current integrated programmes » Use the evidence from this review to guide future programme development
Individual/family	» Build systems for co-production at each level of the system: policy, provider, treatment design, and individual care

Conclusion

This realist review and synthesis begins to answer the overarching question of 'how can integration using effective models of care improve outcomes for individuals with co-occurring mental health and substance use disorders?' Integration is not a single concept related to a specific treatment or relationship among providers, but rather a complex, multifaceted portfolio of interrelated parts of a system. Central to development of integrated models is a four-level framework for integration that is co-produced by policy-makers, providers, and clients at the policy, organisation or provider, treatment, and individual levels. Policies and resources need to be aligned to create incentives for providing integrated care, while a knowledgeable, coordinated workforce keeps the individual at the centre.

Keywords: co-occurring disorders, dual diagnosis, integration, mental health disorders, rapid realist review, substance use disorders

Introduction

The Health Research Board and Georgia Health Policy Center partnership

The Georgia Health Policy Center at Georgia State University in Atlanta, Georgia, USA, responded to a solicitation for proposals and was contracted by the HRB to conduct this rapid realist review. The Georgia Health Policy Center developed the study protocol and conducted meetings with knowledge users in Ireland on two occasions to obtain input into the scope of the study and study findings. They engaged expert panels and reviewed and synthesised the literature. The HRB identified dual diagnosis experts in Ireland and arranged meetings with knowledge users, shared materials, and participated in regular project calls.

Rationale for review

In many parts of the world, there is a deficit of services for mental health and SUDs. These deficits are exacerbated by challenges in service coordination to treat both conditions. In Ireland, despite implementation of a progressive mental health policy in 2006, there is ongoing concern that people struggling with addiction and mental health issues do not get the care they need (Mental Health Reform, 2016). The 2017–2025 National Drugs Strategy, *Reducing Harm, Supporting Recovery,* sets a goal to improve treatment for individuals dually diagnosed with mental health and substance use concerns (Department of Health, 2017).

The burden of both mental health and SUDs is great. According to the 2016 Healthy Ireland Survey, more than one-half of the population surveyed (52%) reported having experience with mental health problems (Ipsos MRBI, 2016). Ten per cent reported suffering from negative mental health, defined as a Mental Health Index-5[1] score of 56 or lower. For Ireland's population over age 15, it is estimated that 9% have a probable mental health disorder, make higher use of emergency and hospital services, and experience delays in accessing mental health services (Mental Health Reform, 2016). The estimated overall cost of poor mental health in Ireland is 2% of gross national product, equivalent to €4 billion (Mental Health Reform, 2016).

These reports of negative mental health are even more concerning in the context of rising rates of substance misuse. According to a 2014–2015 study in Ireland and Northern Ireland, commissioned by the National Advisory Committee on Drugs and Alcohol (NACDA) and the Department of Health, Social Services and Public Safety in Northern Ireland, lifetime usage of any illegal drug increased significantly from 27.2% in 2010–2011 to 30.7% in 2014–2015 among adults aged 15 to 64 years (NACDA, 2016). Similarly, among young adults aged 15 to 34 years, lifetime use increased significantly from 10.9% to 14% over the same period (NACDA, 2016). About one-third of individuals who misuse substances have co-occurring mental health conditions (also called dual diagnosis).

1 The Mental Health Index-5 is a tool used to assess mental health. Respondents self-report the extent to which they have 'been a very nervous person', felt 'downhearted and blue', 'worn out', 'tired', or 'so down in the dumps that nothing could cheer you up'. Scores are calculated on a scale of 0 to 100, with lower scores indicating greater psychological distress.

Despite increases in substance misuse, similar increases have not occurred in associated treatment (Irish Medical Organisation, 2015). Clinical training for physicians and mental health professionals generally provides only limited information on the identification and treatment of substance misuse. This lack of preparation manifests in a reluctance among providers to engage with patients around these issues (Ross *et al.*, 2015). Similarly, substance use treatment professionals often receive limited or no education in the identification and treatment of mental health conditions.

The co-occurrence of mental health and SUDs has been widely recognised and studied over the past 40 years (Flynn and Brown, 2008). Woody and Blaine (1979) first identified this association among substance use treatment clients who suffered from depression. However, despite numerous studies of specific mental health conditions and substance use, the nature of this co-occurrence remains unclear. What is known is that this relationship is complex, with unanswered questions around causality and if and how one may accelerate the progression of the other. Data from the United States of America (USA) and Australia show alcohol dependence increases an individual's odds of having concurrent affective or anxiety disorder threefold to fourfold (Baker et al., 2012). This dual risk is further exacerbated by the association between co-occurring alcohol and depressive and anxiety disorders with other negative outcomes such as suicidal ideation and poor social functioning (Baker *et al.*, 2012). However, a recent study by Farmer *et al.*, (2017), which tested for the relationships between co-occurring emotional disorders and first episode alcohol use disorder, found these to be co-occurring yet independent of each other.

For co-occurring mental health and SUDs, a preponderance of evidence suggests that patient outcomes are improved when treatment is integrated (McGovern *et al.*, 2014). Several models for integrating primary care and behavioural health services have developed and examples of best practices can be found around the world (World Health Organization and World Organization of Family Doctors, 2008). Models for integrating mental health and substance misuse treatment are more limited, but a number of examples have been identified and tested (Sterling *et al.*, 2011 (68); Torrens et al., 2012 (70)). Historically, tests of integrated treatment models were limited to controlled settings and yielded disappointing results and produced only limited evidence for adolescent and young adult populations (Drake *et al.*, 1998).

Understanding of best practice for integration across physical and mental health and substance misuse services is more limited, and there are even fewer studies of integration of socioeconomic support services for stabilisation of recovery. Clients with co-occurring conditions would benefit from providers with a thorough understanding of their needs and who can provide comprehensive care – from early identification to ongoing management during their recovery.

Despite knowledge of the co-occurrence of mental health and SUDs, and evidence that integrated treatment strategies are most effective, implementation of integrated treatment continues to lag. In a recent study in the USA of programme capacity to address co-occurring disorders, McGovern et al. (2014) found that only 18% of substance misuse and 9% of mental health treatment programmes met criteria for capability in the delivery of dual diagnosis services. Challenges to integration include not only provider education but also systemic conditions such as siloed funding and service systems, barriers to co-location of services, differences in insurance coverage, and limited knowledge of best practice for service integration. These factors and others often make it difficult to coordinate or integrate services.

Recent systematic reviews of effective treatments and approaches for co-occurring mental health and SUDs are limited by their focus on specific mental health conditions or substances. They do not respond to realist questions that unpack the context and mechanism characteristics that may serve as facilitators or barriers to achieving positive outcomes in providing integrated care for mental health and SUDs. Understanding these facilitators and barriers is especially important in healthcare settings, including Ireland's, where funding mechanisms for services and other administrative challenges may be at odds with ensuring equitable access to services. These characteristics must be considered in order to develop an in-depth understanding of what works for whom under what circumstances. A policy-friendly approach to evidence synthesis is required.

With the 2017–2025 National Drugs Strategy (Department of Health, 2017), there is a need for information to make significant progress on goals to integrate mental health and substance use services. To study how best to integrate these services, the HRB determined to employ a realist approach that would include engaging knowledge users experienced with integrated services. More information was

needed about implementation factors that improve integration and systems outcomes, and the effectiveness of treatment for co-occurring conditions. The realist approach provides a strategy to identify characteristics, or mechanisms, that affect the successful implementation and outcomes of evidence-based treatments, and their contexts. This study is likely to contribute valuable information in order to plan and implement integrated services throughout Ireland.

Objectives and focus of review

The overarching objective of this rapid realist review is to support Ireland's new National Clinical Programme for Mental Health (Health Service Executive, 2017) to address dual diagnosis by providing essential information needed to develop joint protocols between mental health services and drug and alcohol services. This will facilitate integrated care planning and management in line with the National Drugs Rehabilitation Framework (Doyle and Ivanovic, 2010), and objective 2.1.24 of Ireland's 2017–2025 National Drugs Strategy (Department of Health, 2017): 'Improve outcomes for people with co-morbid severe mental illness and substance misuse problems'. To meet these objectives, this review focused on answering the following three research questions:

» What interventions improve treatment and personal functioning outcomes for people with co-occurring substance use and mental health problems and in what circumstances do they work?

» What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?

» What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?

Methodology

To answer the research questions, a rapid realist review was conducted. As described by Pawson *et al*. (2005), a realist review serves as a logic of enquiry that seeks to explain rather than judge. Further, it learns from real-world contextual factors rather than trying to control them. For each idea, reviewers seek out the contextual influences that are hypothesised to have triggered the relevant mechanism(s) to generate the outcome(s) of interest. Synthesis consists of comparing 'how the programme was supposed to operate' to the 'empirical evidence on the actuality in different situations' (Wong *et al.*, 2013).

Access to effective services for individuals impacted by co-occurring mental health and SUDs requires immediate attention, and evidence of what works, for whom, and under what circumstances is needed to provide knowledge users with the in-depth, contextualised understanding required to improve outcomes for people with comorbid severe mental illness and substance misuse. Use of a rapid realist review for this study preserved the core philosophy of realist reviews, while also prioritising the time-sensitive need for the results of the study (Saul *et al.*, 2013).

The planned review process included a broad search of the literature across all research questions. However, due to the large volume of literature returned in early searches across multiple databases, overlapping search results, and the rapid nature of the study, the focus was limited to one database, PsycINFO, for the first two research questions.

The project included two occasions to learn from and share information directly with knowledge users (providers and service users) in Ireland. Given the opportunity to interact with a larger-than-planned number of people, these activities took on an expanded scope. This ultimately benefited the review by gaining greater insight from those directly involved with services. Emphasis was placed on co-production[2] (Social Care Institute for Excellence, 2013) and locally informed planning. So, consistent with Saul *et al.*'s (2013) recommendation for a rapid realist review, a small local advisory group was invited to provide periodic input to the project. However, the invited expert advisers were engaged less frequently than anticipated given conflicting schedules and logistical challenges posed by working in multiple time zones. This issue was also identified by Saul *et al.* (2013) as a challenge for rapid reviews.

Rationale for using realist synthesis

The HRB seeks to contribute to the development of a standardised, evidence-based approach to the identification, assessment, and treatment of comorbid mental health and SUDs. Building this evidence-based approach is complex and requires an iterative approach that bridges multisectoral parties' knowledge and experience with diverse evidence types. In addition, there is a desire for a speedy translation of research to practice, as this is a part of a multiphase project.

2 Co-production involves decision-makers, practitioners, and/or professionals working as equal partners and co-creators of solutions with citizens, including users of services and their families.

The HRB chose (and the Georgia Health Policy Center affirmed) the realist synthesis method for this review given the goal of gaining an understanding of why some interventions work (or do not work) for some people with dual diagnosis and under what conditions. To answer the question of why a programme works, it is necessary to employ a theory-driven approach to evaluating the literature. The realist synthesis approach can help unpack complexity by uncovering the mechanisms that lead to particular outcomes and the contexts within which these outcomes occur. Such a theory-driven explanation is the desired output of this review.

Process overview

The rapid realist synthesis included the necessary components to begin to build the evidence-based approach in order to identify, assess, and treat comorbid mental illness and substance use (Greenhalgh *et al.*, 2011; Shé *et al.*, 2018; Willis *et al.*, 2014). The process recognised the complexity of the real world with an iterative approach that included the engagement of those working with and using the theory-driven interventions and programmes. Multisector partners included service users, mental health and substance use providers, and policy-makers. The evidence synthesis included diverse information from both academic and practical literature, as well as information gathered from stakeholders. The rapid synthesis offered the means to provide timely evidence to support the desire for a speedy multiphase process. While a more detailed description of the rapid realist synthesis process follows, Figures 1–3 provide an overview.

Figure 1: Process part I – informing the search

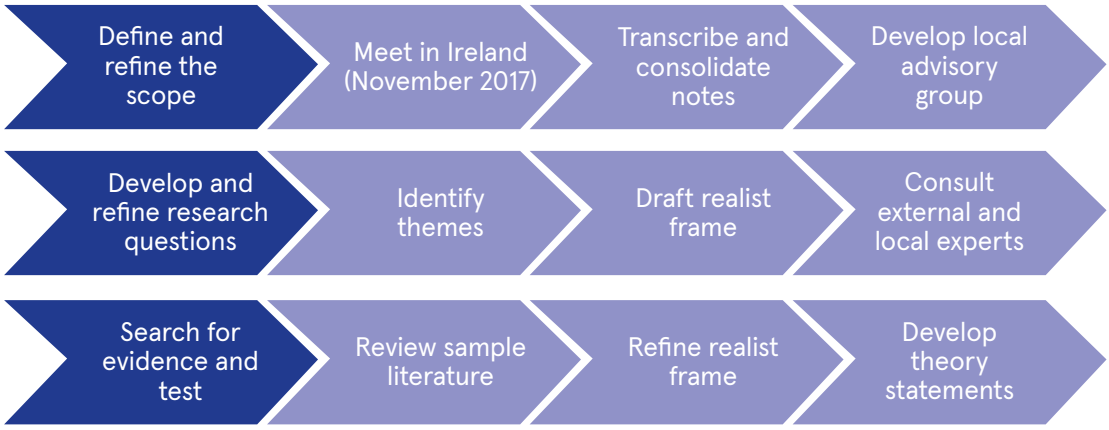


Figure 2: Process part II – conducting the search

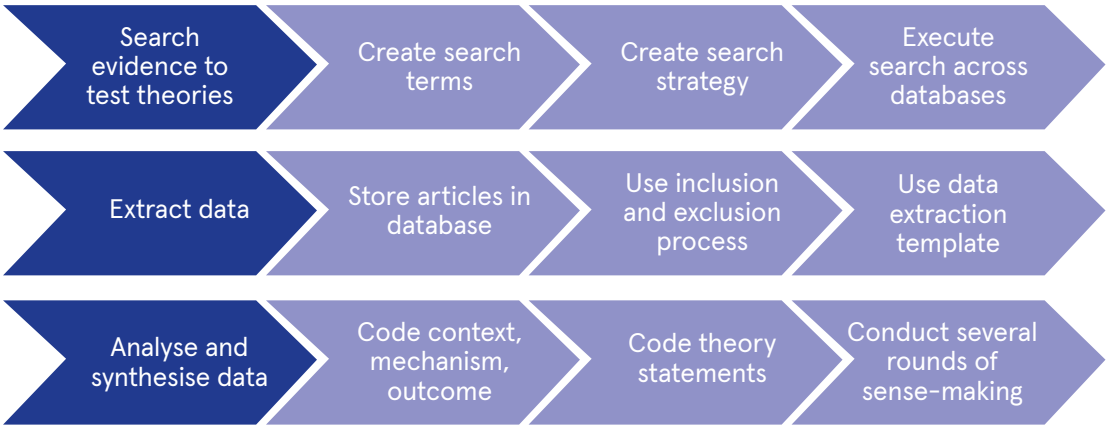
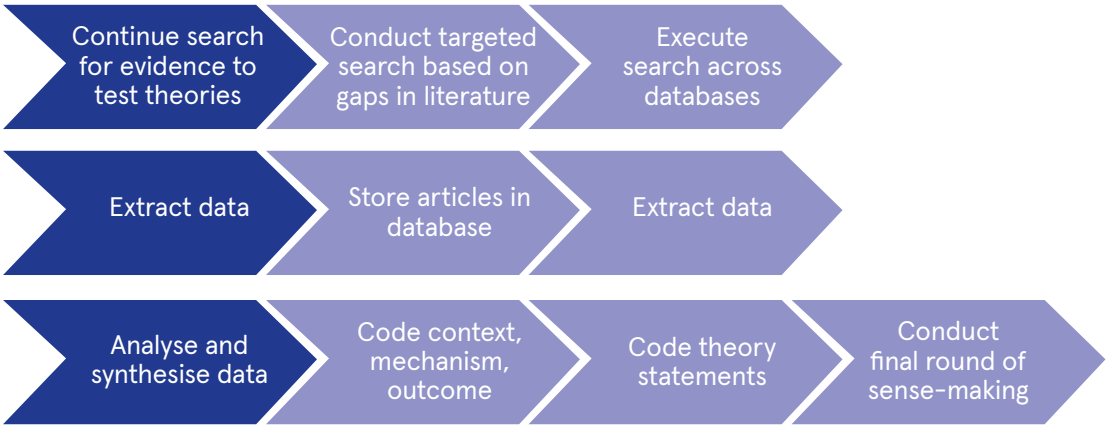


Figure 3: Process part III – finalise search and analysis



Defining the scope

The scope of this rapid realist review was developed through a high-level review of relevant literature and early engagement of knowledge users in Ireland. The first steps included a review of the National Drugs Strategy (Department of Health, 2017) and dual diagnosis articles identified by the HRB. This provided insight into the spectrum of literature, a framework for the full search, and the development of the research questions with a focus on potential goals for use of findings. The reviewed literature spanned systematic reviews, meta-analyses, qualitative and quantitative research, and methods papers. Research topics included co-occurrence of substance misuse and specific mental health concerns (e.g. anxiety, depression, schizophrenia, autism, suicide), treatments (e.g. psychosocial, pharmacological, technology-based, therapeutic communities), settings (e.g. inpatient, outpatient, emergency departments), and adult and youth populations.

Knowledge users in Ireland, including both drug and alcohol treatment providers and service users at a Recovery College, provided information on their experiences to inform the scope of the rapid realist review and refinement of research questions. The treatment providers included representatives from the drug and alcohol task forces, a psychiatrist, and a partnering mental health provider collaborating to implement dual diagnosis services.

The meeting with a group of 18 drug and alcohol treatment providers from across Ireland introduced the project and realist methods and generated their insights through a series of activities. Participants shared their service experiences, identified research areas of interest and uses for study findings, and reflected on desired future conditions for addressing the needs of dual diagnosis clients. Twelve service users with dual diagnosis, engaged with a Recovery College, participated in a two-hour guided group discussion, sharing insights about their experiences and recommendations to meet the needs of persons with co-occurring conditions. No personally identifying information was collected from participants.

Research question refinement

The HRB's request for tender proposed three research questions to guide the realist synthesis. Keeping in line with the realist approach, the research team used an iterative process for question refinement to ensure that they accurately reflected the needs of the knowledge users, including providers and users of dual diagnosis services in Ireland.

Research question refinement began during the first set of meetings with knowledge users in Ireland in November 2017. Discussions with representatives of the drug and alcohol task forces and individuals with lived experience were facilitated by the research team to gather feedback about the proposed questions – what additional questions should be asked, what was missing, and what changes should be made? Detailed notes of these discussions taken by two core members of the research team were later consolidated to create one comprehensive document available to the full team.

The consolidated notes were then reorganised to pay attention to context and mechanism, plus additional areas of interest to the knowledge users. This was done for each of the three research questions to further facilitate the refinement process. Patterns and themes emerged within each research question. The research team discussed the identified patterns and themes during a follow-up telephone meeting with the HRB and the local advisory group, at which time additional insight was gained, feedback was incorporated, and the research questions were finalised. See Table 1 for the finalised research questions and sub-questions.

Table 1: Final research questions and sub-questions identified by knowledge users

Research question 1: What interventions improve treatment and personal functioning outcomes for people with co-occurring substance use and mental health problems and in what circumstances do they work?
Sub-questions identified: » How does prison policy influence or impact individual and service delivery? » What role should family members take to improve treatment outcomes and wellbeing of clients? » What resources are required to implement effective dual diagnosis integrated services? » What infrastructure is needed to support that?
Research question 2: What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?
Sub-questions identified: » How do we gather data around services provided to individuals with dual diagnosis? » What are best practices for integrated service delivery? » What are best practices (policy level, service level) for meaningful participation? » How do we make integrated programmes and supports safe and accessible for clients with dual diagnosis? » How do we make it safe for the clients to engage? » What upskilling is needed within services to allow provision of dual diagnosis support? » What personal, familial, community, and national factors help a person reach and sustain recovery? » Why and how does helping clients understand and cope with their substance use and mental health at the same time in the same care plan help them recover?
Research question 3: What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?
Sub-questions identified: » How do values play a role in delivery of interventions? » How do you shift values? » What values should be evident? » How to reduce/change stigma (with public awareness)? » What baseline training is needed for staff to be confident working with individuals with dual diagnosis? » How can general practitioners be prepared?

The themes and patterns gleaned from mining the data used during the research question refinement process were later used to cross-check and validate search terms and parameters developed to guide the literature search. Additional information about contexts and mechanisms identified by the knowledge users is located in the Results section as follows.

Theory identification and refinement

Co-production guided the process at the first meetings in Ireland. Throughout all of these meetings, detailed notes were taken in an effort to identify and draft theory statements that would guide the realist review. The Georgia Health Policy Center research team consolidated and organised the notes from these in-depth discussions with the participating knowledge users to draft theory statements. These transcribed notes were organised based on each of the discussions and activities facilitated with the groups. The research team then carried out thematic analysis of this initial dataset of notes to generate 10 theory statements that ultimately informed and guided the literature search, data extraction, and analysis processes. The 10 theory statements were brought back to the knowledge users for revision, validation, and finalisation (see the following section). The final theory statements are presented in Table 2.

Table 2: Final theory statements

Final theory statements	
Number	**Theory statement**
1	Integration of existing services, particularly community-based services, supports access to care and minimises barriers faced with creation of new service lines.
2	Integrated treatment requires training and cross-training of substance use and mental health service providers at multiple levels.
3	Improved coordination between providers (substance use, mental health, and primary care) will break down administrative silos and improve access to timely diagnosis, care, and treatment.
4	Services must be tailored to the local context and the individual's needs and circumstances to be most effective.
5	Including service users and families in service and care decisions results in better outcomes for individuals and their families.
6	A knowledge of local efforts already in place and co-production with service providers and individuals with lived experience is needed to develop practice-informed strategies and policies that take known facilitators and implementation challenges into consideration.
7	Resources (financial and otherwise) must accompany strategy and policy to enable integration and improve service delivery and individual outcomes.
8	When treatment takes a holistic view and includes housing and social supports, individual outcomes are improved.
9	A holistic model to mental health is needed to improve mental health outcomes, particularly among individuals with co-occurring mental health and substance use disorders.
10	Peer support facilitates recovery and positive outcomes for individuals with co-occurring mental health and substance use disorders.

Searching processes

A two-round iterative search process led to the final set of articles reviewed in this realist synthesis. The search process, including identification of search terms and databases, was informed by an appraisal of the following initial documents:

- The funder's request for tender, to ensure that the search yielded information appropriate to the needs of the HRB.
- Meeting notes from the research team's November 2017 visit to Ireland, to understand what knowledge users and various stakeholders needed from the synthesis.
- The three refined research questions and sub-questions of interest to the knowledge users, to ensure that the appropriate evidence was gathered for the review from the appropriate sources.
- Additional research questions and themes of interest identified by knowledge users, to ensure that evidence related to these interests was also gathered.

From review of these initial items, 272 key search terms were developed across 25 relevant content areas. The research team then engaged an information specialist to narrow the search terms and execute the first round of the searching process. For Round 1, the searching was carried out by each research question. For research questions 1 and 2, only the PsycINFO database was searched for articles to be included in analysis, due to the wide scope of the questions. Searches also were tested on multiple databases (e.g. MEDLINE, CINAHL, Global Health, Health Management, Web of Science) to understand the type and volume of literature returned, and alignment with the questions of interest. These searches yielded mixed results. Limiting the search for these questions to only one database was needed to control the number of articles returned to align with the rapid timeframe of the review. PsycINFO was selected in consultation with the information specialist as the most appropriate database to answer research questions 1 and 2, given the behavioural health treatment focus and time restrictions. For research question 3, the PsycINFO, MEDLINE, CINAHL, and Academic Search Complete databases were searched. This approach was needed due to the limited literature specific to dual diagnosis models of care, as well as the existence of global efforts to develop and implement such models. See Appendix 3 for specific syntax used to execute each search.

Round 1 of the search process occurred during March 2018. The searches were limited to results published between 1998 and 2018 that were written in English. The articles returned across the three research questions were geographically diverse, and the search did not restrict articles by any geography. The articles were quite diverse in their methodology, so no exclusions were made based on research methodology. For example, some of the studies included in the synthesis were of an experimental design, while others were quasi-experimental cross-sectional or longitudinal studies, or prior systematic reviews related to the present study. An article was excluded from the review if its focus was unrelated (e.g. the population studied was under 13 years of age) or if the article was not readily accessible. For this rapid review, because of the broad spectrum of the research questions and knowledge users' interests, a cap of 30 articles per research question was set. All articles returned in a search were scanned for relevance to the research question and the diverse populations and settings identified by knowledge users. Articles were chosen, first, for their relevance to the research question, but, whenever possible, content related to knowledge users' supplemental interests (e.g. homelessness, women, trauma, prisons) was included. Articles were not deliberately chosen for their focus on these areas but were included if they addressed the research question. As shown in Appendix 3, no additional searches specific to the knowledge users' interests were conducted. This was because a sufficient spectrum of articles that included these interests were returned by the searches and met inclusion criteria. Effort was made to limit inclusion of multiple articles by the same authors or about the same studies to maximise inclusion of diverse conditions.

For research question 1, only articles that addressed mental health and substance use treatment in the title or abstract were chosen. For research question 2, articles chosen addressed integration of programmes and services, including also primary care. Search results for research question 3 were first scanned for those that addressed integrated dual diagnosis models of care. Additional articles were selected to broaden the final set to include other models and contexts for delivery of integrated care. Across all questions, articles that focused on factors peripheral or unrelated to the specific question – such as those addressing instrument development,

methods, healthcare costs, physical illness outcomes, surveys, prevalence, and factors related to co-occurrence of mental health and substance use conditions – were excluded.

Once the data extraction and analysis of the articles from Round 1 was complete, the research team recognised several gaps in the literature. Gaps were identified in the following areas:

» Studies conducted in Ireland

» Peer support

» Consumer, client, service user, and family inclusion in service and care decisions

» Knowledge of local efforts and recognition of service providers and individuals with lived experience as experts.

After conversations and engagement with the knowledge users during the second round of in-person meetings to review initial findings (see Round 2 below), a supplemental literature search was deemed necessary to ensure that the findings of the review met the needs of the stakeholders.

Appendix 3 includes the complete syntax for the searches executed in Round 2. For the second round of searching, the PsycINFO, MEDLINE, and CINAHL databases were utilised. Round 2 occurred in May 2018. The lead subject matter expert on the research team pulled a purposive set of articles to adequately address the gaps identified following Round 1. Given time constraints and other limitations to further search and review, a sampling of 10 articles per content area (Ireland-specific [for each research question], peer support, consumer/family inclusion, and lived experience) was employed. Although this small number of articles could not fully represent all research in these areas, the subject matter expert sought to choose research articles that were representative of issues in the field, were immediately available, and were not duplicative of the same studies. Because this project was conducted specifically for Ireland, it was considered important to include studies addressing the Irish health system or interventions in Ireland, in addition to studies conducted in other countries already included in the review.

Selection of articles was not driven by research validity criteria for each study or positive intervention outcomes, and instead included various types of studies to provide insight into context, mechanism, and outcome (CMO) configurations from quantitative and qualitative sources, rather than focusing on specific intervention outcomes. A full list of reviewed articles can be found in Appendix 5. When cited the text, these reviewed articles are referenced numerically. The citation numbers for articles with positive, negative, or neutral outcomes can be found in Appendices 6, 7, 8, and 9.

Following both rounds of data extraction, the findings were entered into the research team's online database (EPPI Reviewer software) for synthesis. Coding trees mirrored the data extraction template (Appendix 4) and allowed the team to electronically tag each paper reviewed in the synthesis for CMO and theory, as well as other supplemental information.

Data extraction

The data extraction template (Appendix 4) was created to facilitate uniform retrieval of a common set of data elements from each article included in the synthesis. This template helped to ensure a level of consistency among reviewers by providing definitions of context and mechanism and instructions for tagging text from included articles. Reviewers included members of the research team, and experts in behavioural health, public health, and health systems employed at the Georgia Health Policy Center.

Data extracted for context focused on the pre-existing characteristics of the individuals, localities, situations, and systems of interpersonal and social relationships in which the intervention occurred. Data extracted for mechanism included the intervention and anything about the individuals, resources, and actors that might help to explain why the intervention worked or did not work. Examples of mechanisms were given to reviewers to ensure consistency. These examples included implementation factors such as satisfaction, acceptability, feasibility, collaboration, retention and attendance, and environmental factors.

A preliminary test of inter-rater reliability for data extraction was conducted in December 2017 using a subsample of the literature identified by a content expert. This test resulted in enhancements to the data extraction template and informed the sense-making processes carried out throughout the review.

Following the data extraction test, two full rounds of data extraction took place. The first round extracted data from relevant articles across all three research questions and the theory statements. The second round of data extraction occurred from the content-specific articles identified in response to literature gaps from Round 1 of the search. The second round of data extraction focused independently on Ireland-specific literature relevant to each of the three research questions, and articles focused on the three theories that were not prominently identified in the Round 1 search: inclusion of individuals and families in service and care decisions (theory 5), knowledge of local efforts in place and recognition of service providers and individuals with lived experience as experts (theory 6), and the role of peer support (theory 10). A high-level summary statement was developed for each theory statement, based on the literature aligned with that theory, to share results with the knowledge users. The results of the data extraction by theory statement can be found in Appendix 6, and for each research question in Appendices 7, 8, and 9.

Verification with knowledge users

The second set of meetings with knowledge users occurred in May 2018. These meetings served to obtain input on findings from providers, who were a subset of those who attended the first set of meetings, and service users, who were a mix of those attending the first meeting and others involved with the Recovery College. Additionally, this second round of meetings provided the opportunity to meet with key policy-makers. Each of these meetings was used to obtain input on the theory statements and summaries of what was found in the literature, high-level findings from the literature review, and recommendations for dissemination of findings. Exercises to facilitate discussion were used with providers and service users, and policy-makers participated in more general discussions guided by the same information about the theory statements and findings. These meetings confirmed that the theory statements sufficiently covered key issues with minor refinements, affirmed the importance of needing more information in areas where the first round of the literature review did not return sufficient results, as described above, and highlighted the importance of policy relevance of the study.

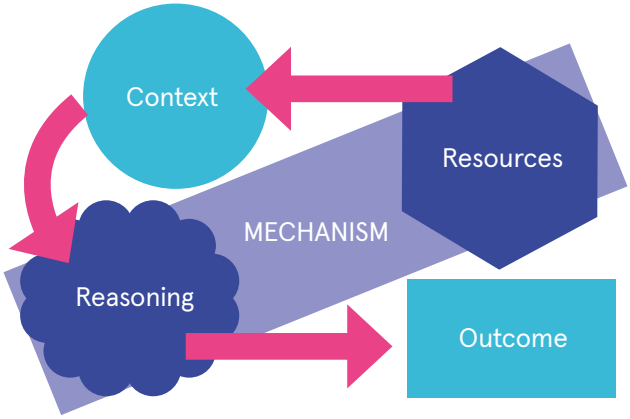
Data analysis and synthesis

Data analysis and synthesis of the final set of articles included in the review was informed by the realist synthesis steps outlined by Rycroft-Malone *et al*. (2012: 6–7). Data analysis began by organising the data collected utilising the data extraction form into EPPI Reviewer software. The software enabled the research team to systematically code all articles included in the review, as well as rapidly retrieve the CMO codes throughout data analysis. Across articles, reviewers paid particular attention to common themes in both the context and mechanisms present in the literature. These themes were then compared across articles and formulated into appropriate chains of inference.

Throughout the stages of data analysis and synthesis, reviewers participated in iterative sense-making sessions. These sessions allowed each reviewer to provide concise summaries of the CMOs and emerging patterns and themes found in their reviewed articles and to describe whether the articles addressed the identified theories. The information presented was discussed by the group, and common patterns were recorded on a whiteboard and aligned as each article was presented in each session. A core member of the research team took detailed notes to support the identification of themes and patterns across reviewers and content-relevant articles for each research question.

An important aspect of realist methods and of this realist review is mechanism. With the mechanism, researchers try to understand the how and why of what works for whom in what circumstances. Our conceptualisation and subsequent analysis of mechanisms was driven by Dalkin *et al*. (2015), who describe a mechanism as having two components. One is the *intervention*, which refers to the *resources that are applied to the context*. The second component of mechanism, according to Dalkin *et al*. (2015), is the *reasoning that is triggered by that combination of the resources and context*. This dynamic is depicted in Figure 4.

Figure 4: Context–mechanism–outcome configuration



Source: Dalkin SM, Greenhalgh J, Jones D, Cunningham B and Lhussier M (2015) What's in a mechanism? Development of a key concept in realist evaluation. *Implementation Science*, 10: 49.

The analysis of the literature included a deep exploration of each article's mechanisms – the resources (interventions), the reasoning, and the combination of the two – for each of the three research questions and key outcomes associated with the 10 theory statements.

Results

The following section presents the results of the rapid realist review. It begins by summarising the wisdom shared during the meetings with knowledge users and content experts. This is followed by the results of the literature search; the findings for each of the three research questions within the realist CMO framework; and the synthesis of these findings to extract patterns of contextual relationships of mechanisms and interventions and their relevance to outcomes.

Wisdom discovery findings from knowledge users and content experts

The findings in this section stem directly from the knowledge users and content experts. The co-production process resulted in rich information about the contextual factors and mechanisms relevant to each research question from the perspective of the knowledge users. These learnings are reported by research question as follows.

Research question 1: What interventions improve treatment and personal functioning outcomes for people with co-occurring substance use and mental health problems and in what circumstances do they work?

Relevant contextual factors:

- The influence of prison policy on individuals and services
- Client circumstances and risk and protective factors
- Community factors
- Inclusion of youth
- Lack of services in some areas
- Cultural differences and social determinants such as poverty and other inequalities.

Relevant mechanisms:

- The role of families in treatment outcomes
- Resources required for effective services
- Infrastructure requirements
- The roles and tasks of service providers
- Staffing practitioners with experience in dual diagnosis across service lines
- Empowering people who have lived experience
- Access to services at any time, like emergency services
- Continuum of care and aftercare
- Interagency coordination.

Research question 2: What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?

Relevant contextual factors:

- Addressing the needs of children and young people, as well as adults
- Positive system outcomes, as defined by the client.

Relevant mechanisms:

- Case management
- The involvement of general practitioners
- Gender-specific and gender-sensitive services.

Research question 3: What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?

Relevant contextual factors:

- Children and young people as well as adults
- The role of values in intervention delivery
- The role of stigma
- Governance and oversight from psychiatric services
- Expansion of what works
- Collaboration, with addiction and mental health working together and with a shared understanding.

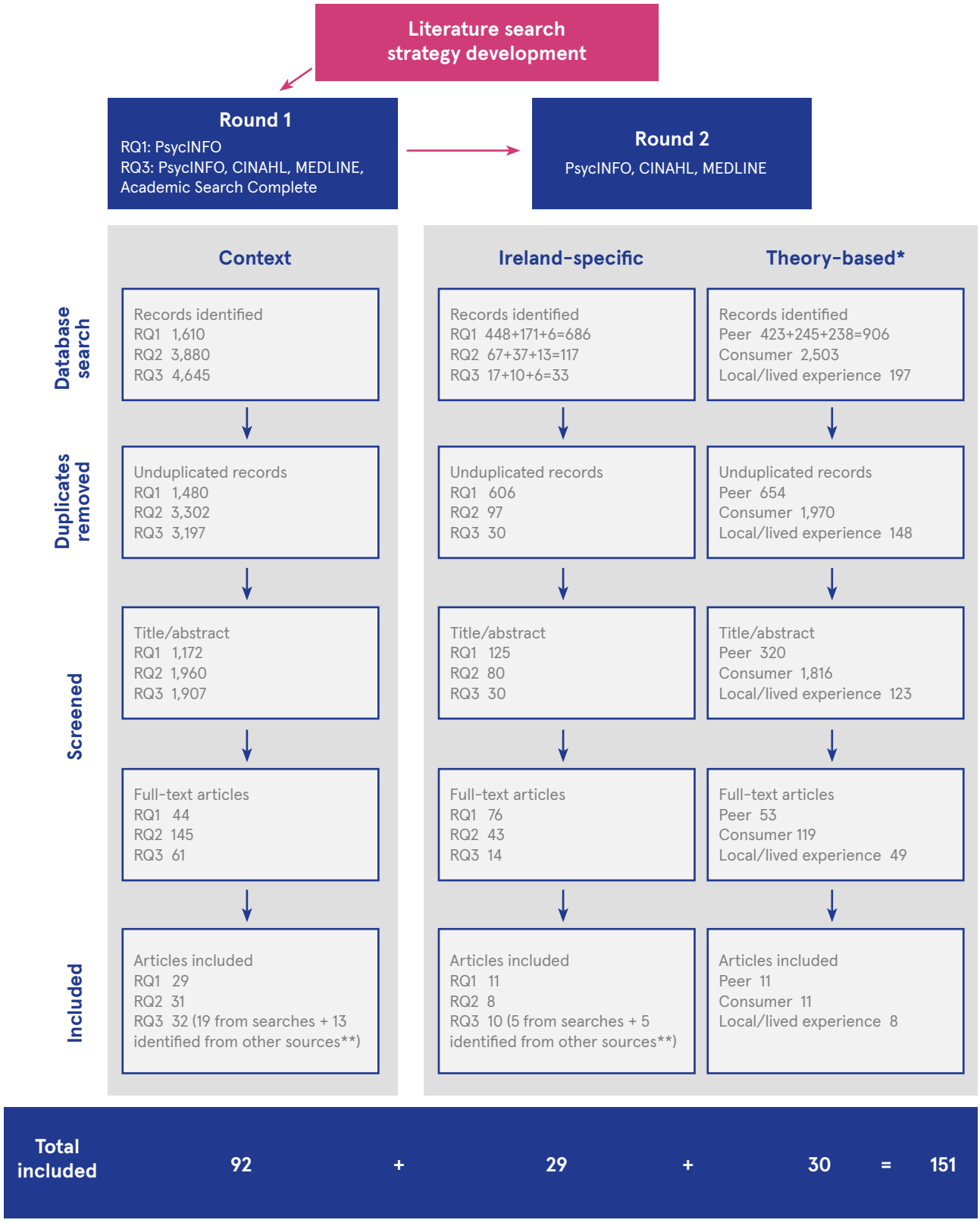
Relevant mechanisms:

- Staff and general practitioner training.

Literature search: Document flow

Figure 5 shows the results of the database literature searches performed in Round 1 (for each of the three research questions) and in Round 2 (Ireland-specific searches for the three research questions and theory-specific searches where the Round 1 literature was weak: peer support, consumer collaboration, and lived experience). The figure details the number of articles identified at each stage of the search, including Round 1 and 2 database searches, removal of duplicates, reduction by title and abstract content (screening), and those ultimately included in full-text review based on the criteria described in the methods section. The searches used to generate these results are provided in Appendix 3.

Figure 5: Database literature searches



RQ = Research question

* The second round of data extraction focused on Ireland-specific literature across all three research questions and additional articles that focused on three theories that were not prominently identified in the first round. These theories included:

- Theory 5: Including service users and families in service and care decisions results in better outcomes for individuals and their families.
- Theory 6: A knowledge of local efforts already in place and co-production with service providers and individuals with lived experience is needed to develop practice-informed strategies and policies that take known facilitators and implementation challenges into consideration.
- Theory 10: Peer support facilitates recovery and positive outcomes for individuals with co-occurring mental health and substance use disorders.

** Other sources include research question searches, references, and related articles identified while conducting each search.

Document characteristics

Round 1 of the review yielded 92 articles aligned with the three research questions. In Round 2, 59 articles specific to peer support (n=11), local and lived experience (n=8), co-production (n=11), and research in Ireland across the three research questions (n=11, 8, 10, respectively) were added and coded to align with Round 1 research question coding.

The 151 articles selected for review included 118 empirical studies (n=22 randomised trials, 48 programme evaluations, 15 longitudinal analyses, 39 qualitative studies, 14 other), 16 syntheses or reviews (n=11 systematic reviews, 4 literature syntheses, 1 other), 16 brief reports, and 1 commentary. Research question 1, 2, and 3 articles, respectively, included empirical studies (n=47, 41, 32 articles), reviews (n=3, 1, 12 articles), reports (n=6, 4, 6 articles), and 1 commentary (question 3). Methods employed across questions 1, 2, and 3, respectively, included randomised trials (n=8, 10, 4 studies), programme evaluations (n=15, 17, 17 studies), qualitative studies (n=17, 12, 12 studies), mixed methods (n=3, 3, 3 studies), longitudinal analyses (n=7, 4, 4 studies), and systematic reviews (n=3, 1, 7 studies). Question 1 also included 2 cross-sectional studies and 1 pilot study.

Main findings

Literature synthesis by research question

A first round of synthesis by research question distilled information from the literature into tables and coded it in EPPI Reviewer by context, intervention, mechanism, outcome, and evidence of relevance to the theory statements. Identification of interventions at this level was focused on the key area of each research question: 1) treatment, 2) integration, and 3) models of care. Mechanisms identified at this level were those examined or referenced in the literature as related to results specific to these interventions. It was found that the mechanisms that surfaced were often aligned with the theory statements identified by the knowledge users. This first level of organisation of mechanisms therefore focused on the theory statements, allowing also for other mechanisms not aligned with these to be identified.

The review, extraction, sorting, iterative review, and distillation of the literature by research questions and each article's CMOs and theory alignment became a critical step in moving from the content of the literature to recognition of CMO patterns. The articles aligned with the research questions in these content areas and subdivided by types of contexts, interventions, mechanisms, outcomes, and theories are located in Appendices 7, 8, and 9. Articles aligned with each theory statement are found in Appendix 6. The complete results of the first level of synthesis by research question, including details about the contexts found in the literature, which are not included in this summary by research question, are located in Appendices 10, 11, and 12.

Research question 1: What interventions improve treatment and personal functioning outcomes for people with dual diagnosis of addiction and mental health problems and in what circumstances do they work?

Research question 1 focuses on **optimum treatments and individual outcomes**. The sub-questions identified by knowledge users identified nuances related to multiple levels of integration, and by theory statement. At the policy level, factors include resources required to implement integrative structures, the infrastructure needed, and other specific issues like prison policy. Organisational factors include interagency collaboration, staffing, continuum of care, hours of operation, and availability by region. Specific treatment questions were related to types of treatment, tailored treatments, and medication. There were also questions about more community or bottom-up approaches. Individual factors include age groups to be explored and the role of families in treatment.

Interventions

The literature identified six different interventions that improve treatment and personal functioning for individuals with a dual diagnosis. These interventions are cognitive behavioural therapy (CBT) (4, 5, 9, 11, 17, 22, 27, 29), intensive case management (ICM) (6), day treatment centres and residential programmes (2, 3, 7, 10, 12, 18, 23), dialectical behaviour therapy (DBT) (8), Integrated Dual Disorder Treatment (IDDT) (14, 15, 25), and general interventions that occurred in the outpatient or primary care setting (1, 13, 16, 24). Details about the studies examining these interventions are located in Appendix 10. Additional information about treatment interventions across all of the literature can be found in Appendix 13.

Mechanisms

The mechanisms identified at this level were organised around training (11, 13, 25, 120); coordination of mental health, substance use, and primary care (2, 4, 6, 12, 13, 27); care tailored to individual needs (2, 3, 5, 6, 7, 11, 22); client–provider relationships (10, 11, 12, 125, 130); holistic approach (housing and whole-person support) (10, 19, 23, 28); peer support (8, 9); and other cross-cutting mechanisms. Additional barriers – including stress and stressful life events, serious physical illness, unemployment, complex multiple drug use, and unescorted leave (25, 120, 121, 122) – and enablers of recovery – including comprehensive programmes with medication (123), retention in treatment programmes (9, 29), supportive care environment, client motivation, and incentives such as parole requirements and pay-for-clean-urine-supported recovery – were identified. Because retention in treatment programmes was associated with better outcomes, mechanisms that promote consistent participation over time have high leverage for recovery.

Outcomes

High-level treatment and individual outcome themes that emerged in the sense-making process were as follows:

- Tailoring to individual needs is crucial.
- Outcomes align with the type of treatment implemented.
- Adaptability in the service delivery is needed.
- Programme modifications need to be made to address the issues that might be pressing at different times.
- Meeting people where they are is necessary.
- Brief treatment can be helpful – particularly with alcohol.
- Individual motivation and commitment is important.
- A Relationship (trust) between client and provider is beneficial.
- Technology may be helpful (web-based modules, telephonic support).

Review of treatment and individual outcomes from research question 1 revealed several patterns. The mechanism of participation in treatment is important (95, 98). Across various treatment approaches, treatment engagement had a constant association with recovery. Across the studies, engagement in treatment was enhanced when family members were involved (93, 94, 97, 149). The importance of hope repeatedly surfaced both in various approaches from family members and with the use of peers (112). Peer support was also associated with recovery, empowerment, and self-efficacy (110, 111, 113).

Other outcomes from the literature that may prove helpful in evidence-based programme development include the following:

- Dual diagnosis programmes are associated with improved treatment engagement, mental health, and family cohesion, and reductions in mood disorders and craving alcohol and drugs (93, 123).
- Brief interventions are associated with reductions in drinking (22).
- Regular short outpatient group interventions can improve functioning (27).
- A recovery model is associated with increased confidence (130).
- Participation in a modified therapeutic recovery decreases hospitalisation and increases employment (3, 114).

Research question 2: What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?

This research question focuses on the characteristics of efforts to integrate mental health and substance use programmes or services that led to success across service systems. Knowledge users in Ireland described six dual diagnosis programmes in different communities (Waterford, Limerick, Cork, Clondalkin, Kilkenny, and Dublin) that engaged in locally driven integration efforts across the drug and alcohol task forces, mental health or psychiatric services, and/or a Recovery College. Knowledge users specifically identified local initiative and professional risk-taking, training and cross-training, communication and record sharing, developing a shared language across providers, breaking down professional prejudices and institutional barriers, co-production of programmes and treatment plans with service users, and fully integrating peers. Some of the frustrations experienced included budget constraints, lack of recognition of locally successful efforts, bureaucratic delays, insufficient community-

based resources, and challenges with general practitioners. The literature addressed many of these examples and identified additional mechanisms relevant to systems change (see Appendix 8 for details).

Interventions

The intervention at this question level was **integration**. At the treatment level in these articles, integration primarily addressed the addition of one treatment to another treatment, incorporation of an approach into a new environment, or developing skills of a provider to identify and potentially address mental health and substance use treatment needs. Treatments implemented included integrated CBT (33, 39), 12-step facilitation (33), acceptance and commitment therapy (134), computer-based alcohol brief interventions in emergency rooms (43), contingency management (CM) (45), mindfulness-oriented recovery enhancement (37), modified therapeutic community in prison (41), outpatient (54), Double Trouble in Recovery (DTR) (47), inclusion of a drug liaison midwife in obstetric care (133), enhanced community-based psychiatric and substance use services (52), pharmacotherapy (132, 133, 135), and the Strengthening Families Programme prevention intervention, which was implemented by interagency collaboration in Ireland, showing effectiveness in reducing substance use (138).

Mechanisms

Efforts to integrate traditionally and institutionally separated services, including physical health, mental health, substance use, and community support services, surface the organisational, educational, attitudinal, philosophical, and other factors that define each silo. The mechanisms that define these silos and those that facilitate the building of bridges between silos provide insight into the implementation factors relevant to successful and sustainable integration.

Mechanisms identified in these articles were integration characteristics (30, 31, 34, 42, 51, 55); provider and staff training and motivation (30, 31, 34, 35, 36, 38, 39, 42, 55); recovery self-management, empowerment, and motivation (31, 32, 33, 41, 47, 50, 106, 131); programme and treatment characteristics (32, 40, 41, 45, 46, 50, 51, 52, 131, 134); care tailored to individual needs (46, 50, 54, 136); client characteristics (33, 34, 49, 138); continuity of care and transition navigation (42, 59, 136, 137); local and cultural adaptation and implementation (35, 55, 59, 138); collaboration and coordination (36, 48, 138); organisational and systems change (36, 44, 55, 56, 57); resources (36, 38, 56, 57, 60); holistic whole-person support (37, 47, 50, 51, 53, 60, 137); peer support (109, 118); positive environment, orientation, and relationships as recovery facilitators (37, 49, 53); access to care (53, 60, 135, 137); and co-production (99, 101, 151, 153).

Outcomes

Outcomes of integrating programmes and services generally fell into the following categories:

- Engagement with treatment improved and access-to-care barriers decreased, which can lead to better client outcomes.
- Improvements in treatment outcomes occurred, but integration of services does not necessarily improve both mental health and substance use outcomes. Treatments may not have addressed all care needs of individuals as efforts were focused on integration.
- Integration improves linkage between programmes and services and continuity of care, reduces treatment gaps, and promotes socioeconomic stability addressing housing, employment, and other community needs.
- Greater valuing of integration by staff and comfort and skill with mental health and substance use needs can improve outcomes.
- Organisational factors such as leadership, resources, climate, accreditation, and public funding improves the likelihood of coordination of services.
- Policies, fiscal constraints, and treatment philosophies affect decisions regarding integration of services.
- Monitoring and addressing quality can impact outcomes, including mortality.
- Organisations can improve capability for integration with technical assistance and implementation support.

Research question 3: What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?

There are several identified models of care for delivering more than one type of service, particularly for integration of mental health and primary care. Three broad treatment models are 1) parallel, where services are delivered simultaneously by different providers; 2) sequential, where one treatment follows the other; and 3) integrated, where treatments are delivered together by an integrated treatment team (70). An Australian evidence review, published in 2015 (NSW Ministry of Health, 2015), summarised the limited literature on models of care for dual diagnosis and makes recommendations for implementation at the intake, treatment, workforce, discharge, and evaluation levels.

In any of these models, implementation may differ according to staffing, shared client records, payment, collaborative activities, etc. Different types of issues and challenges arise with each, such as lack of coordination of treatment in parallel models; lack of treatment of one condition while the other is treated in sequential models; and challenges with payment in integrated models when infrastructure does not support billing needs. Other models of care that may intersect with these include referral, stepped care, early intervention, chronic disease models that have a continuum of care, and location-based models including residential, community care, office-based, or non-office-based.

Interventions

The interventions identified in the literature reviewed for this question included IDDT (63, 71), assertive community treatment (74), a framework for helping homeless individuals with co-occurring disorders (61), health and mental/behavioural health integration approaches (75, 76, 77, 139), health homes for treating opioid use disorders that integrate medical and other behavioural healthcare (82), an integrated mental health services programme conducted in collaboration with insurers in Germany (86), long-term continuing care for alcohol use disorder (65), chronic care model (69), opioid inpatient treatment with six months of aftercare (147), residential substance use treatment (81), residential integrated treatment for dual diagnosis (85), integration of peer support in a residential setting (87, 115), home-based counselling for alcohol problems by non-specialists as part of a collaborative care model (66), mental health crisis response home treatment (CRHT) (142), integrated treatment including trauma treatment (72, 73), patient-centred, recovery-oriented, and trauma-informed services within a biopsychosocial framework (88), technology-based treatment (79, 92, 141), integration of motivational interviewing (MI) and CBT for psychosis and substance misuse (80), integrated services primary and specialty service models in rural communities (84), integrated alcohol treatment strategies (89), harm reduction (90), DTR (91), methadone treatment models and settings (144, 146, 148), recovery models (143, 145), early detection of psychosis in primary care (140), an integrated model of care within local youth alcohol services to detect and manage co-occurring mental health issues (64), integrated, multidisciplinary systems of care to ensure adequate treatment and continuity of care for children, youth, and young adults (62), and expansion of individual provider treatment capabilities for mental health and substance use (83).

Mechanisms

Mechanisms identified in these articles included integration characteristics (61, 67, 70, 77, 80, 88, 89, 139); provider and staff training and motivation (63, 64, 67, 68, 88, 143); programme and treatment characteristics (61, 64, 65, 72, 78, 92, 147); local and cultural adaptation and implementation (84, 148); collaboration and coordination (62, 64, 66, 79); policy (61, 68, 82); resources (67, 77, 79); organisational and systems change (62, 64, 67, 68, 69, 74, 75, 79, 87, 143); holistic whole-person support (61, 71, 73, 74, 76, 145, 148); positive, hopeful culture and environment (71, 90, 143, 144, 145, 146, 148); individualised treatment (63, 76, 78, 86); communication and information sharing and flow (69, 70, 77, 142, 146); harm reduction (63, 73, 90, 146); adverse childhood experiences and trauma treatment (62, 72, 73); continuity of care and transition navigation (61, 65, 68, 77, 142, 152); access to care (62, 66, 142); supportive provider relationships (61, 63, 148); peer support (87, 91, 115, 116, 117, 142); stigma and stigma reduction (70, 90, 140, 145, 150); and co-production (100, 102, 140, 145, 150).

Outcomes

One key theme that emerged was the comprehensive nature of whole-systems change to support integrated models of care across policy; systems infrastructure; organisational change; ongoing training and support for staff; coordination and collaboration

among services and staff; mutual respect across services; leadership; communication and information-sharing structures; payment alignment; treatment integration; and support for a continuity of care to minimise breaks in treatment resulting from care transition failures.

Another key theme was related to philosophies of care and recovery, as they are affected by stigma, values, and attitudes. These were most relevant when shifting towards a recovery-oriented and harm reduction approach that required a shift in mindset from 'cure' to 'care' in the treatment model. Positive recognition of clients as partners in treatment also requires a shift from stigmatising beliefs, with improved results for positive environments, recognition of potentially harmful environments, positive interpersonal relationships, support for the whole person, and peer support that strengthens self-worth. Positive encounters furthered early and continued treatment engagement, an important predictor of positive long-term treatment outcomes. For individuals, treatment tailored to individual needs, strengths and weaknesses; motivation; and recovery self-management were important mechanisms.

CMO patterns for integration, access, and treatment outcomes

After completing the first level of synthesis and reviewing the results, it became clear upon discussion that the reasoning component of mechanisms, or, stated another way, the essential nature of mechanisms described in the realist literature as the unobservable causal force (Westhorp, 2018), was not fully extracted in the first level of synthesis. The mechanisms identified therefore only partially answer the 'why does it work in these conditions' question and are largely at the level of resources. For example, training is identified as a mechanism because it was identified as essential to integration. As such, training is a resource, but implementing training in an environment with the best of intentions does not make it effective. At the same time, training may move the needle on progress, but what is at play when it does so successfully? There is, however, some identification of reasoning, of what makes these resources effective. There is reference to hope, changed mindsets, mutual respect, recognition of expertise in others, self-worth, motivation, and other concepts that hint at reasoning and hidden forces that are not at the level of the intervention but may be caused by it or may trigger its success.

To draw out these concepts of reasoning and begin to understand their relationships to the resources identified in the first round, additional sense-making through meetings among the reviewers and synthesisers, and a second level of synthesis, drew out and grouped concepts to better identify relationships relevant to achieving positive outcomes in various contexts. In line with Williams's (2018) description of mechanistic thinking, the following results presented attempt to move beyond a descriptive explanation and to explore the reasoning and reaction mechanisms present in the literature reviewed. Arriving at this level of comprehension for the chains of inference identified across the 151 articles required the research team to conceptually group the 10 theory statements into three theory areas, which became the final unit of analysis for the synthesis (see Dalkin *et al*., 2015).

The three groupings of theories ultimately related to **integration, access,** and **individual and family treatment outcomes**. These three outcome areas distil essential components of the three research questions, which address, in reverse order, 1) the conditions that affect individual treatment outcomes; 2) characteristics of integrative programmes that yield positive system outcomes (distilled into access here); and 3) successful integrated models of care. The outcome areas are discussed below in reverse order of the research questions, beginning first with the broader view of integration, followed by access, and then treatment, which is nested within integrated and accessible service conditions. Each of the three outcome areas is associated with a different context. Although there are broad contexts represented across the reviewed literature, as detailed in Appendices 7, 8, 9, 10, 11, and 12, the context at the level of the service system was a unifying element for examining CMO patterns. The mechanisms for improved integration are associated with the provider context. The context for the access mechanisms is the systems of mental health and substance use services. The context for individual and family outcomes is the care setting. The findings of this second round are presented here, organised by outcome area.

Each outcome area is accompanied with a diagram to visually display the alignment of each grouping of theory statements with their contexts and the connections between mechanisms (reasoning and resources) and outcomes. In each diagram (Figures 6–8), chains of inference are presented in yellow font and arrows represent relationships among the chains of inference and associated outcomes. Each chain of inference is accompanied by a box that contains examples from the literature relevant to that chain. For example, wet housing (non-abstinence-based congregate housing that allows alcohol use) discussed in the literature demonstrates flexibility in contrast to sober housing (abstinence-based) by admitting an alternate conceptualisation of recovery housing (see Figure 8).

Not all possible relationships are shown in the diagrams, and the syntheses aligning and configuring these relationships drew on the focus of the original research questions, which sought both identification of models and effective strategies, and the conditions relevant to their effectiveness. Although these analyses draw on Dalkin *et al.*'s (2015) model and the concepts of reasoning and resources, they do not exclude the possibility of other constructs of mechanism identified by Westhorp (2018). When determining whether a chain of inference is a mechanism, context, or outcome, as Westhorp (2018) notes, a concept such as self-esteem is a CMO, depending on circumstances. For the current study, context was considered to be the environment for integrating or providing integrated mental health and substance use services. Therefore, chains of inference identified as mechanisms are those relevant to affecting context and outcome relevant to those environments.

Although each figure admittedly represents a complex series of relationships, we also set forth that there are exogenous relationships perhaps between and within each figure. Indeed, in the 'real world' of programmes, policy, and practice, there are likely arrows that could theoretically connect each of the three figures together. However, to aid in the interpretation of the findings of this study, each figure should be seen as standing on its own. Additionally, the results presented within this section do not draw conclusions of causality; rather they infer relationships that should be taken into consideration in efforts that seek to enable access to integrated service delivery to improve outcomes for individuals with co-occurring mental health and substance use issues.

Improved integration

Four of the theories developed with the knowledge users describe components of integration:

2) Integrated treatment requires training and cross-training of substance use and mental health services providers at multiple levels.

6) A knowledge of local efforts already in place and co-production with service providers and individuals with lived experience is needed to develop practice-informed strategies and policies that take known facilitators and implementation challenges into consideration.

7) Resources (financial and otherwise) must accompany strategy and policy to enable integration and improve service delivery and individual outcomes.

9) A holistic model to mental health is needed to improve mental health outcomes, particularly among individuals with co-occurring mental health and substance use disorders.

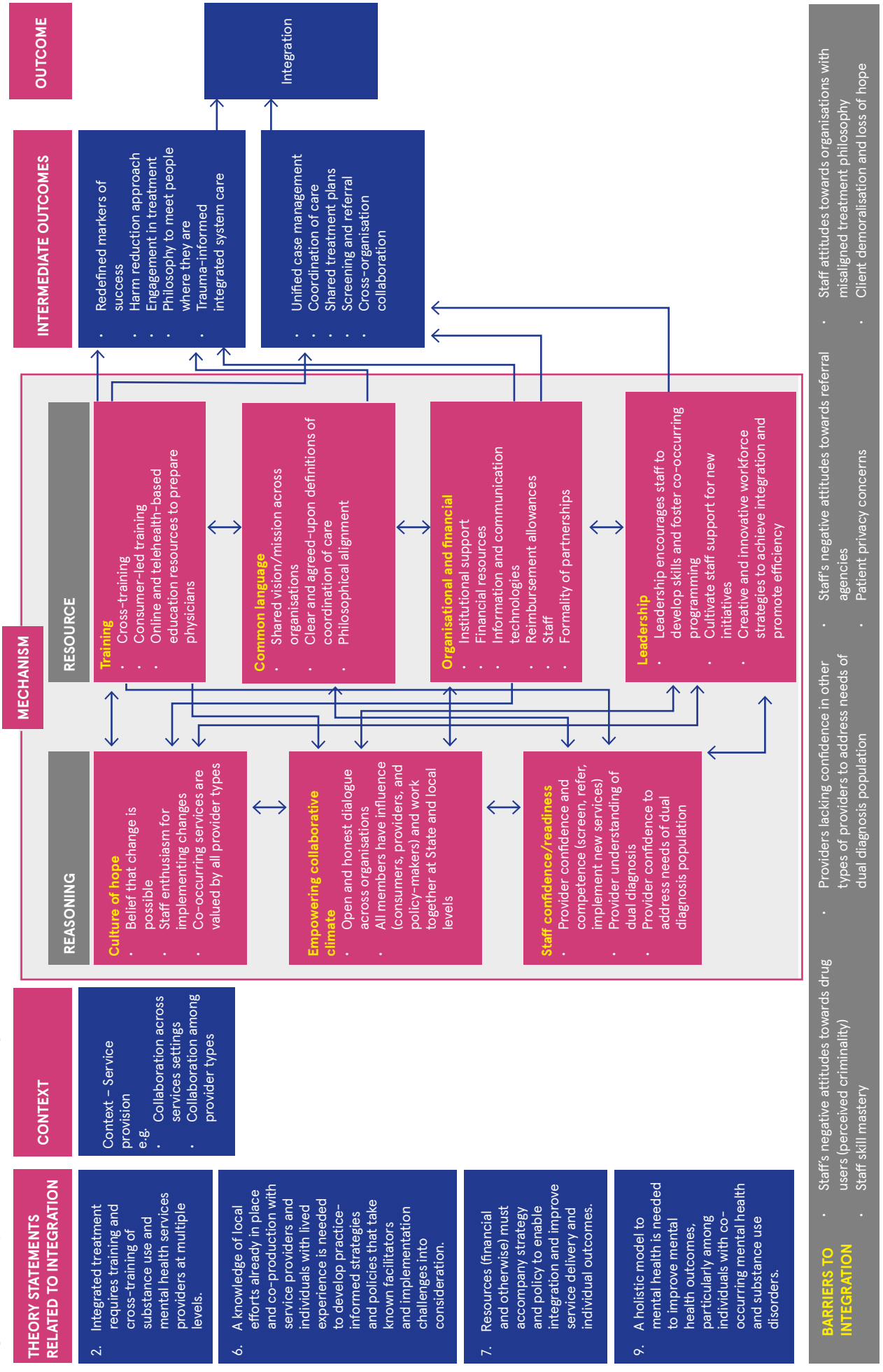
Context

In the reviewed literature, integration played out across a range of service settings and in a variety of combinations across service sectors and provider types. Research settings spanned rural and urban, inpatient, outpatient, and community based. It included implementation of fully integrated programmes and models of care, integration across service locations and provider types, integration of provider types on-site into existing service lines, and integration through shared treatment plans.

CMO patterns relating to integration were found in those instances that related to service provision – more specifically, in the context of providers collaborating across service systems, such as mental health and substance use outpatient clinics or mental health and primary care, and in the context of a diversity of provider types with different clinical backgrounds and training.

Figure 6 illustrates the reasoning and resource patterns identified in the literature that addressed integration in these above-mentioned contexts. The first column lists the theory statements related to integration, and the middle box differentiates reasoning from resource and identifies some of the patterns of relationship between these. The intermediate outcomes refer to conditions

Figure 6: CMO patterns related to integration



Mechanism: training + culture of hope and staff confidence/readiness

When training and cross-training (resource) of mental health, substance use, and primary healthcare providers is introduced, a culture of hope and staff confidence/readiness (reasonings) appear to act as catalysts to the training efforts leading to intermediary outcomes, such as improvements in screening and referral processes, coordination of care, and philosophical alignment across organisations (intermediate outcome), resulting in better integrated service delivery (outcome).

> Ayano *et al*. (30) found that the effectiveness of mental health training for primary healthcare workers is crucial for successful integration of mental health into general healthcare, as it serves to improve staff confidence and readiness (resource) as well as attitudes (resource), which play a role in the success of integrated care and treatment of mental, neurologic, and substance use disorders into the existing general healthcare services.
>
> Lubman *et al*. (64) found that embedding mental health clinicians within service sites to facilitate mentorship and work alongside substance use service providers to carry out screening and intervention with actual clients further enhanced the confidence and skills of the staff involved and encouraged active ownership of the initiative.
>
> Roussy *et al*. (99) found that consumer-led training had more impact on staff readiness and enthusiasm to address the needs of a dual diagnosis population compared to a traditional clinician-led training due to the personal stories shared by individuals with lived experience.

Mechanism: training + empowering collaborative climate

Furthermore, when training takes place in an empowering collaborative environment in which all members have influence and the knowledge of individuals with lived experience is valued (resource), provider understanding of dual diagnosis and provider confidence to address client needs are enhanced. This appears to further contribute to and enable a culture of hope and confidence among providers of integrated services.

> Roussy *et al*. (99) found that a training developed and delivered by individuals with lived experience proved to be more impactful for healthcare workers in improving their understanding of dual diagnosis than traditional clinician-to-clinician training.

Mechanism: organisational and financial resources + empowering collaborative climate and culture of hope

At the core, financial resources are needed to support efforts of integration, be they trainings, hiring staff, or ensuring reimbursement allowances. The literature reviewed provided insight into additional resources that, when accompanied by an empowering collaborative climate and a culture of hope, enable integration. These include institutional support by way of organisational policy, regulations, or incentives (11, 36); staff (12, 13); leadership (56); staff mentorship and supervision (38); and information and communication technologies (25).

> Clark *et al*. (36) explored factors of programme collaboration and found that policy (laws, regulations, administrative actions, or incentives) played a significant role in facilitating or impeding collaboration.

These resources appear to be associated with an empowering collaborative climate (reasoning) in which formal partnerships between providers and across organisations form and open and honest dialogue takes place in support of developing a common language and understanding across service sectors (resource).

> Guerrero *et al*. (57) found that 'programs with higher motivational readiness and an organizational climate supportive of change were more likely to coordinate with mental health and public health care' and that 'leaders can have a direct influence on developing motivation and a climate of change in organizations and service teams'.
>
> Clark *et al*. (36) found that the formality of the partnership influenced the structure of the collaboration and that the strongest collaborations included the primary health service provider as the referring organisation or the organisation receiving a referral.

Mechanism: organisational and financial resources and common language + empowering collaborative climate

When these organisational and financial resources align with proposed strategies and policies, and a common language coexists, intermediary outcomes, such as unified case management, coordination of care, and shared treatment plans, are more likely to result and enable better integration of services (outcome) for individuals with co-occurring mental health and substance use issues.

> Markoff *et al.* (48) found that openly and respectfully discussing differences from the outset allows organisations to develop a common language and respectfully address potential barriers to individual and system level change.

Mechanism: leadership + staff confidence/readiness and empowering collaborative climate

Leadership served as a factor relevant to integration in the literature reviewed, particularly as it relates to an empowering collaborative climate and staff confidence/readiness to implement changes and provide integrated care.

> Guerrero *et al.* (56) found that in circumstances where leaders encouraged staff to engage in dialogue about what was and was not working and to think creatively about how to work with clients with co-occurring disorders, staff enthusiasm for implementing changes necessary to provide integrated care was increased.
>
> Blakely and Dziadosz (25) found that leadership would be better defined, as it pertains to supporting implementation of integrated treatment programmes, as the entire organisation's management and supervisory staff understanding, being committed, and persistently reinforcing the implementation of the treatment model.
>
> Lubman *et al.* (64) found that full support of leadership to drive an integrated agenda is central to successful capacity-building and training initiatives.

Furthermore, supportive leadership is associated with other resource mechanisms such as organisational and financial resources like institutional support and reimbursement allowances.

> Guerrero *et al.* (56) found that supporting leadership behaviours was important among programme directors to be able to address financial and organisational issues, such as programme licensure, funding, and staffing to deliver integrated co-occurring disorder treatment in specialty settings.

Improved access to dual diagnosis services

Three of the theories were related to the thematic area of improved **access** to dual diagnosis services:

1) Integration of existing services, particularly community-based services, supports access to care and minimises barriers faced with creation of new service lines.

3) Improved coordination between providers (substance use, mental health, and primary care) will break down administrative silos and improve access to timely diagnosis, care, and treatment.

4) Services must be tailored to the local context and the individual's needs and circumstances to be most effective.

CMO patterns relating to access were found in 19 of the 151 papers reviewed. Context, in these instances, is related to organisations in transition, effectively community mental health and substance use organisations seeking to collaborate or partner with providers of dissimilar services. Drawing from the organisational behaviour literature, the reasoning component of mechanism refers to group dynamics, leadership, norms, culture, etc. – essentially how an organisation 'thinks'. Three main CMO patterns emerged:

1) In the context of community mental health and substance use organisations seeking to collaborate or partner with providers of dissimilar services, staff knowledge, skills, and abilities, or changes in staff attitudes (reasoning) related to training (resource), are associated with increases in direct access to services or evidence of access such as prompt diagnosis, increases in organisation capacity to provide co-occurring disorder services, and signs of increased coordination and collaboration (outcome).

2) In the context of community mental health and substance use organisations seeking to collaborate or partner with providers of dissimilar services, staff enthusiasm for change, trust, and the realisation that they do not

have to be knowledgeable of all aspects of care (reasoning) in relation to staff inclusion in implementing evidence-based services, co-production of services by providers and consumers, and organisational partners skilfully negotiating power and knowledge (resources) are associated with increased chances for successful systems change and integration of co-occurring disorder treatment processes (outcome).

3) In the context of community mental health and substance use organisations seeking to collaborate or partner with providers of dissimilar services, staff adoption of a client-centred approach and increases in staff kindness towards patients (reasoning), combined with the act of integration as a resource, are associated with increased patient engagement and improved treatment (outcome).

The three main patterns, followed by additional patterns that were not observed as frequently in the literature, are detailed in Figure 7. This is followed by a description of the literature where the patterns appeared by mechanism type.

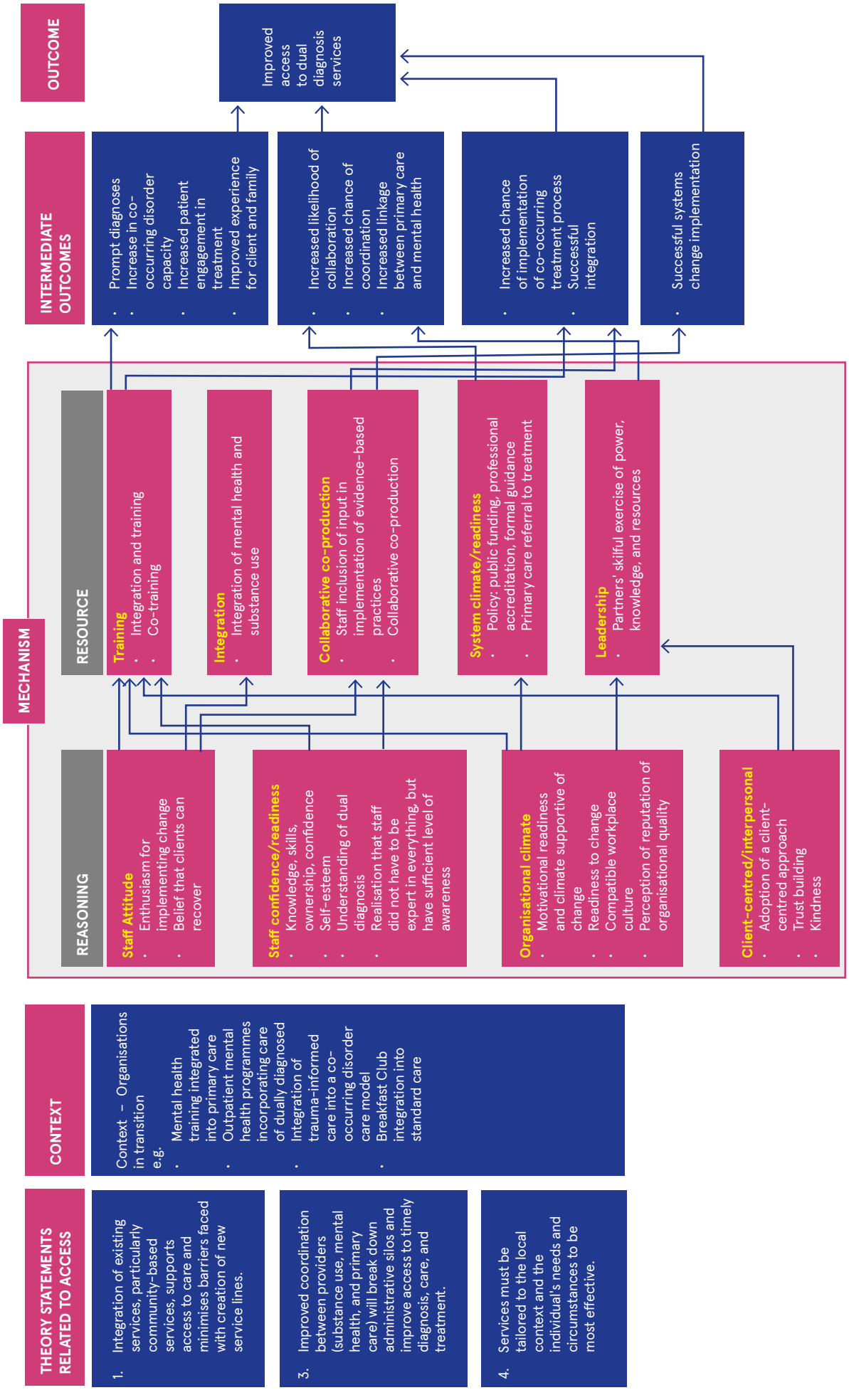


Figure 7: CMO patterns related to access

Mechanism: training + multiple changes in reasoning

Eight of the 151 articles reviewed for this rapid synthesis uncovered mechanisms including some type of change in staff reasoning, knowledge, or belief (reasoning) related to training (resource). Three described a combination of training and increases in staff skills. Lubman *et al*. (64) described an initiative in Victoria, Australia, which focused on improving detection and management of co-occurring mental health issues within the youth alcohol and drug involved sector (C). Embedded clinical psychologists provided training (M) and then support and coaching over a 12-month period. A follow-up evaluation showed staff increases in knowledge, skills, and confidence (M), although four team members dropped out of the training due to lack of time, lack of confidence in being able to deliver a brief intervention, and inconsistencies with their theoretical orientations towards treatment and the intervention. Associated with the training and consequent increases in knowledge, skills, and confidence, the researchers reported increases in mental health screenings and successful management of youth with co-occurring disorders (O). Ayano *et al*. (30) described an intervention in Ethiopia to integrate mental health training (M) into primary care practices (C) that increased staff knowledge, attitudes, and practice (M), which was associated with implied increases in success of integrating care and treatment (O).

Other articles described multiple changes in staff or organisational reasoning related to training (resource): four papers described training being associated with increases in staff beliefs that patients can recover, staff adoption of a client-centred approach, or staff's better understanding of dual diagnosis (M) (11, 99, 130, 143). These mechanisms were associated with outcomes that included increases in staff ability to work in a recovery-oriented way (143), increases in the quality of experience for clients and families (130), and improved treatment, all of which might support improved access to integrated services. Three papers referenced training in combination with organisational culture or climate (M) (38, 57, 82). These mechanisms were associated with outcomes including increased odds of mental health and substance use services being integrated (57), increases in co-occurring disorder capacity and early assessment (38), and increases in the ability to facilitate an integrated model of care (82).

Mechanism: staff inclusion/co-production + multiple changes in reasoning

Three of the 151 papers described a broad mechanism of multiple changes in staff reasoning related to staff inclusion in the implementation of evidence-based practices, staff and consumer co-production of integrated services, or skilful organisation of organisational power, knowledge, and resources in the integration process (resource). Guerrero *et al*. (56) studied leadership in a random sample of 48 outpatient mental health programmes in low-income and racial and ethnic minority communities (C). They observed that when leaders encouraged staff to openly discuss working with clients with co-occurring disorders and to think creatively about how to work with them, staff enthusiasm for implementing changes necessary to provide integrated care increased (M), and this was associated with greater implementation of co-occurring disorder treatment processes (O).

Markoff *et al*. (48) described the implementation of a relational systems change model to support integrated delivery of trauma-informed services for women with co-occurring substance use and mental health disorders (C). Staff and consumer inclusion in the integration of substance use and mental health services (and openly and respectfully discussing differences from the outset) combined with a staff realisation that they did not have to be experts in all services but rather have a working knowledge of different services to support warm hand-offs (M) was associated with fostering agency, community, and State-level service integration (O).

Somewhat related to the mechanism described above, Fitzpatrick *et al*. (84) studied the integration of services in rural areas (C). They observed that when organisational partners skilfully exercised resources, power, and knowledge, trust was built across partnering organisations (M). This was associated with sustainable linkages between general practice and community mental health providers (O).

Mechanism: integration + multiple changes in reasoning

Two papers of the 151 analysed described changes in staff reasoning related to the act of integration as a resource. Padgett *et al*. (53) studied engagement in mental health and substance abuse treatment with 39 formerly homeless individuals (C). They saw that where mental health and substance use services were integrated and staff showed kindness to clients

(in combination with pleasant surroundings and the promise of housing) (M), clients were more likely to be engaged in treatment (O). In focus groups with staff considered experts in working with clients with co-occurring disorders (C), Carey *et al*. (11) discovered that integration of mental health and substance abuse services facilitated staff adoption of a client-centred approach (M), characterised by the quote, 'Don't fix me – listen to me'. They described that this was associated with improved client treatment.

Other mechanisms

Several other mechanisms were identified in the 151 papers analysed that are worth citing but which did not necessarily contribute to a pattern across multiple papers. Clark *et al*. (36) interviewed 40 individuals at organisations primarily engaged in substance use, mental health, or HIV services (C). They discovered that primary care referrals to treatment are dependent on a treatment organisation's organisational reputation for quality (M). When there is perceived quality by the referring organisation, there is more likely to be collaboration across organisations (O). A paper by Gotham *et al*. (38) qualitatively studied the capability of 14 community providers of mental health and substance use services to provide services to clients with co-occurring disorders (C). They found that policy resources, such as public funding, accreditation, and formal guidance or technical assistance, combined with organisational readiness to change and a climate supportive of change (M), were associated with increased chances for coordination among agencies (O). Finally, Kulik and Shah (111) studied the effects of implementing a Breakfast Club model of peer support in East London (C). They found that implementing Breakfast Club (with greater emphasis on recovery-oriented aspects of treatment than medical aspects), combined with increases in staff and client satisfaction (M), resulted in an association with increased client attendance in their treatment (O).

Improved individual and family outcomes

This section focuses on the thematic area related to individual and family outcomes. The literature reveals a predominant relationship between individual and family outcomes and engagement in treatment (9, 10, 23, 24, 27, 29, 123, 124, 128). The theories related to individual and family outcomes (see Appendix 5 for the complete list of reviewed literature) are:

5) Including service users and families in service and care decisions results in better outcomes for individuals and their families.

8) When treatment takes a holistic view and includes housing and social supports, individual outcomes are improved.

10) Peer support facilitates recovery and positive outcomes for individuals with co-occurring mental health and substance use disorders.

Each of these theories represents interventions that are associated with engagement in treatment and subsequently individual and family outcomes.

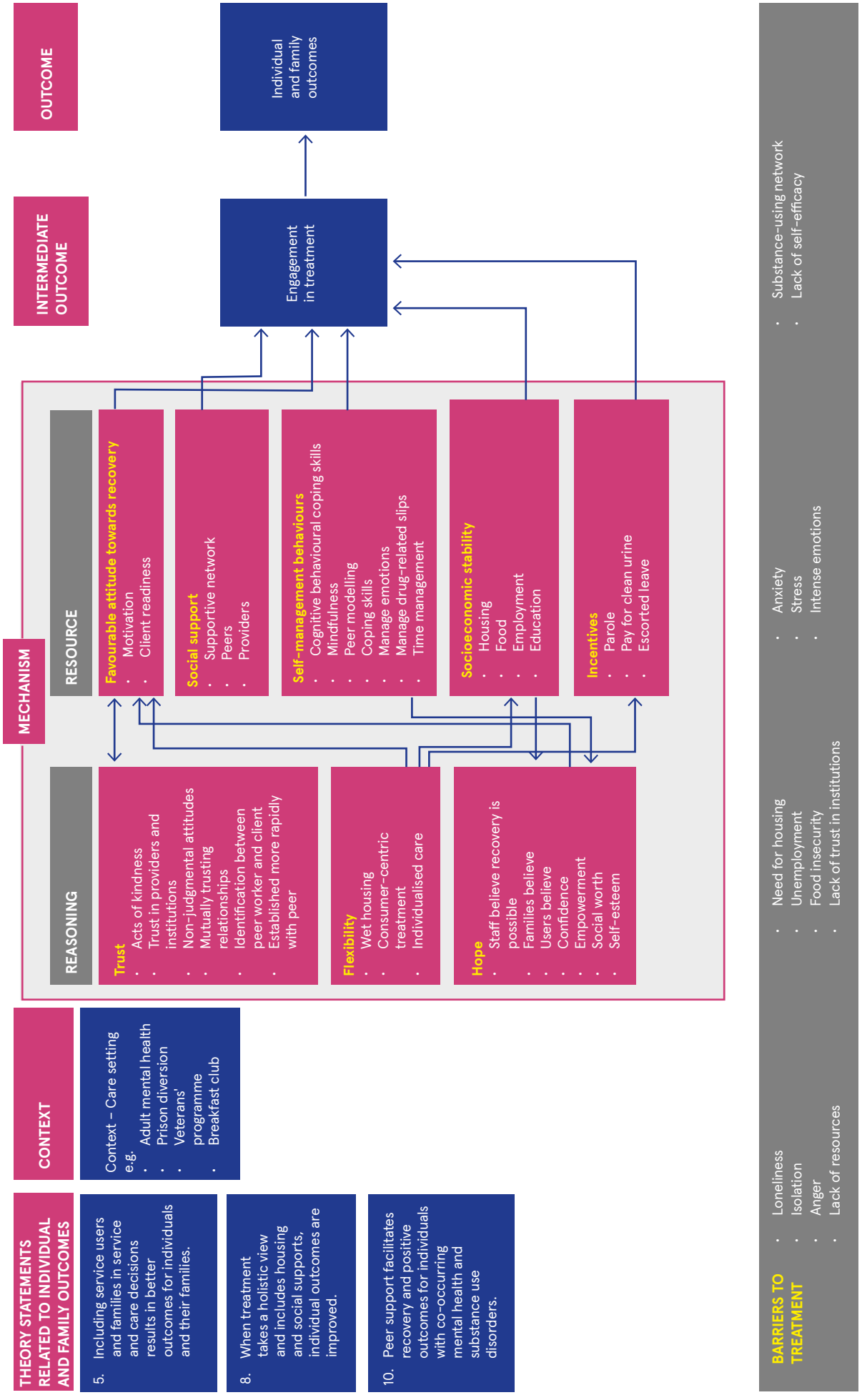
Context

The context for these interventions is the care setting. The literature review process included a second round of articles that focused specifically on including service users and families and peer support; therefore, there are at least 10 reviewed articles related to these two interventions in addition to their presence in the overall literature reviewed. Taking a holistic view is found throughout both the first and second rounds of the literature review. Including service users and families is referenced in various settings. Examples include: behavioural treatment for alcohol dependence (93); adult mental health care (94); family preservation in a rural setting (95); and treatment for co-occurring disorders (100). Taking a holistic view is identified as important in multiple settings. A few contexts include: housing (10), prison diversion (28), and supportive employment (13). Peer support is examined in the literature in a residential veterans' programme (110), a Breakfast Club (111), community-based support for people with severe mental illness (112), hard-to-reach populations (116), and other contexts. Taken together these interventions are associated with numerous care settings.

Mechanisms

Rather than a single or even multiple CMO patterns, the literature reveals a complex, multifaceted portfolio of interrelated parts of a system (see Figure 8). Five resources (favourable attitude towards recovery, social support, self-management behaviours, socioeconomic stability, and incentives) are identified in the literature that are closely associated with engagement in treatment. There is evidence in the literature that these resources are triggered by trust, flexibility, and hope, and are inhibited by numerous underlying barriers. Figure 8 presents these findings associated with individual and family outcomes.

Figure 8: CMO patterns related to individual and family outcomes



Resources

Illustrations of these five resources were seen in the literature. When clients have a favourable attitude towards recovery, they are more likely to engage in treatment. Client motivation is frequently referenced in the literature (17, 18, 24, 29, 130). Client motivation is triggered by trust, flexibility in treatment programmes, and hope. It is also affected by barriers such as anger, lack of resources, and being part of a substance-using network. Being in an environment in which recovery is supported by various social supports, such as supportive networks, peers, providers, and family members, is associated with engagement in treatment (8, 9, 10, 12, 23, 28, 96). Including families and peer support contributes to creating social support. Clients are better able to engage in treatment when they have positive self-management behaviours. Examples of self-management behaviours include coping skills, mindfulness, managing emotions, and managing drug-related slips (8, 9, 31, 33, 41, 47, 50, 131). Engagement in treatment is more likely when clients experience socioeconomic stability in their lives. Stability in the basic needs of housing, food, and employment is important (10, 23, 41, 47, 50, 53, 54, 60, 115, 137). A holistic view of the client and the treatment includes addressing stability issues. Addressing stability creates a positive reinforcing loop with hope, a favourable attitude towards recovery, and engagement in treatment. Incentives like parole requirement (29), escorted leave (120), and pay for clean urine (24) play a role in engagement in treatment. Incentives are more likely to be present in treatment environments where flexibility is present.

Reasoning (triggers): trust, flexibility, and hope

The key reasoning mechanisms that when fired can trigger individual and family outcomes in this literature are trust, flexibility, and hope. In the literature, acts of kindness, trust in providers and institutions, non-judgmental attitudes, mutually trusting relationships, and identification between peer worker and client were associated with **trust** (109, 114, 116, 117, 118). It was also noted that trust frequently is associated with peer mentors and is often established more rapidly with peers than with other providers. **Flexibility** in care programmes and approaches is important to recovery outcomes. Examples of flexibility in the literature include wet housing (10), consumer-centred treatment (2, 11), individualised care (22, 53), and co-production (101, 106, 151, 153). Including service users and families, holistic approaches, and peers all support flexibility, which in turn is associated with favourable attitudes towards recovery and the creation of incentives for engagement in treatment. **Hope** is an important trigger for recovery (11, 12, 31, 32, 37, 49, 95, 125, 130). It is built by including service users and families in care design and through peer support. It is reinforced by self-management behaviours and stability. Hope is strongly related to favourable attitudes towards recovery. It is also central in multiple positive reinforcing loops within the CMO patterns.

Reasoning barriers

In addition to the reasoning mechanisms that can trigger the path to recovery, the literature reveals several barriers. Examples of these barriers include loneliness, isolation, anger, lack of resources, need for housing, unemployment, hunger, anxiety, stress, intense emotions, lack of self-efficacy, and more (8, 9, 10, 23, 25). These barriers can be overcome through effective interventions and are intertwined with the resources and reasoning mechanisms. They play important roles in having what is needed to engage in treatment.

Examples that illustrate CMO complexity

Chappell *et al.*'s article, 'Effects of intensive family preservation services in rural Tennessee on parental hopefulness with families affected by substance use' (95), describes a CMO pattern related to including service users and families (especially families) in treatment. In this case, building strong families is a flexible programme that instils hope. The strengthened family units are more confident in their ability to serve as a social support for the clients. This creates a favourable attitude towards recovery, triggering engagement in treatment and improved individual and family outcomes.

A complex CMO example is illustrated in Becker *et al.*'s article, 'Supported employment for people with co-occurring disorders' (23). Supported employment happens when a flexible, holistic approach to recovery is present. When clients can participate in employment that supports their recovery, they experience stability. This stability builds hope through confidence, empowerment, and social worth. The hope reinforces the favourable attitude towards recovery and engagement in treatment. Employment also overcomes many of the barriers to recovery

(loneliness, isolation, lack of resources, etc.). This pattern helps us see often unobserved mechanism relationships that underlie an intervention like taking a holistic approach.

Thomas and Salzer's article, 'Associations between the peer support relationship, service satisfaction and recovery-oriented outcomes: a correlational study' (117), illustrates the CMO relationships related to peer support. In this case, peer support was incorporated in a flexible programme that was co-designed with the client. Barriers to treatment were removed and self-management behaviours and stability were innovatively supported with 'freedom funds'. These mechanisms triggered increased engagement in treatment.

Discussion

The three research questions focused on how integration works, effective models of care, and treatment and individual outcomes. By using a realist synthesis approach, the study drew on both the knowledge of real-world experience of service providers and service users with dual diagnosis services, and knowledge found in the research literature, with one informing the other in an iterative manner. Through question refinement and theory extraction, key themes relevant to implementation of integrated services, and in particular dual diagnosis services, emerged. As relevant information was extracted and synthesised from both sources, three predominant outcomes emerged from the synthesis related to integration, access, and treatment. These were critical components of the research questions, and this distillation facilitated drawing out both resources and reasoning, and their interrelationships in the three outcome areas.

Several resource and reasoning mechanisms serve as enablers and barriers to successful integration of co-occurring mental health and substance use service delivery. Organisational and financial resources generally align with strategy and policy, but this alignment alone will not ensure successful integration. Provider belief that change is possible and enthusiasm for implementing these changes serve as catalysts for implementing the necessary changes that integrated care requires. Provider belief and enthusiasm are influenced by a variety of factors, such as the climate in which they operate, the organisational partnerships involved, and their confidence in their skills and abilities to implement new services or implement services differently in coordination with other providers.

The literature paints a picture of a knowledgeable, integrated workforce that keeps the individual at the centre. One of the realist chains in this work linked common language, dialogue, competence, and confidence. Currently, there may be differences in the language used by substance use, behavioural, and social service providers and clients. A first step to integration may be the development of common language across all the different provider types, consumers, and families. This was a factor that was also pointed out in discussion with the knowledge users. Once there is a common language, stakeholders in the system can engage in true dialogue. Such dialogue, combined with training programmes, can result in integrated competencies. The final step in this realist chain is confidence on the parts of all involved in practice integration. Confidence for those who have co-occurring mental health and substance use disorders (SUDs) stems from having hope. Hope is an important mechanism for recovery and providers play an important role in building a culture of hope. The providers' perceptions of the service users and their opportunities for recovery are important components of this mechanism. The relationship between the professional and/or peer provider and the service user is also a factor. Building a culture of hope is a material way to put the individual at the centre of the system.

Mechanisms related to access were found generally to be operating at the organisational or staff levels rather than at an individual level. For example, the predominant mechanisms identified related to staff changes in knowledge, skills, and attitudes associated with training; staff changes in thinking and reasoning associated with their inclusion and/or co-production of services for co-occurring disorders; and changes in staff reasoning associated with the process of organisational integration. Additional mechanisms were related to what one might consider changes in organisational reasoning, such as organisational climate and readiness to change.

Each of the mechanisms identified related to access helped to explicate the three associated theory statements. The findings related to access helped to begin to unwind the complex story addressing the study's second research question: What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur? Based on the analysis, these aspects include, but are not limited to, changes in staff knowledge and skills associated with training that is, ideally, designed and/or delivered by individuals with lived experience, and organisational climates and readiness for change that facilitate successful integration of mental health and substance use services.

Interventions identified in the theory statements as important to access identify features of integration at the service, provider, and individual treatment levels: integration of community-based services, coordination between providers, breaking down administrative silos, and tailoring services to individual needs and circumstances. For integration to occur, conditions that support integration are needed.

Aligning resources is one component of overcoming integration barriers. The funding infrastructure can be a barrier to integration. In Ireland, there are opportunities for financial incentives to be aligned to support integration. For example, overall payment for healthcare is designed so that the source and structure of payment for mental health services is different from that of substance use services. This complexity can create barriers to alignment. Related to this is the payment structure for general practitioners. The privatisation of components of the healthcare system and the per-patient payment in the public system may create disincentives for general practitioners to care for complex and potentially time-consuming patients with co-occurring diagnosis. Integration will require both mental health and substance use support for those with dual diagnosis. Ireland has a shortage of access to psychologists, while simultaneously some psychologists are unable to find positions. Resources for integration refer not just to financial but also to human and other supports.

Practical considerations from the study findings relate to their application in context, such as Ireland's. While resources and their alignment at all levels are needed for integration, making resources available in and of themselves does not mean improved integration. Changes in resource availability may be most effective with an infrastructure, organisational climate, staff, and leadership able to embrace and promote integration. The study identifies mechanisms such as readiness, hope, belief that change is possible, shared vision, open communication, confidence and self-efficacy, among others, that potentiate integration.

At the same time, the introduction of new resources – funds, knowledge, leadership, organisational change – affect climate, attitudes, and readiness. This effect can be positive or negative. The result of training, for example, is enhanced when staff are in a collaborative climate, have positive attitudes, feel confident about their skills, and have hope that change is possible. At the same time, training can initiate or enhance these attitudes in an iterative learning process. However, training conducted in an environment which is not ready to embrace change may result in disengagement and poor implementation. These findings align with studies of evidence-based practice implementation that define characteristics of leadership and organisational context, including leadership that is knowledgeable about the evidence-based practice, is proactive and anticipatory, supports others in implementation, and perseveres through challenges, and organisations with a strategic implementation climate (Aarons *et al*., 2014; Aarons *et al*., 2017).

The literature on individual and family outcomes which is related to interventions that include service users and families in treatment decisions, take a holistic view of treatment, and include peer support reveals important mechanisms for building an integrated system for individuals with co-occurring mental health and substance use diagnoses. A dominant theme is the importance of engagement in treatment for recovery.

The conditions associated with engagement in treatment described in the literature paint a picture of a client who is embedded in a supportive social network, has mastered self-management behaviours, has stability in basic social and employment needs, and is motivated and has individualised incentives to engage in recovery treatment. The care system and the individual have worked together to establish a secure and stable environment that supports recovery.

The literature also reveals three more difficult-to-observe mechanisms that are part of this complex system: trust, flexibility, and hope. The treatment approaches explored in this literature (including service users and families, holistic view, and peer

support) lend themselves to triggering these mechanisms. Review of the detail of this literature creates a roadmap for the design of services that are most likely to trigger recovery. There are specific actions and orientations that contribute to trust. For example, creating an environment that is intentional about displaying simple acts of kindness will help build trust. Purposefully building flexibility into treatment through co-design will help build the conditions necessary for recovery. Building a culture of hope among providers, family, and clients through instilling confidence, self-esteem, and empowerment is critical to recovery.

While specific relationships have been illustrated in Figure 6,7 and 8, the results, the examples, and the discussion, it is important to take all of these interventions, reasonings, and resources into account. They illustrate a complex, multifaceted system. Also included in the system are several barriers to recovery, such as isolation, intense emotions, and lack of trust in institutions, that can trigger negative reinforcing loops away from treatment and recovery. Careful design of a system of care that uses the leverage of these mechanisms is more likely to create an environment of recovery.

These three areas, although examined separately, are each components of the system of care. There is substantial discussion in the literature about integrated systems of care and the need for whole-systems change to support integration. Taken together, the literature emphasises that integration is not a single concept related to a specific treatment or relationship among providers, but rather a complex, multifaceted portfolio of interrelated parts of a system.

'Nothing about us without us' and 'don't fix me – listen to me' are quotes that are symbolic of the desires of clients to be a part of solutions. The opportunity to co-produce solutions at every level is important to service users and those in recovery. Collaboration, shared decision-making, and being equal partners in planning care are characteristics of co-production at the individual treatment level. But there are opportunities for co-production at every level in the system: policy, organisation, treatment, and individual. Leveraging the wisdom of lived experience can change systems and the people in them.

Strengths, limitations, and future research directions

As with any study, this rapid realist review has limitations that warrant discussion. By the methodological design of a rapid review, the research team did not have access to the time and resources allocated to a traditional systematic review designed to capture every published piece of evidence on a topic. Adding to a set of already broad research questions, the 'rapid' aspect of this review required the research team to devote attention to specific articles that could best answer the three research questions associated with the project. Accordingly, our synthesis of the literature is limited in the scope of what could be completed in a realistic timeline with limited resources associated with the project. While we believe that enough evidence was synthesised to appropriately answer each research question, our review may have excluded some relevant studies.

One of the strengths of the rapid realist review methodology, although also bound by time resources, is the extent to which the review is tailored to meet the needs of the knowledge users who stand to gain the most from the results of the synthesis. We believe that the research team's approach to engaging not only the Health Research Board (HRB) but also various stakeholders in Ireland held high fidelity to the realist synthesis method. By providing their lived experiences and subject matter expertise, which in turn resulted in testable programme theories, it was truly the insights of the people on the ground implementing dual diagnosis programmes in Ireland that heavily guided the direction the research team employed in designing and carrying out the synthesis.

Regarding future directions, we return to two critical points discussed by Saul *et al*. (2013) in their description of the rapid realist review process. They point out that the results of a rapid synthesis are only meaningful when local knowledge users can use the results in their own way. In their words, 'if those engaged as the local reference group aren't the ones who will be able to use the results, the process will have significant challenges' (Saul *et al*., 2013: 13). Therefore, in holding true to the realist approach, there remain immense future opportunities to co-produce new policies and practices in Ireland with the knowledge users engaged in the policy-making process from beginning to end. Of particular importance is ensuring that the knowledge users are 'brought to the table' with parity throughout

the policy-making process to ensure that their lived experience and subject matter expertise continues to build on the findings of this realist synthesis. To that end, Saul *et al*. (2013) also remind us that the ultimate goal of a realist synthesis is to produce some type of policy change grounded in an evidence base. Accordingly, care should be taken to monitor and evaluate the changes in policy and practice that resulted from this realist synthesis.

Comparison with existing literature

The review addresses the spectrum of issues identified in the 2017–2025 National Drugs Strategy (Department of Health, 2017) to be considered in building a system responsive to the needs of people with co-occurring mental health and SUDs. These issues include treatment settings, integration strategies, collaboration partners, early problem identification, early access to services, the need to address trauma histories in treatment planning, the role of community and socioeconomic services and supports, quality of care, provision of services in low-resourced settings, and prevention. This realist synthesis recognises people and their circumstances in context. In particular, it provides an awareness of the cost of failing to recognise the individual needs of service users and service providers. A repeating theme is that researchers' assumptions about study participants and outcomes may not manifest as planned. An example of this is the assumption – unseen in planning the intervention – that by screening out persons with anxiety, no study participants will have anxiety (136). However, this study's results indicate that it is the untreated anxiety – untreated because there is an assumption that the screening was 100% successful – that correlated with negative outcomes.

In 2015, the New South Wales government in Australia reported on an evidence review of effective models of care for comorbid mental health and substance use problems (NSW Ministry of Health, 2015). The report provides a frame for services across the intake, treatment, workforce, discharge, and evaluation components of the continuum of care. It presents 13 models of care with evidence both in and outside of Australia. This comprehensive report provides an operational framework for the development of a model of care. The model includes multiple levels to the system. While there is overlap with the four layers of policy/system, organisation/provider, service/treatment, and individual/family levels identified through this realist review and synthesis, the Australian model does not take into account the broader system context outside of the service system itself. It also does not incorporate the perspective of the service user or service provider; the effect of stigma; or the experiences, values, and beliefs of individuals, groups of people, and larger society that interact with the service system and are critical to change.

Two literature reviews included in this study, Sterling *et al*. (68) and Torrens *et al*. (70), provide detailed information about issues in integrating care and treatment, respectively. Sterling *et al.'s* article includes the US Institute of Medicine recommendations for integrating care for individuals with co-occurring disorders. These recommendations are largely similar to those in New South Wales government's report. Torrens *et al.'s* focus is on issues of integrated treatment and the limited evidence base for treatment decisions. The article acknowledges the clinical, administrative, and policy contexts in which the provision of care resides.

There is no mention of peers, peer support, family support, shared decision-making, or the value of local expertise and lived experience in any of these documents. What the incorporation of local expertise and lived experience brings to this realist review is the recognition that policy and planning decisions directly affect individual lives and communities, and that the knowledge that comes from facing and addressing these issues is essential to informing system change.

This study used realist methods in both understanding the perspectives of knowledge users and synthesising the literature. This resulted in a systematic practice of integrating all information and examining the patterns within and across context, mechanism, outcome, and theory. Interaction with the HRB, service users, and service providers revealed a need to understand as much as possible about the how and why of integration, and the conditions that affect integration and outcomes. The specific examination of mechanisms in each information source and connecting these learnings with contexts and outcomes resulted in an understanding of how lived experience and evidence can be assembled into an effective, evidence-based implementation path. This initial process of knowledge–experience integration provides the basis for additional rounds of knowledge–experience sense-making as the implementation process unfolds. It forms the basis for effective, evidence-

based, quality improvement. Participants in the process have both new knowledge and an important evidence-based practice capacity that is not present with traditional literature reviews.

Initial recommendations

The HRB seeks to contribute to the development of a standardised evidence-based approach to the identification, assessment, and treatment of co-occurring mental illness and substance disorders. The results of this realist review and synthesis process provide ideas regarding how integrated systems can be built to use evidence-based models of care to improve outcomes for individuals.

Knowledge users in Ireland described six dual diagnosis programmes in different communities (Waterford, Limerick, Cork, Clondalkin, Kilkenny, and Dublin) that engaged in locally driven integration efforts across the drug and alcohol task forces, mental health or psychiatric services, and a Recovery College. These programmes create vehicles for learning among the providers and consumers involved in these programmes. There are opportunities for learning about each other's programmes, as well as evidence for treatments, models, and integration produced by this project. Additionally, learnings from these programmes can be used to support the development of additional programmes.

These six local integrated programmes provide a starting place for learning and integrating knowledge about treatment and building a culture of co-production that supports putting the individual at the centre of the system. The wisdom gained from knowledge users and the literature synthesis reveals numerous ideas for building an integrated system. Content in each section of this report can be translated into evidence-based actions.

The four-level framework that emerged from this project provides a structure to organise potential steps. At the policy/system level, high-leverage steps may focus on the alignment of resources. At the organisation/provider level, a focus on building a knowledgeable workforce is important. Initial recommendations are focused on a few preliminary actions that may have high leverage and build on what currently exists. A collaborative session with local knowledge users would be useful to meaningfully mine the findings for appropriate actions and would be in keeping with the co-production recommendation. Table 3 outlines initial implementation ideas to be considered in relation to each of the four levels, with reference to supporting literature.

Table 3: Initial recommendations by level

Level	Potential action	Supporting evidence
Policy/system	» Create incentives in payment to providers for integrating care of individuals with co-occurring diagnosis » When developing service payment agreements, include deliverables that recognise the long path to recovery » Analyse the system as it relates to access to psychological services and align providers with service needs » Examine payment structure for peer mentors, coaches, and instructors » Explore how resources can be allocated to support a holistic approach to care (e.g. housing, supportive employment)	2, 3, 4, 7, 8, 10, 11, 12, 13, 14, 15, 16, 22, 23, 25, 28, 36, 38, 40, 41, 46, 47, 50, 52, 53, 54, 56, 57, 60, 61, 63, 65, 66, 69, 71, 73, 77, 79, 82, 85, 89, 90, 91, 95, 96, 97, 98, 100, 101, 102, 103, 116, 117, 121, 125, 137, 138, 145, 146, 147, 148, 151
Organisation/ provider	» Build a knowledgeable integrated workforce that keeps the individual at the centre » Develop a common language among different provider types, consumers, and families » Examine training modes and build in time to support provider training and cross-training to build competence and confidence » Build a culture of hope	5, 11, 15, 30, 31, 34, 35, 38, 39, 55, 56, 58, 60, 61, 62, 64, 67, 68, 69, 70, 75, 76, 79, 82, 83, 88, 89, 90, 93, 94, 96, 99, 100, 102, 106, 115, 117, 120, 130, 149, 150, 151
Service/ treatment	» Create a learning community among the current integrated programmes » Conduct a realist evaluation of the current work and use the learnings to improve current programmes and build others » Allocate resources to support the creation of new integration pilot programmes that include resources for programmes, technical assistance, and peer support from current integrated programmes » Use the evidence from this review to guide future programme development	2, 6, 7, 11, 16, 31, 47, 48, 49, 50, 51, 65, 66, 84, 85, 86, 90, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 114, 116, 117, 121, 130, 138, 145, 146, 148, 149, 150, 151, 152, 153
Individual/ family	» Build systems for co-production at each level of the system: policy, provider, treatment design, and individual care	30, 40, 42, 48, 52, 54, 55, 57, 59, 60, 61, 69, 77, 84, 87, 90, 91, 95, 98, 99, 102, 103, 104, 105, 106, 116, 118, 121, 128, 130, 138, 150, 151, 153

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Appendix 1: Acronyms

ACT	assertive community treatment
CBT	cognitive behavioural therapy
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CM	contingency management
CMO	context, mechanism, outcome
CRHT	crisis response home treatment
DBT	dialectical behaviour therapy
DD	dual diagnosis
DTR	Double Trouble in Recovery
HIV	human immunodeficiency virus
HRB	Health Research Board
ICM	intensive case management
IDDT	Integrated Dual Disorder Treatment
MI	motivational interviewing
NACDA	National Advisory Committee on Drugs and Alcohol
RAMESES	Realist And Meta-narrative Evidence Syntheses: Evolving Standards
SUD	substance use disorder
WHO	World Health Organization

Appendix 2: Bibliography

Aarons GA, Ehrhart MG, Farahnak LR and Sklar M (2014) The role of leadership in creating a strategic climate for evidence-based practice implementation and sustainment in systems and organizations. *Frontiers in Public Health Services and Systems Research,* 3(4). Retrieved from https://uknowledge.uky.edu/frontiersinphssr/vol3/iss4/3

Aarons GA, Ehrhart MG, Moulin JC, Torres EM and Green AE (2017) Testing the leadership and organizational change for implementation (LOCI) intervention in substance abuse treatment: a cluster randomized trial study protocol. *Implementation Science*, 12: 29. doi:10.1186/s13012-017-0562-3

Baker AL, Thornton LK, Hiles S, Hides L and Lubman DI (2012) Psychological interventions for alcohol misuse among people with co-occurring depression or anxiety disorders: a systematic review. *Journal of Affective Disorders*, 139(3): 217–29.

Dalkin SM, Greenhalgh J, Jones D, Cunningham B and Lhussier M (2015) What's in a mechanism? Development of a key concept in realist evaluation. *Implementation Science*, 10: 49. doi:10.1186/s13012-015-0237-x

Department of Health (2017) *Reducing Harm, Supporting Recovery: A health-led response to drug and alcohol use in Ireland 2017–2025.* Dublin: Department of Health. Retrieved from https://health.gov.ie/wp-content/uploads/2017/07/Reducing-Harm-Supporting-Recovery-2017-2025.pdf

Doyle J and Ivanovic J (2010) *National Drugs Rehabilitation Framework Document.* National Drugs Rehabilitation Implementation Committee. Dublin: Health Service Executive. Retrieved from http://www.drugs.ie/NDRICdocs/ndrframework.pdf

Drake RE, Mercer-McFadden C, Mueser KT, McHugo GJ and Bond GR (1998) Review of integrated mental health and substance abuse treatment for patients with dual disorders. *Schizophrenia Bulletin*, 4(4): 589–608.

Farmer RF, Seeley JR, Kosty DB, Gau JM, Duncan SC, Sher KJ, *et al.* and Lewinsohn PM (2017) No reliable evidence that emotional disorders are proximal antecedents, concomitants, or short-term consequences of first episode alcohol use disorders in a representative community sample. *Journal of Studies on Alcohol and Drugs*, 78(2): 222–31.

Flynn PM and Brown BS (2008) Co-occurring disorders in substance abuse treatment: issues and prospects. *Journal of Substance Abuse Treatment,* 34(1): 36–47. doi:10.1016/j.jsat.2006.11.013

Greenhalgh T, Wong G, Westhorp G and Pawson R (2011) Protocol-realist and meta-narrative evidence synthesis: evolving standards (RAMESES). *BMC Medical Research Methodology*, 11(1): 115.

Grounded Theory Institute (2014) *What is grounded theory?* Mill Valley, CA: Grounded Theory Institute. Retrieved from http://www.groundedtheory.com/what-is-gt.aspx

Health Service Executive (2017) Mental Health [Internet]. Dublin: Health Service Executive. Retrieved from https://www.hse.ie/eng/about/who/cspd/ncps/mental-health/

Ipsos MRBI (2016) *Healthy Ireland Survey 2016: summary of findings*. Dublin: Stationery Office. Retrieved from http://health.gov.ie/wp-content/uploads/2016/10/Healthy-Ireland-Survey-2016-Summary-Findings.pdf

Irish Medical Organisation (IMO) (2015) IMO position paper on addiction and dependency. Dublin: Irish Medical Organisation. Retrieved from http://www.drugs.ie/resourcesfiles/ResearchDocs/Ireland/2015/Addiction_and_Dependency_IMO_Position_Paper.pdf

McGovern MP, Lambert-Harris C, Gotham HJ, Claus RE and Xie H (2014) Dual diagnosis capability in mental health and addiction treatment services: an assessment of programs across multiple state systems. *Administration and Policy Mental Health and Mental Health Services Research*, 41(2): 205–14.

Mental Health Reform (MHR) (2016) MHR opening statement to the Oireachtas Committee on Future of Healthcare. Dublin: Mental Health Reform. Retrieved from http://www.oireachtas.ie/parliament/media/committees/futureofhealthcare/Opening-Statement-by-Dr-Shari-McDaid-Director-Mental-Health-Reform.pdf

National Advisory Committee on Drugs and Alcohol (NACDA) (2016) *Bulletin 1. Prevalence of drug use and gambling in Ireland and drug use in Northern Ireland*. Dublin: NACDA. Retrieved from http://health.gov.ie/wp-content/uploads/2016/11/Bulletin-1.pdf

NSW Ministry of Health (2015) *Effective models of care for comorbid mental illness and illicit substance use: evidence check review*. North Sydney: Mental Health and Drug and Alcohol Office. Retrieved from http://www.health.nsw.gov.au/mentalhealth/publications/Publications/comorbid-mental-care-review.pdf

Pawson R, Greenhalgh T, Harvey G and Walshe K (2005) Realist review – a new method of systematic review designed for complex policy interventions. *Journal of Health Services Research & Policy*, 10(Suppl 1): 21–34.

Ross LE, Vigod S, Wishart J, Waese M, Spence JD, Oliver J, et al. (2015) Barriers and facilitators to primary care for people with mental health and/or substance use issues: a qualitative study. *BMC Family Practice*, 16: 135. doi:10.1186/s12875-015-0353-3

Rycroft-Malone J, McCormack B, Hutchinson AM, DeCorby K, Bucknall TK, Kent B, et al. (2012) Realist synthesis: illustrating the method for implementation research. *Implementation Science*, 7(1): 33.

Saul JE, Willis CD, Bitz J and Best A (2013) A time-responsive tool for informing policy making: rapid realist review. *Implementation Science*, 8: 103.

Shé ÉN, Keogan F, McAuliffe E, O'Shea D, McCarthy M, McNamara R, *et al.* (2018) Undertaking a collaborative rapid realist review to investigate what works in the successful implementation of a frail older person's pathway. *International Journal of Environmental Research and Public Health*, 15(2): 199.

Social Care Institute for Excellence (2013) *Co-production in social care: what it is and how to do it*. London: Social Care Institute for Excellence. Retrieved from https://www.scie.org.uk/publications/guides/guide51/what-is-coproduction/defining-coproduction.asp

Westhorp G (2018) Understanding mechanisms in realist evaluation and research. In Emmel N, Greenhalgh J, Manzano A, Monaghan M and Dalkin S (eds). *Doing realist research*. Washington, DC: Sage Publishing. 42–57.

Williams M (2018) Making up mechanisms in realist research. In Emmel N, Greenhalgh J, Manzano A, Monaghan M and Dalkin S (eds). *Doing realist research*. Washington, DC: Sage Publishing. 26–40.

Willis CD, Saul JE, Bitz J, Pompu K, Best A and Jackson B (2014) Improving organizational capacity to address health literacy in public health: a rapid realist review. *Public Health*, 128(6): 515–24.

Wong G, Greenhalgh T, Westhorp G, Buckingham J and Pawson R (2013) RAMESES publication standards: realist syntheses. *BMC Medicine*, 11: 21. doi:10.1186/1741-7015-11-21

Woody GE and Blaine J (1979) Depression in narcotic addicts: quite possibly more than a chance association. In DuPont RL, Goldstein A, O'Donnell JA and Brown B (eds). *Handbook on drug abuse*. Washington, DC: National Institute on Drug Abuse. US Government Printing Office. 277–85.

World Health Organization (WHO) and World Organization of Family Doctors (Wonca) (2008) *Integrating mental health into primary care: a global perspective*. Geneva: WHO Press.

Appendix 3: Search strategy

Primary searches

Search strategy for RQ1 Database: PsycINFO Language: English Years: 1998–2018	Number of articles
(mental disorders OR mental health OR mental illness) AND (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use) AND treatment AND outcomes AND dual diagnosis *Academic journals*	609
mental disorders AND substance abuse **Subject:** mental disorders drug abuse substance use disorder comorbidity mental health drug rehabilitation alcohol abuse alcoholism drug therapy mental health services anxiety disorders schizophrenia dual diagnosis treatment outcomes cocaine intervention **Subject: Major heading:** comorbidity drug rehabilitation drug therapy treatment outcomes major depression drug usage intervention bipolar disorder health care services *Academic journals*	898
Mental disorders AND substance abuse AND Ireland *Peer reviewed*	50
mental disorders AND substance abuse and treatment intervention **Subject:** comorbidity treatment intervention dual diagnosis incarceration treatment outcomes *Peer reviewed*	53

Search strategy for RQ2 Database: PsycINFO Language: English Years: 1998–2018	Number of articles
(integrati*) AND (mental disorders OR mental health OR mental illness) AND (substance abuse OR substance use disorder)	422
mental disorders AND substance abuse	293
mental disorders AND substance abuse AND Ireland	369
(integrati*) AND (dual diagnosis OR co-occurring)	422
(mental disorders OR mental health OR mental illness) AND (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol OR addiction) AND (integrat* OR coordinat* OR collaborat*) AND (system OR program OR administration OR service OR organization OR sector)	2,401
(mental disorders OR mental health OR mental illness) AND (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use) AND (treatment) AND (outcomes) AND (dual diagnosis)	173
(mental disorders OR mental health OR mental illness) AND (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol OR addiction) AND (integrat* OR coordinat* OR collaborat*) AND (system OR program OR administration OR service OR organization OR sector) AND (system outcome OR community outcome OR service outcome)	107

Search strategy for RQ3 Databases: PsycINFO, CINAHL, MEDLINE, Academic Search Complete Language: English Years: 1998–2018	Number of articles
(mental disorders OR mental health OR mental illness) AND (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol OR addiction) AND model* of care AND (treatment OR service OR integrat*)	1,540
((dual diagnosis OR co-occurring OR comorbid*) OR (addiction OR (substance AND abuse) OR (drug AND abuse) OR (alcohol)) AND (mental AND (health OR illness OR disorder) OR (psychiatri* AND illness))) AND (model* of care) AND (integrat* OR collaborat*)	2,536
integrat* AND dual diagnosis AND treatment AND mental AND substance	1,293

Secondary searches

Search strategy for RQ1 – Ireland Databases: PsycINFO, CINAHL, MEDLINE Language: English, Years: 1998–2018	Number of articles
((mental disorders OR mental health OR mental illness) OR (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol)) AND treatment AND outcomes AND Ireland	686

Search strategy for RQ2 – Ireland Databases: PsycINFO, CINAHL, MEDLINE	Number of articles
((mental disorders OR mental health OR mental illness) OR (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol)) AND integrat* AND outcomes AND Ireland	117

Search strategy for RQ3 – Ireland Databases: PsycINFO, CINAHL, MEDLINE	Number of articles
((mental disorders OR mental health OR mental illness) OR (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol)) AND model of care AND outcomes AND Ireland	33

Search strategy for peer support Databases: PsycINFO, CINAHL, MEDLINE	Number of articles
((mental disorders OR mental health OR mental illness) OR (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol)) AND treatment AND outcomes AND peer support	906

Search strategy for consumer, family, collaboration Databases: PsycINFO, CINAHL, MEDLINE	Number of articles
((mental disorders OR mental health OR mental illness) OR (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol)) AND treatment AND outcomes AND (client OR consumer OR service user OR family) AND shared decision*	160
((mental disorders OR mental health OR mental illness) OR (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol)) AND treatment AND outcomes AND (client OR consumer OR service user OR family) AND engagement	1,179
((mental disorders OR mental health OR mental illness) OR (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol)) AND treatment AND outcomes AND (client OR consumer OR service user OR family) AND collaborat*	1,172

Search strategy for local, co-production Databases: PsycINFO, CINAHL, MEDLINE Language: English Years: 1998–2018	Number of articles
((mental disorders OR mental health OR mental illness) OR (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol)) AND coproduction	68
((mental disorders OR mental health OR mental illness) OR (substance abuse OR substance use OR drug abuse OR drug addiction OR drug use OR alcohol)) AND (dual diagnosis OR co-occurring) AND local	197

Appendix 4: Data Extraction template

		Complete this column for each article reviewed
Title (copy from article)	Full title	
Authors	Cut and paste list of authors	
Abstract (copy from article)	Include full abstract	
Type of literature (e.g., journal article, report, etc.)	Provide brief description of type	
Methods (Research methods employed)	Lift key sentences from article from methods section to capture methods	
Context: The pre-existing characteristics of the individuals, localities, situations, or systems of interpersonal and social relationships in which an intervention is being set up.	Most likely found in the background or methods section, describing the population and setting. Examples of types of information to include: » Urban/rural » Type of health system » Service availability » Geopolitical » Individual demographics » Diagnosis The four I's (context levels) » Individual » Interpersonal » Institutional » Infrastructure	
Mechanism: Intervention – what was introduced into the context by the study?	Cut and paste the section of the article describing the intervention. Examples of types of information to include: » Treatment category (e.g., behavioral, medication, alternative) » Treatment intensity » Treatment duration » Provider type » Referral sources	

		Complete this column for each article reviewed
Mechanism: An element of reasoning and reactions of (an) individual or collective agent(s) in regard of the resources available in a given context to bring about changes through the implementation of an intervention. A mechanism results in the interaction between human agents, intervention, and structures.	Cut and paste sentences in the article describing these types of elements. They are most likely described in the discussion or in the description of the implementation or intervention. What about the individuals, resources, etc. helps to explain why the intervention worked or didn't work?	
Outcome: A result, whether positive or negative.	Cut and paste the section of the article describing the results. Results of the study	
Research questions, hypothesis, theory	Cut and paste the section of the article describing these. Likely found in the methods section. Research questions, hypothesis, theory stated in the article that is driving the introduction of the intervention or the nature of the study to achieve a desired result.	
Theory 1 – Integration into existing services Integration of existing services, particularly community-based services, supports access to care and minimises barriers faced with creation of new service lines.	**For each theory statement below:** Step 1: Identify whether or not the literature addresses this theory (Y/N). Step 2: Additionally, provide a brief description of how. For example, this article confirms (or disputes) this theory by stating that …	
Theory 2 – Training Integrated treatment requires training and cross-training of substance use and mental health service providers at multiple levels.		
Theory 3 – Improved coordination/breaking down admin silos Improved coordination between providers (substance use, mental health, and primary care) will break down administrative silos and improve access to timely diagnosis, care, and treatment.		
Theory 4 – Tailor services to local context and individual needs Services must be tailored to the local context and the individual's needs and circumstances to be most effective.		

		Complete this column for each article reviewed
Theory 5 – Include service users and families in care decisions Including service users and families in service and care decisions results in better outcomes for individuals and their families		
Theory 6 – Knowledge of local efforts already in place and individuals/providers as experts. A knowledge of local efforts already in place and co-production with service providers and individuals with lived experience is needed to develop practice-informed strategies and policies that take known facilitators and implementation challenges into consideration.		
Theory 7 – Resources Resources (financial and otherwise) must accompany strategy and policy to enable integration and improve service delivery and individual outcomes.		
Theory 8 – Supporting whole person/ housing and other social supports When treatment takes a holistic view and includes housing and social supports, individual outcomes are improved.		
Theory 9 – Holistic model for mental health A holistic model to mental health is needed to improve mental health outcomes, particularly among individuals with co-occurring mental health and substance use disorders.		
Theory 10 – Peer support Peer support facilitates recovery and positive outcomes for individuals with co-occurring mental health and substance use problems		
Notes	Please include any relevant notes about the study	

Appendix 5: List of reviewed articles

1 Carrà G, Bartoli F, Brambilla G, Crocamo C and Clerici M (2015) Comorbid addiction and major mental illness in Europe: a narrative review. *Substance Abuse*, 36(1): 75–81. doi:10.1080/08897077.2014.960551

2 Mayes J and Handley S (2005) Evolving a model for integrated treatment in a residential setting for people with psychiatric and substance use disorders. *Psychiatric Rehabilitation Journal*, 29(1): 59–62. doi:10.2975/29.2005.59.62

3 Mierlak D, Galanter M, Spivack N, Dermatis H, Jurewicz E and De Leon G (1998) Modified therapeutic community treatment for homeless dually diagnosed men. Who completes treatment? *Journal of Substance Abuse Treatment,* 15(2): 117–21. doi:10.1016/S0740-5472(97)00136-0

4 Milosevic I, Chudzik SM, Boyd S and McCabe RE (2017) Evaluation of an integrated group cognitive-behavioral treatment for comorbid mood, anxiety, and substance use disorders: a pilot study. *Journal of Anxiety Disorders,* 46: 85–100. doi:10.1016/j.janxdis.2016.08.002

5 Moggi F, Ouimette PC, Finney JW and Moos RH (1999) Effectiveness of treatment for substance abuse and dependence for dual diagnosis patients: a model of treatment factors associated with one-year outcomes. *Journal of Studies on Alcohol,* 60(6): 856–66. doi:10.15288/jsa.1999.60.856

6 Morandi S, Silva B, Golay P and Bonsack C (2017) Intensive Case Management for Addiction to promote engagement with care of people with severe mental and substance use disorders: an observational study. *Substance Abuse Treatment, Prevention, and Policy*, 12: 26. doi:10.1186/s13011-017-0111-8

7 Pray ME and Watson LM (2008) Effectiveness of day treatment for dual diagnosis patients with severe chronic mental illness. *Journal of Addictions Nursing,* 19(3): 141–49. doi:10.1080/10884600802306008

8 Rizvi SL, Dimeff LA, Skutch J, Carroll D and Linehan MM (2011) A pilot study of the DBT coach: an interactive mobile phone application for individuals with borderline personality disorder and substance use disorder. *Behavior Therapy,* 42(4): 589–600. doi:10.1016/j.beth.2011.01.003

9 Laudet AB, Magura S, Cleland CM, Vogel HS, Knight EL and Rosenblum A (2004) The effect of 12-step-based fellowship participation on abstinence among dually diagnosed persons: a two-year longitudinal study. *Journal of Psychoactive Drugs*, 36(2): 207–16. doi:10.1080/02791072.2004.10399731

10 Brunette MF, Mueser KT and Drake RE (2004) A review of research on residential programs for people with severe mental illness and co-occurring substance use disorders. *Drug and Alcohol Review,* 23(4): 471–81. doi:10.1080/09595230412331324590

11 Carey KB, Purnine DM, Maisto SA, Carey MP and Simons JS (2000) Treating substance abuse in the context of severe and persistent mental illness: clinicians' perspectives. *Journal of Substance Abuse Treatment*, 19(2): 189–98. doi:10.1016/S0740-5472(00)00094-5

12 Carroll JFX and McGinley JJ (1998) Managing MICA clients in a modified therapeutic community with enhanced staffing. *Journal of Substance Abuse Treatment*, 15(6): 565–77. doi:10.1016/S0740-5472(98)00005-1

13 Chan Y-F, Lu S-E, Howe B, Tieben H, Hoeft T and Unützer J (2016) Screening and follow-up monitoring for substance use in primary care: an exploration of rural–urban variations. *Journal of General Internal Medicine*, 31(2): 215–22. doi:10.1007/s11606-015-3488-y

14 Chandler DW and Spicer G (2006) Integrated treatment for jail recidivists with co-occurring psychiatric and substance use disorders. *Community Mental Health Journal*, 42(4): 405–25. doi:10.1007/s10597-006-9055-6

15 Chandler DW (2011) Fidelity and outcomes in six integrated dual disorders treatment programs. *Community Mental Health Journal*, 47(1): 82–89. doi:10.1007/s10597-009-9245-0

16 Clark RE (2001) Family support and substance use outcomes for persons with mental illness and substance use disorders. *Schizophrenia Bulletin*, 27(1): 93–101. doi:10.1093/oxfordjournals.schbul.a006862

17 Clarke N, Mun EY, Kelly S, White HR and Lynch K (2013) Treatment outcomes of a combined cognitive behavior therapy and pharmacotherapy for a sample of women with and without substance abuse histories on an acute psychiatric unit: do therapeutic alliance and motivation matter? *The American Journal on Addictions*, 22(6): 566–73. doi:10.1111/j.1521-0391.2013.12013.x

18 Clodfelter RC, Albanese MJ, Baker G, Domoto K, Gui AL and Khantzian EJ (2003) The MICA case conference program at Tewksbury Hospital, Mass.: an integrated treatment model. *The American Journal on Addictions*, 12(5): 448–54. doi:10.1080/10550490390240819

19 Czuchry M and Dansereau DF (1999) Node-link mapping and psychological problems: perceptions of a residential drug abuse treatment program for probationers. *Journal of Substance Abuse Treatment*, 17(4): 321–29. doi:10.1016/S0740-5472(99)00013-6

20 Anderson KG, Ramo DE and Brown SA (2006) Life stress, coping and comorbid youth: an examination of the stress-vulnerability model for substance relapse. *Journal of Psychoactive Drugs*, 38(3): 255–62. doi:10.1080/02791072.2006.10399851

21 Arnold EM, Stewart JC and McNeece CA (2001) Enhancing services for offenders: the impact on treatment completion. *Journal of Psychoactive Drugs*, 33(3): 255–62. doi:10.1080/02791072.2001.10400572

22 Baker A, Turner A, Kay-Lambkin FJ and Lewin TJ (2009) The long and the short of treatments for alcohol or cannabis misuse among people with severe mental disorders. *Addictive Behaviors*, 34(10): 852–58. doi:10.1016/j.addbeh.2009.02.002

23 Becker DR, Drake RE and Naughton WJ Jr (2005) Supported employment for people with co-occurring disorders. *Psychiatric Rehabilitation Journal*, 28(4): 332–38. doi:10.2975/28.2005.332.338

24 Bellack AS, Bennett ME, Gearon JS, Brown CH and Yang Y (2006) A randomized clinical trial of a new behavioral treatment for drug abuse in people with severe and persistent mental illness. *Archives of General Psychiatry*, 63(4): 426–32. doi:10.1001/archpsyc.63.4.426

25 Blakely TJ and Dziadosz GM (2007) Creating an agency integrated treatment program for co-occurring disorders. *American Journal of Psychiatric Rehabilitation*, 10(1): 1–18. doi:10.1080/15487760601166316

26 Bovasso G (2001) The long-term treatment outcomes of depression and anxiety comorbid with substance abuse. *The Journal of Behavioral Health Services & Research*, 28(1): 42–57. doi:10.1007/BF02287233

27 Bradley AC, Baker A and Lewin TJ (2007) Group intervention for coexisting psychosis and substance use disorders in rural Australia: outcomes over 3 years. *Australian & New Zealand Journal of Psychiatry*, 41(6): 501–08. doi:10.1080/00048670701332300

28 Broner N, Nguyen H, Swern A and Goldfinger S (2003) Adapting a substance abuse court diversion model for felony offenders with co-occurring disorders: initial implementation. *Psychiatric Quarterly*, 74(4): 361–85. doi:10.1023/A:1026039527354

29 Brooks AJ and Penn PE (2003) Comparing treatments for dual diagnosis: twelve-step and self-management and recovery training. *The American Journal of Drug and Alcohol Abuse*, 29(2): 359–83. doi:10.1081/ADA-120020519

30 Ayano G, Assefa D, Haile K, Chaka A, Haile K, Solomon M, *et al.* (2017) Mental health training for primary health care workers and implication for success of integration of mental health into primary care: evaluation of effect on knowledge, attitude and practices (KAP). *International Journal of Mental Health Systems*, 11(1): 63. doi:10.1186/s13033-017-0169-8

31 Brooks AJ, Malfait AJ, Brooke D, Gallagher SM and Penn PE (2007) Consumer perspectives on co-occurring disorders treatment *Journal of Drug Issues*, 37(2): 299–320. doi:10.1177/002204260703700204

32 Brooner RK, Kidorf MS, King VL, Peirce J, Neufeld K, Stoller K, *et al.* (2013) Managing psychiatric comorbidity within versus outside of methadone treatment settings: a randomized and controlled evaluation. *Addiction*, 108(11): 1942–51. doi:10.1111/add.12269

33 Brown SA, Glasner-Edwards SV, Tate SR, McQuaid JR, Chalekian J and Granholm E (2006) Integrated cognitive behavioral therapy versus twelve-step facilitation therapy for substance-dependent adults with depressive disorders. *Journal of Psychoactive Drugs*, 38(4): 449–60. doi:10.1080/02791072.2006.10400584

34 Chan YF, Huang H, Bradley K and Unützer J (2014) Referral for substance abuse treatment and depression improvement among patients with co-occurring disorders seeking behavioral health services in primary care. *Journal of Substance Abuse Treatment*, 46(2): 106–12. doi:10.1016/j.jsat.2013.08.016

35 Chaple M and Sacks S (2016) The impact of technical assistance and implementation support on program capacity to deliver integrated services. *The Journal of Behavioral Health Services & Research*, 43(1): 3–17. doi:10.1007/s11414-014-9419-6

36 Clark CDP, Langkjaer S, Chinikamwala S, Joseph H, Semaan SM, Clement J, *et al.* (2017) Providers' perspectives on program collaboration and service integration for persons who use drugs. *The Journal of Behavioral Health Services & Research*, 44(1): 158–67. doi:10.1007/s11414-016-9506-y

37 Garland EL, Roberts-Lewis A, Tronnier CD, Graves R and Kelley K (2016) Mindfulness-oriented recovery enhancement versus CBT for co-occurring substance dependence, traumatic stress, and psychiatric disorders: proximal outcomes from a pragmatic randomized trial. *Behaviour Research and Therapy*, 77: 7–16. doi:10.1016/j.brat.2015.11.012

38 Gotham HJ, Claus RE, Selig K and Homer AL (2010) Increasing program capability to provide treatment for co-occurring substance use and mental disorders: organizational characteristics. *Journal of Substance Abuse Treatment*, 38(2): 160–69. doi:10.1016/j.jsat.2009.07.005

39 Graham HL, Copello A, Birchwood M, Orford J, McGovern D, Mueser KT, *et al.* (2006) A preliminary evaluation of integrated treatment for co-existing substance use and severe mental health problems: impact on teams and service users. *Journal of Mental Health*, 15(5): 577–91. doi:10.1080/09638230600902633

40 Santini ZI, Nielsen L, Hinrichsen C, Tolstrup JS, Vinther JL, Koyanagi A, *et al.* (2017) The association between Act-Belong-Commit indicators and problem drinking among older Irish adults: findings from a prospective analysis of the Irish Longitudinal Study on Ageing (TILDA). *Drug and Alcohol Dependence*, 180: 323–31. doi:10.1016/j.drugalcdep.2017.08.033

41 Sullivan CJ, Sacks S, McKendrick K, Banks S, Sacks JY and Stommel J (2007) Modified therapeutic community treatment for offenders with co-occurring disorders. *Journal of Offender Rehabilitation*, 45(1–2): 227–47. doi:10.1300/J076v45n01_15

42 Urada D, Schaper E, Alvarez L, Reilly C, Dawar M, Field R, *et al.* (2012) Perceptions of mental health and substance use disorder services integration among the workforce in primary care settings. *Journal of Psychoactive Drugs*, 44(4): 292–98. doi:10.1080/02791072.2012.720163

43 Walton MA, Chermack ST, Blow FC, Ehrlich PF, Barry KL, Booth BM, *et al.* (2015) Components of brief alcohol interventions for youth in the emergency department. *Substance Abuse*, 36(3): 339–49. doi:10.1080/08897077.2014.958607

44 Watkins KE, Paddock SM, Hudson TJ, Ounpraseuth S, Schrader AM, Hepner KA, *et al.* (2016) Association between quality measures and mortality in individuals with co-occurring mental health and substance use disorders. *Journal of Substance Abuse Treatment*, 69: 1–8. doi:10.1016/j.jsat.2016.06.001

45 Kidorf M, Brooner RK, Gandotra N, Antoine D, King VL, Peirce J, *et al.* (2013) Reinforcing integrated psychiatric service attendance in an opioid-agonist program: a randomized and controlled trial. *Drug and Alcohol Dependence*, 133(1): 30–36. doi:10.1016/j.drugalcdep.2013.06.005

46 Kidorf M, King VL, Peirce J, Gandotra N, Ghazarian S and Brooner RK (2015) Substance use and response to psychiatric treatment in methadone-treated outpatients with comorbid psychiatric disorder. *Journal of Substance Abuse Treatment*, 51: 64–69. doi:10.1016/j.jsat.2014.10.012

47 Laudet AB, Magura S, Vogel HS and Knight E (2000) Recovery challenges among dually diagnosed individuals. *Journal of Substance Abuse Treatment*, 18(4): 321–29. doi:10.1016/S0740-5472(99)00077-X

48 Markoff LS, Finkelstein N, Kammerer N, Kreiner P and Prost CA (2005) Relational systems change: implementing a model of change in integrating services for women with substance abuse and mental health disorders and histories of trauma. *The Journal of Behavioral Health Services & Research*, 32(2): 227–40. doi:10.1007/BF02287269

49 Mowbray CT, Jordan LC, Ribisl KM, Kewalramani A, Luke D, Herman S, *et al.* (1999) Analysis of postdischarge change in a dual diagnosis population. *Health & Social Work*, 24(2): 91–101. doi:10.1093/hsw/24.2.91

50 Moggi F, Hirsbrunner HP, Brodbeck J and Bachmann KM (1999) One-year outcome of an integrative inpatient treatment for dual diagnosis patients. *Addictive Behaviors*, 24(4): 589–92. doi:10.1016/S0306-4603(98)00079-3

51 Morrissey JP, Jackson EW, Ellis AR, Amaro H, Brown VB and Najavits LM (2005) Twelve-month outcomes of trauma-informed interventions for women with co-occurring disorders. *Psychiatric Services*, 56(10): 1213–22. doi:10.1176/appi.ps.56.10.1213

52 Neufeld K, Kidorf M, King V, Stoller K, Clark M, Peirce J, *et al.* (2010) Using enhanced and integrated services to improve response to standard methadone treatment: Changing the clinical infrastructure of treatment networks. *Journal of Substance Abuse Treatment*, 38(2): 170–77. doi:10.1016/j.jsat.2009.07.003

53 Padgett DK, Henwood B, Abrams C and Davis A (2008) Engagement and retention in services among formerly homeless adults with co-occurring mental illness and substance abuse: Voices from the margins. *Psychiatric Rehabilitation Journal*, 31(3): 226–33. doi:10.2975/31.3.2008.226.233

54 Sacks S, McKendrick K, Sacks JY, Banks S and Harle M (2008) Enhanced outpatient treatment for co-occurring disorders: main outcomes. *Journal of Substance Abuse Treatment*, 34(1): 48–60. doi:10.1016/j.jsat.2007.01.009

55 Sacks S, Chaple M, Sirikantraporn J, Sacks JY, Knickman J and Martinez J (2013) Improving the capability to provide integrated mental health and substance abuse services in a state system of outpatient care. *Journal of Substance Abuse Treatment*, 44(5): 488–93. doi:10.1016/j.jsat.2012.11.001

56 Guerrero EG, Padwa H, Lengnick-Hall R, Kong Y and Perrigo JL (2015) Leadership and licensure for drug treatment and the implementation of co-occurring disorder treatment in community mental health centers. *Community Mental Health Journal*, 51(5): 554–66. doi:10.1007/s10597-015-9886-0

57 Guerrero EG, Aarons GA and Palinkas LA (2014) Organizational capacity for service integration in community-based addiction health services. *American Journal of Public Health*, 104(4): e40–e47. doi:10.2105/AJPH.2013.301842

58 Hughes E, Wanigaratne S, Gournay K, Johnson S, Thornicroft G, Finch E, *et al.* (2008) Training in dual diagnosis interventions (the COMO Study): randomised controlled trial. *BMC Psychiatry*, 8(1): 12. doi:10.1186/1471-244X-8-12

59 Huỳnh C, Ngamini Ngui A, Kairouz S, Lesage A and Fleury M-J (2016) Factors associated with high use of general practitioner and psychiatrist services among patients attending an addiction rehabilitation center. *BMC Psychiatry*, 16(1): 258. doi:10.1186/s12888-016-0974-7

60 Johnson JE, Schonbrun YC, Peabody ME, Shefner RT, Fernandes KM, Rosen RK, *et al.* (2015) Provider experiences with prison care and aftercare for women with co-occurring mental health and substance use disorders: treatment, resource, and systems integration challenges. *The Journal of Behavioral Health Services & Research*, 42(4): 417–36. doi:10.1007/s11414-014-9397-8

61 Sun AP (2012) Helping homeless individuals with co-occurring disorders: the four components. *Social Work*, 57(1): 23–37. doi:10.1093/sw/swr008

62 Catania LS, Hetrick SE, Newman LK and Purcell R (2011) Prevention and early intervention for mental health problems in 0–25 year olds: are there evidence-based models of care? *Advances in Mental Health*, 10(1): 6–19. doi:10.5172/jamh.2011.10.1.6

63 Devitt TS, Davis KE, Kinley M and Smyth J (2009) The evolution of integrated dual disorders treatment at thresholds: lessons learned. *American Journal of Psychiatric Rehabilitation*, 12(2): 93–107. doi:10.1080/15487760902812972

64 Lubman DI, Hides L and Elkins K (2008) Developing integrated models of care within the youth alcohol and other drug sector. *Australasian Psychiatry,* 16(5): 363–66. doi:10.1080/10398560802027294

65 McKay JR and Hiller-Sturmhöfel S (2011) Treating alcoholism as a chronic disease: approaches to long-term continuing care. *Alcohol Research & Health*, 33(4): 356–70.

66 Nadkarni A (2018) Increasing access to psychosocial interventions for alcohol use disorders: home based interventions. *Indian Journal of Psychiatry*, 60(Suppl 4): S564–S570. doi:10.4103/psychiatry.IndianJPsychiatry_25_18

67 Sacks S, Gotham HJ, Johnson K, Padwa H, Murphy DM and Krom L (2016) Integrating substance use disorder and health care services in an era of health reform: models, interventions, and implementation strategies. *American Journal of Medical Research*, 3(1): 75–124.

68 Sterling S, Chi F and Hinman A (2011) Integrating care for people with co-occurring alcohol and other drug, medical, and mental health conditions. *Alcohol Research & Health*, 33(4): 338–49.

69 Sullivan WP and Wahler EA (2017) Chronic care, integrated care, and mental health: moving the needle now. *Social Work in Mental Health*, 15(6): 601–14. doi:10.1080/15332985.2016.1265636

70 Torrens M, Rossi PC, Martinez-Riera R, Martinez-Sanvisens D and Bulbena A (2012) Psychiatric co-morbidity and substance use disorders: treatment in parallel systems or in one integrated system? *Substance Use & Misuse*, 47(8–9): 1005–14. doi:10.3109/10826084.2012.663296

71 Tsai J, Salyers MP, Rollins AL, McKasson M and Litmer ML (2009) Integrated dual disorders treatment. *Journal of Community Psychology,* 37(6): 781–88. doi:10.1002/jcop.20318

72 Torchalla I, Nosen L, Rostam H and Allen P (2012) Integrated treatment programs for individuals with concurrent substance use disorders and trauma experiences: a systematic review and meta-analysis. *Journal of Substance Abuse Treatment*, 42(1): 65–77. doi:10.1016/j.jsat.2011.09.001

73 Schütz C, Linden IA, Torchalla I, Li K, Al-Desouki M and Krausz M (2013) 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 Services Research*, 13(1): 288. doi:10.1186/1472-6963-13-288

74 van Vugt MD, Kroon H, Delespaul PAEG and Mulder CL (2014) Assertive community treatment and associations with substance abuse problems. *Community Mental Health Journal*, 50(4): 460–65. doi:10.1007/s10597-013-9626-2

75 Fleury M-J, Grenier G, Vallée C, Aubé D, Farand L, Bamvita J-M, *et al.* (2016) Implementation of the Quebec mental health reform (2005–2015). *BMC Health Services Research*, 16(1): 586. doi:10.1186/s12913-016-1832-5

76 Gaughran F, Stahl D, Ismail K, Greenwood K, Atakan Z, Gardner-Sood P, *et al*. (2017) Randomised control trial of the effectiveness of an integrated psychosocial health promotion intervention aimed at improving health and reducing substance use in established psychosis (IMPaCT). *BMC Psychiatry*, 17(1): 413. doi:10.1186/s12888-017-1571-0

77 Gurewich D, Prottas J and Sirkin JT (2014) Managing care for patients with substance abuse disorders at community health centers. *Journal of Substance Abuse Treatment,* 46(2): 227–31. doi:10.1016/j.jsat.2013.06.013

78 Kim SJ, Marsch LA, Acosta MC, Guarino H and Aponte-Melendez Y (2016) Can persons with a history of multiple addiction treatment episodes benefit from technology delivered behavior therapy? A moderating role of treatment history at baseline. *Addictive Behaviors,* 54: 18-23. doi:10.1016/j.addbeh.2015.11.009

79 LaBelle CT, Han SC, Bergeron A and Samet JH (2016) Office-based opioid treatment with buprenorphine (OBOT-B): statewide implementation of the Massachusetts Collaborative Care Model in community health centers. *Journal of Substance Abuse Treatment,* 60: 6–13. doi:10.1016/j.jsat.2015.06.010

80 Barrowclough C, Haddock G, Beardmore R, Conrod P, Craig T, Davies L, *et al.* (2009) Evaluating integrated MI and CBT for people with psychosis and substance misuse: recruitment, retention and sample characteristics of the MIDAS trial. *Addictive Behaviors*, 34(10): 859–66. doi:10.1016/j.addbeh.2009.03.007

81 Boden MT and Moos R (2009) Dually diagnosed patients' responses to substance use disorder treatment. *Journal of Substance Abuse Treatment,* 37(4): 335–45. doi:10.1016/j.jsat.2009.03.012

82 Clemans-Cope L, Wishner JB, Allen EH, Lallemand N, Epstein M and Spillman BC (2017) Experiences of three states implementing the Medicaid health home model to address opioid use disorder – case studies in Maryland, Rhode Island, and Vermont. *Journal of Substance Abuse Treatment,* 83: 27–35. doi:10.1016/j.jsat.2017.10.001

83 Fisher CM, McCleary JS, Dimock P and Rohovit J (2014) Provider preparedness for treatment of co-occurring disorders: comparison of social workers and alcohol and drug counselors. *Social Work Education,* 33(5): 626–41. doi:10.1080/02615479.2014.919074

84 Fitzpatrick SJ, Perkins D, Luland T, Brown D and Corvan E (2017) The effect of context in rural mental health care: understanding integrated services in a small town. *Health & Place,* 45: 70–76. doi:10.1016/j.healthplace.2017.03.004

85 McCoy ML, Devitt T, Clay R, Davis KE, Dincin J, Pavick D, *et al.* (2003) Gaining insight: who benefits from residential, integrated treatment for people with dual diagnoses? *Psychiatric Rehabilitation Journal,* 27(2): 140–50. doi:10.2975/27.2003.140.150

86 Mueller-Stierlin AS, Helmbrecht MJ, Herder K, Prinz S, Rosenfeld N, Walendzik J, *et al*. (2017) Does one size really fit all? The effectiveness of a non-diagnosis-specific integrated mental health care program in Germany in a prospective, parallel-group controlled multi-centre trial. *BMC Psychiatry,* 17(1): 283. doi:10.1186/s12888-017-1441-9

87 Parker S, Dark F, Newman E, Korman N, Meurk C, Siskind D, *et al.* (2016) Longitudinal comparative evaluation of the equivalence of an integrated peer-support and clinical staffing model for residential mental health rehabilitation: a mixed methods protocol incorporating multiple stakeholder perspectives. *BMC Psychiatry*, 16(1): 179. doi:10.1186/s12888-016-0882-x

88 Raymond H, Amlung M, De Leo JA, Hashmani T, Younger J and MacKillop J (2016) Adaptation of an acute psychiatric unit to a concurrent disorders unit to increase capacity and improve patient care. *Canadian Journal of Addiction,* 7(3): 25–33.

89 Savic M, Best D, Manning V and Lubman DI (2017) Strategies to facilitate integrated care for people with alcohol and other drug problems: a systematic review. *Substance Abuse Treatment, Prevention, and Policy,* 12(1): 19. doi:10.1186/s13011-017-0104-7

90 Lago RR, Peter E and Bógus CM (2017) Harm reduction and tensions in trust and distrust in a mental health service: a qualitative approach. *Substance Abuse Treatment, Prevention, and Policy,* 12(1): 12. doi:10.1186/s13011-017-0098-1

91 Magura S (2008) Effectiveness of dual focus mutual aid for co-occurring substance use and mental health disorders: a review and synthesis of the 'Double Trouble' in Recovery evaluation. *Substance Use & Misuse,* 43(12–13): 1904–26. doi:10.1080/10826080802297005

92 Marsch LA, Guarino H, Acosta M, Aponte-Melendez Y, Cleland C, Grabinski M, *et al.* (2014) Web-based behavioral treatment for substance use disorders as a partial replacement of standard methadone maintenance treatment. *Journal of Substance Abuse Treatment,* 46(1): 43–51. doi:10.1016/j.jsat.2013.08.012

93 Bischof G, Iwen J, Freyer-Adam J and Rumpf HJ (2016) Efficacy of the Community Reinforcement and Family Training for concerned significant others of treatment-refusing individuals with alcohol dependence: a randomized controlled trial. *Drug and Alcohol Dependence,* 163: 179–85. doi:10.1016/j.drugalcdep.2016.04.015

94 Bradley E and Green D (2017) Involved, inputting or informing: 'shared' decision making in adult mental health care. *Health Expectations,* 21(1): 192–200. doi:10.1111/hex.12601

95 Chappell E, Sielbeck-Mathes K, Reiserer R, Wohltjen H, Shuran W and McInerney E (2015) Effects of intensive family preservation services in rural Tennessee on parental hopefulness with families affected by substance use. *Child Welfare,* 94(5): 187–200.

96 Day E, Copello A, Seddon JL, Christie M, Bamber D, Powell C, *et al.* (2013) Pilot study of a social network intervention for heroin users in opiate substitution treatment: study protocol for a randomized controlled trial. *Trials,* 14(1): 264. doi:10.1186/1745-6215-14-264

97 Flynn B (2010) Using systemic reflective practice to treat couples and families with alcohol problems. *Journal of Psychiatric and Mental Health Nursing,* 17(7): 583–93. doi:10.1111/j.1365-2850.2010.01574.x

98 He Y, Gewirtz A, Lee S, Morrell N and August G (2016) A randomized preference trial to inform personalization of a parent training program implemented in community mental health clinics. *Translational Behavioral Medicine,* 6(1): 73–80. doi:10.1007/s13142-015-0366-4

99 Roussy V, Thomacos N, Rudd A and Crockett B (2015) Enhancing health-care workers' understanding and thinking about people living with co-occurring mental health and substance use issues through consumer-led training. *Health Expectations,* 18(5): 1567–81. doi:10.1111/hex.12146

100 Sorsa M, Greacen T, Lehto J and Åstedt-Kurki P (2017) A qualitative study of barriers to care for people with co-occurring disorders. *Archives of Psychiatric Nursing,* 31(4): 399–406. doi:10.1016/j.apnu.2017.04.013

101 Spanjol J, Cui AS, Nakata C, Sharp LK, Crawford SY, Xiao Y, *et al.* (2015) Co-production of prolonged, complex, and negative services: an examination of medication adherence in chronically ill individuals. *Journal of Service Research,* 18(3): 284–302. doi:10.1177/1094670515583824

102 Tobin MJ, Matters B, Chen L, Smith R and Stuhlmiller C (2001) Improving clinical management for consumers with co-existing mental health and substance use disorders. *Australian Health Review,* 24(3): 118–24. doi:10.1071/AH010118

103 Zlotowitz S, Barker C, Moloney O and Howard C (2015) Service users as the key to service change? The development of an innovative intervention for excluded young people. *Child and Adolescent Mental Health,* 21(2): 102–08. doi:10.1111/camh.12137

104 Kidd S, Kenny A and McKinstry C (2014) Exploring the meaning of recovery-oriented care: an action-research study. *International Journal of Mental Health Nursing,* 24(1): 38–48. doi:10.1111/inm.12095

105 Knowles S, Hays R, Senra H, Bower P, Locock L, Protheroe J, *et al.* (2018) Empowering people to help speak up about safety in primary care: using codesign to involve patients and professionals in developing new interventions for patients with multimorbidity. *Health Expectations,* 21(2): 539–48. doi:10.1111/hex.12648

106 Lim E, Wynaden D and Heslop K (2017) Recovery-focussed care: how it can be utilized to reduce aggression in the acute mental health setting. *International Journal of Mental Health Nursing*, 26(5): 445–60. doi:10.1111/inm.12378

109 Crawford S and Bath N (2013) Peer support models for people with a history of injecting drug use undertaking assessment and treatment for hepatitis C virus infection. *Clinical Infectious Diseases,* 57(Suppl 2): S75–S79. doi:10.1093/cid/cit297

110 Jain S, McLean C, Adler EP and Rosen CS (2016) Peer support and outcome for veterans with posttraumatic stress disorder (PTSD) in a residential rehabilitation program. *Community Mental Health Journal,* 52(8): 1089–92. doi:10.1007/s10597-015-9982-1

111 Kulik W and Shah A (2016) Role of peer support workers in improving patient experience in Tower Hamlets Specialist Addiction Unit. *BMJ Quality Improvement Reports,* 5(1). doi:10.1136/bmjquality.u205967.w2458

112 Lloyd-Evans B, Mayo-Wilson E, Harrison B, Istead H, Brown E, Pilling S, *et al.* (2014) A systematic review and meta-analysis of randomised controlled trials of peer support for people with severe mental illness. *BMC Psychiatry*, 14(1): 39. doi:10.1186/1471-244X-14-39

113 Mahlke CI, Priebe S, Heumann K, Daubmann A, Wegscheider K and Bock T (2017) Effectiveness of one-to-one peer support for patients with severe mental illness – a randomised controlled trial. *European Psychiatry*, 42: 103–10. doi:10.1016/j.eurpsy.2016.12.007

114 Min SY, Whitecraft J, Rothbard AB and Salzer MS (2007) Peer support for persons with co-occurring disorders and community tenure: a survival analysis. *Psychiatric Rehabilitation Journal*, 30(3): 207–13. doi:10.2975/30.3.2007.207.213

115 Simpson A, Flood C, Rowe J, Quigley J, Henry S, Hall C, *et al.* (2014) Results of a pilot randomised controlled trial to measure the clinical and cost effectiveness of peer support in increasing hope and quality of life in mental health patients discharged from hospital in the UK. *BMC Psychiatry,* 14(1): 30. doi:10.1186/1471-244X-14-30

116 Sokol R and Fisher E (2016) Peer support for the hardly reached: a systematic review. *American Journal of Public Health,* 106(7): e1–e8. doi:10.2105/AJPH.2016.303180

117 Thomas EC and Salzer MS (2018) Associations between the peer support relationship, service satisfaction and recovery-oriented outcomes: a correlational study. *Journal of Mental Health,* 27(4): 1–7. doi:10.1080/09638237.2017.1417554

118 Vayshenker B, Mulay AL, Gonzales L, West ML, Brown I and Yanos PT (2016) Participation in peer support services and outcomes related to recovery. *Psychiatric Rehabilitation Journal,* 39(3): 274–81. doi:10.1037/prj0000178

119 Verhaeghe M, Bracke P and Bruynooghe K (2008) Stigmatization and self-esteem of persons in recovery from mental illness: the role of peer support. *International Journal of Social Psychiatry,* 54(3): 206–18. doi:10.1177/0020764008090422

120 Sandbrook J, Clark T and Cocksedge KA (2015) Addressing substance misuse in medium secure settings in the UK and Ireland – a survey of current practice. *The Journal of Forensic Practice,* 17(3): 192–203. doi:10.1108/JFP-01-2015-0006

121 Butler S (2016) Coolmine Therapeutic Community, Dublin: a 40-year history of Ireland's first voluntary drug treatment service. *Addiction*, 111(2): 197–203. doi:10.1111/add.13157

122 Cox GM and Comiskey CM (2011) Does concurrent cocaine use compromise 1-year treatment outcomes for opiate users? *Substance Use & Misuse,* 46(9): 1206–16. doi:10.3109/10826084.2010.501649

123 Farren CK and McElroy S (2008) Treatment response of bipolar and unipolar alcoholics to an inpatient dual diagnosis program. *Journal of Affective Disorders,* 106(3): 265–72. doi:10.1016/j.jad.2007.07.006

124 Farren CK, Murphy P and McElroy S (2014) A 5-year follow-up of depressed and bipolar patients with alcohol use disorder in an Irish population. *Alcoholism: Clinical & Experimental Research,* 38(4): 1049–58. doi:10.1111/acer.12330

125 Field CA, Klimas J, Barry J, Bury G, Keenan E, Smyth BP, *et al.* (2013) Problem alcohol use among problem drug users in primary care: a qualitative study of what patients think about screening and treatment. *BMC Family Practice,* 14(1): 98. doi:10.1186/1471-2296-14-98

126 Hartnett D, Murphy E, Kehoe E, Agyapong V, McLoughlin DM and Farren C (2017) Supportive text messages for patients with alcohol use disorder and a comorbid depression: a protocol for a single-blind randomised controlled aftercare trial. *BMJ Open,* 7(5): e013587. doi:10.1136/bmjopen-2016-013587

127 Klimas J, Cullen W and Field CA (2014) Problem alcohol use among problem drug users: development and content of clinical guidelines for general practice. *Irish Journal of Medical Science,* 183(1): 89–101. doi:10.1007/s11845-013-0982-2

128 Murphy E and Comiskey CM (2015) Modeling the impact of place on individual methadone treatment outcomes in a national longitudinal cohort study. *Substance Use & Misuse,* 50(1): 99–105. doi:10.3109/10826084.2014.958860

129 O'Toole J, Hambly R, Cox A-M, O'Shea B and Darker C (2014) Methadone-maintained patients in primary care have higher rates of chronic disease and multimorbidity, and use health services more intensively than matched controls. *European Journal of General Practice,* 20(4): 275–80. doi:10.3109/13814788.2014.905912

130 Walsh FP, Meskell P, Burke E and Dowling M (2017) Recovery-based training in mental health: effects on staff knowledge and attitudes to recovery. *Issues in Mental Health Nursing,* 38(11): 886–95. doi:10.1080/01612840.2017.1346014

131 Madigan K, Brennan D, Lawlor E, Turner N, Kinsella A, O'Connor JJ, *et al.* (2013) A multi-center, randomized controlled trial of a group psychological intervention for psychosis with comorbid cannabis dependence over the early course of illness. *Schizophrenia Research,* 143(1): 138–42. doi:10.1016/j.schres.2012.10.018

132 O'Malley SS, Sinha R, Grilo CM, Capone C, Farren CK, McKee SA, *et al.* (2007) Naltrexone and cognitive behavioral coping skills therapy for the treatment of alcohol drinking and eating disorder features in alcohol-dependent women: a randomized controlled trial. *Alcoholism: Clinical & Experimental Research,* 31(4): 625–34. doi:10.1111/j.1530-0277.2007.00347.x

133 Scully M, Geoghegan N, Corcoran P, Tiernan M and Keenan E (2004) Specialized drug liaison midwife services for pregnant opioid dependent women in Dublin, Ireland. *Journal of Substance Abuse Treatment,* 26(1): 329–35. doi:10.1016/S0740-5472(03)00154-5

134 Thekiso TB, Murphy P, Milnes J, Lambe K, Curtin A and Farren CK (2015) Acceptance and commitment therapy in the treatment of alcohol use disorder and comorbid affective disorder: a pilot matched control trial. *Behavior Therapy,* 46(6): 717–28. doi:10.1016/j.beth.2015.05.005

135 Thompson A, Ashcroft DM, Owens L, van Staa TP and Pirmohamed M (2017) Drug therapy for alcohol dependence in primary care in the UK: a clinical practice research datalink study. *PLOS ONE,* 12(3): e0173272. doi:10.1371/journal.pone.0173272

136 Farren CK and McElroy S (2010) Predictive factors for relapse after an integrated inpatient treatment programme for unipolar depressed and bipolar alcoholics. *Alcohol and Alcoholism,* 45(6): 527–33. doi:10.1093/alcalc/agq060

137 Comiskey CM and Stapleton R (2010) Longitudinal outcomes for treated opiate use and the use of ancillary medical and social services. *Substance Use & Misuse,* 45(4): 628–41. doi:10.3109/10826080903452504

138 Kumpfer KL, Xie J and O'Driscoll R (2012) Effectiveness of a culturally adapted strengthening families program 12–16 years for high-risk Irish families. *Child & Youth Care Forum,* 41(2): 173–95. doi:10.1007/s10566-011-9168-0

139 McHugh P, Brennan J, Galligan N, McGonagle C and Byrne M (2013) Evaluation of a primary care adult mental health service: year 2. *Mental Health in Family Medicine,* 10(1): 53–59.

140 Gavin B, Cullen W, Foley S, McWilliams S, Turner N, O'Callaghan E, *et al.* (2008) Integrating primary care and early intervention in psychosis services: a general practitioner perspective. *Early Intervention in Psychiatry,* 2(2): 103–07. doi:10.1111/j.1751-7893.2008.00065.x

141 Richards D, Timulak L, Doherty G, Sharry J, McLoughlin O, Rashleigh C, *et al.* (2014) Low-intensity internet-delivered treatment for generalized anxiety symptoms in routine care: protocol for a randomized controlled trial. *Trials,* 15(1): 145. doi:10.1186/1745-6215-15-145

142 Morrow R, McGlennon D and McDonnell C (2016) A novel mental health crisis service – outcomes of inpatient data. *The Ulster Medical Journal,* 85(1): 13–17.

143 Cusack E, Killoury F and Nugent LE (2017) The professional psychiatric/mental health nurse: skills, competencies and supports required to adopt recovery-orientated policy in practice. *Journal of Psychiatric and Mental Health Nursing,* 24(2–3): 93–104. doi:10.1111/jpm.12347

144 Comiskey CM and Cox G (2010) Analysis of the impact of treatment setting on outcomes from methadone treatment. *Journal of Substance Abuse Treatment,* 39(3): 195–201. doi:10.1016/j.jsat.2010.05.007

145 Newman D, O'Reilly P, Lee SH and Kennedy C (2015) Mental health service users' experiences of mental health care: an integrative literature review. *Journal of Psychiatric and Mental Health Nursing,* 22(3): 171–82. doi:10.1111/jpm.12202

146 Quigley P (2003) Hard cases in hard places: challenges of community addictions work in Dublin. *Drugs: Education, Prevention and Policy,* 10(3): 211–21. doi:10.1080/0968763031000102617

147 Smyth BP, Barry J, Lane A, Cotter M, O'Neill M, Quinn C, *et al.* (2018) In-patient treatment of opiate dependence: medium-term follow-up outcomes. *British Journal of Psychiatry,* 187(4): 360–65. doi:10.1192/bjp.187.4.360

148 Van Hout MC and Bingham T (2014) Service stakeholders' perspectives on methadone maintenance treatment, Special Community Employment Schemes and client recovery pathways. *Journal of Vocational Rehabilitation,* 40(1): 49–58. doi:10.3233/JVR-130664

149 Landau J, Stanton MD, Brinkman-Sull D, Ikle D, McCormick D, Garrett J, *et al.* (2004) Outcomes with the ARISE approach to engaging reluctant drug- and alcohol-dependent individuals in treatment. *The American Journal of Drug and Alcohol Abuse*, 30(4): 711–48. doi:10.1081/ADA-200037533

150 Mahone IH, Farrell S, Hinton I, Johnson R, Moody D, Rifkin K, *et al.* (2011) Shared decision making in mental health treatment: qualitative findings from stakeholder focus groups. *Archives of Psychiatric Nursing,* 25(6): e27–e36. doi:10.1016/j.apnu.2011.04.003

151 Paudel S, Sharma N, Joshi A and Randall M (2018) Development of a shared decision making model in a community mental health center. *Community Mental Health Journal,* 54(1): 1–6. doi:10.1007/s10597-017-0134-7

152 Schaefer JA, Cronkite RC and Hu KU (2011) Differential relationships between continuity of care practices, engagement in continuing care, and abstinence among subgroups of patients with substance use and psychiatric disorders. *Journal of Studies on Alcohol and Drugs,* 72(4): 611–21. doi:10.15288/jsad.2011.72.611

153 Woltmann EM and Whitley R (2010) Shared decision making in public mental health care: Perspectives from consumers living with severe mental illness. *Psychiatric Rehabilitation Journal,* 34(1): 29–36. doi:10.2975/34.1.2010.29.36

Appendix 6: Realist synthesis theory insights themes

Theory number	Theory statement	Realist synthesis insights	Supporting articles
1	Integration of existing services, particularly community-based services, supports access to care and minimises barriers faced with creation of new service lines.	Integration was prominent in the literature. Much of the literature compared various aspects of integration, including information systems and co-location. Comparisons with and without integration were not found.	1, 4, 5, 6, 12, 13, 14, 15, 17, 18, 24, 28, 30, 32, 34, 35, 39, 40, 42, 43, 45, 46, 47, 48, 49, 52, 54, 55, 56, 60, 61, 64, 68, 69, 74, 75, 76, 77, 78, 79, 80, 82, 84, 85, 86, 87, 88, 89, 91, 92, 93, 95, 96, 97, 98, 99, 102, 104, 105, 106, 114, 115, 120, 121, 123, 124, 125, 126, 127, 131, 133, 134, 135, 138, 146, 149, 150, 151
2	Integrated treatment requires training and cross-training of substance use and mental health service providers at multiple levels.	The importance of training and cross-training was supported in the literature. The differences between the mental health and alcohol and other drug fields in terms of training, beliefs, and ideologies highlight the need for cross-training.	5, 11, 15, 30, 31, 34, 35, 38, 39, 55, 56, 58, 60, 61, 62, 64, 67, 68, 69, 70, 75, 76, 79, 82, 83, 88, 89, 90, 93, 94, 96, 99, 100, 102, 106, 115, 117, 120, 130, 149, 150, 151
3	Improved coordination between providers (substance use, mental health, and primary care) will break down administrative silos and improve access to timely diagnosis, care, and treatment.	The literature confirms coordination as important. Integration at all levels emerged as a dominant theme. Integration creates more opportunities for early identification of problems and early intervention.	2, 3, 6, 7, 13, 18, 23, 24, 25, 27, 28, 30, 31, 35, 42, 48, 51, 53, 57, 59, 62, 64, 66, 67, 68, 69, 70, 71, 75, 76, 77, 79, 82, 83, 84, 88, 89, 100, 101, 102, 105, 115, 121, 133, 136, 137, 138, 146
4	Services must be tailored to the local context and the individual's needs and circumstances to be most effective.	This was a prominent theme in the literature and included harm reduction and client-centred approaches, meeting patients where they are, and tailoring services to individual needs.	2, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19, 21, 22, 27, 31, 36, 41, 45, 46, 47, 48, 49, 51, 53, 60, 61, 62, 63, 65, 66, 74, 76, 77, 78, 81, 82, 84, 85, 86, 87, 90, 91, 92, 93, 94, 95, 97, 98, 100, 101, 102, 103, 104, 105, 106, 120, 121, 125, 126, 128, 130, 136, 137, 138, 144, 145, 146, 147, 148, 150, 151, 152
5	Including service users and families in service and care decisions results in better outcomes for individuals and their families.	The literature confirmed the importance of including service users and families in mental health and substance use service and care decisions. Some literature referenced this as a right. Furthermore, provider and consumer relationships were a common theme in this literature and suggested a trusting and positive relationship as a mechanism for achieving inclusive care decisions.	2, 6, 7, 11, 16, 31, 47, 48, 50, 51, 65, 66, 84, 85, 86, 90, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 114, 116, 117, 121, 130, 138, 145, 146, 148, 149, 150, 151, 152, 153

Theory number	Theory statement	Realist synthesis insights	Supporting evidence
6	A knowledge of local efforts already in place and co-production with service providers and individuals with lived experience is needed to develop practice-informed strategies and policies that take known facilitators and implementation challenges into consideration.	The importance of trust between providers and clients was a predominant theme in the literature reviewed that addressed this theory: co-production and shared decision-making. This led to recognition that both structural (dedicated appointments) and relational (sensitive communication, trust) space are essential for such preferences to be genuinely shared.	30, 40, 42, 48, 52, 54, 55, 57, 59, 60, 61, 69, 77, 84, 87, 90, 91, 95, 98, 99, 102, 103, 104, 105, 106, 116, 118, 121, 128, 130, 138, 150, 151, 153
7	Resources (financial and otherwise) must accompany strategy and policy to enable integration and improve service delivery and individual outcomes.	Financial resources are important. Investment in new capabilities is a form of resource. In addition to more financial resources, there was some focus on efficiency and effectiveness. It is necessary to match the resource to the need and consider alternative delivery options (phone, internet modules, and brief interventions). High-level policy can hinder or facilitate positive outcomes. Urban tends to be more resource-rich than rural.	8, 11, 12, 13, 14, 15, 16, 22, 25, 36, 38, 46, 52, 56, 57, 60, 63, 65, 66, 77, 79, 82, 89, 96, 97, 98, 100, 101, 102, 121, 137, 138, 145, 147, 151
8	When treatment takes a holistic view and includes housing and social supports, individual outcomes are improved.	The literature is supportive of taking a holistic view and approach to serving individuals. Housing and social supports were most commonly mentioned, suggesting these supports play a role in engagement and retention of individuals in services. Supportive employment was also described as important.	2, 3, 4, 7, 10, 14, 16, 23, 28, 40, 41, 47, 50, 53, 54, 60, 61, 63, 65, 69, 71, 73, 85, 90, 91, 95, 103, 116, 117, 125, 137, 145, 146, 148
9	A holistic model to mental health is needed to improve mental health outcomes, particularly among individuals with co-occurring mental health and substance use disorders.	This statement is focused on the need for a holistic mindset that includes behavioural, psychiatric, and substance use mindsets. This concept was not prevalent in the literature reviewed. One Ireland study focused on the value of a population-based approach. There was also an emphasis on the importance of putting the patient at the centre.	2, 4, 5, 6, 7, 9, 12, 13, 20, 24, 26, 28, 33, 37, 40, 41, 46, 48, 63, 64, 77, 82, 93, 94, 95, 97, 99, 100, 103, 104, 105, 106, 125, 145, 148
10	Peer support facilitates recovery and positive outcomes for individuals with co-occurring mental health and substance use disorders.	The literature was supportive of the value of peer support. Some articles identified the value of a broader range of peer support, such as what occurs in group settings. Social support networks may provide a supportive buffer for those who are dually diagnosed with mental health and substance use issues.	6, 9, 24, 27, 31, 51, 54, 60, 63, 87, 91, 95, 96, 97, 101, 103, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 133, 151

Appendix 7: Research question 1 coding results table

Research question 1: What interventions improve treatment and personal functioning outcomes for people with co-occurring substance use and mental health problems and in what circumstances do they work?

Context	Mechanism	Outcome	Theory
Ireland (121, 122, 123, 124, 125, 126, 127, 128, 129, 130)	**Care tailored to individual needs** (2, 3, 5, 6, 11, 21, 22, 111)	**Positive outcome** (2, 3, 6, 7, 8, 9, 12, 14, 15, 16, 17, 18, 20, 21, 22, 24, 27, 28, 29, 93, 95, 97, 98, 110, 111, 113, 114, 122, 123, 130, 149)	**Integration into existing services** (1, 4, 5, 6, 12, 13, 14, 15, 17, 18, 24, 28, 93, 95, 96, 97, 98, 104, 105, 114, 120, 121, 123, 124, 125, 126, 127, 149)
Europe (1, 6, 93, 94, 96, 97, 103, 105, 111, 113, 119, 120, 127)	**Provider and staff training and motivation** (11, 13, 19, 23, 25, 26, 28, 103, 113, 149)	**Negative outcome** (26)	**Training and cross-training** (5, 11, 15, 93, 94, 96, 120, 130, 149)
USA (1, 2, 3, 5, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 28, 29, 95, 110, 114, 149)	**Holistic, whole-person support** (2, 10, 27, 103)	**Neutral outcome** (4, 5, 10, 11, 13, 19, 23, 25, 94, 96, 103, 104, 105, 112, 120, 121, 124, 125, 126)	**Improved coordination** (2, 3, 6, 7, 13, 18, 23, 24, 25, 27, 28, 105, 121)
Other location (4, 22, 27, 104)	**Collaboration and coordination development and structure** (4, 6, 12, 13)		
Urban (1, 2, 3, 6, 7, 9, 12, 13, 14, 16, 20, 24, 26, 28, 103)	**Continuity of care and transition navigation** (none)		**Services tailored to context and needs** (2, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19, 21, 22, 27, 93, 94, 95, 97, 98, 103, 104, 105, 120, 121, 125, 126, 128, 130)
Rural (1, 13, 16, 27, 95)	**Peer support** (8, 9, 16, 110, 111, 113, 114, 119)		**Including service users** (2, 6, 7, 11, 16, 93, 94, 95, 96, 97, 98, 103, 104, 105, 114, 121, 130, 149)
Suburban (17)	**Positive, hopeful culture and environment** (8, 9, 10, 11, 12, 17, 18, 25)		**Knowledge of local efforts** (95, 98, 103, 104, 105, 121, 128, 130)
Youth and young adults, ages 13–25 (2, 9, 12, 16, 20, 21, 95, 98, 103, 123, 126, 130)	**Supportive provider relationships** (10, 94, 95, 125)		**Financial and other resources** (8, 11, 12, 13, 14, 15, 16, 22, 25, 96, 97, 98, 121)
Adults, ages 26–65 (2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 21, 22, 24, 26, 27, 28, 29, 93, 94, 95, 98, 113, 114, 119, 122, 124, 125, 126, 127, 128, 130, 149)	**Programme and treatment characteristics** (1, 2, 4, 11, 12, 13, 17, 18, 24, 26, 29, 122, 123)		

Context	Mechanism	Outcome	Theory
Older adults, ages 66–99 (2, 16, 21, 98, 130)	**Policy** (2, 12, 15, 25, 104)		**Holistic view – housing, social supports, etc.** (2, 3, 4, 7, 10, 14, 16, 23, 28, 95, 103, 125)
History of homelessness (3)	**Organisational and systems change** (93)		
History of contact with criminal justice system (128)	**Recover skills, empowerment, and motivation** (2, 7, 8, 9, 17, 18, 20, 24, 25, 26, 29, 120, 122, 123, 124, 128, 130)		**Holistic model – mental health** (2, 4, 5, 6, 7, 9, 12, 13, 20, 24, 26, 28, 93, 94, 95, 97, 103, 104, 105, 125)
Mental health diagnosis only (94)			**Peer support** (6, 9, 24, 27, 95, 96, 97, 103, 110, 111, 112, 113, 114, 119)
Substance use diagnosis only (93, 122, 125, 127, 128)	**Local and cultural adaptation and implementation** (none)		
Hospital setting (10, 123)	**Client characteristics** (none)		
Veterans' affairs (7, 24, 110)	**Adverse childhood experiences and trauma treatment** (none)		
Outpatient programme (7, 9, 13, 27, 29, 149)	**Resources** (none)		
Single-site programme (6, 12, 14, 16, 17, 19, 28)	**Integration characteristics** (113)		
Multisite programme (15, 21, 96)	**Access to care** (none)		
	Communication and information sharing (105)		
	Quality and performance improvement (none)		
	Co-production (97, 105, 149)		
	Harm Reduction (none)		
	Stigma and stigma reduction (119, 125)		

Appendix 8: Research question 2 coding results table

Research question 2: What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?

Context	Mechanism	Outcome	Theory
Ireland (131, 133, 134, 136, 137, 138, 142)	**Care tailored to individual needs** (41, 45, 46, 50, 54, 136)	**Positive outcome** (30, 32, 35, 37, 38, 43, 45, 46, 48, 50, 51, 58, 118, 133, 134, 138, 142, 151)	**Integration into existing services** (30, 32, 34, 35, 39, 40, 42, 43, 45, 46, 47, 48, 49, 52, 54, 55, 56, 60, 99, 106, 131, 133, 134, 135, 138, 151)
Europe (39, 50, 58, 135)	**Provider and staff training and motivation** (30, 34, 35, 36, 38, 39, 55, 56, 58, 99)	**Negative outcome** (none)	
USA (31, 32, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 48, 49, 51, 52, 53, 56, 57, 60, 101, 118, 132, 151)	**Holistic, whole-person support** (37, 47, 50, 51, 53, 60, 133, 137)	**Neutral outcome** (31, 34, 36, 39, 41, 42, 44, 47, 49, 52, 53, 56, 57, 59, 60, 99, 106, 109, 131, 132, 135, 137, 153)	**Training and cross-training** (30, 31, 34, 35, 38, 39, 55, 56, 58, 60, 99, 106, 151)
Other location (30, 59, 99)	**Collaboration and coordination development and structure** (36, 48, 138)		**Improved coordination** (30, 31, 35, 42, 48, 51, 53, 57, 59, 101, 133, 136, 137, 138)
Urban (37, 47, 49, 52, 56, 57, 58, 153)	**Continuity of care and transition navigation** (42, 59, 136, 137)		**Services tailored to context and needs** (31, 36, 41, 45, 46, 47, 48, 49, 51, 53, 60, 101, 106, 136, 137, 138, 151)
Rural (38)	**Peer support** (none)		**Including service users** (31, 47, 48, 50, 51, 99, 101, 106, 138, 151, 153)
Suburban (38)	**Positive, hopeful culture and environment** (37, 49, 53)		**Knowledge of local efforts** (30, 40, 42, 48, 52, 54, 55, 57, 59, 60, 99, 106, 118, 138, 151, 153)
Youth and young adults, ages 13–25 (37, 43, 47, 133, 138)	**Supportive provider relationships** (none)		**Financial and other resources** (36, 38, 46, 52, 56, 57, 60, 101, 137, 138, 151)
Adults, ages 26–65 (30, 31, 32, 34, 37, 41, 42, 44, 45, 46, 47, 48, 49, 50, 52, 58, 59, 99, 101, 118, 131, 132, 134, 136, 137, 151, 153)	**Programme and treatment characteristics** (32, 33, 34, 39, 40, 41, 43, 45, 46, 49, 51, 52, 53, 131, 133, 134, 135, 136)		
Older adults, ages 66–99 (59)			

Context	Mechanism	Outcome	Theory
History of homelessness (37, 53) **History of contact with criminal justice system** (none) **Mental health diagnosis only** (118, 151) **Substance use diagnosis only** (none) **Hospital setting** (43, 49, 50) **Veterans' affairs** (44) **Outpatient programme** (30, 35, 52, 132) **Single-site programme** (42, 46) **Multisite programme** (31, 32, 35, 36, 47, 48, 51)	**Policy** (36, 44, 48, 56, 58, 151) **Organisational and systems change** (32, 35, 36, 38, 42, 44, 48, 50, 52, 55, 56, 57, 59, 133, 138) **Recover skills, empowerment, and motivation** (31, 32, 33, 37, 41, 46, 47, 49, 50, 54, 60, 101, 118, 131, 132, 135, 136, 153) **Local and cultural adaption and implementation** (35, 55, 59, 138) **Client characteristics** (33, 34, 49, 52, 134, 138) **Adverse childhood experiences and trauma treatment** (51, 53, 54) **Resources** (36, 38, 56, 57, 60) **Integration characteristics** (30, 31, 32, 39, 42, 50, 51, 52, 55) **Access to care** (53, 60, 135, 137) **Communication and information sharing** (48) **Quality and performance improvement** (44) **Co-production** (53, 99) **Harm reduction** (40,50) **Stigma and stigma reduction** (99)		**Holistic view – housing, social supports, etc.** (40, 41, 47, 50, 53, 54, 60, 137) **Holistic model – mental health** (33, 37, 40, 41, 46, 48, 99, 106) **Peer support** (31, 51, 54, 60, 101, 118, 133, 151)

Appendix 9: Research question 3 coding results table

Research question 3: What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?

Context	Mechanism	Outcome	Theory
Ireland (139, 140, 141, 143, 144, 145, 146, 148)	**Care tailored to individual needs** (100, 144)	**Positive outcome** (48, 64, 71, 73, 74, 79, 80, 82, 85, 88, 91, 92, 102, 117, 147)	**Integration into existing services** (48, 61, 64, 68, 69, 74, 75, 76, 77, 78, 79, 80, 82, 84, 85, 86, 87, 88, 89, 91, 92, 102, 115, 146, 150)
Europe (70, 74, 76, 80, 86, 115, 147)	**Provider and staff training and motivation** (61, 63, 64, 67, 68, 69, 70, 77, 79, 80, 83, 88, 89, 90, 139, 143)	**Negative outcome** (76)	**Training and cross-training** (61, 62, 64, 67, 68, 69, 70, 75, 76, 79, 82, 83, 88, 89, 90, 100, 102, 115, 117, 150)
USA (48, 65, 71, 77, 79, 81, 82, 83, 85, 91, 92, 117, 147, 150, 152)	**Holistic, whole-person support** (61, 71, 73, 74, 76, 85, 145, 148)	**Neutral outcome** (61, 62, 65, 66, 70, 72, 75, 77, 81, 83, 84, 86, 89, 90, 100, 115, 116, 139, 140, 141, 143, 144, 145, 146, 148, 150, 152)	**Improved coordination** (48, 62, 64, 66, 67, 68, 69, 70, 71, 75, 76, 77, 79, 82, 83, 84, 88, 89, 100, 102, 115, 146)
Other location (62, 64, 66, 72, 73, 75, 84, 88, 90, 102)	**Collaboration and coordination development and structure** (48, 62, 64, 66, 79, 88)		**Services tailored to context and needs** (48, 61, 62, 63, 65, 66, 74, 76, 77, 78, 81, 82, 84, 85, 86, 87, 90, 91, 92, 100, 102, 144, 145, 146, 147, 148, 150, 152)
Urban (71, 80, 85, 91, 92)	**Continuity of care and transition navigation** (none)		**Including service users** (48, 65, 66, 84, 85, 86, 90, 92, 100, 102, 116, 117, 145, 146, 148, 150, 152)
Rural (84)	**Peer support** (64, 87, 109, 116)		**Knowledge of local efforts** (48, 61, 69, 77, 84, 87, 90, 91, 102, 116, 150)
Suburban (none)	**Positive, hopeful culture and environment** (none)		**Financial and other resources** (63, 65, 66, 77, 79, 82, 89, 100, 102, 145, 147)
Youth and young adults, ages 13–25 (62, 79, 86, 139)	**Supportive provider relationships** (62, 65, 90)		
Adults, ages 26–65 (48, 79, 80, 81, 86, 91, 92, 100, 117, 139)			
Older adults, ages 66–99 (86, 100, 139)			
History of homelessness (61)			

Context	Mechanism	Outcome	Theory
History of contact with criminal justice system (none) **Mental health diagnosis only** (117) **Substance use diagnosis only** (none) **Hospital setting** (71, 79) **Veterans' affairs** (81, 152) **Outpatient programme** (74, 100) **Single-site programme** (73, 85) **Multisite programme** (48, 64)	**Programme and treatment characteristics** (61, 63, 64, 65, 68, 69, 70, 72, 74, 75, 76, 78, 85, 86, 87, 88, 90, 92, 115, 117, 141, 147) **Policy** (48, 61, 68, 82) **Organisational and systems change** (48, 62, 64, 67, 68, 69, 74, 75, 79, 87, 143) **Recover skills, empowerment, and motivation** (61, 63, 71, 81, 85, 91, 102, 145, 148, 152) **Local and cultural adaption and implementation** (84, 148) **Client characteristics** (61, 81, 91) **Adverse childhood experiences and trauma treatment** (62, 73) **Resources** (67, 68, 69, 77, 79, 141) **Integration characteristics** (none) **Access to care** (none) **Communication and information sharing** (48, 150) **Quality and performance improvement** (none) **Co-production** (150) **Harm reduction** (none) **Stigma and stigma reduction** (none)		**Holistic view – housing, social supports, etc.** (61, 63, 65, 69, 71, 73, 85, 90, 91, 116, 117, 145, 146, 148) **Holistic model – mental health** (48, 63, 64, 77, 82, 100, 145, 148) **Peer support** (63, 87, 91, 115, 116, 117)

Appendix 10: Synthesis of research question 1 findings

Research question 1	What interventions improve treatment and personal functioning outcomes for people with dual diagnosis of addiction and mental health problems and in what circumstances do they work?
Overview	Research question 1 asks about optimum treatments and individual outcomes. Nuances related to this question surfaced during the process to revise and clarify the questions. These include sub-questions at each level of integration and across some of the theory themes. Policy factors include resources required to implement integrative structures, the infrastructure needed, and other specific issues like prison policy. Organisational factors include interagency collaboration, staffing, continuum of care, hours of operation, and availability by region. Specific treatment questions were related to types of treatment, tailored treatments, and medication. There were also questions about more community or bottom-up approaches. Individual factors include age groups to be explored and the role of families in treatment. Several high-level treatment and individual outcome themes emerged from the first round of literature sense-making: » Tailoring to individual needs is crucial. » Outcomes align with the type of treatment implemented. » Adaptability in the service delivery is needed. » Programme modifications need to be made to address the issues that might be pressing at different times. » Meeting people where they are is necessary. » Brief treatment can be helpful, particularly with alcohol. » Individual motivation and commitment is important. » A relationship (trust) between client and provider is beneficial. » Technology may be helpful (web-based modules, telephonic support). Appendix 7 provides details about the contexts, mechanisms, outcomes, and theories aligned with research question 1.
Context	The interventions and programmes reviewed for research question 1 were implemented in a variety of contexts. Regarding geography, the majority of interventions occurred in the United States of America (USA), but a sizeable number of interventions were also implemented in both Ireland and other parts of Europe. More of the interventions tended to occur in urban locations than in suburban or rural locations. The target population of the interventions most frequently tended to be adults between the ages of 26 and 65 years, while comparatively fewer of the intervention groups were youth, young adults, or older adults. Many of the interventions occurred in the format of an outpatient or single-site programme, while few of the interventions were multisite programmes.

Research question 1	What interventions improve treatment and personal functioning outcomes for people with dual diagnosis of addiction and mental health problems and in what circumstances do they work?
Interventions	The synthesis of articles associated with research question 1 indicated six different interventions that improve treatment and personal functioning for individuals living with a dual diagnosis. These interventions include: cognitive behavioural therapy; intensive case management; day treatment centres/ residential programmes; dialectical behaviour therapy; Integrated Dual Disorder Treatment; and general interventions that occurred in the outpatient or primary care setting. Each of these interventions is described more fully below.

Cognitive behavioural therapy

Cognitive behavioural therapy (CBT) and 12-step programmes utilising CBT include the Crossing Paths programme in Ontario, Canada, which targets symptoms of depression, anxiety, and substance use and incorporates strategies that address reciprocal relationships among them. CBT programmes typically took place in outpatient settings and may have combined other forms of therapy such as motivational interviewing (4, 27). Programmes utilising CBT or a 12-step model typically resulted in decreased stress, decreased drinking behaviours and decreased alcohol consumption, increased refusal of drinking and drug use, and improvements in anxiety and stress symptoms (5, 27, 29). Similar results were found in a review of several integrated 12-step programmes employed by Veterans Affairs (4, 5). Other studies found that CBT or 12-step programmes implementing CBT were also effective for adult outpatient programmes (9, 11), women (17), adults in the general population in Australia (22), and dually diagnosed adults in Arizona (29).

Intensive case management

Intensive case management (ICM) is a time-limited intervention designed to engage clients by offering psychological services targeted at dual diagnosis. The intervention focused on the participant's agenda, where case managers and psychiatrists worked together to develop therapeutic relationships. The goal was to participate in their daily lives and build up the participant's support network and recovery plan. Results indicated reduction in visits to the emergency department and psychiatric emergency department, improvement in treatment and medication adherence, improvement in social support networks and global functioning, and reduction in alcohol and illicit substance use (6).

Day treatment centres and residential programmes

Day treatment centres and residential programmes prevent potentially contradictory treatment approaches provided by separate mental health and addiction programmes by ensuring that all services received are focused on dual diagnosis and located in one place. These programmes usually operated Monday through Friday during regular business hours, employing a team approach. They used a programme coordinator, certified clinical nurse, certified addictions nurse, licensed certified social worker, and mental health technician. A variety of approaches have been taken to address dual diagnosis, including motivational interviews to establish a therapeutic relationship, dual diagnosis wellness classes, assertive community outreach, family education, contingency plans, and supported employment (7, 18, 23). Those who attended these programmes regularly were less likely to experience a psychiatric hospitalisation and more likely to experience an increase in global functioning (7, 12). A review of 10 residential programmes by Brunette et al. (10) also found that these types of programmes are effective because they ensure that the integration of programmes addressing dual diagnosis is actually taking place in one location with a team of individuals aiming to address both substance use and mental health. However, residential programmes differ from day treatment centres in that they usually involve longer lengths of stay and are more restrictive on the participants' ability to come and go from the programme. Mayes and Handley (2) and Mierlak *et al*. (3) also found an integrated dual diagnosis day programme to be effective for the adult homeless population, reducing hospitalisation rates and decreasing substance use.

Dialectical behaviour therapy

Dialectical behaviour therapy (DBT) is a multimodal intervention for those with dual diagnosis that focuses on individual therapy and skills training through therapist consultation and phone consultations. DBT results in individuals less frequently experiencing the emotions believed to trigger their substance use and also results in lower levels of psychological distress. Those who received DBT also report increased confidence in themselves and lower levels of depression. Regarding substance use, individuals receiving DBT experienced fewer urges to engage in substance use (8).

Integrated Dual Disorder Treatment

Integrated Dual Disorder Treatment (IDDT), as described in Blakely and Dziadosz (25), Chandler (15), and Chandler and Spicer (14), is an evidence-based practice addressing dual diagnosis that combines behavioural and medication therapy aimed at addressing both behavioural health and substance use problems by using an integrated team in one physical location and involving clients and their family members in care. Chandler and Spicer (14) found IDDT to be particularly effective for dually diagnosed 'jail recidivists' in reducing the likelihood of experiencing incarceration and the likelihood of experiencing an inpatient psychiatric hospitalisation.

Research question 1	What interventions improve treatment and personal functioning outcomes for people with dual diagnosis of addiction and mental health problems and in what circumstances do they work?

General integrated interventions

General integrated interventions in the outpatient or primary care setting are programmes that do not specify an evidence-based practice or promising practice, but rather create some type of unique programme specifically targeting dual diagnosis (16, 24). As pointed out by Carrà et al. (1), there tends to be two general models. One model is characterised by services being led by a mental health service where treatment for substance use is incorporated into psychological or psychiatric services. This approach has been used in Denmark, Hungary, Poland, Finland, and Norway. A second model is characterised by drug treatment systems being the main point of entry for dually diagnosed individuals, where care for mental health is referred out to other programmes. This approach has been used in the Czech Republic, Spain, France, Italy, the Netherlands, Ireland, Portugal, and the United Kingdom. An example of the first type of integration is the Washington State Mental Health Integration Program (13), where individuals in more than 130 community health clinics in Washington received dual diagnosis services that were led by outpatient behavioural health providers. The focus of these programmes was mainly to begin screening all individuals at these clinics for substance use problems in order to make the appropriate referrals or linkages to care when necessary, but no outcomes data were available at the time of their evaluation.

Mechanisms

A deep dive into the mechanisms related to treatment and individual outcomes revealed findings that add texture to the 10 theories that emerged from interactions with the service users and providers. These mechanism findings provide a powerful underpinning for the other phases of this process. As implementation strategies are designed, care can be taken to include the evidence-based mechanisms that emerged from this process. A high-level summary of these mechanisms with examples can be found in Appendices 7, 8, and 9 with alignment for each of the research questions.

Because the ground-up coding of these mechanisms mapped so closely to the 10 theories, we will discuss them as related to some of those theories. Findings included cross-cutting mechanisms that will also be discussed.

Training

Training emerged as an important mechanism for integration. This included time set aside for staff training (11, 25, 120), training staff across disciplines (especially mental health and substance use) (11), training for primary care providers (13), developing mastery of cross-disciplinary skills, and organisational leadership to support a culture of learning. These findings provide part of the underpinning for the higher-level finding that supports a knowledgeable, integrated workforce that keeps the individual at the centre. Common language, dialogue, competence, and confidence among all the different provider types, consumers, and families are important.

Coordination of mental health, substance use, and primary care

Coordination of mental health, substance use, and primary care was an important theme in the literature and among service users and providers (6, 12, 13, 27). Concepts that surfaced in the literature included jointly developed programmes using CBT (4); integrated, multidisciplinary programmes; ICM by a multidisciplinary team (6); and access to a continuum of care. This, along with other themes, is overlapping and reinforcing of workforce development. Additionally, coordination of mental health, substance use, and primary care can create a holistic approach that puts the client at the centre of service design and delivery (2).

Care tailored to individual needs

There were multiple examples of research studies that resulted in programmes being modified to be more consumer-centric, flexible, and individualised (2, 3, 5, 6, 7, 22). The literature also pointed to flexible therapeutic communities that recognise the special needs of those who experience both mental illness and substance use disorders. The quote ‘don’t fix me – listen to me’ (11) is reflective of the concepts of inclusion of the client in design and decisions about treatment and patient-led, individualised treatment.

Client–provider relationship

The client–provider relationship surfaced as an important mechanism for recovery (10). Having staff that believe that recovery is possible and recognise the clients as individuals was repeatedly referenced in the literature. While loss of hope among providers deters recovery, a supportive approach is associated with longer engagement in treatment and better outcomes. Building a culture of hope among all service providers, families, and clients is an important and possibly overlooked mechanism (11, 12, 125, 130).

Holistic approach (housing and whole-person support)

A holistic approach to care for service users surfaced in the mechanism deep dive and in conversations with service users and providers (10, 19, 23, 28). The nuance of this holistic approach is one that supports the whole person and includes flexibility, wet housing, a broader array of stakeholders involved in prison diversion programmes, housing, and supportive employment. Resources to support these services at the individual level were also mentioned. This is probably best addressed at the policy level.

Peer support

Peer support is a mechanism that can support recovery in numerous ways. It can help decrease loneliness and isolation that can trigger substance use (9). In one case, DBT coaching resulted in decreases in intensity of emotion, decreases in urges to use substances, and increased confidence (8).

Cross-cutting mechanisms

In addition to the mechanisms that were mapped to the theory themes identified by service users and providers, there were cross-cutting mechanisms across the articles.

Research question 1	What interventions improve treatment and personal functioning outcomes for people with dual diagnosis of addiction and mental health problems and in what circumstances do they work?
Barriers to recovery Understanding these often hidden, not frequently studied mechanisms is an important component to this realist analysis. Developing programmes that include attention to these barriers will support recovery. Barriers to recovery that surfaced in research question 1 articles include stress and stressful life events, serious physical illness, unemployment, complex multiple drug use, and unescorted leave (25, 120, 121, 122).	
Recovery enablers The articles also revealed recovery enablers. These included comprehensive programmes with medication (123), retention in treatment programmes (9, 29), supportive care environment, and client motivation. Also, incentives such as parole requirements and pay for clean urine supported recovery. Because retention in treatment programmes was associated with better outcomes, mechanisms that promote consistent participation over time have high leverage for recovery.	
Outcomes	Of the reviewed articles addressing research question 1, 31 reported positive outcomes, 19 reported neutral outcomes, and 1 reported a negative outcome. Positive outcomes indicate that the intervention resulted in at least some of the desired recovery. Articles in which there was not a research component with outcomes were coded as neutral. This may mean that the article is descriptive or that the research has not yet taken place. Articles were also coded as a neutral outcome when no significant group differences were found in the study, or when no significant relationships were seen between the key variables of interest and the outcomes of the study. A negative outcome indicates that the expected outcomes were not achieved. An important component of a realist approach is to identify patterns. Review of treatment and individual outcomes from research question 1 reveals several patterns. The mechanism of participation in treatment is important (95, 98). Across various treatment approaches, treatment engagement had a constant association with recovery. Across the studies, engagement in treatment was enhanced when family members were involved (93, 94, 97, 149). The importance of hope repeatedly surfaced both in various approaches from family members and with the use of peers (112). Peer support was also associated with recovery, empowerment, and self-efficacy (110, 111, 113). A few other outcomes from the literature that may prove helpful in evidence-based programme development include the following: » Dual diagnosis programmes are associated with improved treatment engagement, mental health, and family cohesion, and reductions in mood disorders and craving alcohol and drugs (93, 123). » Brief interventions are associated with reductions in drinking (22). » Regular short outpatient group interventions can improve functioning (27). » A recovery model is associated with increased confidence (130). » Participation in a modified therapeutic recovery programme decreases hospitalisation and increases employment (3, 114).
Theories	The 10 theories generated in partnership with the knowledge users were well supported in the synthesis of articles associated with research question 1. Perhaps most supported was the theory that integration into existing services, particularly community-based services, supports access to care and minimises barriers faced with creation of new service lines. Almost all of the interventions reviewed did not design completely new programmes to serve those living with a dual diagnosis. Rather, the focus was on adapting or expanding a programme already in place to uniquely meet the needs of the target population, which is closely related to theory 4, that services must be tailored to the local context and the individual's needs and circumstances to be most effective. The key to producing effective outcomes, however, was to focus on addressing the most pressing behavioural health and substance use concerns facing the client.

Appendix 11: Synthesis of research question 2 findings

Research question 2	What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?
Overview	This research question focuses on the characteristics of efforts to integrate mental health and substance use programmes or services that led to success across service systems. During meetings with knowledge users in Ireland, they described six dual diagnosis programmes in different communities (Waterford, Limerick, Cork, Clondalkin, Kilkenny, and Dublin) that engaged in locally driven integration efforts across the drug and alcohol task forces, mental health or psychiatric services, and/or a Recovery College. Description of these efforts informed the 10 theory statements. Knowledge users specifically identified local initiatives and professional risk-taking; training and cross-training; communication and record sharing; developing a shared language across providers; breaking down professional prejudices and institutional barriers; co-production of programmes and treatment plans with service users; and fully integrating peers. Some of the frustrations experienced included budget constraints, lack of recognition of locally successful efforts, bureaucratic delays, insufficient community-based resources, and challenges with general practitioners. The literature addressed many of these examples and identified additional mechanisms relevant to systems change. Appendix 8 provides details about the contexts, mechanisms, outcomes, and theories aligned with research question 2.
Context	The studies spanned a range of environments, populations, and service settings. These include places with few resources for behavioural health and those implementing integration efforts on a large scale across multiple communities. Studies included 24 conducted in the USA, 8 in Ireland, 4 in Europe, and 3 in other locations (Canada, Ethiopia, and Australia). Most were conducted in urban locations. Research settings spanned outpatient, inpatient, and Veterans Affairs services. Some studies focused on single programme locations, while a larger number involved multiple sites. While adults were the focus of most programmes' studies, a small number of studies focused on older adults (3 studies), adolescents or young adults (5 studies), or homeless individuals (2 studies).
Interventions	Integration at the treatment level in these articles primarily addressed the addition of one treatment to another treatment, incorporation of an approach into a new environment, or developing skills of a provider to identify and potentially address mental health and substance use treatment needs. Treatments included integrated CBT (33, 39), 12-step facilitation (33), acceptance and commitment therapy (134), computer-based alcohol brief interventions in emergency rooms (43), contingency management (45), mindfulness-oriented recovery enhancement (37), modified therapeutic community in prison (41), outpatient (54), Double Trouble in Recovery (47), inclusion of a drug liaison midwife in obstetric care (133), enhanced community-based psychiatric and substance use services (52), pharmacotherapy (132, 133, 135), and the Strengthening Families Programme prevention intervention, which was implemented by interagency collaboration in Ireland, showing effectiveness in reducing substance use (138).
Mechanisms	Efforts to integrate traditionally and institutionally separated services, including physical health, mental health, substance use, and community support services, surface the organisational, educational, attitudinal, philosophical, and other factors that define each silo. The mechanisms that define these silos and those that facilitate the building of bridges between silos provide insight into the implementation factors relevant to successful and sustainable integration. Mechanisms associated with programme integration align with and build on the programme theory statements. These mechanisms are grouped as follows:

Research Question 2	What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?

Integration characteristics

The benefits of integrated care were broadly described as improvement of the therapeutic environment capable of addressing multiple concerns and improving client service experience and outcomes (31) by employing multidimensional approaches (55). Integration can improve early identification of disorders and access to care through screening and brief intervention, and supplemental office-based specialty staff (34, 42). Staff training is considered essential for integrated care and treatment (30). Findings that integration may be more effective at the client level than the agency level (51), and that despite integration not enough emphasis may have been given to substance use issues, point to the complexity of organisational challenges. Integration alone may not be enough without corresponding attendance to the treatment needs.

Provider and staff training and motivation

Integration requires the efforts of a broad spectrum of providers and staff including mental health, substance use, primary care, and support staff (42). Successful integration of care and treatment requires knowledgeable providers and staff who receive training and cross-training to understand integration and each other's skills and professional language, and to build relevant skills (30, 34, 55). Training builds staff confidence (39) and enhances engagement in integration activities (36). However, training and funding alone are insufficient to produce significant changes in programmes and service integration (38, 55). Training and technical assistance need to meet programmes where they are to promote encouragement and engagement (35).

Recovery self-management, empowerment, and motivation

Clients with both mental health and substance use disorders (SUDs) experience psychological or physical symptoms from each condition that may compromise recovery. Their level of experience with a mental health condition (47), and symptoms such as those of depression that impede social engagement, may impact participation in recovery fellowships (33). Other mental health concerns may persist despite improvement in treated symptoms (50). Clients need skills to manage emotions such as loneliness, anger, isolation, and depression, and drug-related slips, relapses, and symptoms (e.g. cravings), in order to manage their recovery (31, 33, 41, 47, 50). Clients need to be empowered and motivated to manage themselves (31), and motivation may affect treatment attendance (32). Relapse prevention includes development of skills such as coping and time management, and access to resources post treatment (131). Collaboration with and support for consumers as active decision-makers in all stages of their recovery encourages long-term active recovery management (106).

Programme and treatment characteristics

Mechanisms associated with treatments generally did not address integration conditions, focusing on treatment characteristics such as directing contingency management towards reducing drug use (45) or ACT's focus on reducing experiential avoidance (134). Programme characteristics independent of client characteristics were found to be important in determining outcomes (51), including flexibility in programming (41), programme intensity (45), and harm reduction (40, 50). Client characteristics, such as cognitive effects of substance use, that benefit from psychological counselling (46) also needed to be considered. Attendance reinforcements, including behavioural contingencies (32, 52) and early engagement and commitment to a goal of non-problematic substance use (131), were identified as strategies for treatment engagement and adherence.

Care tailored to individual needs

The complexity of treating persons with dual diagnosis and the potential nonlinear relationship between multiple risk factors (136) seem to be integral to the need for individualised services. Challenges with achieving expected outcomes highlight how clients' individual needs may be missed with a 'one-size-fits-all' approach. These challenges include ongoing distress from substance use symptoms that may have moderated psychiatric care outcomes (46), symptom severity (54), persistence of anxiety and depression (50), and untreated anxiety symptoms that were associated with relapse (136).

Client characteristics

The unique characteristics and needs of these clients are relevant to treatment integration efforts. How much clients think about action rather than moving into action due to depression, and worry about possible relapse (34), psychiatric and drug use history (49), ability to engage socially (33), and social exclusion conditions (138), may impact treatment outcomes.

Continuity of care and transition navigation

Continuity of care across the full continuum from early identification to long-term management of a chronic condition surfaces in the literature as a key to improving outcomes. Gaps across this continuum and vulnerable transition points between services and providers present risks for worsening symptoms and the potential for relapse. Warm hand-offs between providers (42), removal of payment barriers (42), availability of medical and psychiatric providers (59), use of aftercare services (136), acute use of detoxification, brief psychotherapy, and counselling services (136, 137) appear to be helpful in improving outcomes.

Local and cultural adaptation and implementation

Local conditions and existing local efforts should be considered when implementing programmes. In addition to experience with existing dual diagnosis programmes, collaboration for other purposes, such as in Cork for the Strengthening Families Programme (138), knowing what is locally practical (35), understanding local barriers to accessing physical and mental health services by persons with SUDs (59), and beginning with easier-to-implement services in environments not ready to take on more sophisticated efforts (55) provide examples of factors relevant to local adaptation. Local programmes effectively developed their own implementation plans with technical assistance supports (35).

Research Question 2	What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?

Collaboration and coordination

Mechanisms related to the ability of organisations and individuals to collaborate include formality of partnerships; staff engagement in the process; open and respectful discussion of differences; a mutually empowering environment where all members have an impact on outcomes; understanding staff reluctance to change and addressing that; and concerns about the potentially damaging effects of new and unknown partner reputations and quality of care. Beneficial mechanisms included collective understanding of problems and situations that can be built on to enhance effectiveness, and strengthened relationships across statutory and community voluntary sectors to work together to improve outcomes (36, 48, 138).

Organisational and systems change

Mechanisms for organisational and systems change to integrate services generally align with recommendations from implementation science, including catalysts that provide pressure to change (e.g. pressure to enrol clients [36], professional regulation, and public funding [57]); motivation and readiness for change (57); leadership that promotes a climate of change, encourages staff, and advocates for resources (56); and competing responsibilities (55). Laws, regulations, administrative actions, or incentives impact on collaboration (36). Having and using data to improve care (e.g. process-based quality measures) was associated with decreased mortality of persons with co-occurring conditions (44).

Resources

Financial and other resources were frequently mentioned as mechanisms that impact service integration. Resource issues included prison budget constraints that did not allow for hiring staff to provide psychotherapy and limited the ability to implement discharge planning, which negatively impacted community re-entry for persons with dual diagnosis (60). Aligning funds or incentives with mandated use of resource-intensive implementation of evidence-based practices by states or payers was recommended (38). Differences in the resources of substance use and mental health treatment programmes, and payment and service regulations may impact their ability to implement co-occurring treatments (56). In one health system, differences in resources (regular community outpatient programmes that provide services for co-occurring disorders versus methadone programmes that have fewer services) reduced the ability for these programmes to coordinate with mental health providers (57). On the other hand, limited resources can also serve as a catalyst for programme coordination (36).

Holistic whole-person support

Addressing the needs of the whole person, including housing, employment, and food, stabilises lives and helps people return to productivity, regain their social worth (37, 47), and work on their recovery. Housing-first programmes can be incentives for treatment engagement (53), while drug trafficking in shelters and lack of trust in institutions can be a barrier for providing housing and other necessities to women who prefer to live on the street than be placed in dangerous conditions (60). Integrative inpatient treatment was one approach examined for stabilising post-treatment housing and subsistence (50). Other examples of addressing needs of the whole person included overcoming women's exposure to violence (51) and helping to stabilise pregnant women with methadone by introducing a drug liaison midwife who could reduce stigma and improve engagement with care (137).

Peer support

The way peer support is implemented, whether initiated by services or by grassroots community efforts, may be related to consumer trust and engagement with services (109). Effects of peer support on self-stigma, self-esteem, self-efficacy, and other subjective factors of recovery may mediate other recovery outcomes (118).

Positive environment, orientation, and relationships as recovery facilitators

Engaging with clients in a positive, hopeful way was important for treatment engagement and retention. A positive environment includes the welcoming nature of the physical environment and staff, kindness and support (53), and a sense of hope (49). Mindful attention and appreciation of positive events and emotions were tested in one programme (37) showing positive outcomes. Respect for consumer choice supported engagement with services, while rules and restrictions that take away from choice could undermine cooperation (53).

Access to care

Delays in access were mentioned as contributors to increased symptom severity, greater use of pharmacotherapy, and barriers to services that promote relapse prevention (135, 137). Barriers to accessing mental health services included substance use, programme rigidity, and absence of available therapy (53). Challenges with accessing housing because of upfront requirements for commitment to recovery create challenges for agencies attempting to place clients in housing (60).

Co-production

Co-production or full participation of clients in the production, delivery, and consumption of services was identified as important, especially when service encounters are prolonged, complex, and require customer commitment of resources (e.g. time and effort), including beyond direct interaction with the service provider (101). Skill-building and empowerment for choice (151), and perceptions of the shared decision-making process by persons receiving mental health services (153), were identified as related to promoting client choice. Lived experience shared through stories positively affected understanding of and thinking about dual diagnosis among providers (99).

Research Question 2	What aspects of integrative programmes for the treatment of co-occurring substance use and mental health problems trigger positive system outcomes and in what circumstances do these outcomes occur?
Outcomes	The articles reviewed for research question 2 included 18 that were coded with positive outcomes and 23 that were coded as having neutral outcomes, representing either mixed results or articles that were not reporting results of original research. Outcomes tested, reviewed, or identified across the literature generally did not have strong evidence; however, they provided insights into a range of relevant measures across multiple levels. Few studies reported on programme-level outputs or outcomes such as improved integration or communication and focused more on client- and treatment-level factors. Outcomes were examined at the following levels: 1) client (substance use, mental health recovery, depression, self-efficacy, self-esteem, internalised stigma, social functioning, criminal justice involvement, post-traumatic stress, mortality, quality of life, readiness to change, stable living situation, employment, hospitalisation); 2) treatment (pharmacotherapy, client communication of recovery needs and challenges, client-perceived decision-making support, attendance, prior services use, continuing care, acute care for relapse, client engagement); 3) service provider (confidence, knowledge, attitudes, practices); 4) integrated service delivery (staff perspectives, extent of services provided, level of coordination between services, co-occurring disorder treatment organisational capability); and 5) system (admissions, inpatient bed occupancy, length of stay). Outcomes of integrating programmes and services generally fall into the following categories: » Engagement with treatment improved and access-to-care barriers decreased, which can lead to better client outcomes. » Improvements in treatment outcomes occurred, but integration of services does not necessarily improve both mental health and substance use outcomes. Treatments may not have addressed all care needs of individuals as efforts were focused on integration. » Integration improves linkage between programmes and services and continuity of care, reduces treatment gaps, and promotes socioeconomic stability addressing housing, employment, and other community needs. » Greater valuing of integration by staff and comfort and skill with mental health and substance use needs can improve outcomes. » Organisational factors such as leadership, resources, climate, accreditation, and public funding improve the likelihood of coordination of services. » Policies, fiscal constraints, and treatment philosophies affect decisions regarding integration of services. » Monitoring and addressing quality can impact outcomes, including mortality. » Organisations can improve capability for integration with technical assistance and implementation support.
Theories	These articles expanded on the theory statements with additional insight gained in areas of organisational and policy factors in integration, and the importance of attending to client-level needs and conditions. Almost all studies addressed integration into existing services (26 studies). In addition to individualising care, the need to develop change based on local contexts (17 studies) and local knowledge and experience (16 studies) and to allow that to guide development of integration came out. Training (13 studies) was a significant factor for integration success, and coordination (14 studies) between agencies was expanded to include collaboration in the literature and the importance of service providers working together effectively. Mechanisms for addressing the theory related to resource and financing (11 studies) extended beyond budgets to payment and non-financial factors. Addressing the needs of the whole person with housing and other supports (8 studies) was prominent for improving outcomes. Although integration of treatments addressed the theory of holistic approaches to mental health, substance use, and primary care (8 studies), a comprehensive vision generally was not well represented in the studies. Peer support was aligned with conditions promoting trust and improved self-valuing and enhanced engagement with services (8 studies). Sharing of lived experience through stories affected perspectives of providers on dual diagnosis conditions.

Appendix 12: Synthesis of research question 3 findings

Research question 3	What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?
Overview	There are several identified models of care for delivering more than one type of service, particularly for integration of mental health and primary care. Three broad treatment models are 1) parallel, where services are delivered simultaneously by different providers; 2) sequential, where one treatment follows the other; and 3) integrated, where treatments are delivered together by an integrated treatment team (70). In any of these models, implementation may differ with regard to staffing, shared client records, payment, collaborative activities, etc. Different types of issues and challenges arise with each, such as lack of coordination of treatment in parallel models; lack of treatment of one condition while the other is treated in sequential models; and challenges with payment in integrated models when infrastructure does not support billing needs. Other models of care that may intersect with these include referral; stepped care; early intervention; chronic disease models that have a continuum of care; and location-based models including residential, community care, office-based, or non-office-based. The literature specific to models of care for treating co-occurring mental health concerns and substance misuse is sparse. An Australian evidence review, published in 2015 (NSW Ministry of Health, 2015), summarised the limited literature on models of care for dual diagnosis and made recommendations for implementation at the intake, treatment, workforce, discharge, and evaluation levels. The literature search for research question 3 took into consideration the sparse literature specifically addressing dual diagnosis models of care, and the knowledge that countries other than the USA are engaging in efforts to address the treatment needs of dual diagnosis clients. Appendix 9 provides details about the contexts, mechanisms, outcomes, and theories aligned with research question 3.
Context	The broader literature search for research question 3 captured a more global international reach. Only 17 articles came from the USA, while 25 came from other locations, including 8 from Ireland, 7 from Europe, and 10 from other locations, including primarily Australia, followed by Canada, Brazil, and India. Settings included outpatient, hospital or residential, Veterans Affairs services, and community. Adults were the focus of most studies, although youth and older adults were also represented. Two articles focused on mental health only and two focused on substance use only. Three examined multisite programmes.

Research question 3	What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?
Interventions	Torrens et *al.*'s review (70) of dual diagnosis models of care presents the above-mentioned models but reflects the ongoing uncertainty about the best treatment approaches and treatment locations, given limited knowledge about what works, for whom, under what conditions. Reviewed articles included primarily specific, locally implemented models – case studies of independently developed models of care and reviews of dual diagnosis treatment approaches. The interventions present a diverse list of treatment integration efforts focused on evidence-based treatment models, populations (homeless, youth, older adults), settings (inpatient, home-based, rural), integrations in differing combinations across the various service sectors, treatment needs (psychosis, alcohol, opioids, trauma), system-wide efforts (health homes, coordination with insurers), continuing care and chronic disease models, and recovery-oriented and harm reduction approaches. Two reviewed articles were included that addressed broadly recognised strategies for quality implementation of integrated care. These included the US Institute of Medicine's *Recommendations for implementing quality integrated care for individuals with co-occurring disorders* (70) and the dissemination of evidence-based practice by the Substance Abuse and Mental Health Services Administration's Addiction Technology Transfer Center Network (68). The interventions included IDDT (63, 71), ACT (74), a framework for helping homeless individuals with co-occurring disorders (61), health and mental/behavioural health integration approaches (75, 76, 77, 139), health homes for treating opioid use disorders that integrate medical and other behavioural healthcare (82), an integrated mental health services programme conducted in collaboration with insurers in Germany (86), long-term continuing care for alcohol use disorder (65), a chronic care model (69), opioid inpatient treatment with six months of aftercare (147), residential substance use treatment (81), residential integrated treatment for dual diagnosis (85), integration of peer support in a residential setting (87, 115), home-based counselling for alcohol problems by non-specialists as part of a collaborative care model (66), mental health crisis response home treatment (142), integrated treatment including trauma treatment (72, 73), patient-centred, recovery-oriented, and trauma-informed services within a biopsychosocial framework (88), technology-based treatment (79, 92, 141), integration of motivational interviewing and CBT for psychosis and substance misuse (80), integrated services primary and specialty service models in rural communities (84), integrated alcohol treatment strategies (89), harm reduction (90), Double Trouble in Recovery (91), methadone treatment models and settings (144, 146, 148), recovery models (143, 145), early detection of psychosis in primary care (140), an integrated model of care within local youth alcohol services to detect and manage co-occurring mental health issues (64), integrated, multidisciplinary systems of care to ensure adequate treatment and continuity of care for children, youth, and young adults (62), and expansion of individual provider treatment capabilities for mental health and substance use (83).
Mechanisms	
Integration characteristics Best practice integrated models of care described in this literature aligned policy and service specifications and payment structures; transcended administrative silos; supported, trained, and engaged staff; built positive interagency relationships; shared client information; used case management; and planned for treatment provided by a multidisciplinary team (67, 70, 89). Integrated services should be based on the service user's needs, be non-judgmental, operate from a harm reduction framework, and address psychosocial needs in collaboration with community-based partners. At the treatment level, there was discussion of integrating evidence-based practices (61, 80) and aligning treatment intensity with level of need (139). Integration ideally addresses the challenges of sequential and parallel models, such as leaving a comorbid condition untreated, placing logistical burdens on clients, limiting communication between providers, and dealing with negative staff attitudes (70). The integration of staff across professions in new settings (e.g. integrating addiction specialists in mental health inpatient settings [88] and placing behavioural health providers with or near primary or other medical care for screening or urgent care triage [77]) brings challenges, but increases access to substance use treatment.	
Provider and staff training and motivation Common threads around training include the need for training across all levels of staff (63), skill and knowledge building for working in an integrated setting (67), cross-training on SUDs to address educational differences across disciplines (63, 67), the need for ongoing best practice training to maintain skills and address staff turnover (64, 88), and from the client perspective, assurance that providers know how to work in a recovery-oriented way (143).	
Programme and treatment characteristics Mechanisms related to treatment initiation and engagement, quality of treatment delivery, use of technology, and maintaining involvement in aftercare programmes spanned the treatment continuum. Clarifying the purpose of screening seemed to improve mental health referral (64). More structured protocols of integrated treatment and more careful training of clinicians are important (72). Greater anonymity through the use of computer-based treatment programmes may help clients overcome stigma concerns related to extensive treatment histories and relapses (78) and may complement work with a counsellor (92). Outreach techniques (61) and identifying incentives desirable to the client (65) can motivate engagement and continued treatment involvement. However, differential factors that encourage attendance for inpatient and aftercare programmes need to be better understood (147).	

Research question 3	What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?

Mechanisms

Local and cultural adaptation and implementation

Local contexts and culture include geography, characteristics of the locale, health provider availability, situation within the broader health system, the broader social structures of the locality, and power relations. These were some of the mechanisms identified in relation to services in rural settings (84). Culturally appropriate, community-level treatments and support for employment were seen as important factors to assist individuals receiving methadone maintenance therapy (148). These examples describe both factors affecting programmes within their local context and those of the individual in that context.

Collaboration and coordination

Systemic changes to promote collaborative care models were seen as essential for integration by allowing multisector stakeholders to work together synergistically (62, 66, 79). Appreciation of professional and theoretical diversity across staff from different sectors is important to collaboration (64).

Policy

Mechanisms such as the motivations and thinking behind a policy (82), or the absence or overreach of a policy, were identified as affecting care. Examples include drivers for developing opioid-focused health homes (82), potential for diagnostic criteria set in policy to limit access to co-occurring services (68), and de-emphasis on discharge planning without policy (61).

Resources

Resource factors associated with implementing integrated dual diagnosis models of care included staff time, resources for coordinating activities, need for physical space for care teams (77), the ability to bill for services (79), and alignment of workforce credentials and payer requirements (67). For young people, their own lack of resources may impact seeking treatment, in addition to barriers such as staff shortages, waiting lists, and stigma. These resource barriers identify additional resources needed to facilitate access to service.

Organisational and systems change

Integration involves recognising fundamental differences in service models (64). An integrated, multidisciplinary, and streamlined system of care enables seamless transitions between services regardless of the client's age (62). Enabling mechanisms identified included system and local cooperation between clinicians, enhanced communication, shared clinical care, joint education, programmes, and system planning (62), as well as training and supports for staff (79). Leadership of senior staff can drive the agenda for change (67), capacity building, commitment, and overcoming organisational barriers (68).

System integration often does not mean integration of practice and culture. Barriers keeping organisations from changing include attitudes, customs, practices, and fiscal policy (69). Changes in organisational culture were noted to support a recovery-oriented approach (143). Testing novel staffing models, such as integrating peer support and clinical staff as a unified team in a residential rehabilitation setting (87), could initiate change. Lack of prioritisation by management (74), lack of operational mechanisms and protocols for new services, and lack of interest and involvement (75) were identified as barriers to implementation.

Holistic whole-person support

Common themes of whole-person supports for recovery address changes in mindset to one that sees the individual's needs from a broader, longer-term perspective of stabilisation and re-entry into society. Connection to community and support resources is essential to meet that goal (61, 73). Developing interpersonal, peer, family, service, and vocational training networks provides a safety net for community re-entry from prison or after detoxification (148). These include support for seeking and obtaining employment (61) and supported housing (71). Investment in improving the individual's psychosocial situation can lead to improved substance use outcomes (74) and mental and physical health outcomes (76, 145).

Positive, hopeful culture and environment

Positive safe settings and relationships that promote hope and reduce fear are characteristics of providers and provider relationships that support recovery. Instilling hope and having hope about life were described as important to a recovery-oriented approach (71, 143). This included the location of services, with the type of methadone treatment setting predicting future heroin use (144) and housing with active drug users affecting treatment and vocational outcomes (148). The seeming impenetrability of large non-local treatment centres (146) contrasted with environments where local trust relationships could be established (90, 146). Mechanisms included the attitudes and knowledge of providers and first responders, feeling valued and connected to staff and peers, a sense of mutual respect and partnership in therapy, and the respect by providers for the local environment to establish trusting relationships (145, 146).

Research question 3	What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?

Mechanisms

Individualised treatment

The broad theme among mechanisms related to individualised treatment attends to the disconnect between the unique needs of individuals with both mental health and substance use treatment needs, and traditional discipline-specific or single broad-spectrum approaches. One article describes this as the suppression of positive outcomes with the heterogeneity of a one-size-fits-all treatment philosophy (86). Individualised approaches build on individual treatment needs and mental health and drug use histories in order to develop treatment goals around individual strengths and weaknesses (63, 76, 78).

Communication and information sharing and flow

Barriers to communication and the exchange of information most frequently noted included lack of shared treatment plans (70), lack of post-referral feedback from substance use treatment providers (77), lack of information exchange despite colocation of services (69), and institutional reluctance to share information (146). These barriers address systemic, organisational, and treatment levels. Sharing information was seen as promoting mutual involvement in care planning (69) and minimising philosophical differences between care providers (70). Implementing infrastructure across multiple levels to improve communication that included roles and structures around communication improved information sharing (142).

Harm reduction

The themes that emerge around harm reduction have to do with fundamental philosophical differences in understanding treatment and recovery as something that can happen at one time with a single treatment intervention versus along the continuum of care for a chronic condition. This is described in one article as shifting from a 'cure' mindset to a 'care' mindset and from detox to maintenance treatment (146). At the broader societal level, the concept of harm reduction, which involves reduced or managed use of drugs, sits within a context of drugs as illegal and therefore those who use them must stop (90). A condition of abstinence is not necessary for integrated care, as not everyone receiving care will achieve full abstinence along the same trajectory (73). Like with other chronic conditions, recovery from substance use is nonlinear; therefore, relapses occur. Barriers to other resources that can assist in stabilisation, such as housing, can impede recovery (63).

Adverse childhood experiences and trauma treatment

Childhood stressors affect development, and relationships with caregivers are critical factors in stress hormone regulation (62). Trauma histories are contributing factors to mental health conditions and substance misuse and may be a barrier to seeking treatment. Treating trauma may be a mechanism important to improving outcomes of integrated dual diagnosis services. Treating trauma as a co-occurring chronic condition may improve outcomes for integrated treatment (72, 73).

Continuity of care and transition navigation

Ongoing and repeatable services are a strong theme across this literature. Acknowledging that treatment is a long-term process is a component (61). Engagement in continuing care was the only significant predictor of abstinence for alcohol and drugs at follow-up, with longer engagement having greater effects (152). Transitions present situations when loss of continuity due to breaks in care can occur (65, 77). The effectiveness of continuing care is affected by longer duration in care (i.e. more than 12 months), active effort to retain clients in services through outreach efforts and involving significant others, and use of incentives (65). Barriers to continuing care include lack of emphasis on discharge planning that results in discontinuity of care (61) and lack of financing for continuing care services (68). Options proposed for continuing care include establishing separate recovery centres that provide a range of services or integrating these services into primary care clinics (65). Combining inpatient care with a crisis response home treatment team and acute day treatment was found to improve transitions to the community (142).

Access to care

Themes related to access included clear pathways to accessing care, approaches suited to life stages and situations (62), no-wrong-door strategies, single points of access that improve safety and quality (142), and addressing provider shortages by building a non-specialist workforce as a part of a continuum of care that can deliver home-based services (66).

Supportive provider relationships

Positive supportive providers are described as trusted and those who facilitate participation and engagement with the treatment process and motivate clients towards recovery goals (63, 148). One programme paired clients and home-visiting social workers who accompanied clients to appointments, facilitated relationships with new provider staff, and provided advice during crises (61).

Research question 3	What existing models of care for adults with co-occurring substance use and mental health problems lead to positive treatment outcomes and successful service integration?
Mechanisms	
Peer support Establishing relationships with peer support is described by service users as an important factor for ensuring recovery (142). Peers accept and value the service user as a human being (91). Clients assigned a peer support worker post discharge from inpatient mental health services showed lower readmissions and increased hope (115). Challenges with peer worker assignment in one randomised study revealed conditions potentially relevant for planning peer integration, including management of discharge and peer assignment, client preferences for having a peer worker, and awareness of the complexity of client mental health backgrounds (115). A mechanism identified as potentially responsible for the success of peer support was its flexibility (116). Improving early engagement and motivation were other mechanisms identified (117). Peers have been integrated in service settings of non-senior staff to implement care plans (87).	
Stigma and stigma reduction Stigma affects both treatment-seeking and staff attitudes. Negative stereotypes of mental illness (140) and self-stigmatisation affect accessing treatment. Individuals may suffer in silence and not get help until their condition worsens and treatment needs become more complicated (145). Negative staff attitudes towards substance use and persons who misuse substances include presumptions of criminal behaviour (70). Despite implementing a harm reduction approach, stigma may cause a continued emphasis to be placed on stopping substance use by both staff and clients (90).	
Co-production Treating a client as an equal demonstrates respect and can promote recovery goals. Involvement in development of the care plan is described as essential (145). Challenges for providers were differences in their viewpoints about the client's problems and the client's choices, and not knowing how to bridge solutions to these differences (100). Consumers recognised in shared decision-making have a greater responsibility for their own recovery (150). Consumer choice included preference for continuity of clinician care, and for use of less stigmatised services, expressing that substance use was less stigmatising than mental health concerns (102).	
Outcomes	Almost all of the articles reviewed for research question 3 involved an integrated model of care that described various types of integration of mental health, substance use, primary care, trauma treatment, and community- and technology-based treatments, services, and supports. Fifteen articles were coded with positive outcomes and 27 with neutral outcomes, reflecting either mixed effects or articles that did not report original or completed research. Only one was coded as negative. One key theme that emerged was the comprehensive nature of whole-systems change to support integrated models of care across policy; systems infrastructure; organisational change; ongoing training and support for staff; coordination and collaboration among services and staff; mutual respect across services; leadership; communication and information-sharing structures; payment alignment; treatment integration; and support for a continuity of care to minimise breaks in treatment resulting from care transition failures. Another key theme was related to philosophies of care and recovery, as they are affected by stigma, values, and attitudes. These were most relevant when shifting towards a recovery-oriented and harm reduction approach that required a shift in mindset from 'cure' to 'care' in the treatment model. Positive recognition of clients as partners in treatment also requires a shift from stigmatising beliefs, with improved results for positive environments, recognition of potentially harmful environments, positive interpersonal relationships, support for the whole person, and peer support that strengthens self-worth. Positive encounters furthered early and continued treatment engagement, an important predictor of positive long-term treatment outcomes. For individuals, treatment tailored to individual needs, strengths, and weaknesses; motivation; and recovery self-management were important mechanisms.
Theories	Three theory statements predominated this literature on models of care. Most addressed were the characteristics of organisational and system change by tailoring services to local contexts and individual needs (29 studies), integrating into existing services (27 studies), and improving coordination (23 studies). The second two areas, training (20) and inclusion of service users and families in care decisions (19 studies), share change at the personal and interpersonal levels. A holistic view of treatment (14 studies), knowledge of local efforts, recognition of service providers and individuals with lived experience as experts (12 studies), and the need for resources (11 studies) were all also frequently mentioned. Less often addressed were holistic models of mental health (8 studies) and peer support (7 studies). The literature adds to these theories by examining a broad range of integration efforts and describing the features of whole systems change to support integrated models of care. This literature adds to these theories by providing insight into the mindsets, philosophies, and contexts that serve as barriers to the implementation of effective, integrated models of care.

Appendix 13: A sample of treatment approaches for integrating care for individuals with co-occurring mental health and substance use disorders

Treatment approach	Acronym (if applicable)
Acute day treatment	ADT
Assertive community treatment	ACT
Cognitive behavioural therapy	CBT
Contingency management	CM
Community reinforcement and family training	CRAFT
Computer-based alcohol brief interventions	
Crisis response home treatment	CRHT
Day treatment centres and residential programmes	
Dialectal behaviour therapy	DBT
Double Trouble in Recovery	DTR
Drug liaisons	
Enhanced community-based psychiatric and substance use service	
Home-based counselling	
Treatment approach	**Acronym (if applicable)**
Housing first programmes	
Health Research Board	HRB

Intensive case management	ICM
Integrated Dual Disorder Treatment	IDDT
Mindfulness-oriented recovery enhancement	
Motivational interviewing	MI
Pharmacotherapy	
Strengthening Families Programme	
The Seven Challenges	