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Evidence Check

Initiatives to improve physical health for people in community-based mental health programs

An Evidence Check rapid review brokered by the Sax Institute for the NSW Ministry of Health—August 2020.

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This report was prepared by: Kate Bartlem, Caitlin Fehily, Olivia Wynne, Lauren Gibson, Simone Lodge, Tara Clinton-McHarg, Julia Dray, Jenny Bowman, Luke Wolfenden, and John Wiggers.

August 2020

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Implementing initiatives to improve physical health for people in community-based mental health programs

An Evidence Check rapid review brokered by the Sax Institute for the NSW Ministry of Health. August 2020.

This report was prepared by Kate Bartlem, Caitlin Fehily, Olivia Wynne, Lauren Gibson, Simone Lodge, Tara Clinton-McHarg, Julia Dray, Jenny Bowman, Luke Wolfenden, John Wiggers. University of Newcastle.

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Executive summary

Background

People living with a mental illness experience substantial disparities in physical health and reduced life expectancy. Inadequate receipt of appropriate physical health care for people living with a mental illness is a major contributor to these inequitable physical health outcomes. There is a need to increase understanding of how services that provide care and support to people living with a mental illness can best provide physical health care, including preventive care, to this population group.

This Evidence Check was commissioned by the NSW Ministry of Health, Mental Health Branch to evaluate the evidence for the delivery of preventive and physical health interventions through community mental health programs that provide psychosocial support programs to people living with a mental illness. For this review, preventive interventions are considered to be a range of activities with the goal of reducing the onset or severity of a physical health condition, commonly focusing on lifestyle interventions or early screening and detection. Physical health interventions include, but are not limited to, preventive interventions, with a broader focus on care for existing physical health issues, and for the purpose of this review includes screening, health promotion, referral, assessment, follow-up, monitoring and continuity of care.

Review questions

This review aimed to address the following specific questions:

Question 1: What have been shown to be the most effective **preventive health care** interventions for mental health consumers delivered by community mental health service providers?

Question 2: What have been shown to be the most effective ways community mental health services can deliver or facilitate **physical health care** (including preventive health care) for their mental health consumers?

Question 3: What have been the barriers and enablers for community mental health services to deliver or facilitate **preventive and physical health care** for their mental health consumers?

Studies contributing to Question 1 have a focus on evaluating preventive health interventions, with the key outcomes focused on consumer improvement in physical or behavioural outcomes.

Studies contributing to Question 2 are focused on evaluating the impact of different models of, or approaches, to the delivery of physical health care for consumers. The key outcomes for assessing the effectiveness of these approaches include care receipt or provision (including consumer-reported receipt of physical health related care or access to such care, and provider reports of physical health care) or changes in consumer physical health outcomes.

Studies contributing to Question 3 include those identified to answer Questions 1 and 2.

Summary of methods

A search strategy (Appendix 2) was developed to locate relevant peer-reviewed and grey literature. The strategy used terms for variants of: setting and population; health behaviours, preventive activities, and physical health conditions; physical health care and interventions, and; study type and methods. The search was conducted across two databases (Medline and CINAHL). Additionally, an extensive grey literature search was conducted, including: a search of Google Scholar retaining the first 200 extracts; a search of websites of Community Managed Organisations (CMOs) and relevant peak mental health organisations (in Australia and internationally); hand searches of relevant conferences, journal publications and reference lists of known relevant publications; and direct contact with known CMOs. Relevant literature included publications reporting intervention trials, evaluations or service improvement initiatives aiming to improve physical health or delivery/access to physical healthcare for consumers of community-managed mental health organisations. All searches were limited to literature published in English between January 2010 and June 2020. Studies must have been undertaken in countries or jurisdictions with health systems similar to Australia, including New Zealand, the UK, Canada, Western Europe, Scandinavia, the US (with caution due to differences in healthcare models), and Australian states and territories.

Publications were screened against pre-specified inclusion and exclusion criteria (Appendix 3) to determine those eligible for inclusion in the review. Details of included studies were extracted by the review team for inclusion in the table of publications (Appendix 4) and evidence synthesis. A total of 35 publications were identified as meeting the eligibility criteria and are included in the review (Appendix 1): 20 publications were identified through the search of peer-reviewed literature and 15 were identified through the extensive grey literature search. The 35 included publications represent 29 studies. Of these, nine were randomised controlled trials (NHMRC evidence level 2), three were non-randomised comparison studies (NHMRC evidence level III-2), and 17 were the lowest NHMRC level of evidence (single group, pre-post or post-test only). In the summary of findings, study effectiveness is considered in terms of the proportion of outcomes for which statistically significant improvements are reported. Studies reporting improvements in 50% or more of assessed outcomes are classified as effective.

Key findings

Overall findings:

- Overall, 29 studies were included (Question 1: n=21; Question 2: n=8; Question 3: n=29). Of the overall 29 identified studies, 12 demonstrated significant improvements in at least 50% of outcomes (six RCTs, six pre-post studies). A further nine studies descriptively reported positive improvements (one quasi-experimental, eight pre-post studies)
- For Question 1, seven of the 21 included studies demonstrated significant improvements. For Question 2, five of the eight included studies demonstrated significant improvements
- Of the 12 studies demonstrating significant improvements:
    - Six used linkages/referrals to physical health care providers as an intervention component
    - Five included elements of co-production
    - Four interventions were provided by peer workers
    - Four included tailoring or adapting the intervention to a mental health population
- For Question 3, 21 of the 29 studies reported on or discussed barriers and enablers to the delivery or effectiveness of the preventive or physical healthcare interventions being evaluated. Of these, 15 studies identified barriers and 19 identified enablers, with 13 studies identifying both.

Question 1: What have been shown to be the most effective preventive health care interventions for mental health consumers delivered by community mental health service providers?

The review identified 21 studies that focused on evaluating preventive health interventions delivered by mental health CMOs. Studies most frequently focused on weight loss (through targeting both physical activity and nutrition; n=9), multiple risk behaviours (n=5), or smoking cessation (n=4). Two studies focused solely on physical activity and one on sleep.

Of the 21 studies identified, seven demonstrated significant positive improvements in consumer behaviour change or physical health outcomes (three RCTs, four pre-post studies). A further six descriptively reported positive results (one quasi-experimental, five pre-post studies).

Of the seven interventions demonstrating significant improvements, two were delivered by peer workers, two used the co-design element of research co-production, two involved tailoring or adaptation, and two included referral or linkages as an intervention component.

All except two lifestyle interventions consisted of multiple intervention strategies. The two single-strategy interventions (an RCT and a pre-post) provided assisted, practical support and demonstrations, neither of which reported significant improvements in outcomes.

Summary of Question 1 findings by intervention focus area:

- Of the nine studies focused on weight loss, four were higher levels of evidence. Of these, two demonstrated significant positive improvements in consumer physical health outcomes (weight-related and cardiorespiratory fitness outcomes). Of the remaining five lower level of evidence

studies, one demonstrated positive consumer behaviour change outcomes (physical activity and dietary-related outcomes)

- The evidence for multiple lifestyle behaviour change interventions was limited, with one pre-post study (targeting physical activity, nutrition, smoking and alcohol) demonstrating positive changes in physical health outcomes (cardiovascular fitness and waist circumference) (of a total of five studies: one RCT and four pre-post studies)
- Of the four studies evaluating smoking cessation interventions, two were higher levels of evidence (an RCT and a quasi-experimental). Of these, the RCT demonstrated positive behaviour change outcomes. The remaining two lower levels of evidence studies also reported significant positive effects
- The evidence provided from two physical activity (one RCT, one pre-post) and one sleep intervention (an RCT) was limited, with no studies demonstrating significant changes.

Question 2: What have been shown to be the most effective ways community mental health services can deliver or facilitate physical health care (including preventive care) for their mental health consumers?

Eight studies were identified that focused on evaluating the impact of different models of, or approaches to, the delivery of physical health care for consumers. Five studies evaluated models or initiatives for improving the delivery of physical health care for multiple health risks or conditions, two studies evaluated models for chronic disease management, and one evaluated an initiative to improve oral health promotion practices.

Five of the eight studies demonstrated significant improvements in care receipt or provision, or consumer physical health outcomes (three RCTs, two pre-post). The remaining three lower level of evidence studies all reported positive outcomes descriptively.

The models or initiatives were varied, with a key element that distinguished the different models or initiatives being *who* provided the physical healthcare support (e.g. peer workers, usual staff, or a new dedicated position).

Of the five interventions demonstrating significant improvements, two were delivered by peer workers, three included elements of co-production, two included tailoring or adaptation, and four included referral or linkages as an intervention component.

Of the five interventions demonstrating significant improvements, all included implementation strategies to support integration into practice, most commonly practice change support personnel, training, and resources and information for providers.

Summary of Question 2 findings by intervention focus area:

- Of the five studies addressing models for delivery of care addressing multiple health risks or conditions, two were of higher levels of evidence (both RCTs). Both reported significant improvements in care provision or receipt. Of the remaining three lower level of evidence studies (all pre-post), all similarly suggested positive effects

- One of two studies evaluating models for delivering chronic disease management care was of a higher level of evidence (an RCT) and reported significant increases in consumer service use. The second study (a pre-post trial) also suggested positive effects, with descriptive improvements in consumer physical health outcomes
- One pre-post study evaluating an initiative to increase oral health promotion care delivery reported a significant increase in staff care provision.

Question 3: What have been the barriers and enablers for community mental health services to deliver or facilitate preventive and physical health care for their mental health consumers?

Studies contributing to this question are drawn from those identified to answer Questions 1 and 2. Twenty-one of the 29 included studies reported on or discussed barriers and enablers to the delivery of physical health care or the effectiveness of preventive healthcare interventions in mental health CMOs.

Factors identified as barriers or enablers were grouped into five categories:

- Client factors included social support, motivation and knowledge, medications, and accessibility
- Staff factors included attitudinal factors, roles and responsibilities, and practical aspects such as workload
- Tailoring factors included potential to alter logistics of intervention sessions and tailoring to align with the resources of the service
- Environmental/systemic factors included service facilities, existing processes, and broader environmental factors such as housing availability, and
- Intervention factors included those related to length and content of the interventions.

Gaps in the evidence

Most studies addressed Question 1 regarding the effectiveness of preventive health care interventions and focused on behavioural risks that contribute to preventable chronic diseases, such as cardiovascular disease, diabetes and cancers.

Few of the lifestyle interventions that were identified in Question 1 targeted multiple health behaviours, and the majority of those that did were evaluated with low quality study designs (four of five studies). Further research is required to understand the most effective approaches to addressing multiple risk behaviours, particularly to explore if particular combinations of health risks are more effectively addressed together.

Many gaps remain regarding evidence for additional priority health areas for this population, including medication monitoring, and the prevention and management of communicable diseases (e.g. HIV, HCV), sexual health issues, and musculoskeletal conditions such as osteoporosis.

Few studies were identified that addressed Question 2 regarding the impact of different models of, or approaches to, the delivery of physical health care (including preventive health care) for consumers. There is a need for rigorous evaluation of different models or approaches to providing evidence-based physical and preventive health care within the CMO setting. Further, a greater understanding of the implementation strategies required to support the integration of such models or approaches into the usual practice of mental health CMOs is needed.

Across both Questions 1 and 2, few studies involved integrated and coordinated provision of physical health care across services or sectors. The ability to provide physical health care is hampered by the complex nature of the health care system and siloed mental health services, however, an integrated approach to physical health care across services may result in higher quality and accessible care, as well as better outcomes for consumers services. There is a need to identify mechanisms to promote communication and coordination across services (e.g. government and non-government mental health services) to facilitate the provision of integrated care for physical health, including preventive health care.

Across both Questions 1 and 2, few studies were identified that addressed physical or preventive health care for identified priority groups, despite extending the setting to include acute and clinical community services for these groups.

Recommendations and conclusion

Despite a need for more rigorous evidence, a number of recommendations can be made. Sufficient evidence exists to support, with further evaluation:

Question 1:

- The delivery of multi-strategy lifestyle behaviour change interventions in mental health CMOs
  - Key characteristics of effective studies addressing Question 1 included:
    - intervention duration of 12 weeks to 12 months
    - face-to-face or telephone care delivery
    - individual or group sessions
    - providing consumers with education and/or advice, free lifestyle aids, counselling and coaching, and assistance, practical support, and demonstrations.

Question 2:

- A variety of preventive or physical health care delivery models or initiatives in CMOs, including peer-led self-management models, care delivery by existing staff members, integration of a new dedicated care provider, combined care delivery by dedicated providers and usual staff, and online delivery of care
  - Key characteristics of effective studies addressing Question 2 included:
    - intervention duration of six months to two years
    - face-to-face or online care delivery
    - individual or group care delivery

- Supporting the integration of new physical health care models or initiatives with multi-strategy implementation interventions, involving strategies such as staff training, practice change support personnel, and provision of resources and information for providers
    - There is a need to evaluate a broader range of implementation support strategies to gain an understanding of the most effective strategies, or combinations of strategies
    - Undertaking a comprehensive, systematic assessment of the barriers and enablers to providing physical and preventive health care in specific settings is a recommended precursor to ensuring such strategies are tailored to address the specific needs of each organisational context.

Questions 1 and 2:

- Referral of consumers to physical health care providers and services
    - The evidence supports the referral of CMO consumers to the following, where relevant:
        - telephone-based Quitline services
        - primary, secondary and specialty health care services
        - oral health providers
    - Further research is recommended to strengthen the evidence for other services that CMO consumers with a mental health condition could be referred to, for instance, telephone-delivered services for behaviours other than smoking, and non-clinical physical activity providers and services

- Systematic and comprehensive assessment of barriers and enablers prior to the implementation of new physical and preventive health care models or approaches in mental health CMOs
    - To develop targeted support strategies to overcome barriers to implementation within a specific organisational setting, the practice change and implementation science literature recommends the use of theory-based behaviour change models and frameworks
    - The use of such frameworks, such as the Consolidated Framework for Implementation Research or the Theoretical Domains Framework, to systematically and comprehensively assess barriers and enablers should be considered prior to the implementation of new models, programs or initiatives in mental health CMOs, in order to develop targeted and appropriate support strategies for each specific organisation

- Involvement of mental health peer workers in the delivery and support of preventive and physical health care interventions
    - The role of peers across effective studies varied, and included:
        - co-facilitating a healthy lifestyle group program as peer educators
        - co-leading smoking cessation groups with a non-peer facilitator
        - leading a healthcare engagement and self-management intervention as a peer navigator
        - leading a health and recovery group program as peer educators
    - Offering physical health programs to peer workers, and considering additional relevant experiences (e.g. quitting smoking or improving health risk behaviours) when selecting peers to deliver health interventions or support, may enhance the successful integration of physical or preventive health care into CMO practice

    - Ensuring that peer workers feel confident in the intervention delivery, receive sufficient training and guidance, and have support available to them if their own mental or physical health declines, are vital elements to consider to ensure optimal intervention effectiveness
- Co-production of preventive and physical health care interventions and initiatives with CMO consumers and care providers, specifically regarding co-designing the intervention components
    - A 'true' co-production process is recommended, involving all stakeholders throughout all aspects of the process, including determining the problem, holding governance and leadership roles, designing and delivering the intervention, and determining which outcomes should be measured, as well as who should evaluate them and how this should occur
- Tailoring or adapting existing evidence-based physical health care interventions to meet the needs of a mental health population
    - Of the effective studies that involved tailoring the intervention, common variations included:
        - modifications to written materials
        - modifications to delivery
        - modifications to content
        - modified self-management and self-monitoring tools
        - modifications to improve motivation and reduce social isolation

- As considerable variability was found between studies regarding intervention strategies, duration, delivery mode and outcomes assessed, the ability to determine the effectiveness of individual intervention components or an optimal combination of strategies was limited, requiring further rigorous research
- There remains a need for rigorous evaluations to grow the evidence base around the most effective physical health care initiatives for delivery in mental health CMOs, and effective ways to implement such initiatives.

Background

People living with a mental illness experience substantial disparities in physical health, with an increased prevalence of physical health condition.[1–4] People living with a mental illness are less likely to receive care or support for their physical health, which leads to physical conditions being undiagnosed and untreated.[5] They are more likely to die from chronic preventable disease than the general population due to higher rates of cardiovascular disease, diabetes and cancer.[1–4,6]

The need to provide support to people living with a mental illness to improve their physical health has been recognised internationally with physical health included as a priority in the World Health Organisation Mental Health Action Plan.[7] The need is also recognised nationally by the Australian Government Department of Health in its Fifth National Mental Health and Suicide Action Plan[8], which aims to establish a national approach to the integration of physical and mental health. Addressing physical health in conjunction with mental health is an objective of holistic, person-centred care, which is part of the NSW Strategic Framework and Workforce Plan for Mental Health 2018–2022[9] and is highlighted by the Mental Health Commission of NSW's Living Well framework.[10] It is clear that the physical health of those living with mental illness is a public health priority and publications such as the Equally Well national consensus statement[11] provide guidance on what needs to be achieved, however, there is little direction on how best to deliver physical health support for people living with mental illness.

The provision of physical health support for people living with mental illness presents numerous challenges, with inadequacy of current support linked to factors including, but not limited to, the stigma around mental illness[12,13], the siloing of healthcare[14–16], diagnostic overshadowing[17–20] and socioeconomic factors such as limited access to preventive health care providers.[21–23] At the service level, barriers include a lack of staff time and confidence in delivering support[13,24–26], as well as a lack of supportive tools and resources. People living with mental illness also have difficulty accessing preventive health care due to issues with affordability and practical issues such as difficulty travelling to appointments. Additionally, while pharmacological treatment is an important component of the management of many mental health conditions, the types of psychotropic medications prescribed to treat different conditions and the associated adverse drug reactions can further compromise physical health. Antipsychotic medications in particular are associated with a range of long-term effects broadly classified as cardiometabolic, endocrine, neuromotor and other. Weight gain is an especially significant adverse drug reaction as it mediates other cardiometabolic outcomes, such as type 2 diabetes and cardiovascular diseases. Further, the negative psychosocial impacts of weight gain and reduced adherence to treatment can lead to relapse and poor mental health outcomes.[5] Monitoring adverse drug reactions and promoting adherence to both pharmacological and non-pharmacological treatments is important to optimising both mental and physical health outcomes for people living with mental illness.

Community Managed Organisations (CMOs), also referred to as non-government organisations, not-for-profit, or community-controlled organisations, typically support people living in the community with services such as individual daily support, transportation, accommodation, and access to healthcare.

Community-delivered services are playing an increasingly important role within the Australian mental health sector, featuring prominently in the delivery of mental health support and with the potential to deliver effective preventive care support. It is known that many CMOs across Australia deliver interventions to support both the physical and mental health of consumers to whom they provide care.[26–28] It is not known, however, what initiatives implemented by CMOs have successfully improved the physical health outcomes of consumers.

This Evidence Check review will evaluate evidence of different initiatives to deliver preventive and physical health interventions through community-managed mental health organisations, and provide examples of effective innovations, programs and initiatives implemented.

Methods

The Evidence Check questions were addressed through the following search strategies:

- Systematic review of the peer-reviewed literature
- Grey literature search, including requests for information from a range of CMOs in NSW providing support to people living with a mental illness.

The search strategies were supplemented by studies known to the review authors, and review of the reference lists of identified studies for additional relevant publications. Retrieved records were exported into Endnote, duplicates removed and remaining records uploaded into Covidence[29] for title/abstract and full-text screening by the review team. Publications were screened against pre-specified inclusion and exclusion criteria to determine those eligible for inclusion in the review. Details of included studies were extracted by the review team for inclusion in the table of publications and evidence synthesis.

Systematic review of peer-reviewed literature methodology

Databases searched and search terms

A search strategy was developed to find relevant peer-reviewed literature and used search terms related to:

- Setting and population
- Health behaviours, preventive activities, and physical health conditions
- Physical health care and interventions
- Study type and design.

The strategy was then conducted across two databases (Medline and CINAHL). Searches were limited to those published in English between 2010 and June 2020. For a detailed list of entered search terms, refer to Appendix 1.

Grey literature search methodology

An extensive grey literature search was conducted, including a search of websites of CMOs and relevant peak mental health organisations (in Australia and internationally), hand searches of relevant conferences, journal publications and reference lists of known relevant publications, directly contacting known CMOs, and a Google Scholar search.

Website search: Websites of peak CMOs and key state and territory CMOs, a random sample of CMOs representing priority populations, and other relevant websites (such as 'Equally Well') in Australia were hand searched for potentially relevant publications (n=138). Additionally, websites of relevant international mental health peak bodies from jurisdictions with health systems similar to Australia (including the UK, Canada, New Zealand, Ireland and the US) were hand searched (n=9). In total,103 potentially relevant publications were identified from these websites and included in screening for eligibility, with six included in the final included publications.

Conference and journal hand searches: Conference booklets and online conference proceedings from Equally Well 2019 (First National Equally Well Symposium), and The MHS Conference 2019, and all issues of the New Paradigm Journal published since 2015 (seven publications) were hand searched for potentially relevant abstracts. Fourteen potentially relevant publications were identified and included in screening for eligibility, with one included in the final eligible publications. A search of reference lists of known publications identified a further 17 potentially relevant publications, with seven included in the final included publications.

Contact with CMOs: An additional 30 CMOs providing services in NSW were emailed to request the provision of any relevant publications (see Appendix 2). Ten responses were received, with nine potentially relevant documents received from one CMO. Of the nine provided documents, one was included in the final included publications.

Google Scholar search: A Google Scholar search was undertaken of the first 200 returned results. Six potentially relevant publications were found, with three included in the final included publications.

Inclusion and exclusion criteria

Relevant literature included publications reporting intervention trials, evaluations or service improvement initiatives aiming to improve physical health or delivery/access to physical health care, for consumers of CMOs.

Briefly, study inclusion criteria were:

- **Study type:** Intervention trials, evaluations or service improvement initiatives (with either a baseline or a comparison group)
- **Setting:** Undertaken in CMOs providing psychosocial supports specifically to people living with a mental illness. This was expanded to allow inclusion of acute/clinical community mental health services if the study population was one of the Ministry's key priority groups: Culturally and linguistically diverse consumers, Aboriginal and/or Torres Strait Islander consumers, refugees or asylum seekers, older people, people living in social housing, and people transitioning out of correctional facilities
- **Population:** Participants could be consumers with a mental health diagnosis or providers from an eligible setting
- **Care or interventions:** Focused on improving any aspect of a consumer's physical health, ability to manage their health, or access to physical health care

- **Outcomes:** Any relevant quantitative outcomes relating to physical health, health behaviours, preventive or physical care receipt or delivery, knowledge or self-efficacy, or implementation-related outcomes.

All searches were limited to literature published in English between January 2010 and June 2020. Studies must have been undertaken in countries or jurisdictions with health systems similar to Australia, as defined in the NSW Ministry of Health proposal, including New Zealand, the UK, Canada, Western Europe, Scandinavia, the US (with caution due to difference in healthcare model), and Australian states and territories. For full details related to study inclusion criteria, refer to Appendix 3.

Findings

Included studies and Evidence grading

A flowchart of the literature selection process is included in Appendix 4. A total of 35 publications were identified as meeting the eligibility criteria and are included in the review: 20 publications were identified through the search of peer-reviewed literature and 15 were identified through the extensive grey literature search (as detailed under the methods of each component of this strategy above). The included publications represented 29 individual interventions/evaluations.

Table 1 summarises the NHMRC levels of evidence for included studies. The majority (59%; 17/29 interventions) were the lowest NHMRC level of Evidence (IV: Case series, either post-test or pre-test and post-test). Three (10%) studies were Level III: 2 (comparative studies with concurrent controls – non-randomised), and nine (31%) were Level II (randomised controlled trials).

Table 1—NHMRC levels of evidence for included studies (*n*=29)

NHMRC level of evidence	Definition	Number of included studies
Level I:	Systematic review of all relevant RCTs	0
Level II:	RCT	9
Level III:1	Pseudo-randomised controlled trials	0
Level III:2	Comparative studies with concurrent controls (non-randomised), case-control, interrupted time series with control group	3
Level III:3	Comparative studies with historical control, two or more single-arm studies, interrupted time series without a parallel control group	0
Level IV	Case series, either post-test or pre-test and post-test	17

Findings related to each of the review questions are examined separately, with 21 contributing to Question 1 and eight contributing to Question 2. Evaluations were undertaken in the US (n=15),

Australia n=12), Sweden (n=1) and the Netherlands (n=1). Appendix 5 provides summary details of each of the included studies.

For each question, findings related to the key outcomes are discussed in the below sections and summarised in Tables 2–5, with the remaining relevant outcomes and study descriptions summarised in Appendix 5. Due to variation in outcomes reported, the following sections organise outcomes under the categories: consumer physical health outcomes; consumer behaviour change; care receipt or provision (includes consumer service use/access); and other relevant outcomes (including consumer satisfaction, acceptability, and uptake; consumer beliefs and knowledge; and provider beliefs, knowledge and attitudes, satisfaction and feasibility). Study effectiveness is considered in terms of the proportion of outcomes for which statistically significant improvements are reported. Studies reporting improvements in 50% or more of key outcomes assessed are considered to be effective. For each question, outcomes are considered separately for higher evidence quality studies (RCTs and quasi-experimental studies: NHMRC levels II and III-2), and for lower evidence quality studies (pre-post studies, NHMRC level IV). For Question 1, key outcomes include consumer behaviour change or consumer physical health outcomes. For Question 2, they include care receipt or provision (including consumer-reported receipt of physical health-related care or access to such care, and provider reports of physical health care), or changes in consumer physical health outcomes.

Question 1: What have been shown to be the most effective preventive health care interventions for mental health consumers delivered by community mental health service providers?

Studies contributing to Question 1 have a focus on evaluating preventive health interventions, with the key outcomes focused on consumer improvement in physical or behavioural outcomes. Twenty-one studies were identified. The following section categorises each intervention into: weight loss, nutrition and physical activity interventions (n=9); multiple risk behaviour interventions (n=5); smoking cessation interventions (n=4); physical activity interventions (n=2); and sleep-related interventions (n=1). For each intervention, the strategies used and the results are summarised in Table 2, with further detail provided in Appendix 5.

Overall summary of the evidence base

Of the 21 identified studies, nine were of higher evidence levels (6 RCTs[30–35], three quasi-experimental trials[36–38]), and the remaining 12 studies were of a lower evidence level (all single-group pre-post evaluations[39–50]).

Overall summary of interventions

See Table 2 for a summary of the characteristics of each intervention, grouped by intervention focus: weight loss interventions (including components addressing both nutrition and physical activity); multiple lifestyle behaviour change interventions; smoking cessation interventions; physical activity only interventions; and sleep-related interventions. Three studies focused on priority populations: one

pre-post study was undertaken with 85% culturally and linguistically diverse consumers (a weight loss, physical activity and nutrition intervention)[49]; one RCT focused on those living in social housing (physical activity only intervention)[31]; and one RCT on improving insomnia among older consumers (sleep-related intervention).[35]

Table 2—Summary of studies addressing Question 1

Publication Evidence level, sample size	Description of Intervention								Outcomes			
	Assessment & screening	Education & advice	Educational resources[1]	Linkages & referrals	Free lifestyle aids[2]	Counselling & coaching[3]	Assisted, practical support & demonstrations[4]	Mode of delivery	Follow up	Consumer behaviour change	Consumer physical health	Other
Weight loss, physical activity and/or nutrition (n=9)												
Aschbrenner 2017[46] Evidence level IV, (n=15)		✓			✓	✓	✓	Face-to-face Group	12 weeks	●●	●●	● Consumer beliefs and knowledge
Bartels 2015[33] Evidence level II, (n=210)	✓	✓			✓	✓	✓	Face-to-face Individual	12 months	●	● *Primary outcomes* ●● *Secondary outcomes*	
Bartels 2018[37] Evidence level III-2, (n=122)	✓	✓			✓	✓	✓	Face-to-face Individual	12 months	●●	●	● Consumer beliefs and knowledge
Chapman 2019[47] Evidence level IV, (n=311)		✓			✓	✓	✓	Face-to-face Group	6 months	--	●	
Daumit 2011[48] Evidence level IV, (n=52)		✓	✓		✓		✓	Face-to-face	6 months	●	●	● Consumer beliefs and knowledge

Table 2—Summary of studies addressing Question 1

Publication Evidence level, sample size	Description of Intervention								Outcomes			
	Assessment & screening	Education & advice	Educational resources[1]	Linkages & referrals	Free lifestyle aids[2]	Counselling & coaching[3]	Assisted, practical support & demonstrations[4]	Mode of delivery	Follow up	Consumer behaviour change	Consumer physical health	Other
								Individual and Group				
Looijmans 2017[34] Evidence level II; (n=636)						✓	✓	Face-to-face Individual	12 months	--	●●	
Mangurian 2013[49] Evidence level IV; (n=80)	✓	✓	✓		✓		✓	Face-to-face Group	14, 26 and 40 weeks	--	●●	● Consumer – feasibility, acceptability, satisfaction
Mechling 2019[38] Evidence level III-2; (n=54)		✓					✓	Face-to-face Group	3, 6 months	--	●●	● Consumer beliefs and knowledge
Quiñones 2018[50] Evidence level IV; (n=11)	✓	✓				✓	✓	Face-to-face Individual and Group	22 weeks	●	●	● Consumer – feasibility, acceptability, satisfaction
Multiple health behaviours and risk (n=5)												
Gill 2012[42]		✓					✓	Face-to-face Group	16 weeks	--	●	

Table 2—Summary of studies addressing Question 1

Publication Evidence level, sample size	Description of Intervention								Outcomes			
	Assessment & screening	Education & advice	Educational resources[1]	Linkages & referrals	Free lifestyle aids[2]	Counselling & coaching[3]	Assisted, practical support & demonstrations[4]	Mode of delivery	Follow up	Consumer behaviour change	Consumer physical health	Other
Evidence level IV; (n=55)												
Kelly 2020[32] Evidence level II; (n=43)	✓			✓	✓	✓		Telephone Individual	16 weeks	●	--	● Consumer – feasibility, acceptability, satisfaction
Martin 2014[43] Evidence level IV; (n=118)							✓	Face-to-face Individual and Group	12 months	●	●	● Consumer service access ● Implementation/process-related outcomes
Mission Australia 2013[44] Evidence level IV; (n=14)	✓	✓	✓	✓	✓	✓	✓	Face-to-face Individual and Group	6 months	--	●	
Sane Australia ND[45] Wolstencroft ND[51] Evidence level IV; (n=8) (n=20)		✓				✓		Face-to-face Individual and Group	Program end	--	●	● ● Consumer beliefs and knowledge ● Provider – feasibility, acceptability, satisfaction

Table 2—Summary of studies addressing Question 1

Publication Evidence level, sample size	Description of Intervention								Outcomes			
	Assessment & screening	Education & advice	Educational resources[1]	Linkages & referrals	Free lifestyle aids[2]	Counselling & coaching[3]	Assisted, practical support & demonstrations[4]	Mode of delivery	Follow up	Consumer behaviour change	Consumer physical health	Other
Smoking cessation (n=4)												
Ashton 2010 [52], 2013[53], 2015[41] Evidence level IV; (n=324), (n=108 consumers, n=33 support workers), (n=844)		✓	✓		✓	✓		Face-to-face Group	12 months	● ●	--	● Consumer beliefs and knowledge ● Provider care provision ● Provider beliefs and knowledge
Bryant 2012[39] Evidence level IV; (n=20 consumers, n=9 support workers)	✓	✓	✓	✓	✓	✓		Face-to-face Individual	6 months	● ●	--	● Provider care provision
Ennals 2019[36], Hall 2019[54] Evidence level III-2; (n=64)	✓	✓	✓	✓	✓	✓		Face-to-face Individual	4 weeks, 3 months	●		● Consumer beliefs and knowledge
Morris 2011[30] Evidence level II; (n=123)	✓	✓		✓	✓	✓	✓	Face-to-face + Telephone	6 months	● *Either intervention compared to baseline*	--	

Table 2—Summary of studies addressing Question 1

Publication Evidence level, sample size	Description of Intervention								Outcomes			
	Assessment & screening	Education & advice	Educational resources[1]	Linkages & referrals	Free lifestyle aids[2]	Counselling & coaching[3]	Assisted, practical support & demonstrations[4]	Mode of delivery	Follow up	Consumer behaviour change	Consumer physical health	Other
Quitline + community								Individual + Group		● *Quitline+ compared to Quitline only*		
Quitline only		✓		✓	✓	✓		Telephone Individual				
Physical activity (n=2)												
Gyllensten 2017[31] Evidence level II, (n=73 RCT participants; n=30 qualitative interviews)							✓	Web-based Individual + Group	10 months	●●	●●	
Mood Active 2018[55]**, 2019**[40] Evidence level IV, (n=12) (n=64)						✓	✓	Face-to-face Group	8 weeks	--	●	● Program completion
Sleep related (n=1)												
Sadler 2018[35] Evidence level II; (n=72)										--	● *Standard CBT and advanced*	

Table 2—Summary of studies addressing Question 1

Publication Evidence level, sample size	Description of Intervention								Outcomes			
	Assessment & screening	Education & advice	Educational resources[1]	Linkages & referrals	Free lifestyle aids[2]	Counselling & coaching[3]	Assisted, practical support & demonstrations[4]	Mode of delivery	Follow up	Consumer behaviour change	Consumer physical health	Other
3 groups C-RCT Advanced CBT		✓	✓			✓	✓	Face-to-face Group	3 months		*CBT compared to control* ●● *Standard CBT compared to advanced CBT*	
Standard CBT		✓	✓			✓						
Control		✓										

● 50% or more of outcome type demonstrated a positive effect
● Less than half of outcome type demonstrated a positive effect
●● None of the collected outcomes are significant.
● Positive change reported descriptively only (significant testing not conducted)
● No change reported descriptively (significance testing not conducted)
● Follow-up data from intervention group only

Note: Where there was a mixed approach to analysis (combining descriptive analysis and significance testing) two different coloured indicators are used to represent results as appropriate.

[1] Information sheets, web-based resources, flipcharts, handouts, visual cues (Ashton 2015), recipe cards.

[2] Nicotine replacement therapy, kitchen utensils, scales, pedometers, fitness club/gym membership, provision of fruit and vegetables (Kelly 2020), healthy snack provision during classes (Mangurian 2013)

[3] Developing plans and goals (Ashton 2015; Ennals 2020, Chapman 2019, Looijmans 2017), developing anxiety reduction and coping strategies (Morris 2011), group support (Ashton 2015; Gill 2012; Martin 2014), advanced CBT included techniques and strategies to address comorbid depression (Sadler 2018)

[4] Walking groups, cooking supports and lessons, exercise classes, fitness coaching at gym, exercise component, accompaniment to gym, computerised physical activity training (Gyllensten 2017), improved cafeteria menu, purchase of healthy salad bar (Martin 2014), support to kitchen staff to provide healthier meals (Daumit 2011)

Of the 21 interventions, 19 were delivered face-to-face, one was telephone delivered[32], and one was a combination of face-to-face and telephone delivery.[30] Six interventions were provided in an individual format[32–34,36,37,39], eight in a group format[30,35,40–42,46,47,49], six involved both individual and group sessions[31,43–45,48,50], and one was not clear.[38] Intervention length ranged from six weeks[45] to 12 months[33,34,37], with the number of sessions ranging from 6[45] to 50.[33,37] The duration of intervention was unclear for six studies[31,36,43,56–58], and the number of sessions was unclear for seven studies.[31,33,36,39,41,43,44] All interventions consisted of multiple strategies with the exception of two that solely used assistance, practical support and demonstrations.[31,43] The most frequently reported strategies were counselling and coaching (16 interventions), education and advice (16 interventions), and assistance, practical support and demonstrations (16 interventions). Referrals and linkages were a key component of five studies.[30,32,36,39,44]

One intervention involved collaboration across mental health sectors.[47] A formalised partnership was established between the CMO, public mental health services and community sports recreation organisations ('PCYC'). The intervention was developed across these organisations and all organisations shared responsibility for intervention delivery. Two interventions included communication between sectors.[32,41] Written feedback was provided to GPs[32,41] and/or case managers and other medical specialists[32] regarding consumers' physical health and receipt of intervention.

Six studies involved peer workers in intervention delivery.[32,41–43,45,50] Co-production of research with end users featured in five of the 21 studies.[34,39,41,45,50] The four elements of co-production encompass: 1) *co-planning* of the research methodology, stakeholder involvement, timeframes and research governance; 2) *co-designing* interventions to address a problem and testing different solutions; 3) *co-evaluating* the effectiveness of an intervention by determining what outcomes are important to measure and how data should be collected; and 4) *co-delivery* where consumers and other end-users partner in the delivery of the intervention.[59] Only the element of co-design featured in all five studies, with peer workers[41], support workers[39], other staff[34] and consumers[34,45,50] contributing to either the design of a new intervention or the adaptation of an existing intervention. Six studies involved tailoring of the intervention: three were tailored to address specific needs of a mental health population[22,34,42], two involved individualising the intervention for participating consumers[36,46], and one involved cultural adaptation of a program for a Latino population.[49]

Overall summary of results

Overall: Seven of the 21 studies reported significant improvements (in 50% or more of those assessed) for at least one of the key outcomes: consumer behaviour change or consumer physical health outcomes. Follow-up lengths ranged from four weeks[36] to 12 months[33,37,41,43], with the follow-up length for one study unclear.[45]

Higher evidence level studies: Of the nine studies of higher evidence levels, three reported significant improvements (in 50% or more of those assessed) for at least one of the key outcomes: consumer behaviour change or consumer physical health outcomes.[30,33,37] These three studies included a smoking cessation intervention[30] and two weight loss interventions.[33,37] One additional quasi-experimental smoking cessation study descriptively reported positive improvements in smoking-related behaviour change.[36]

Lower evidence level studies: Of the remaining 12 lower levels of evidence studies, four – two smoking cessation interventions[39,41], one multiple lifestyle behaviour change intervention[42], and one weight loss intervention[48] – reported significant improvements. A further five pre-post studies descriptively reported positive improvements for physical activity interventions[40], multiple lifestyle behaviour change interventions[43–45] and weight loss.[50]

1. Weight loss interventions

Nine studies focusing on weight loss were found: four of higher evidence levels (2 RCTs[33,34], two quasi-experimental trials[37,38]), and five lower evidence level studies (pre-post trials).[46–50] One of the pre-post studies was undertaken with a priority population (85% culturally and linguistically diverse consumers).[49] All studies included both a physical activity and a nutrition component. Five studies included only participants who were overweight or obese[33,37,46,48,49], and one study included overweight or obese participants with a diagnosis of pre-diabetes.[50]

Summary of interventions

All nine interventions were delivered face-to-face – three were provided in an individual format[33,34,37], three in group settings[46,47,49], two involved both group and individual sessions[48,50], and one was not clear.[38] Intervention length ranged from 8 weeks[47] to 12 months[33,34,37], with the number of sessions ranging from 8[47] to 50.[33,37] For two studies[34,38], the number of sessions was not clear, and for another the duration of intervention was not reported.[50] Three interventions were delivered by external providers[33,48,49], three were provided by a combination of external and usual providers (though not during routine care)[34,38,47], two were provided by usual staff members (though not during routine care)[37,46], and one was provided by either a peer specialist (existing position) or mental health counsellor (unclear if internal or external provider).[50]

All interventions consisted of multiple strategies. The most frequently reported was ‘assistance, practical support and demonstrations’, including fitness coaching at a gym, and cooking supports and lessons (included in all interventions). ‘Education and advice’ was provided in eight interventions (all except Looijmans 2017[34]); ‘free lifestyle aids’ such as gym memberships, scales and pedometers were provided in six [33,37,46–49]; and ‘counselling and coaching’ was provided in five.[33,34,37,46,50] Four interventions used ‘assessment or screening’[33,37,49,50], two reported ‘educational resources’[48,49] and none reported ‘linkages and referrals’.

One intervention included collaboration across sectors (the CMO, public mental health services and community sports recreation organisations) to co-develop and co-deliver the intervention components.[47] One study involved peer workers in intervention delivery[50], and two reported using a co-design approach with end users in at least one aspect of study development.[34,50] No studies specifically reported tailoring the intervention to address the needs of people living with a mental health condition.

Summary of results (weight loss interventions):

Overall: Three of the nine studies reported significant results (50% or more of those assessed) for at least one of the key outcomes: consumer behaviour change or consumer physical health outcomes (two higher evidence level studies[33] and one lower evidence level study.[48] Follow-up length ranged from 12 weeks[38,46,50] to 12 months.[33,34,37]

Higher evidence level studies: Of the four higher evidence level studies identified (2 RCTs, 2 quasi-experimental studies), two demonstrated significant positive improvements in key outcomes. One RCT[33] reported significant improvements in all primary physical health outcomes related to weight and fitness (4 of 4); however, no improvements in secondary physical health outcomes (metabolic indicators, 0 of 5) and limited consumer behaviour change outcomes (3 of 8 outcomes).[33] One quasi-experimental study reported significant improvements in physical health outcomes (3 of 4 outcomes) but not consumer behaviour change (0 of 1).[37] The remaining two higher evidence level studies reported no significant improvements in physical health outcomes (0 of 3 outcomes[34]; and 0 of 4 outcomes[38]).

Lower evidence level studies: Of the five lower evidence level studies (all single group pre-post), one demonstrated significant improvements among 7 of 12 behaviour change outcomes, and some significant improvements in consumer physical health outcomes (4 of 13 outcomes).[48] One study descriptively reported improvements in both physical health outcomes (2 of 2) and consumer behaviour change (1 of 1 outcomes), but significance testing was not conducted.[50] The remaining three studies reported limited to no significant improvements: one study reported no significant improvements in any behaviour change (0 of 2) or physical health outcomes (0 of 3)[46], and the remaining two studies reported improvements in 1 of 6[47] and 0 of 4 physical health outcomes.[49]

Additional outcomes: Additional outcomes of relevance are noted in Table 2, and described in detail in Appendix 5, including: Consumer beliefs and knowledge[37,38,46,48], and consumer feasibility, acceptability and satisfaction outcomes.[49,50]

2. Multiple lifestyle behaviour change interventions

Five studies reported on interventions with a focus on improving multiple behaviours: one higher evidence level study (an RCT)[32], and four lower evidence level studies (all pre-post).[42–45] No studies focused on priority population groups.

Summary of interventions

For one intervention, the focus was not clearly defined, with consumers able to identify their own specific goals.[45] The remaining four interventions all included nutrition and physical activity[32,42–44], with two also including smoking[43,44], one also including smoking and alcohol[42], and the RCT also including smoking, alcohol, and screen time.[32] The randomised controlled trial was telephone-delivered to individuals[32], with the four pre-post studies delivered face-to-face.[42–45] Of these, one was delivered solely in a group format[42], and three were a combination of individual and group sessions.[43–45] Intervention length ranged from six weeks45 to six months[44], with the telephone-delivered intervention

providing fortnightly contacts[32], three studies involving weekly sessions[42,44,45], and the number of contacts provided in one study was unclear.[43]

All interventions attempted to aid consumer change by using multiple strategies. Education and advice[42,44,45], counselling and coaching, and assistance[32,44,45], practical support and demonstrations[42–44] were most frequently provided (each reported in n=3 studies), with assessment and screening[32,44], linkages and referrals[32,44], and free lifestyle aids[32,44] each provided by two studies. Educational resources were provided by one (see Table 2).[44]

One intervention included communication across sectors, where written feedback was provided to general practitioners, case managers and other medical specialists regarding consumers' physical health.[32] Three of the five interventions were delivered by peer workers[32,43,45], one by a combination of peer workers and usual staff[42], and one by multidisciplinary existing staff members (including a team leader, exercise support person, nutritionist, and smoking cessation support person).[44] One intervention used the co-design element of co-production[45], and one reported tailoring the intervention for people with a mental health condition.[42]

Summary of results:

Overall: One of the five studies reported significant results (50% or more of outcomes assessed) for at least one of the key outcomes (consumer behaviour change, or change in consumer physical health outcomes; a lower evidence level study).[42] Follow-up length ranged from 16 weeks[32,42] to 12 months[43], with one follow-up length unclear.[45]

Higher evidence level studies: The one higher evidence level study (an RCT) reported significant improvements in less than 50% of outcomes assessed (5 of 12 consumer behaviour change outcomes).[32]

Lower evidence level studies: Of the four lower evidence level studies (all single group pre-post), one demonstrated significant positive changes in physical health outcomes (2 of 3 outcomes).[42] The remaining three pre-post studies all descriptively reported improvements in outcomes, with one study reporting improvements in both consumer behaviour change (1 of 1) and consumer physical health outcomes (2 of 3)[43], and two studies reporting improvements in physical health outcomes (2 of 3)[44] and (4 of 6)[45] (significance testing not conducted).

Additional outcomes: Additional outcomes of relevance are noted in Table 2, and described in detail in Appendix 5: Consumer feasibility, acceptability, satisfaction[32], service access[43], and beliefs and knowledge[45], and provider feasibility, acceptability and satisfaction.[45]

3. Smoking cessation interventions

Four studies focused on evaluating smoking cessation interventions[30,36,39,41]: two higher evidence level studies (one RCT[30], one quasi-experimental trial[36]), and two lower evidence level studies (single group pre-post evaluations[39,41]). No studies were undertaken with the identified priority populations.

Summary of smoking cessation interventions

All four interventions were provided face-to-face, with one study also incorporating a telephone-provided intervention component for both the intervention and control groups (Quitline support[30]). Two interventions were delivered as group sessions[30,41], one consisting of 15 sessions over 10 weeks delivered by a mental health worker and a peer worker[41], and the other of 10 sessions delivered by mental health clinicians (time frame not reported[30]). Two interventions consisted of individual support by usual providers during routine appointments.[36,39] In one, support was provided over a six-month period (with number of appointments not reported[39]); in the second, neither the number of appointments nor duration of support was reported.[36]

All interventions included multiple components. All four included education and advice and free lifestyle aids (nicotine replacement therapy) and three of the four included assessment and screening[30,36,39], linkages and referrals[30,36,39], and counselling and coaching.[30,36,39] One study provided educational resources[41], and one included assistance, practical support and demonstrations, with group sessions including exercises to learn and practice alternative behaviours, coping skills, and anxiety reduction strategies.[30]

One intervention involved communication between sectors.[41] This included providing written feedback to general practitioners regarding consumers' involvement and progression through the program, as well as prompting general practitioners to monitor medication doses and mental health during smoking cessation attempts. One study involved peer workers in the delivery of the intervention[41], and two interventions included the co-design element of co-production.[39,41]

Summary of results (smoking cessation interventions)

Overall: Three of the four studies reported significant results (50% or more of those assessed) for consumer behaviour change.[30,39,41] One was a higher evidence level study (RCT)[30], with two being lower evidence level studies (pre-post studies).[39,41] Follow-up length ranged from 4 weeks[36] to 12 months.[41]

Higher evidence level studies: One of the two higher evidence level studies (the RCT) reported significant improvements in smoking-related behaviour changes outcomes. The RCT30 reported significant increases in 3 of 3 outcomes for both intervention groups at a six-month follow-up compared to baseline, with little difference between the two conditions at follow-up (1 of 3 outcomes improved significantly more in the 'Quitline Plus' intervention). The two-group, non-randomised trial descriptively reported improvements in 4 of 5 smoking-related behaviour change outcomes.[36]

Lower evidence level studies: Both trials reported significant improvements in outcomes (1 of 1)[39,41], both being a reduction in the number of cigarettes smoked. Each descriptively reported additional positive improvements in 2 of 2[41] and 1 of 2[39] behaviour change outcomes.

Additional outcomes: Additional outcomes of relevance are noted in Table 2, and described in detail in Appendix 5: consumer beliefs and knowledge[36,41], provider care provision[39,41], and provider beliefs and knowledge.[41]

4. Physical activity interventions

Two included studies[31,40] provided interventions that focused solely on increasing physical activity: one higher evidence level study (RCT)[31], and one lower evidence level study (single group pre-post).[40] The RCT focused on an identified priority population (social housing).[31]

Summary of physical activity interventions

One study examined the effectiveness of computerised exercise games in improving physical activity habits and fitness in a residential social housing setting[31], and consisted of computerised physical activity training in both individual and group formats (with technical support and instruction provided by a technical assistant). The second involved the Mood Active physical activity intervention, provided face-to-face in group settings by usual support providers, with 24 contacts over eight weeks.[40] It consisted of counselling and coaching and assisted, practical support and demonstrations (guided exercise in small group classes). Neither study reported referrals or linkages, collaboration or communication between sectors, peer workers in the delivery of the intervention, any elements of co-production, or any tailoring of the intervention.

Summary of results (physical activity interventions):

Overall: *Neither* study reported significant results (50% or more of those assessed) for consumer behaviour change or consumer physical health outcomes. Follow-up length ranged from 8 weeks[40] to 10 months.[31]

Higher evidence level studies: The RCT reported no significant improvements in either consumer behaviour change (0 of 2 outcomes) or physical health outcomes (0 of 4 outcomes).[31]

Lower evidence level studies: The pre-post study descriptively reported improvements (4 of 4 outcomes), however, significance testing was not undertaken, and the improvements were poorly defined.[40]

Additional outcomes: Additional outcomes of relevance are noted in Table 2, and described in detail in Appendix 5: program completion.[40]

5. Sleep-related interventions

One higher evidence level study (an RCT) evaluated the impact of two different cognitive behavioural therapy (CBT) interventions on improving insomnia among older consumers.[35]

Summary of intervention:

The RCT compared two CBT groups to a control condition who received psychoeducation only.[35] For both intervention groups (standard CBT and advanced CBT), the intervention was delivered face-to-face in eight weekly group sessions by two therapists. Both interventions consisted of education and advice, educational resources, and counselling and coaching, with the advanced CBT group also

receiving assistance, practical support and demonstrations, and additional content related to comorbid depression.[35] The study did not report using any of the following: referrals or linkages, collaboration or communication between sectors, peer workers in intervention delivery, any elements of co-production, or any tailoring of the intervention.

Summary of results

The one identified study (an RCT) found limited improvements in physical health outcomes. One of four sleep-related outcomes improved in both intervention groups compared to control at a three-month follow-up (insomnia severity), with no difference in outcomes between the intervention conditions.[35]

Question 2: What have been shown to be the most effective ways community mental health services can deliver or facilitate physical health care (including preventive health care) for their mental health consumers?

Studies contributing to Question 2 are focused on evaluating the impact of different models of, or approaches to, the delivery of physical health care (including preventive health care) for consumers. Where relevant, strategies to support the implementation of these models, approaches or initiatives are discussed. The key outcomes for assessing the effectiveness of these approaches include care receipt or provision (including consumer-reported receipt of physical health related care or access to such care, and provider reports of physical health care), or changes in consumer physical health outcomes.

Eight studies were identified that contribute to Question 2, with the focus of these interventions varied. The following section categorises each intervention by focus: chronic disease management (n=2); multiple health risks or conditions (n=5); and oral health (n=1). Each intervention and their corresponding results are summarised in Table 3, with the implementation support strategies for each study summarised in Table 4. Specific details for each study are provided in Appendix 5.

Table 3—Summary of studies addressing Question 2

Publication Design, Sample size, Level of evidence	Intervention Delivery							Outcomes			
	Peer-led program [1]	Physical health service co-location/ Integration [2]	Integration of dedicated roles [3]	Routine provision by all staff [4]	Online care delivery [5]	Mode of delivery	Provider	Follow up	Care receipt or provision	Consumer physical health	Other results
Chronic disease management (n=2)											
Druss 2010[60] Evidence level II; (n=80)	✓					Face-to-face, individual	Peer worker	6 months	● Consumer service use	●●	● Consumer beliefs and knowledge
Teachout 2011[61] Evidence level IV; (n=13)		✓		✓		Face-to-face, group and individual	Co-located service and all staff	6 months	--	●	● Consumer satisfaction
Multiple health risk behaviours/conditions (n=5)											
Kelly 2014[62] Evidence level II; (n=21)	✓					Face-to-face, individual	Peer worker	6 months	● Consumer service use	●	●● Consumer beliefs and knowledge
Bartels 2014[63] Evidence level II; (n=183)			✓			Face-to-face, group and individual	Dedicated staff member	3 years	● Consumer service use	--	● Consumer uptake
Sane Australia 2013[64]**; Lo 2014**[65] Evidence level IV; (n=NR); focus groups with consumers (n=43) and providers (N=41)				✓		Face-to-face, individual	All staff	Post training	● Staff care provision	--	● Provider knowledge and attitudes ● Staff satisfaction ● Staff care provision
Schuster 2018[56]						Online,	Consumer-	24	●	●	*Online compared to*

Table 3—Summary of studies addressing Question 2

Publication Design, Sample size, Level of evidence	Intervention Delivery							Outcomes			
	Peer-led program [1]	Physical health service co-location/ Integration [2]	Integration of dedicated roles [3]	Routine provision by all staff [4]	Online care delivery [5]	Mode of delivery	Provider	Follow up	Care receipt or provision	Consumer physical health	Other results
Evidence level IV; (n=1,229 consumers) Self-directed intervention					✓	individual	directed	months	Consumer service use: *Online compared to provider delivered* ●	*Online compared to provider delivered* ● *Either intervention, compared to baseline*	*provider delivered:* ● Consumer beliefs and knowledge *Either intervention, compared to baseline:* ● Consumer beliefs and knowledge
Provider intervention			✓	✓		Face-to-face, individual	All staff and dedicated staff member		Consumer service use: *Either intervention, compared to baseline*		
Sims 2017 [58] Evidence level IV; (n=NR consumers)				✓		Face-to-face, individual	All staff	12 months	● Staff care provision	--	● Client uptake
Oral health (n=1)											
McGrath 2018 [57] Evidence level IV; (n=NR staff members); post-only training survey (n=197)				✓		Face-to-face, individual	All staff	Post training	● Staff care provision	--	●● Provider knowledge and attitudes ● Consumer satisfaction

● 50% or more of outcome type demonstrated a positive effect
● Less than half of outcome type demonstrated a positive effect
●● None of the collected outcomes are significant.

● Positive change reported descriptively only (significant testing not conducted)
● No change reported descriptively (significance testing not conducted)
● Follow-up data from intervention group only
Note: Where there was a mixed approach to analysis (combining descriptive analysis and significance testing) two different coloured indicators are used to represent results as appropriate.

[1] Physical health care or programs provided by a peer worker(s), a person with a lived experience of mental illness.
[2] Physical co-location or integration of a physical health service within a community-managed organisation: co-location of a diabetes management clinic staffed by nurse practitioners to provide regular diabetes education classes, diabetes counselling and exercise instruction (Teachout 2011).
[3] Integrating additional staff with a dedicated role of providing physical health care: nurse embedded in a community-managed organisation with the dedicated role of providing preventive health care (Bartels 2014); nurses were embedded in the service to support staff members in providing physical health care through providing education and assisting in developing wellness plans (Schuster 2018; provider intervention).
[4] All staff of a service provide physical health care in their supports and/or appointments with consumers, i.e. physical health care is integrated in routine care delivery.
[5] Physical health care is provided through online modalities and is consumer-directed: consumers access a web portal with content tailored to their physical health goals and own care (Schuster 2018; self-directed intervention)

Table 4—Summary of implementation strategies for studies addressing Question 2

	Implementation Support Strategies									Outcomes		
Publication **Design, Sample size, intervention focus**	**Service/ clinic co-location[1]**	**Consensus[2]**	**Guidelines, policies, protocols[3]**	**Tools, prompts, reminders[4]**	**Training[5]**	**Provider resource, information[7]**	**Program tailoring/ adaptation[8]**	**Practice change support[9]**	**Audit feedback[10]**	**Care receipt or provision**	**Consumer physical health**	**Other results**
Chronic disease management (n=2)												
Druss 2010[60] Evidence level II;(n=80)		✓			✓		✓			● Consumer service use	●●	● Consumer beliefs and knowledge
Teachout 2011[61] Evidence level IV; (n=13)	✓									-	●	● Consumer satisfaction
Multiple health risk behaviours/conditions (n=5)												
Kelly 2014[62] Evidence level II; (n=21)					✓	✓				● Consumer service use	●	●● Consumer beliefs and knowledge
Bartels 2014[63] Evidence level II; (n=183)						✓				● Consumer service use	●	● Consumer uptake
Sane Australia 2013[64]; Lo 2014[65] Evidence level IV: Single group pre-post (n=NR);			✓	✓	✓	✓		✓	✓	● Staff care provision	--	● Provider knowledge and attitudes ● Staff satisfaction

Table 4—Summary of implementation strategies for studies addressing Question 2

Publication Design, Sample size, intervention focus	Implementation Support Strategies									Outcomes		
	Service/ clinic co-location[1]	Consensus[2]	Guidelines, policies, protocols[3]	Tools, prompts, reminders[4]	Training[5]	Provider resource, information[7]	Program tailoring/ adaptation[8]	Practice change support[9]	Audit feedback[10]	Care receipt or provision	Consumer physical health	Other results
focus groups with consumers (n=43) and providers (n=41)												● Staff care provision
Schuster 2018[56] Evidence level IV; (n=1229) Self-directed intervention Provider intervention				✓	✓ ✓			✓		● Consumer service use; *Online compared to provider delivered* ● Consumer service use; *Either intervention, compared to baseline*	● *Online compared to provider delivered.* ● *Either intervention, compared to baseline*	*Online compared to provider delivered:* ● Consumer beliefs and knowledge *Either intervention, compared to baseline:* ● Consumer beliefs and knowledge
Sims 2017[58] Evidence level IV: (n=NR consumers)			✓	✓	✓					● Staff care provision	-	● Client uptake
Oral health (n=1)												

Table 4—Summary of implementation strategies for studies addressing Question 2

	Implementation Support Strategies									Outcomes		
Publication **Design, Sample size, intervention focus**	**Service/ clinic co-location[1]**	**Consensus[2]**	**Guidelines, policies, protocols[3]**	**Tools, prompts, reminders[4]**	**Training[5]**	**Provider resource, information[7]**	**Program tailoring/ adaptation[8]**	**Practice change support[9]**	**Audit feedback[10]**	**Care receipt or provision**	**Consumer physical health**	**Other results**
McGrath 2018[57] Evidence level IV; (n=NR staff members) and a post-only training survey (n=197)					✓			✓		● Staff care provision		●● Provider knowledge and attitudes ● Consumer satisfaction

● 50% or more of outcome type demonstrated a positive effect.
● Less than half of outcome type demonstrated a positive effect.
●● None of the collected outcomes are significant.
● Positive change reported descriptively only (significant testing not conducted)
● No change reported descriptively (significance testing not conducted)
● Follow-up data from intervention group only

Note: Where there was a mixed approach to analysis (combining descriptive analysis and significance testing), two different coloured indicators are used to represent results as appropriate.

[1] Physical co-location or integration of a physical health service or clinic within a community-managed organisation: co-location of a diabetes management clinic staffed by nurse practitioners to provide regular diabetes education classes, diabetes counselling and exercise instruction (Teachout 2011).

[2] Processes to reach a common understanding of requirements, guidelines or procedures: review of components of the manual by an expert panel (Druss 2010).

[3] Shared documents establishing clear guidelines or mandates for care provision.

[4] A tool (in electronic or printed modality) to guide provision and recording of physical health care, or remind staff to provide care: The 'health prompt' tool to promote conversations regarding physical health (Sane Australia 2013; Lo 2014); a monitoring system to record and track referrals (Sims 2017); an online tool accessed by consumers to support self-directed care, providing access to content tailored to their needs or goals and enhance patient activation (Schuster 2018).

[5] Educational sessions (online or face-to-face) that aim to upskill and train staff in care provision, e.g. courses, online learning resources.

[7] Printed or electronic information or resources to support care provision: intervention manual (Druss 2010); educational resources and 'train the trainer' manuals (Sane Australia 2013; Lo 2014).

[8] Adaptation of an existing program or intervention to meet the specific needs and circumstances of the target population: modification of an existing self-management program to meet the needs of people with a mental health condition (Druss 2010).

[9] Support personnel to facilitate implementation and changes in care provision, monitoring implementation and communicating issues/solutions as they arise and/or providing physical health care: site champions to support implementation (Sane Australia 2013; Lo 2014 and McGrath 2018).

[10] Monitoring care provision and providing feedback to staff/management regarding its provision/implementation

Overall summary of the evidence base

Of the eight identified studies, three were higher evidence level studies (RCTs[60,62,63]), and five were lower evidence level studies (pre-post evaluations[56–58,61,65]). One of these studies was described as a cluster-RCT[56], however, it compared two different models with no comparison group, and as such is treated as a lower evidence level study (pre-post).

Overall summary of interventions

See Table 3 for a summary of the characteristics of each intervention, grouped by intervention focus: chronic disease management, multiple health risks or conditions, and oral health. Two studies focused on priority populations: one on increasing access to preventive services among older consumers[63], and one evaluating a Type II diabetes self-management program for consumers living in social housing.[61]

Of the eight studies, seven reported on models of care delivery for consumers.[56,58,60–63,65] Of these, six involved face-to-face support for consumers[58,60–63,65], and one compared two models of delivery (online or face-to-face).[56] Four were provided to consumers on an individual basis[56,58,62,65], one in a group format[60], and two involved combined individual and group formats.[61,63] The eighth study reported an initiative to improve staff provision of oral health care, with no clear indication of the specific model, content or support that providers were encouraged to provide to consumers.[57] Across all eight studies, the length of the study period ranged from six months[60–62] to two years[63], with the duration unclear for three studies.[56,57,65] The number of contacts provided to consumers was clear in only one study (6 sessions over 6 months).[60]

All models were supported by multiple implementation strategies, except one where co-location was the only strategy reported[61] (Table 4). The most frequently reported implementation supports were staff training[56–58,60,62,65] (n=6 studies), provider resource information[62,63,65] (n=3) and practice change support personnel[56,57,65] (n=3).

Six of the interventions included referrals or linkages as a key care component.[56–58,62,63,65] One intervention involved collaboration across sectors, where promotion activities aimed to engage other services (services not specified) to deliver group activities and sessions with consumers and staff[65], and one involved a partnership between CMO staff and nurse practitioners from a local university.[61] Nurses provided education classes and nutrition counselling to consumers at the CMO site.[61] Two were peer-led programs[60,62], and four of the eight studies included at least one element of co-production.[57,60,62,65] Three studies used the co-design element of co-production, with consumers and staff members involved in developing and/or tailoring the intervention components.[57,60,65] One study included two elements of co-production, with a peer leader involved in both co-design and co-delivery of the intervention.[62] Two involved tailoring or adaptation: one involved adapting an established self-management program to be delivered by, and to, mental health consumers[60], and the second involved a Participatory Action Research approach to ensure the training provided to staff was tailored to address their needs.[57]

Overall summary of results

Overall: Five of the eight studies reported significant improvements (in 50% or more of outcomes) in the key outcomes (care receipt or provision, or consumer physical health outcomes): three higher evidence level studies (all RCTs[60,62,63]), and two lower evidence level studies (pre-post[56,57]). The

remaining three (all lower evidence level studies) each reported positive improvements descriptively.[58,61,65] Follow-up length ranged from 6 months[60–62] to 3 years[63], with follow-up length for two studies unclear.[57,65]

Higher evidence level studies: Of the three studies of higher evidence levels (RCTs), all three reported significant improvements in consumer service use.[60,62,63] These three studies included a tailored peer-delivered chronic condition self-management program[60], a peer worker delivered health care engagement and self-management model[62], and an embedded nurse delivered model to aid linkages to preventive screening services for older consumers.[63]

Lower evidence level studies: Of the remaining five lower level of evidence studies[56–58,61,65], two reported significant improvements in consumer service and consumer physical health outcomes[56], and staff provision of oral healthcare.[57] The remaining three studies all descriptively reported positive improvements in consumer physical health[61] and staff provision of care.[58,65]

1. Chronic disease management (n=2)

Two studies evaluated models for managing existing chronic diseases: one higher evidence level study (RCT) including consumers with various existing chronic medical conditions[60], and one lower evidence level study (single group pre-post) involving consumers with Type II diabetes.[61] The lower evidence level study focused on a priority population: consumers living in social housing.[61]

Summary of interventions addressing chronic disease management

Both studies focused on increasing consumer self-management of medical conditions. The RCT was a peer-delivered program in an outpatient setting, with the intervention adapted from an established medical self-management program to be delivered by, and to, mental health consumers.[60] The pre-post study evaluated a residential self-management program for consumers with Type II diabetes that focused on best practices for diabetes self-care and strategies for making healthy lifestyle change.[61] Both programs were delivered face-to-face over six months. The peer-delivered intervention involved six group sessions[60], while the residential program consisted of weekly classes, and group and individual support provided by existing support staff (number not clear).[61]

The implementation of the peer-delivered model was supported by multiple strategies: consensus, training, and program tailoring or adaptation[60], while the residential model involved service co-location.[61] Neither study included referrals or linkages as an intervention component. One study involved collaboration: a partnership between CMO staff and nurse practitioners from a local university. It involved diabetes education classes and nutrition counselling delivered by usual providers (the nurse practitioners), and practical support provided by usual support staff.[61] One involved peer delivery, used the co-design element of co-production, and involved tailoring of the intervention to meet the needs of a mental health population.[60]

Summary of results (chronic disease management)

Overall: One of the two studies (a higher evidence level study, RCT) reported significant results (50% or more of outcomes assessed) for at least one key outcome (change in receipt, provision, or access to care, or change in consumer physical health outcomes).[60] Follow-up length for both studies was 6 months.[60,61]

Higher evidence level studies: The RCT[60] reported significant increases in consumer service use (1 of 1 outcomes), with no significant improvements reported for physical health outcomes (0 of 3).

Lower evidence level studies: The pre-post study reported positive change descriptively in consumer physical health outcomes (2 of 2), but significance testing was not conducted.[61]

Additional outcomes: Additional outcomes of relevance are noted in Table 3, and described in detail in Appendix 5: changes in consumer beliefs and knowledge[60], and consumer satisfaction.[61]

2. Multiple health risks or conditions (n=5)

Five studies evaluated models of care for multiple health risks or physical conditions: two RCTs[62,63], two single-group pre-post trials[58,65], and one pre-post comparison of two intervention groups with no control.[56] One of the RCTs was focused on increasing access to preventive services among a priority population (older consumers).[63]

Summary of interventions addressing multiple health risks or conditions: The physical health focus of each intervention varied: the two higher evidence level studies focused on reducing barriers to healthcare usage and improving health and wellbeing[62], and aiding linkages to preventive screening services for older consumers.[63] In both, consumers were provided with face-to-face support: in one this was provided by a peer worker on an individual consumer basis[62], and in the other this was provided by a nurse embedded in the service and involved both group (skills training) and individual formats.[63]

Of the three lower evidence level studies, two aimed to integrate physical health care into routine care delivery: one involved the integration of health promotion[65] and the other involved integration of monitoring for key metabolic health indicators.[58] The third evaluated two different models (face-to-face provider support vs online delivery) for increasing the delivery of support for a variety of risk factors (including smoking, weight, nutrition, and sleep hygiene), for coordinating medical services, and for monitoring progress.[56] The two single-group studies were provided face-to-face in an individual format by usual providers.[58,65] The two-group study compared two modalities for providing consumers with support: the ‘self-directed’ intervention was provided online and was consumer-directed, while the ‘provider’ intervention was delivered face-to-face in an individual format, by regular providers (e.g. case managers and wellness nurses).[56]

The implementation of these models was most frequently supported by training[56,58,62,65] (n=4 studies), and tools, prompts and reminders[56,58,65] (n=3), followed by provider resources and information[62,63,65] (n=3), and practice change support personnel[56,65] (n=2). All five studies included referral or linkage as a key care component. One of these studies[65] involved collaboration across sectors where promotion activities were undertaken to engage other services (services not specified) in delivering group activities and sessions with consumers and staff. One intervention was delivered by peer workers[62], one included both the co-design and co-delivery elements of co-production[62], while another included co-design only.[65] None specifically reported tailoring an intervention to meet the needs of a mental health population.

Summary of results (multiple health risks or conditions)

Overall: Of the five studies, three reported significant results (50% or more of those assessed) for at least one of the key outcomes (change in receipt, provision, or access to care; or change in consumer

physical health outcomes). Two were higher evidence level studies (RCTs)[62,63], and the third was a lower evidence level (pre-post).[56] Follow-up length ranged from 6 months[62] to three years[63], with follow-up length for one study unclear.[65]

Higher evidence level studies: Of the two higher evidence level studies, both found significant improvements in consumer service use, with one reporting significant increases in 5 of 10 outcomes related to preventive care services received[63], and the other reporting an increase in 2 of 4 consumer service use outcomes[62], but limited improvements in consumer physical health outcomes (1 of 6).

Lower evidence level studies: Of the three lower evidence level studies, one reported significant improvements in consumer service use (1 of 1 outcomes, in both intervention groups: self-directed and provider support, with no difference between the two interventions), and physical health outcomes (1 of 1 outcomes, in both interventions groups, with no difference between the two interventions).[56] The remaining two descriptively reported increases in provider care provision outcomes (2 of 2)[65] and service level care provision (2 of 2)[58], however, significance testing was not undertaken and neither study reported sample size.

Additional outcomes: Additional outcomes of relevance are noted in Table 3 and described in detail in Appendix 5: consumer beliefs, knowledge, satisfaction and uptake; provider knowledge, attitudes, and satisfaction.

3. Oral health (n=1)

One lower evidence level study (single-group pre-post) evaluated an initiative to improve oral health promotion practices among staff.[57]

Summary of the oral health provider intervention

The study evaluated a partnership to deliver professional development to rehabilitation and support workers to improve oral health promotion practices. It involved training focused on applying existing communication support skills (e.g. motivational interviewing, recovery coaching) to oral health, to increase staff provision of oral health promotion during routine support provision. Specific content or support that providers were encouraged to provide to consumers was not reported, except for referral of consumers to oral health services. The strategies to support the implementation of oral health promotion into routine care included face-to-face training sessions and an e-learning module, and site champions at each site to coordinate implementation. An element of co-production was used, with the training developed in collaboration with consumers and staff (co-design).[57]

Summary of results (oral health provider intervention)

The single-group pre-post study reported on one key outcome: staff care provision. Significant improvements were reported, with provision of oral health support increasing following training (1 of 1 outcome).[57] Follow-up length was unclear.

Additional outcomes of relevance are noted in Table 3 and described in detail in Appendix 5: provider knowledge and attitudes, and consumer satisfaction.

Question 3: What have been the barriers and enablers for community mental health services to deliver or facilitate preventive and physical health care for their mental health consumers?

The studies contributing to Question 3 are drawn from those included to answer Questions 1 and 2. Twenty-one of the 29 total included studies reported on or discussed barriers or enablers to the delivery or effectiveness of preventive or physical healthcare interventions. Of the 21 papers, a total of 15 identified barriers and 19 identified enablers (13 identified both). The following section and Table 5 summarise the barriers and enablers into five categories of factors: client, staff, tailoring, environmental/systemic, and intervention factors. See Appendix 6 for full details of barriers and enablers reported by study.

Client factors: Eight studies identified client-related factors that may affect effectiveness or delivery of preventive and physical health care, including: availability of social support, motivation, mental health medications, transport and accessibility, and client knowledge.

Staff factors*:* The most frequently reported factors that acted as barriers or enablers were staff-related factors, discussed in 13 of the studies. Staff factors related primarily to knowledge, attitudes and confidence, clarity of roles and responsibilities, concerns regarding workload, building rapport with clients, and having a lived experience (peer workers).

Tailoring factors: Seven studies reported factors relating to the tailoring of interventions, including session time, location and frequency, session type (e.g. information or exercise session), logistical changes, cultural changes, tailoring interventions to the resources of the service, and alignment with recovery models.

Environmental/systemic factors: Four studies reported environmental and/or systemic factors relating to: location of care, environmental features of facilities; budget, staffing and resources; financial strain, unstable housing, waiting lists, availability of internal practice guidelines, referral processes, organisational culture, promotion of programs, adequate supports for staff, and information technology capacity.

Intervention factors: Five studies reported factors specific to intervention design, related to length and content of intervention, and the provider of the intervention.

Table 5—Summary of identified barriers and enablers to preventive or physical health care delivery

Study	Client factors	Staff factors	Tailoring factors	Environment /systemic factors	Intervention factors
Question 1 studies: preventive health care interventions					
Aschbrenner 2017[46]	●	-	●	-	-
Ashton 2010/13/15[41]	-	●	-	-	-
Bartels 2015[33]	-	●	-	-	-
Bartels 2018[37]	-	●	--	-	-
Bryant 2012[39]	-	●	-	-	-
Chapman 2019[47]	-	●	-	-	-
Daumit 2011[48]	●	●	●		-
Ennals / Hall 2019[36]	●	●●	●	-	-
Gill 2012[42]	●	-	●	-	-
Gyllensten 2017[31]	●	●	-	-	-
Looijmans 2017[34]	-	●	●	●	-
Mangurian 2013[49]	●	-	●	-	-
Martin 2014[43]	-	●●	-	-	-
Mission Aus 2013[44]	-	-	-	-	●
Sadler 2018[35]	-	-	-	-	●●
Sane/Wolstencroft ND[45]	-	●	-	●●	-
Question 2 studies: delivery or facilitation of physical health care (including preventive health care)					
Druss 2010[60]	●	-	-	-	-
McGrath 2018[57]	-	-	●	-	-
Sane 2013/Lo 2014[65]	●	●●		●	●
Schuster 2018[56]	-	-	-	-	●●
Sims 2017[58]	-	●	-	●	●

No barriers or enablers extracted from the following studies addressing Question 1: Kelly 2020[32], Mechling 2019[38], Mood Active, 2019[40], 2018[55], Morris 2011[30], Quiñones 2018[50]. No barriers or enablers extracted from the following studies addressing Question 2: Bartels 2014[63], Kelly 2014[62], Teachout 2011[61]

Gaps in the evidence

The included studies focused on a broad range of physical and preventive health care focus areas, including tobacco smoking, physical activity, nutrition, sleep, access to preventive services, oral health, and self-management. Most studies addressed Question 1 (regarding the effectiveness of preventive health care interventions) and focused on behavioural risks that contribute to preventable chronic diseases, such as cardiovascular disease, diabetes and cancers. This focus is in line with national and international priority areas for this population[5,7,8,11], however, few of these lifestyle interventions targeted multiple health behaviours. There is a high need to address the multiple risk behaviours so common among this population, yet limited high-quality evaluations were included in this review to evaluate the most effective multiple lifestyle behaviour change interventions (Question 1), or the impact of different models or approaches to the delivery of such interventions (Question 2) to consumers in mental health CMO settings. Further research is needed to identify the most effective approaches to addressing multiple risk behaviours, and to explore if there are gains in effectiveness by interventions targeting particular combinations of risks.

Despite the breadth of focus of the included studies, many gaps remain in the evidence for addressing other priority health areas for this population. The extent to which the findings from the studies included in this report generalise to improving other areas of physical health or care delivery are unknown, including communicable diseases (e.g. HIV, HCV), sexual health, musculoskeletal conditions, and medication monitoring.[5,11] Monitoring adverse drug reactions and promoting adherence with pharmacological and non-pharmacological treatment, for instance, is important to optimising both the outcomes of physical health interventions as well as mental health recovery.[5,11] The role that CMOs might play in this regard, and the degree of integration of care delivery with other providers such as GPs or government mental health services that might be desirable or necessary to facilitate such a role, requires further exploration.

Few studies were identified that addressed Question 2, regarding the impact of different models of, or approaches to, the delivery of physical health care (including preventive health care) for consumers. In mental health services more broadly, similarly little is known regarding the most effective approaches to deliver evidence-based physical health care. While many CMOs are implementing physical and preventive health care initiatives, most are not being evaluated (see Appendix 7). There is a need for rigorous evaluation of different models or approaches to providing evidence-based physical and preventive health care within the CMO setting. Further, a greater understanding of the implementation strategies required to support the integration of such models or approaches into usual mental health CMO practice is required. All eight studies addressing Question 2 included at least one implementation support strategy, with the most frequently reported supports being staff training, practice change support personnel, and provision of resources and information to providers. A number of strategies that are well supported by the broader research literature were included in few studies, including the introduction of guidelines and policies[58,65] (n=2), IT systems change[58,65] (n=2), and performance monitoring[65] (n=1). There is a need to evaluate a broader range of implementation support strategies to gain an understanding of the most effective strategies, or combinations of strategies, for supporting the integration of physical and preventive health care delivery in mental health CMOs.

Improving communication and coordination across services (e.g. government and non-government mental health services) has been acknowledged as a goal for Australian mental health system reform

in the 2015 National Mental Health Commission review.[66] While the ability to achieve integrated and coordinated care is hampered by the complex nature of the health care system and siloed mental health services, an integrated approach to physical health care across services is likely to result in higher quality and accessible care, as well as better outcomes for consumers.[67,68] There is a need to identify effective mechanisms to promote communication and coordination across services (e.g. government and non-government mental health services) to facilitate the provision of integrated care for physical health, however, of the studies included in this review, few involved integrated and coordinated provision of physical health care across services or sectors. Across Questions 1 and 2, three studies involved collaboration across sectors[47,61,65], such as co-delivery of interventions by CMOs and government mental health services, and two studies included information sharing between different services.[32,41] One study reported significant improvements, where general practitioners were provided with written information regarding consumers' involvement in a smoking cessation program and prompted to monitor consumers' medication and mental health.[41]

Few studies addressed physical or preventive health care for identified priority groups, despite extending the setting to include acute and clinical community services for these groups. Of the 21 studies addressing Question 1, three focused on priority groups (culturally and linguistically diverse consumers[49]*;* social housing[31]; and older people[35]). Of the eight addressing Question 2, two focused on priority groups (older people[63]*;* and social housing[61]). No studies were identified that focused on Aboriginal or Torres Strait Islander consumers, consumers transitioning out of correctional facilities, or refugees or asylum seekers.

Discussion

Summary of the evidence base

Overall, 29 studies were included in the review (Question 1: n=21; Question 2: n=8; Questions 3: n=29). Across Questions 1 and 2, 12 demonstrated significant improvements in at least 50% of outcomes (six RCTs, six pre-post). A further nine studies descriptively reported positive improvements (one quasi-experimental, eight pre-post). The findings provide mixed evidence for the effectiveness of preventive and physical health interventions in improving behaviour change and physical health outcomes in mental health CMOs (seven of 21 studies addressing Question 1 reported significant improvements for at least 50% of outcomes), and effective ways for mental health CMOs to deliver or facilitate physical health care for their consumers (five of eight studies addressing Question 2 reported significant improvements for at least 50% of outcomes).

For studies addressing Question 1, positive results were reported for lifestyle interventions focused on weight loss (through addressing physical activity and nutrition), supporting smoking cessation or reduction, and multiple lifestyle behaviour change interventions, but limited support was found for interventions focused solely on physical activity or sleep. Of the higher evidence level studies, two[33,37] of four[33,34,37,38] studies addressing weight, one[30] of two[30,36] addressing smoking cessation, and none of one[32] addressing multiple lifestyle behaviour change interventions reported significant improvements in outcomes. Studies of lower evidence levels supported the outcomes of the higher quality studies, primarily demonstrating positive results for weight loss interventions, multiple lifestyle behaviour change interventions, and smoking cessation interventions. No studies demonstrated positive results for interventions addressing physical activity only (of one high[31] and one low[40] evidence level study), or sleep (of one higher evidence level study[35]).

For studies addressing Question 2, improvements in care receipt, delivery or access were reported across various models or initiatives, including peer-led self-management programs, dedicated staff roles for delivering physical health support, and provision by usual support providers. Of the higher evidence level studies, one of one study addressing chronic disease management[60], and two of two addressing multiple risks or conditions[62,63] demonstrated positive results. Similarly, positive outcomes were demonstrated among the lower evidence level studies for those addressing multiple risks or conditions and chronic disease management. One lower evidence level study addressed staff provision of oral health care, reporting positive results.[57]

Key characteristics of interventions, programs, models and initiatives that demonstrated significant improvements

Tables 5 and 6 summarise the key characteristics of the 12 interventions (seven addressing Question 1 and five addressing Question 2) that demonstrated significant improvements in at least 50% of the

key outcomes assessed, by review question. See the Table of Included Studies (Appendix 5) for detailed information regarding intervention components and content. A table summarising the key characteristics of additional studies that descriptively reported improvements in key outcomes can be found in Appendix 8, and a table summarising the characteristics of studies that showed no improvements can be found in Appendix 9.

Key characteristics of effective studies addressing Question 1: What have been shown to be the most effective preventive health care interventions for mental health consumers delivered by community mental health service providers?

Table 5 summarises the key characteristics of interventions addressing Question 1. Across seven effective studies addressing Question 1, the duration of interventions ranged from 12 weeks[41] to 12 months.[33,37] All studies involved a face-to-face care delivery component, with one also including a telephone component.[30] Both individual and group sessions appear to be effective with three interventions provided on an individual basis[33,37,39], two provided in group settings[41,42], and two involving a combined approach.[30,48] Two of the seven studies used linkages or referrals with physical health care providers or services[30,39], two included some element of co-production[39,41], two interventions were delivered by peer workers[41,42], and two interventions were tailored or adapted to meet the needs of a mental health population.[42,48]

The most frequently used intervention strategies in studies addressing Question 1 were education and advice, free lifestyle aids, counselling and coaching, and assistance, practical support and demonstrations.

- All seven studies provided consumers with education and/or advice. These included personalised fitness plans and individualised healthy eating information[33,37], weight management information covering healthy eating choices and portion sizes[42,48], and smoking-cessation information (including information related to managing mental health, dealing with boredom, stress and sadness, confidence and coping strategies[41], advice to quit[39], and education on smoking and cessation[30]
- Six of the seven studies provided free lifestyle aids. For the weight loss interventions, these included gym memberships[33,37] and a food tracker for self-monitoring (unclear whether hardcopy or electronic)[48], and for all three smoking-cessation interventions this included the provision of free nicotine replacement therapy[30,39,41]
- Five studies provided counselling and coaching. Counselling and coaching sessions included individual fitness coaching and individualised nutrition instruction[33,37], problem solving, skills training and motivational interviewing[41], brief motivational interviewing and support and encouragement to quit[39], and Quitline counselling[30]
- Five studies provided assistance, practical support and demonstrations. Practical support and demonstrations included providing fitness coaching and support sessions at a gym[33,37] or providing group aerobic exercise sessions[48], hands-on nutrition activities such as measuring portions, tasting healthy foods, or an assisted grocery store trip[42,48], and group sessions for smoking cessation that included learning and practicing alternative behaviours, coping skills, and anxiety-reduction strategies.[30]

Table 5—Question 1: *Key characteristics of successful interventions, programs, models and initiatives (that demonstrated significant improvements in at least 50% of outcomes)*

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
QUESTION 1: What have been shown to be the most effective preventive health care interventions for mental health consumers delivered by mental health service providers?									
Weight loss, nutrition, and physical activity interventions									
Bartels 2015[33] Evidence level II	Face-to-face Individual 12 months	✓ Lifestyle/ fitness evaluation	✓ Personalised fitness plans using shared goal setting Individualised healthy eating information			✓ Gym membership	✓ Fitness coaching and support	✓ Fitness coaching at gym (weekly 45 min sessions)	
Bartels 2018[37] Evidence level III-2	Face-to-face Individual 12 months	✓ Lifestyle/ fitness evaluation	✓ Personalised fitness plans using shared goal setting Individualised healthy eating information			✓ Gym membership	✓ Fitness coaching and support	✓ Fitness coaching at gym (weekly 45 min sessions)	

Table 5—Question 1: *Key characteristics of successful interventions, programs, models and initiatives (that demonstrated significant improvements in at least 50% of outcomes)*

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
Daumit 2011[48] Evidence level IV	Face-to-face Individual and Group 6 months		✓ Weight management info sessions: fruit/veg, portion sizes, healthy choices	✓ Flip charts and handouts (for weight management sessions)		✓ Food tracker for self-monitoring		✓ Group physical activity sessions (45 mins aerobic dance) Hands-on nutrition activities: measuring portions, tasting healthy foods, grocery store trip	✓ Tailoring
Multiple lifestyle interventions									
Gill 2012[42] Evidence level IV	Face-to-face Group 16 weeks		✓ Weight management info					✓ Group physical activity sessions Hands-on nutrition activities	✓ Peer worker Tailoring
Smoking cessation interventions									

Table 5—Question 1: *Key characteristics of successful interventions, programs, models and initiatives (that demonstrated significant improvements in at least 50% of outcomes)*

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
Ashton 2010[52], 2013[53], 2015[41] Evidence level I	Face-to-face Group 10 weeks		✓ Smoking cessation info	✓ Visual cues and handouts		✓ Nicotine replacement therapy	✓ Smoking cessation, stress management, coping strategy support		✓ Peer worker Coproduction
Bryant 2012[39] Evidence level IV	Face-to-face Individual 6 months	✓ Smoking assessment	✓ Smoking cessation info	✓ Self-help resources	✓ Quitline	✓ Nicotine replacement therapy	✓ Smoking cessation counselling		✓ Coproduction Referrals/ linkages
Morris 201[30] Evidence level II	Face-to-face + Telephone Individual + Group 10 sessions	✓ Smoking assessment	✓ Smoking cessation info		✓ Quitline	✓ Nicotine replacement therapy	✓ Smoking cessation counselling	✓ Group education sessions	✓ Referrals/ linkages

No studies reported significant improvements in at least 50% of key outcomes for the following categories, and hence are not included: physical activity, and sleep interventions.

Key characteristics of effective studies addressing Question 2: What have been shown to be the most effective ways community mental health services can deliver or facilitate physical health care (including preventive health care) for their mental health consumers?

Table 6 summarises the key characteristics of interventions addressing Question 2. Of the five effective studies addressing Question 2, the duration of interventions ranged from six months[60,62], to two years.[63] All involved a face-to-face care delivery component, with two also including an online component.[56,57] Both individual and group delivery appear to be effective, with three interventions provided on an individual basis[56,62,63], one provided in a group setting[60], and one providing training to staff in both individual (online) and group (face-to-face) format.[57] Four of the five studies used linkages or referrals with physical health care providers or services[56,57,62,63], three included some element of co-production[57,60,62], two were delivered by peer workers[60,62], and two interventions were tailored or adapted to meet the needs of a mental health population.[57,60]

The models or initiatives evaluated in the studies addressing Question 2 were varied, limiting the ability to identify the strategies that were consistent across studies. A key element that distinguishes the different models or initiatives across the five studies could be *who* provides the physical health care support (e.g. peer workers, usual staff, or a new dedicated position).

Two of the effective studies were peer-led self-management programs.[60,62] One of these involved the adaptation of an existing medical self-management model to be delivered by, and to, mental health consumers.[60] Of the remaining three studies, one was focused on professional development and increasing the capacity of existing care providers to provide oral health support during routine support[57], one involved the integration of a nurse to evaluate consumer needs, facilitate preventive screening, and coordinate primary health care visits[63], and one involved a combined delivery approach where wellness coaching was provided by usual staff, with dedicated nurse roles to provide education to usual staff members and support consumers to coordinate medical care.[56] This trial also provided support for online delivery of care to consumers, with a second arm of the trial evaluating a self-directed online intervention consisting of information, self-guided wellness interventions, and trackers (for smoking cessation, weight management, improved nutrition and sleep hygiene).[56]

All studies used implementation strategies to support the integration of the model or initiative into service delivery, however, the range of strategies employed was narrow. The most commonly reported strategies across these effective studies were practice change support personnel (n=2)[56,57], training (n=4)[56,57,60,62], and resources and information for providers (n=2).[62,63]

Table 6—Question 2: Key characteristics of successful interventions, programs, models and initiatives (that demonstrated significant improvements in at least 50% of outcomes)

Publication, Evidence level	Delivery mode, intervention duration	Peer-led program	Physical health service co-location/ integration	Integration of dedicated roles	Routine provision by all staff	Online care delivery	Linkages/ Referrals	Other key characteristics	Implementation support strategies
QUESTION 2: What have been shown to be the most effective ways community mental health services can deliver or facilitate physical health care for their mental health consumers?									
Chronic disease management									
Druss 2010[60] Evidence level II	Face-to-face Group 6 months	✓ Peer-led self-management program						✓ Peer worker Tailoring/Adaptation Coproduction	Consensus Training Program tailoring/adaptation
Multiple health risk behaviours/conditions									
Bartels 2014[63] Evidence level I	Face-to-face Individual 2 years			✓ Integration of nurse			✓ Primary health care		Provider resources
Kelly 2014[62] Evidence level II	Face-to-face Individual 6 months	✓ Peer-led self-management program					✓ Preventive, primary, and specialty health care services	✓ Peer worker Co-production	Training Provider resources

Table 6—Question 2: Key characteristics of successful interventions, programs, models and initiatives (that demonstrated significant improvements in at least 50% of outcomes)

Publication, Evidence level	Delivery mode, intervention duration	Peer-led program	Physical health service co-location/ integration	Integration of dedicated roles	Routine provision by all staff	Online care delivery	Linkages/ Referrals	Other key characteristics	Implementation support strategies
Schuster 2018[56] Evidence level IV	Online (self-directed) Not reported					✓ Access to online web portal: e-learning modules, medical history, wellness interventions Health details, self-guided wellness intervention, trackers for health behaviours, access to health coaches	✓ Primary care physicians		Tools/prompts
	Face to face (provider-supported)			✓ Nurse education/ assistance for staff members Consumer care coordination/ navigation. Nurses, staff members and physical health and wellness coaches worked together for education and development of	✓ Wellness coaching Face-to-face provision during care		✓ Preventive, primary, and specialty medical services		Training Practice change support personnel (nurses to support usual staff)

Table 6—Question 2: Key characteristics of successful interventions, programs, models and initiatives (that demonstrated significant improvements in at least 50% of outcomes)

Publication, Evidence level	Delivery mode, intervention duration	Peer-led program	Physical health service co-location/ integration	Integration of dedicated roles	Routine provision by all staff	Online care delivery	Linkages/ Referrals	Other key characteristics	Implementation support strategies
				tailored consumer wellness plans					
Oral health (1/1)									
McGrath 2018[57] Evidence level IV	Online + face to face Not reported				✓ Staff professional development. Contextually appropriate professional development within a CMO to improve oral health promotion practices		✓ Oral health services	✓ Tailoring/Adaptation Coproduction	Training Practice change support personnel

Recommendations for physical and preventive healthcare delivery in mental health CMOs:

This evidence review has highlighted numerous recommendations that could be considered in the design of initiatives to address physical and preventive health in mental health CMOs:

1. Refer consumers to physical health care providers and services

Across Questions 1 and 2, six of the 12 studies that reported significant improvements in outcomes included linkages or referrals to physical or preventive health care providers or services. Two of these addressed Question 1 and were both components of smoking-cessation interventions, including a referral or linkage to Quitline telephone services.[30,39] Four of these studies addressed Question 2. Of these, three targeted multiple health risks or conditions, with all of the referrals or linkages made to health or medical care providers (primary, secondary, and speciality health services).[56,62,63] The fourth study targeted oral health and included CMO staff members referring consumers to oral health services (with a focus on staff care provision, not consumer behaviour or physical health change).[57]

Based on these results, the evidence supports the referral of CMO consumers to the following, where relevant:

- Telephone-based Quitline services: Internationally, research has identified Quitlines as a cost-effective intervention for smoking cessation[69–71], with a recent systematic review suggesting that multiple sessions of proactive telephone counselling results in the highest quit rates.[72] Evaluations of Quitline services have identified positive smoking cessation outcomes for people with a mental health condition, however, compared with people without such conditions, lower rates of successful quit attempts have been reported.[73,74] Tailoring of Quitline services to meet the specific needs of this population may help to improve smoking-cessation outcomes for people living with a mental health condition. Regardless, Quitlines are an affordable and effective option for this population group that are likely underutilised
- Primary, secondary and speciality health care services: Given the disparities in healthcare access for people with mental health conditions, a focus on the need to integrate physical and mental health care services has been well recognised.[5] Primary care has been identified as an optimal setting for addressing and managing multimorbidity, by which prevention and management of comorbid physical illness could be addressed, including general practitioners and allied health care services[5]
- Oral health providers: Providing referrals to oral health services has been recognised as an important strategy to improve the oral health of people living with mental health conditions[75], with enabling factors such as dentists having previous experience or specific training in providing care to this client group, and collaborative approaches involving community organisations, health professionals and dental professionals, being particularly beneficial[76]

Further research is required to understand the potential for other services that consumers with a mental health condition could be referred to, for instance, telephone-delivered services for behaviours other than smoking, and non-clinical physical activity providers and services.

- One included higher evidence level study that reported significant improvements in close to 50% of outcomes (5 of 12), involved linkage to a telephone-delivered healthy lifestyle intervention specifically developed by the research team for people living with severe mental illness.[32] The intervention included eight telephone-delivered sessions using motivational interviewing and behavioural strategies (e.g. reviews of self-monitoring and behavioural activation)
- In NSW, an existing population-level telephone support service may offer particular opportunity for referring consumers with a mental health condition. While not evaluated as an intervention component in any of the included studies, the NSW Get Healthy Information and Coaching Service (a free government-provided telephone-based lifestyle coaching service) offers an accessible and affordable option for preventive support. Evaluation of Get Healthy Service data has suggested that people living with a mental health condition are engaging with this service[77], however, evaluation of outcomes following the program is yet to be undertaken for this population
- One lower evidence level study that descriptively reported improvements in weight and waist circumference[44] included linking CMO consumers to local gyms, personal trainers and outdoor activities. Evidence suggests that ensuring these services are affordable, accessible, and include flexibility to meet the individual needs of each person, can enhance engagement in physical activity.[78]

Further information on the referrals and linkages included in each of the studies addressing Questions 1 and 2 are detailed in Appendix 10.

2. Support the integration of new models or initiatives with multi-strategy implementation components

All studies evaluating programs, models or initiatives to deliver or facilitate physical health care were supported by multiple implementation strategies (except one study where reporting of the intervention was unclear[61]). The implementation strategies most frequently reported in successful studies were training, practice change support personnel, and provider resources and information. Examples of how these strategies were used in effective studies include:

- Training:
    - Peer specialists participated in a five-day chronic disease self-management training course, and a subsequent three days of specific training regarding an adapted program.[60]
    - Care delivery staff members received training in wellness coaching. Training was designed to improve providers' knowledge, skills, and attitudes related to physical health conditions while increasing their capacity to talk about health and wellness with people who have serious mental illness, and was provided by 'wellness champions' in a 'train the trainer' approach[56]
    - Professional development training included 30-minute, face-to-face training sessions delivered weekly, and an e-learning module that was designed in collaboration with consumers and staff. Training focused on applying existing communication and support skills (e.g. motivation interviewing, recovery coaching) to oral health[57]
- Practice change support personnel:

    - A registered nurse was available to provide consultation and education to staff members around common medical comorbidities, developing tailored wellness plans, and assisting with patient transitions from inpatient to community-based settings.[56]
    - Health promotion site champions were responsible for coordinating the professional development program implementation within their team[57]

- Provider resources and information:
    - Of the effective studies that used this strategy, the provision of intervention manuals or curriculum were reported.[62,63]

Other strategies reported by successful studies included: consensus (processes to reach a common understanding of requirements, guidelines or procedures)[60], and tools, prompts and reminders (an online tool accessed by consumers to support self-directed care, providing access to content tailored to their needs or goals, and to enhance patient activation).[56]

The effectiveness of these strategies in changing practice in healthcare services generally is well established[79–81], and the current findings suggest they are likely to extend to the mental health CMO setting. However, few of the included studies evaluated the many additional strategies that are well supported by the broader research literature in supporting changes to practice, including the introduction of guidelines and policies[58,65] (n=2 studies), use of information technology and systems change[58,65] (n=2), and performance monitoring65 (n=1).

There is a need to evaluate a broader range of implementation support strategies to gain an understanding of the most effective strategies, or combinations of strategies, for supporting the integration of physical and preventive health care delivery in mental health CMOs. Furthermore, undertaking a comprehensive, systematic assessment of the barriers and enablers to providing physical and preventive health care in specific settings (*see recommendation 3)* is an important precursor to ensuring such strategies are tailored to address the specific needs of each organisational context.

3. Undertake a comprehensive, systematic assessment of organisation-specific barriers or enablers and identify evidence-based solutions

Previous research in clinical or acute mental health settings has suggested that for optimum effectiveness, implementation support strategies must be tailored to address the unique barriers in mental health service delivery settings.[82] The findings related to Question 3 provide an indication of a range of barriers and enablers that may be present in mental health CMOs specifically. However, as a systematic search for papers regarding barriers and enablers was not undertaken, the comprehensiveness of the factors identified may be limited. Further, different organisations are likely to experience different factors as barriers and enablers, depending on service type, culture, staff and consumers.[83,84] In order to develop targeted support strategies to overcome barriers to implementation within a specific organisational setting, the practice change and implementation science literature recommends the use of theory-based behaviour change models and frameworks. The use of such frameworks, such as the Consolidated Framework for Implementation Research or the Theoretical Domains Framework[85], to systematically and comprehensively assess barriers and enablers should be considered prior to the implementation of new models, programs or initiatives in mental health CMOs in order to develop targeted and appropriate support strategies for each specific

organisation. See Nilsen 2015 for a summary of key implementation frameworks that could be used to comprehensively assess barriers and enablers in specific CMO settings.[85]

4. Involve mental health peer workers in the delivery and support of physical health interventions

Four of the 12 studies that reported significant improvements overall used peer workers to deliver healthy lifestyle interventions[41,42] or self-management models.[60,62] A previous systematic review of 18 peer-based health interventions for people with a serious mental health condition across a variety of settings found that peer-navigated and self-management physical health interventions were particularly effective, with benefits of peer-based interventions including improved communication with doctors and healthier dietary habits.[86] In settings other than CMOs, randomised controlled trials have reported improvements in physical activity levels and increases in primary care appointment attendance when peer workers were involved in the delivery or support of an intervention.[86,87]

The role of peers across the four studies that reported significant improvements varied:

- Co-facilitating a healthy lifestyle group program as peer-educators[42]
- Co-leading smoking cessation groups with a non-peer facilitator[41]
- Leading a healthcare engagement and self-management intervention as a peer navigator[62]
- Leading a health and recovery group program as peer educators.[60]

Two studies included peers that had relevant experience (additional to having a lived experience of a mental health condition) including having already participated in the program they were delivering[42] and being an ex-smoker co-leading a smoking-cessation group program.[41] Several benefits stemming from these additional experiences were reported by participants, including peer support helping to maintain participant motivation for exercise[42], increasing participant confidence in quitting smoking[41] and peer workers drawing on personal experiences to provide practical advice about maintaining health and wellbeing while quitting smoking.[41] Beyond a shared experience of living with a mental health condition, previous research has identified that peers sharing their experiences in adopting a healthy lifestyle, including the challenges and successes during the process, is an important factor in helping consumers make changes to their physical activity, healthier food choices and self-monitoring.[88] Therefore, considering these additional relevant experiences (e.g. quitting smoking or improving health risk behaviours) when selecting peers to deliver health interventions or support, and offering physical health programs to peer workers, may enhance the successful integration of physical or preventive health care into CMO practice.

All four studies reported that peer workers received training for their role in the intervention, however, only two studies provided a description of the content of the training received, including participating in a five-day Chronic Disease master training course and three days of additional training in the 'Health and Recovery Peer' program, adapted specifically for managing the medical needs of people with mental health conditions[60], and receiving training to be a peer educator including learning communication and presentation skills.[42] The other two studies did not provide specific information about the content of the training, but noted that support and ongoing supervision was provided to peer workers throughout the course of the study.[41,62] Ensuring peer workers feel confident in the intervention delivery, receive sufficient training and guidance, and have support available to them if their own mental or physical health declines, are vital elements to consider to ensure optimal intervention effectiveness.[89] Without such support, peer workers' own mental or physical health needs

may prevent optimal support delivery, as identified by the current review as a potential barrier (see Question 3).[43,45]

5. Co-produce physical health care interventions with CMO consumers and staff

A co-production process when planning, designing, evaluating and delivering a potential physical health care intervention is recommended[59], as this process acknowledges that CMO consumers and other end users play an equal role in decision-making.[90] Five of the 12 overall studies that reported significant improvements in key outcomes used the co-design element of co-production, with consumers, staff or both involved in the process of intervention development.[39,41,57,60,62] These studies reported significant improvements in consumer service use[60,62], staff care provision[57], and smoking cessation outcomes[39,41] and illustrate ways in which co-design processes can be included in the development of preventive or physical health programs that could be implemented in mental health CMO settings. One study included an additional co-production element[62], with a peer leader involved in the co-delivery of the intervention. However, other aspects of co-production (co-planning, co-evaluating) were not reported in any studies.

Emerging evidence has demonstrated that research and interventions that are co-produced are more likely to be successful across a range of outcomes.[91,92] The co-production process allows all stakeholder perspectives (consumer, provider, organisational, etc.) to be considered across the research continuum, from planning to implementation, and leads to products and/or programs that are tailored, acceptable and feasible for the individuals it aims to benefit. It is important to recognise that co-production is not merely surveying consumers for their opinions, or simply consulting consumers for feedback. A ‘true’ co-production process is one that involves all stakeholders throughout all aspects of the research process, including determining the research problem, holding governance and leadership roles, designing and delivering the intervention, and determining which outcomes should be measured, as well as who should evaluate them and how this should occur.59,91

6. Tailor existing evidence-based physical health care interventions for mental health CMO consumers

Numerous evidence-based interventions for health promotion and chronic disease management can be identified in the published literature.[93–98] This research has primarily included narrowly selected samples, where complex demographic characteristics such as having a co-existing physical and mental health condition would make an individual ineligible to participate. There are a range of reasons why evidence-based physical health interventions that have been shown to be effective in the general population may require additional tailoring to retain their benefit for people with a mental health condition. These include factors such as lower self-efficacy, medication side-effects, diagnostic overshadowing, increased engagement in multiple behavioural risks, and the stigma that many people with a mental health condition face.[11]

Examples of the types of intervention elements that might require tailoring to achieve effectiveness in CMO consumer populations include increasing the intensity or duration of the intervention, and providing close monitoring of the impact of the intervention on mental health.[99] Tailoring may also include modifying the delivery mode (face-to-face, telephone, online), considering the differing accessibility needs of consumers (e.g. those living in rural and remote locations, or those restricted to

public transport use), and focusing on the interconnection between mental and physical wellbeing.[100–102] For example, there is existing evidence that providing information about managing mental health, goal setting, problem-solving, building confidence and providing links to additional support can result in more effective smoking cessation interventions for people with a mental health condition.[30,103,104]

Of the 12 included studies that demonstrated significant improvements in key outcomes, four included tailoring or adaptation of the intervention. All four of these included tailoring for a mental health population, as opposed to tailoring an intervention to meet the needs of individual consumers. The process used to tailor the interventions was clear in two of these studies, both addressing Question 2 regarding different models or approaches to the delivery of physical health care.[57,60] Both used staged or multi-level approaches, using either Participatory Action Research[57] or expert group consensus[60] (following the 'ADAPT-ITT' approach for adaptation of evidence-based interventions developed by Wingood et al. 2008.[105] The remaining two studies did not provide details regarding the process used to tailor the intervention.[42,48]

The level of information provided regarding the adaptations that were made were varied. The study that used the Participatory Action Research approach did so to inform the content of training to be provided to staff to improve care delivery for oral health, and did not provide information on the adaptations made.[57] Of the three effective studies that involved tailoring the intervention to address the needs of mental health consumers[42,48,60], common variations included:

- Modifications to written materials: Varying the reading level of written materials[48,60]
- Modifications to delivery: Hands-on activities to emphasise rehearsing of behavioural skills[22,60]; repetition of concepts, fitting sessions within regular attendance schedules, and use of handouts and flipcharts to minimise memory requirements[48]
- Modifications to content: Addition of content regarding the connection between mind and body, and the importance of coordinating information about medications between primary care providers and psychiatrists; diet and exercise content modified to consider high rates of economic and social disadvantage in the population, with strategies included for purchasing healthy food on a budget and for safely exercising in participants' own homes[60]
- Modified self-management and self-monitoring tools to minimise memory requirements: Food diaries were simplified for participants to tick off categories of food that they ate[48], self-management record added to track disease-specific self-management, medications, appointments, dietary intake and physical activity[60]
- Modifications to improve motivation and reduce social isolation: Use of fun activities and a group setting to aid social networking and development of interpersonal skills[42]; pairing of participants to work together towards accomplishing goals and action plans.[60]

Limitations of the evidence base

Among the included studies, there is considerable variability in regard to the intervention strategies used, duration of interventions, mode of delivery, and outcomes assessed, making definitive conclusions regarding the most effective interventions, models and initiatives difficult. All studies

involved the use of multiple intervention strategies, limiting the ability to determine the effectiveness of individual intervention components, or an optimal combination of strategies for mental health CMOs.

A limited number of high-quality evaluations have been undertaken to address the review questions, with 12 studies identified across Questions 1 and 2 that were classified as higher NHMRC evidence levels (RCTs and quasi-experimental studies). Among the nine randomised controlled trials conducted, small sample sizes (five studies with less than 100 participants) likely contributed to limited findings regarding significant improvements in outcomes.

The eligibility criteria for this review was purposefully inclusive to allow for the inclusion of lower evidence level studies, given the novel area of research. Seventeen studies were included that were of the lowest NHMRC level of evidence (single group pre-post studies), highlighting a need for higher quality evaluations of the physical health initiatives being undertaken in mental health CMOs. This design is subject to many limitations regarding the confidence with which conclusions can be drawn, hence the outcomes of these studies must be interpreted with caution. Many studies poorly reported sample descriptions, intervention descriptions, data collection procedures, and definitions of outcomes, further limiting the ability to interpret results. To strengthen the evidence base regarding the most effective preventive health care interventions, and the most effective ways for CMOs to deliver physical health care, methodologically rigorous, high-quality trials are required. We acknowledge that while randomised controlled trials are preferable, for pragmatic studies they may not always be feasible or acceptable to the services involved. Other methodologically rigorous designs such as multiple baseline studies provide acceptable alternatives.

It is worth noting that many additional physical health initiatives are being undertaken by mental health CMOs, however, the related publications did not meet the criteria for inclusion in the review. This was primarily due to the literature (primarily grey literature) describing the initiatives in the absence of any evaluations being undertaken. As such, the effectiveness of these initiatives on any relevant outcomes is unable to be attained. Examples of studies that did not meet the inclusion criteria (due to evaluation not being undertaken), but that may be of relevance to the topic, and therefore of interest are listed in Appendix 7. The number of such publications highlights important missed opportunities, where evaluation of these physical health care initiatives could be strengthening the evidence base, and for engaging with mental health CMOs to increase evaluation and research skills and capacity.

Conclusion

This review has identified multiple interventions, models and initiatives that have been successful in improving outcomes related to consumer physical health and health care in mental health CMO settings. The review has identified sufficient evidence to support the delivery of multi-strategy lifestyle interventions in CMOs, and a variety of preventive or physical health care delivery models or initiatives. These include peer-led self-management models, care delivery by existing staff members, integration of a new dedicated care provider, combined care delivery by a dedicated provider and usual staff, and online delivery of care.

The findings highlight recommendations for consideration in the delivery of physical and preventive healthcare in mental health CMOs:

1. Refer consumers to physical health care providers and services
2. Support the integration of new models or initiatives with multi-strategy implementation components
3. Undertake a comprehensive, systematic assessment of organisation-specific barriers or enablers and identify evidence-based solutions
4. Involve mental health peer workers in the delivery and support of physical health interventions
5. Co-produce physical health care interventions with CMO consumers and staff
6. Tailor existing evidence-based physical health care interventions for mental health CMO consumers.

Mental health CMOs demonstrate huge potential for supporting the preventive and physical health care needs of their consumers. Given the novelty of the research area, there is a need for more rigorous evaluations to grow the evidence base around the most effective physical health care initiatives for delivery in mental health CMOs, and effective ways to implement such initiatives.

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Appendices

Appendix 1. Search strategy

Database(s): Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily 1946 to June 22, 2020
Search Strategy:

#	Searches	Results
1	(mental health or mental illness* or psychiatric or mental disorder*).mp.	533849
2	anxiety disorders/ or "bipolar and related disorders"/ or "feeding and eating disorders"/ or mood disorders/ or personality disorders/ or "schizophrenia spectrum and other psychotic disorders"/ or "trauma and stressor related disorders"/	78856
3	(Anxiety* or bipolar* or eating disorder* or mood disorder* or depress* or personality disorder* or schizo* or psycho* or PTSD or post-traumatic* or SMI or severe mental illness or serious mental illness).tw.	1235640
4	1 or 2 or 3	1522183
5	residential facilities/ or assisted living facilities/ or ambulatory care facilities/ or community mental health centers/ or rehabilitation centers/	36495
6	Charities/ or charity.tw. or charities.tw. or charitable organi?ation*.tw.	7275
7	home care services/ or home care agencies/ or home care support.tw. or outreach.tw. or drop-in support.tw.	47879
8	Psychosocial support systems/ or psychosocial service*.tw. or (social and community service*).tw. or psychosocial disability service.tw. or recovery service.tw. or recovery-oriented service.tw. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	2025
9	Consumer organi?ation*.mp.	1427
10	(non government organi?ation* or nongovernment organi?ation* or NGO or NGOs).mp.	4079
11	("not for profit?" or non-profit* or nonprofit).mp.	11161
12	(Third sector organi?ation* or third sector or third-sector or TSO or TSOs).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	632

#	Searches	Results
13	(Voluntary sector or voluntary organi?ation*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	1040
14	(community managed* or community organi?ation* or community based organi?ation*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	4229
15	(social enterprise* or civic sector or civil sector or social sector or civil society).mp.	2127
16	5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15	114948
17	4 and 16	17529
18	mental health services/	33611
19	community mental health services/ or community mental health centers/	21184
20	community psychiatry/ or preventive psychiatry/	2020
21	outpatients/ and (mental health or mental illness* or psychiatr* or mental disorder*).mp.	2908
22	((psychiatr* or mental health) adj3 (centre* or center* or service* or clinic* or ogani?ation*)).tw.	45333
23	18 or 19 or 20 or 21 or 22	86402
24	cultural diversity/ or cultural diversity.tw.	12444
25	((Culturally and linguistically diverse) or CALD).mp. or bilingual.tw.	5628
26	(Non-english speaking or NESB or English as a second language or ESL).mp.	2192
27	(Linguistically diverse or culturally diverse or ethnically diverse).mp.	7249
28	Multicultur*.mp.	3341
29	minority groups/ or minority groups.tw.	16744
30	24 or 25 or 26 or 27 or 28 or 29	42683
31	Oceanic ancestry group/ and (Australia*.mp. or exp Australia/)	6452
32	Health services, indigenous/ and (Australia*.mp. or exp Australia/)	1437
33	Aborigin*.mp. and (Australia*.mp. or exp Australia/) [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	5998

#	Searches	Results
34	Indigenous*.mp. and (Australia*.mp. or exp Australia/) [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	5551
35	Torres strait*.mp. and (Australia*.mp. or exp Australia/) [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	1656
36	31 or 32 or 33 or 34 or 35	10383
37	Refugees/ or (Refugee* or asylum seeker* or seeking asylum).tw.	14171
38	"Emigration and Immigration"/ or ethnic minority.tw. or bicultural.tw.	32280
39	undocumented immigrants/ or forced migration.tw. or (torture and trauma).tw. or refugee camps.tw. or fear of persecution.tw.	1641
40	37 or 38 or 39	45005
41	Aged/ or aged.tw.	3444184
42	Health services for the aged/	17661
43	Geriatrics/ or Geriatric psychiatry/ or geriatric*.tw.	70281
44	(Elderly or older*).tw.	623076
45	41 or 42 or 43 or 44	3697484
46	public housing/	1419
47	(supported housing or social housing or community housing or temporary housing).tw.	1000
48	46 or 47	2301
49	Prisons/ or prisoners/ or prison*.tw.	28541
50	(Correctional and (setting* or facilit* or service*)).tw.	2269
51	49 or 50	29059
52	30 or 36 or 40 or 45 or 48 or 51	3800154
53	23 and 52	18359
54	17 or 53	34386
55	"tobacco use cessation"/ or smoking cessation/	29437
56	Smoking/	139652

#	Searches	Results
57	smoking.tw.	220295
58	nutrition*.mp.	384847
59	Fruit/	43053
60	vegetables/	24156
61	diet/	158692
62	Obesity/ or overweight/ or body weight/	357114
63	(fruit* or vegetables* or diet* or obes* or overweight).tw.	899100
64	exercise/	108722
65	physical fitness/	27186
66	(physical activit* or exercise or physical fitness or physical inactivit* or sedentary).tw.	360531
67	drinking behaviour/ or alcohol drinking/	66706
68	binge drinking/	1772
69	(drinking or alcohol*).tw.	402912
70	Physical health.mp.	20882
71	(chronic disease/ or noncommunicable disease/) and (factor or behavior* or behaviour* or risk).tw,kw.	41085
72	(lifestyle* adj3 (factor or behavior* or behaviour* or risk)).tw,kw.	10090
73	(modifiable* adj3 (factor or behaviour* or behaviour* or risk)).tw,kw.	11813
74	(risk adj3 (behavior* or behaviour* or factor*)).tw,kw.	621533
75	ethanol/ or cannabis/ or cocaine/ or heroin/ or benzodiazepines/ or street drugs/ or (amphetamines/ or amphetamine/ or methamphetamine/)	175762
76	Polypharmacy/ or medication check.tw. or medication review.tw.	5934
77	preventive dentistry/ or health education, dental/ or dental check.tw.	9125
78	Early detection of cancer/ or cancer screening.tw.	45722
79	Immunization/ or vaccination/	127509
80	Sleep/ or sleep hygiene/	52831
81	Sexual health/ or sex education/	9660
82	Optometry/	5462

#	Searches	Results
83	((Homosexuality/ or "Sexual and Gender Minorities"/ or Homosexuality, Male/ or Bisexuality/ or Homosexuality, Female/ or transgender person/ or transsexualism/) and health.tw.) or ((homosexual* or GLB* or LGB* or transgender* or transexual* or bisexual* or sexual minorit*) adj health).tw.	8381
84	55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83	3031455
85	Chronic disease/ or Chronic disease*.tw.	309322
86	Noncommunicable diseases/ or noncommunicable disease*.tw.	3593
87	Comorbidity/ or multimorbidity/ or Comorbid*.tw.	223292
88	(Physical health or health condition*).mp.	40243
89	Diabetes mellitus/ or Diabetes Mellitus, Type 2/ or Diabetes.tw.	572703
90	Cardiovascular diseases/ or Heart diseases/ or (Heart disease or (((heart or cardiac or cardiovascular or coronary) adj (disease? or disorder? or failure)) or arrythmia?)).tw.	622967
91	hypertension/ or (hypertens* or "high blood pressure?").tw.	489210
92	Metabolic syndrome/ or (metabolic adj (disorder* or disease* or syndrome*)).tw.	92291
93	Neoplasms/ or cancer*.tw.	1944897
94	exp lung diseases, obstructive/ or asthma/ or bronchitis/ or pulmonary disease, chronic obstructive/ or asthma-chronic obstructive pulmonary disease overlap syndrome/ or bronchitis, chronic/ or pulmonary emphysema/ or (Asthma or bronchitis or emphysema).tw.	274208
95	Cerebrovascular disorders/ or stroke.tw.	267399
96	communicable diseases/	29331
97	HIV/ or sexually transmitted diseases/ or chlamydia infections/ or gonorrhoea/ or sexually transmitted.tw. or STI.tw. or STIs.tw. or STD.tw. or STDs.tw.	83153
98	Hepatitis C/	40471
99	Musculoskeletal diseases/ or musculoskeletal pain/ or osteoporosis/ or arthritis/ or back pain/ or low back pain/	131594
100	podiatry/	2248
101	85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100	4471420
102	84 or 101	6627652
103	exp Health promotion/ or health promotion.tw.	91505
104	(physical health care or health check).mp.	3564

#	Searches	Results
105	(physical health or healthy lifestyle intervention).mp.	20983
106	Primary prevention/ or secondary prevention/ or preventive health services/ or prevent* care.tw. or prevent* service.tw.	55588
107	(Screen* or assess* or assist* or advice or advise or arrange or refer* or followup or 5As or AAR or counsel* or prevent* or consult*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	7157322
108	Patient education as topic/ or health education/ or early intervention, educational/	146368
109	(Intervention* or therap* or treatment* or support* or program* or education* or advoca*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	16821763
110	Self-management/ or self care/ or self manage*.tw. or self help.tw. or self care.tw.	60144
111	consumer advocacy/ or (peer* or ((led or lead* or deliver* or facilitat* or mentor*) adj3 (patient* or consumer* or non-specialist))).tw. or lived experience.tw. or consumer enablement.tw.	145422
112	Continuity of patient care/ or (monitor* or care).tw.	2110407
113	103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112	19370065
114	54 and 102 and 113	9481
115	quality improvement.tw.	34453
116	Randomi*ed controlled trial.pt. or rct.tw. or randomised.tw.	577742
117	Controlled trial.tw. or controlled clinical trial.pt.	219444
118	(trial or intervention).tw.	1089760
119	experiment*.tw.	2041981
120	(pre post or prepost).tw.	11568
121	(posttest or post test).tw.	21225
122	before after.tw.	5176
123	Qua*I randomi*ed.tw.	4185
124	Stepped wedge.tw.	865
125	natural experiment.tw.	1668

#	Searches	Results
126	(Non randomi*ed or nonrandomi*ed).tw.	25385
127	interrupted time series.tw.	3124
128	(time series and trial).tw.	806
129	multiple baseline.tw.	2007
130	(evaluation or implement*).tw.	1612365
131	115 or 116 or 117 or 118 or 119 or 120 or 121 or 122 or 123 or 124 or 125 or 126 or 127 or 128 or 129 or 130	4763683
132	114 and 131	2949
133	limit 132 to (english language and yr="2010 -Current")	1705

Google Scholar Search

("mental health" OR "mental illness*" OR "mental disorder*") AND (“community managed” OR “community organisation”) AND (“smoking” OR “nutrition” OR “exercise” OR “alcohol” OR “physical health” OR “chronic disease”)

Limit: 2010–2020

Appendix 2. Email to CMOs

Dear xxxxx,

Background
The NSW Ministry of Health, in collaboration with the Sax Institute, have commissioned our team at the University of Newcastle to review the evidence regarding initiatives to improve the physical health of people in community managed mental health programs. The review findings:

- will inform the development of initiatives by the NSW Ministry of Health, and support the Ministry to provide guidance to community managed organisations about what physical health initiatives they might implement within their services and programs; and
- will be published by the Sax Institute and a version thereof may be submitted for publication in a peer reviewed journal.

What is the review looking at?
The review will explore three key questions:

1. **Preventive health interventions:** What have been shown to be the most effective preventive health care interventions for mental health consumers delivered by community managed mental health providers? (ie Activities with a goal of reducing illness, including lifestyle and screening interventions)
2. **Physical health care delivery/facilitation:** What have been shown to be the most effective ways community managed mental health services can deliver or facilitate physical health care for their mental health consumers? (for example, identification, referral, monitoring and follow-up of physical health conditions)
3. **Barriers and enablers:** What are the barriers and enablers for community managed mental health services to deliver or facilitate preventive and physical health care for their mental health consumers?

We are interested in a broad range of preventive activities and physical health conditions, and a broad range of outcomes, for example:

- change to lifestyle behaviours (e.g. smoking, nutrition);
- change in physical health indicators (e.g. blood pressure);
- change in uptake, use or linkages with physical health or preventive services;
- consumer improvements in self-managing physical health conditions; and
- implementation outcomes (e.g. changes in service provision of care).

How can you contribute?
We would be extremely grateful to know if your organisation has prepared any reports or evaluations (published or unpublished) of innovations, programs or initiatives to improve the physical health of your consumers within the last 10 years. If so, would you be willing to share a copy of any evaluations, for consideration for inclusion in the review?

What will happen with the information you provide?
The review will provide summary information only regarding the approach to the physical health initiative or program, and its outcomes. We understand that such evaluations or reports may contain commercially sensitive information or intellectual property. If you choose to share information, we will respect any requests relating to what information is included in the review, and how the report or evaluation should be referred to, to ensure organisations are credited appropriately and intellectual property is preserved.

Responses due
We would be grateful if you were willing to email any such information to myself by **5pm Friday 10 July 2020.** Your information will be passed on to the Chief Investigator of the review (Dr Kate Bartlem). We apologise for the short timeframe; however this is due to the nature of a 'rapid review'. If you have any questions, please don't hesitate to get in contact via email or by phone (02) 4921 7781. Your support will assist us in summarising evidence for effective strategies to support the

provision of physical health care to mental health consumers in the community managed mental health setting.

Kind regards,
Simone Lodge | Research Assistant
Faculty of Science/ School of Psychology
T: ##
E: ##

The University of Newcastle
University Drive, Callaghan NSW 2308 Australia

Top 200 University in the world by QS World University Rankings 2021

I acknowledge the Traditional Custodians of the land in which the University resides and pay my respect to Elders past, present and emerging.
I extend this acknowledgement to the Awabakal people of the land in which the Callaghan campus resides and which I work.

Appendix 3. Pre-specified inclusion and exclusion criteria

As per the parameters of this Evidence Check, studies eligible for inclusion included those published in English between 2010 and June 2020. Studies must have been undertaken in countries or jurisdictions with health systems similar to Australia, including New Zealand, the UK, Canada, Western Europe, Scandinavia, the US, and Australian states and territories.

Study type and design

Intervention trials, evaluations or service improvement initiatives were included, including randomised trials, time series, or non-controlled trials. Studies that did not include either a baseline or comparison group were excluded (for example, single-group post evaluation only).

Setting and population

Setting

Community-managed organisations (also referred to as non-government, third-sector, or non-profit organisations) providing psychosocial supports specifically to people living with a mental illness were included. Organisations could provide residential, outreach, outpatient or home-based supports.

Acute community mental health services were excluded, except for studies that focused on the following key priority groups:

- Culturally and linguistically diverse (CALD) consumers
- Aboriginal and/or Torres Strait Islander consumers
- Refugees or asylum seekers
- Older people (>65 years, or >50 years if Aboriginal and/or Torres Strait Islander consumers)
- People living in social housing
- People transitioning out of correctional facilities.

For these priority groups, community mental health services providing acute support were eligible for inclusion, to maximise relevant studies.

Drug and alcohol support services, inpatient services, and primary care services were excluded.

Population

The population of interest was adult mental health consumers (18 years+) with a primary mental illness diagnosis including:

- Schizophrenia, schizoaffective, other psychotic disorders
- Bipolar affective disorders
- Personality disorders
- Depression
- Anxiety disorder
- Post-traumatic stress disorder
- Eating disorders

Studies where participants were service providers from an eligible setting were also included (for interventions aiming to improve physical health care delivery, supports or implementation). Studies focused on consumers with cognitive impairment, dementia and substance use disorders were excluded.

Care or interventions

Any care or intervention delivered in an eligible setting that focused on the following were included:

- Improving any aspect of a consumer's physical health (preventive or existing physical health conditions)
- Improving consumer ability to manage their own health
- Increasing consumer access or linkages to physical health care services
- Improving physical health care delivery, supports or implementation.

Excluded interventions included pharmacotherapies, efficacy trials where the care/intervention was delivered by a researcher in a research setting (as opposed to a pragmatic setting), and smoke-free policies.

Outcomes

Studies were included where they quantitatively reported on relevant outcomes, including:

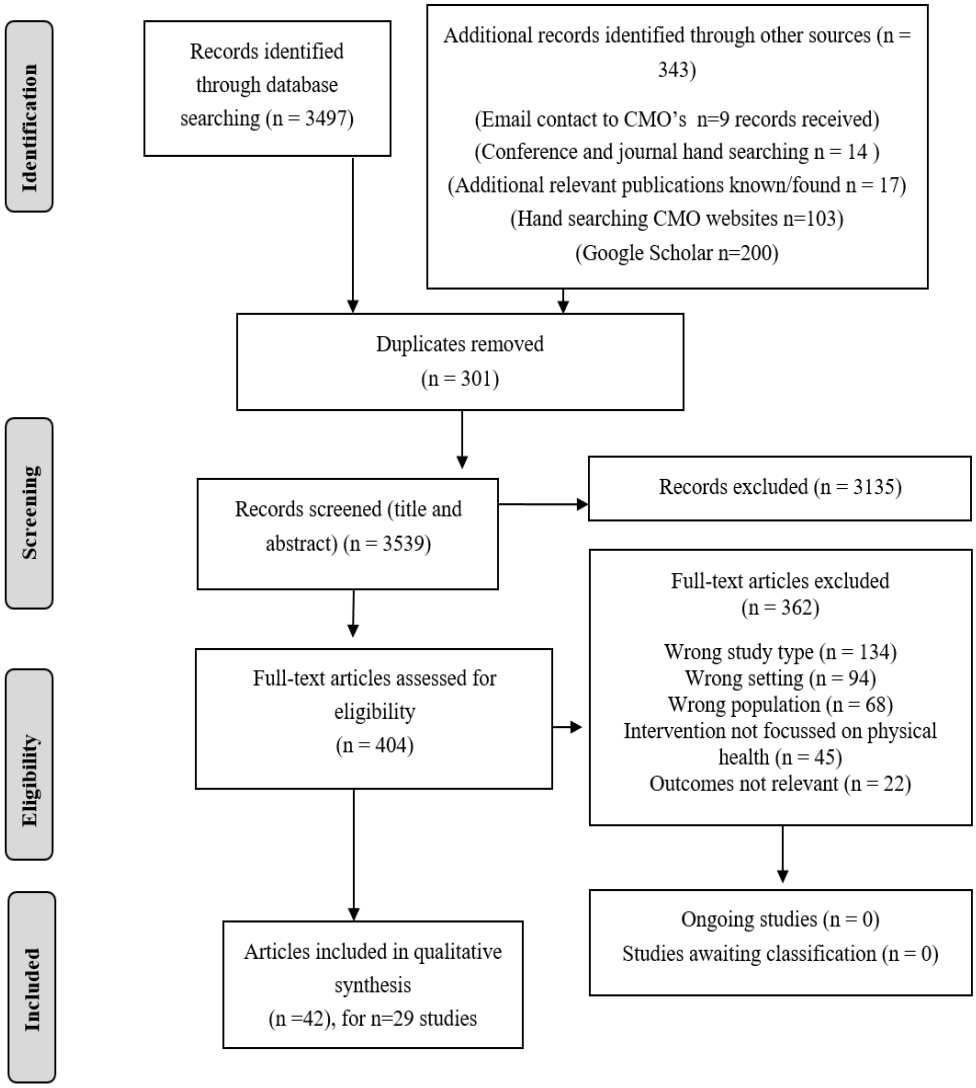
- Engagement in or prevalence of health risks and behaviours
- Engagement in screening behaviours
- Severity of physical health condition
- Access to physical health or preventive services (e.g. GP, dentist)
- Uptake of referrals to physical health or preventive services
- Confidence, knowledge or ability to manage physical health conditions (e.g. self-management skills)
- Prevalence of physical health or preventive care delivery or receipt
- Implementation outcomes: acceptability, feasibility, uptake, adoption, appropriateness, etc.

Where studies reported multiple follow-up time points, the final follow-up was included. Studies solely reporting qualitative outcomes were included only if they provided additional outcomes for an included quantitative study.

Appendix 4. PRISMA flowchart

Figure 1—PRISMA Study flow diagram

Figure 1. PRISMA Study flow diagram



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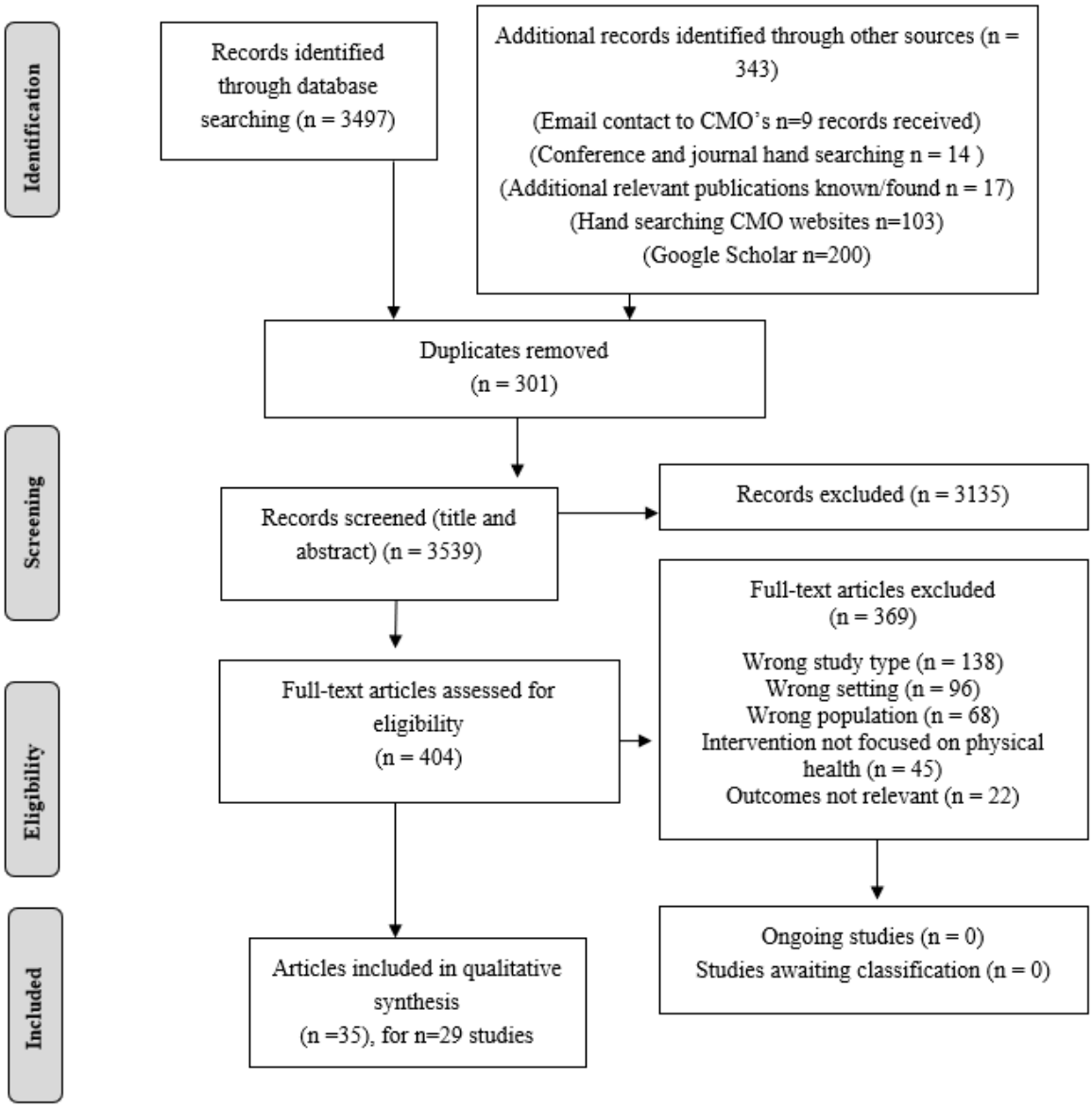

Appendix 5. Table of included studies

Publication, year, country Setting[1]	Population High priority subgroups (HPS)	Research question; design Data collection method(s)	NHMRC grade	Intervention (type; focus; mode of delivery) Details Implementation strategies	Outcomes and results
Aschbrenner 2017[46], US Unclear: 2 community mental health agencies, unclear if government or community managed	Consumers and partners (n=15 days), included consumers with a chart diagnosis of schizophrenia, schizoaffective disorder, major depressive disorder, or bipolar disorder; and a BMI ≥ 25 *High priority subgroups:* No	A feasibility pilot study to evaluate the acceptability and potential health benefits of the refined 'Fit Together' model Single-group pre-post (uncontrolled); interview and questionnaires.	IV	*Intervention:* Health coaching and partner support; Weight loss; Face-to-face, group, delivered by a coach degree in psychology, skilled in motivational interviewing and tailoring wellness plans to meet the needs of persons with SMI) *Co-production*: None reported *Details:* 12 weekly 1-hour dyadic sessions run concurrently with the 'In SHAPE' program. Sessions covering: exercise sessions with a fitness trainer, healthy eating and nutrition guidance, and support for coping with mental health symptoms that interfere with health behaviour change *Implementation strategies:* Consumer-partner coaching in health behaviour change	At 12 weeks follow-up: ●● 0 of 2 **consumer behaviour change** outcomes demonstrated a significant effect: exercise number of days per week (p=.571) and IPAQ total vigorous score (p=0.724) ●● 0 of 3 **consumer physical health** outcomes demonstrated a significant effect: weight loss (p=.072), BMI (p=.067), cardiorespiratory fitness (p=.689) ● 2 of 4 **consumer beliefs and knowledge** about physical health outcomes demonstrated a positive effect: readiness to change physical activity (p=0.27) and dietary behaviours for dietary fat (p=.017). 2 of 4 demonstrated no effect for readiness to change dietary behaviours for portion control (p=.265) and fruits and vegetables (p=.334)

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Publication, year, country **Setting**[1]	**Population** **High priority subgroups (HPS)**	**Research question; design** **Data collection method(s)**	**NHMRC grade**	**Intervention (type; focus; mode of delivery)** **Details** **Implementation strategies**	**Outcomes and results**
Ashton 2010[52]**, 2013**[53]**, 2015**[41] Australia Outreach**:** 10 CMO sites	Consumers (n=844) living with mental illness who wanted to quit, reduce or were thinking about addressing tobacco use Staff (n=33): mental health workers and peer workers (someone with a mental illness and personal experience of quitting tobacco) *High priority subgroup:* No	Three part Q: 1. Develop a program for people living with mental illness and associated disability, and to evaluate the intervention provided between Nov 2002 and Oct 2005; 2. Evaluate impact of programs delivered within CMOs between 2006 and 2011 and determine factors affecting the cessation rates; 3. Evaluate the impact of peer workers' involvement as co-leaders in smoking-cessation programs provided within mental health services Single group pre-post (uncontrolled); post only for peer worker study;	IV	*Intervention:* Peer and mental health worker delivered smoking cessation; Smoking cessation; Group, face-to-face, delivered by mental health worker and peer worker *Co-production*: Peer workers were involved in the development of the intervention which built upon mainstream tobacco-cessation materials *Details:* 10-week standard cessation intervention program (2 sessions per week for 5 weeks, then weekly thereafter) tailored for the group, providing additional information about managing mental health, dealing with boredom and stress, building confidence and coping strategies. NRT offered and supplied as part of the program *Implementation strategies:* NR	At 12-month follow-up: ●● 3 of 3 **consumer behaviour change** outcomes demonstrated a positive effect: smoking cessation (17% quit smoking; significance testing NR), smoking reduction (62% reduced smoking, significance testing NR) and number of cigarettes per day (p<.001) ● 3 of 3 **consumer beliefs and knowledge** outcomes demonstrated a positive effect: increased confidence (91% increased confidence), improved education (M=4.31) and wellbeing (77% improved). Significance testing NR ● 3 of 3 **provider beliefs and knowledge** outcomes demonstrated a positive effect: increased participants' confidence (90% increased), improved education participants (M=4.65) and helped participants' wellbeing (75% improved). Significance testing NR Staff survey results baseline: ● 2 of 2 p**rovider care provision** outcomes measured: rating the importance of addressing tobacco use with patients as 'It's important':

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		Questionnaire and phone interview			n=145/281 (51.6%), 'It's a lower priority': n=79/281 (28.1%), 'It's a matter of choice': n=52 (18.5%), "It's not important': n=19/281 (6.8%); provision of care (raising the issue of tobacco use) n=315 (97.2% rated an average score of 5.7 (SD=2.7) out of 10, where 10 indicates often ● 2 of 2 **provider beliefs and knowledge** outcomes measured: provider perceptions of patients wanting to quit smoking or reduce tobacco use: n=313, average rating = 33.5% (SD=24.9); provider perceptions of patients who could quit or reduce tobacco use if they received NRT, information or support: n=302, 37% reported more than half of patients could
Bartels 2014[63], US Outreach: 2 CMHCs	Consumers (n=183), community-dwelling adults, age ≥50 with DSM-IV Axis I disorder diagnosis of: schizophrenia, schizoaffective disorder, bipolar disorder, or major depression	Is HOPES (Helping Older People Experience Success) associated with improved preventive health care and reduced acute service use? Two-group RCT (intervention, control); participant self-report,	II	*Intervention:* Skills training and integration of nurse; Facilitated access to preventive health care; Face-to-face, not clear who delivered the psychosocial component of training; preventive health care component delivered by a nurse embedded in the mental health setting	At 3-year follow-up: ● 5 of 10 **consumer receipt of care services** demonstrated a positive effect: eye exam (p=.048), visual acuity (p=.045), mammogram (p=.04), PAP smear (p=.004), advance care directives (p<.001). 5 of 10 showed no significant: effect blood pressure, hearing test,

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	High priority subgroup: Older people (100%)	case manager ratings of observed functioning in the community, and performance-based assessments of simulated task		*Co-production*: None reported *Details:* Two-year intervention combining psychosocial and preventive health care. *Psychosocial component*: weekly skills training classes (first year), followed by a maintenance phase (second year) with monthly booster sessions *Preventive health care component:* monthly meetings with an embedded nurse evaluate health care needs (facilitating preventive screening, advance care planning, coordination of primary health care visits) *Implementation strategies:* NR	cholesterol, flu shot, colon cancer screening (p>.05)
Bartels 2015[33], US Outreach: 3 non-profit community	Consumers (n=210) aged ≥21 years, with BMI>25 and SMI defined by an axis I diagnosis of:	Replicate positive health outcomes demonstrated in a prior randomised effectiveness study of the 'In SHAPE' program	II	*Intervention:* lifestyle intervention; weight loss and cardiorespiratory disease; Face-to-face, delivered by 4 health promotion coaches who were either mental health	At 12 months follow-up: ● 3 of 8 **consumer behaviour change** outcomes demonstrated a positive effect: exercise minutes (p=.01), IPAQ total vigorous exercise score (p=.006), readiness to change

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mental health providers	major depression, bipolar disorder, schizoaffective disorder, or schizophrenia; persistent impairment in multiple areas of functioning *High priority subgroup:* No	across urban CMOs serving an ethnically diverse population Two-group RCT (intervention, control); questionnaires and interview		case managers with basic certification in fitness training or certified fitness trainers interested in working with individuals with disabilities *Co-production*: None reported *Details:* In SHAPE is a health promotion intervention consisting of a fitness club membership and a health promotion coach with basic certification as a fitness trainer, instruction on healthy eating and nutrition, and training in tailoring individual wellness plans to the needs of persons with serious mental illness *Implementation strategies:* All coaches completed a one-week In SHAPE training course	dietary behaviours (p=.03). No significant positive effect demonstrated for calorie intake, % calories fat, % calories sweets, fruit servings/day, vegetable servings/day (p>.05) ● 4 of 4 **consumer physical health** primary outcomes demonstrated a positive effect: weight loss (p=.03), cardiorespiratory fitness (p=.04), BMI (p=.03), waist circumference (p=.02) ●● 0 of 5 **consumer physical health** secondary outcomes demonstrated a significant effect: systolic blood pressure, diastolic blood pressure, cholesterol HDL, cholesterol LDL, Triglycerides (all p's>.05)
Bartels 2018[37], US	Consumers (n=122), aged ≥21 years with a primary psychiatric	Evaluated person-level obesity and fitness outcomes by comparing	III-2	*Intervention:* lifestyle intervention; Weight loss, physical activity; Face-to-face, with health mentors	At 12-month follow-up: ●● 0 of 1 **consumer behaviour change** outcomes demonstrated a positive effect. 1 of 1

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Outreach: 4 state-funded CMHCs	diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, or major depression, with moderate impairment in multiple areas of functioning and BMI≥25 *High priority subgroup:* No	outcomes between two implementation CMHCs in the first 12 months and two waitlist control CMHCs that implemented the program in a subsequent phase 12 months later Quasi-experimental observational design; 2 groups post-only (intervention and control); questionnaires and surveys		*Co-production*: None reported *Details:* In SHAPE is a 12-month lifestyle intervention consisting of weekly meetings with a health mentor, a gym membership, and instruction on principles of healthy eating and nutrition *Implementation strategies:* Health mentors are certified fitness trainers who complete a two-day In SHAPE training program and receive instruction on tailoring individual wellness plans to the needs of persons with SMI	demonstrated no effect: vigorous activity (p=.685) ● 3 of 4 **consumer physical health outcomes** demonstrated a positive effect: weight loss (p=.003), BMI (p=.002) and fitness (p=.011). 1 of 4 demonstrated no effect: waist circumference (p.458) ● 1 of 3 **consumer beliefs and knowledge** outcomes demonstrated a positive effect: readiness to engage in healthy behaviours for physical activity (p=.004). 2 of 3 demonstrated no effect: readiness to engage in healthy behaviours for dietary fat (p=.285) and for fruits and vegetables (p=.546)
Bryant 2012[39]**,** Australia Outpatient: CMO	Eligible clients were adults currently engaged with the Personal Helpers and Mentors program (PHaMs) program, who reported daily smoking and were willing to talk about their smoking	This study aimed to determine feasibility and acceptability of integrating the delivery of smoking cessation support into usual care at a community service organisation serving highly disadvantaged	IV	*Intervention:* smoking-cessation support during routine care + NRT; Smoking cessation; Face-to-face; delivered by support workers during usual care over 6 months *Co-production:* Support workers were involved in determining the structure and content of the	At 6-month follow-up: ● 1 of 2 **consumer behaviour change** outcomes demonstrated a positive effect over time: reduction in number of daily cigarettes (*p*=0.04)

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	with their support worker (n=9). PHaMs provides support to individuals living in the community who are recovering from mental illness and need help managing daily activities (n=20) *High priority subgroup:* Yes –10% Aboriginal	smokers (individuals living in the community who are recovering from mental illness and need help managing daily activities), as well as assess the impact of the program on client smoking Single-group pre-post (uncontrolled); pen/paper surveys for clients and support workers		program, which was designed to be flexible and easily integrated into usual care with minimal burden *Details:* Counselling, information and support: support workers encouraged to use the 5A's at each visit with their clients during the intervention period: (i) asking about and recording smoking status in case notes; (ii) assessing willingness to quit; (iii) providing advice to quit; (iv) providing support and encouragement to quit; and (v) arranging follow up. Free NRT: could be accessed directly from support workers or from local participating pharmacies. Use was optional but strongly encouraged. All types and strengths available (i.e. gum, inhaler, patch, lozenge and microtab). Clients were encouraged to use multiple forms	Money spent on cigarettes not significant (p=0.28; reduced from M $70.95 at baseline to $60.69 at follow-up) ● 1 of 1 demonstrated no effect: smoking abstinence (significance testing NR, n=0 reported abstinence) ● 6 of 6 **provider care provision** outcomes demonstrated a positive effect over time: providing support and encouragement ('often or almost always': baseline n=3/9 (33%); 6-months n=4/5 (80%)), providing access to NRT ('often or almost always': baseline n=0/9 (0%); 6-months n=2/5 (40%)), assessing willingness to quit ('often or always': baseline n=1/0 (11%); 6-months n=2/5 (40%)), advise to stop smoking ('often or almost always': baseline n=0/9 (0%); 6-months n=2/5 (40%)), time spent discussing tobacco use (baseline: M=3.8 minutes; 6-months: M=15.5 minutes), and asking about smoking status ('often or always': baseline n=3/9 (33%) and 6-months n=3/5 (60%)). Significance testing NR

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				of NRT if they were heavily nicotine dependent *Implementation strategies:* Training and resources delivered to support workers	
Chapman 2019[47], Australia Outreach: CMOs and public mental health	Consumers (n=311) aged >18 years and receiving treatment for a mental health condition from a public mental health service or a non-government organisation *High priority subgroup:* 5% Aboriginal sample	To inform the development of sustainable service models for the provision of lifestyle interventions in routine mental health care Single-group pre-post (uncontrolled); face-to-face interview and questionnaires	IV	*Intervention:* lifestyle intervention; Nutrition and physical activity; Mode NR, assumed face-to-face, co-delivery including exercise physiologists and allied health staff *Co-production*: None reported *Details:* Healthy Bodies, Healthy Minds (HBHM) is a PCYC Queensland exercise and nutrition program for people with mental illness, 2-hour weekly group sessions for 8 weeks (1-hr nutritional session followed by a 1-hr exercise session) *Implementation strategies:* Co-delivery and co-location of staff delivering the intervention	At 6-month follow-up: ● 1 of 6 **physical health outcomes** demonstrated a positive effect: walk test distance (p<.005). 5 of 6 demonstrated no significant change: systolic blood pressure, diastolic blood pressure, waist circumference, weight, BMI (p's>0.05)

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Daumit 2011[48], US Outreach: CMO	Consumers attending a psychiatric rehabilitation program (*n*=52) with SMI, who were overweight or obese (BMI≥25) *High priority subgroups:* No	The objective of this study was to test the feasibility and preliminary efficacy of a six-month behavioural weight loss intervention in a psychiatric rehabilitation setting Single-group pre-post (uncontrolled); Observation by trained data collectors (physical health measures), face-to-face surveys (self-report measures), and accelerometer data (physical activity)	IV	*Intervention:* lifestyle/behavioural intervention; Weight loss, diet, physical activity, education for kitchen staff; Face-to-face, group *Co-production*: None reported *Details:* The six-month weight loss intervention included three components: weight management counselling sessions; group physical activity sessions; and education for kitchen staff to provide healthier on-site meals. Weight management sessions were led by health educators and a registered dietician; one 45-minute group physical activity class weekly; and 1 individual session every 6 weeks with the interventionist *Implementation strategies:* Advice was provided by dieticians who reviewed breakfast and lunch menus at the facilities and gave	At 6 months follow-up: ● 7 of 12 **consumer behaviour change** outcomes demonstrated a positive effect: moderate physical activity minutes (p=0.04), fruit and vegetable intake (p=0.04), total fat intake (p=0.05), saturated fat intake (p=0.05), per cent fat (p=0.05), dietary cholesterol (p=0.05), dietary fibre (p=0.04). 5 of 12 demonstrated no effect: making time for exercise (p=0.12), reducing calories (p=0.19), reducing salt (p=0.20), reducing fat (p=0.15), binge eating (p=0.27) ● 4 of 13 **consumer physical health** outcomes demonstrated a positive effect: weight (p=0.014), waist circumference (p<0.001), BMI (p=0.008), physical fitness (p<.001). 9 of 13 demonstrated no effect: health status (p>.05), quality of life (p>.05), total cholesterol (p=0.11), triglycerides (p=0.65), glucose (p=0.41), insulin (p=0.24), homeostatic model assessment of insulin resistance (p=0.61), systolic blood pressure (p=0.91), and diastolic blood pressure (p=0.10)

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				advice 2–4 times over the 6 months to assist kitchen staff with making healthy changes to menus	🟡 1 of 2 **consumer beliefs and knowledge** outcomes demonstrated a positive effect: exercise self-efficacy (*p*=0.05). 1 of 2 demonstrated no effect: eating self-efficacy (*p*=0.38)
Druss 2010[60]**,** US Urban, CMHC	Eligible participants (n=80) had to be on the active patient roster at the CMHC, have an SMI and have one or more chronic medical conditions *High priority subgroup:* 82.5% African American	Study adapted an established medical disease self-management program to be delivered by, and to, mental health consumers. Study describes program development of the Health and Recovery Program (HARP) and results of a pilot study designed to assess its feasibility and potential to improve self-management and health outcomes Two-group RCT (intervention, control);	II	*Intervention:* Peer-led self-management program; Chronic illness management*;* Monthly group sessions, delivered by 2 certified mental health peer workers over 6 months *Co-production*: Consumers and staff members were involved in tailoring the intervention components *Details:* Sessions covered topics related to chronic disease self-management: Overview of self-management; Exercise and physical activity; Pain and fatigue management; Healthy eating on a limited budget; Medication	At the 6-month follow-up, in the intervention compared to control group: 🟢 1 out of 1 **consumer service use** outcomes demonstrated a positive effect: primary care provider visits (p=0.04) 🔴🔴 0 of 3 **consumer physical health** outcomes demonstrated a positive effect: physical activity minutes (p=0.40), physical health related quality of life (p=0.41), and medication adherence (p=0.22) 🟢 1 of 1 **consumer beliefs and knowledge** outcomes demonstrated a positive effect: patient activation (p=0.01)

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		surveys and questionnaires		management; Finding and working with a regular doctor *Implementation strategies:* Staff training for mental health peer specialists	
Ennals 2019[36], Hall 2019[54], Australia Outreach: CMO (Neami, n=5 sites)	Trial: consumers (*n*=64) interested in improving their tobacco consumption *High priority subgroups: No*	Evaluate the 'Kick the Habit' (KTH) program; aiming to test a new way of helping smokers with a mental illness to quit smoking compared to treatment as usual. Additionally, determine feasibility and staff experiences Mixed methods: non-randomised, two-group pre-post (intervention, control), and qualitative methods with consumers and staff. Surveys with consumers, and qualitative research with	III-2	*Intervention:* Smoking cessation during routine care*;* Smoking cessation; Face-to-face provided by support workers during routine appointments *Co-production*: None reported *Details:* Intervention included starting a conversation about smoking and assessing nicotine dependence; developing an individually tailored tobacco management plan; clarifying a working alliance with the consumer; and review and celebrate achievements and learnings. Length of support determined on an individual basis	Difference from baseline to 1-month follow-up in the intervention compared to control: ● 4 of 4 **consumer behaviour change** outcomes demonstrated a positive effect: smoking reduction ('<=10 cigarettes per day': Int: n=8/34 (24%) baseline, n=8/25 (32%) at 1-month; Con: n=11/30 (37%) baseline, n=7/27 (26%) 1-month), nicotine dependence ('low dependence': Int: n=0/34 (0%) baseline, n=6/20 (30%) 1-month; Con: n=5/30 (17%) baseline, n=4/22 (18%) 1-month), self-reported change in tobacco use ('reduced or stopped': n=20/25 (80%); Con: 11/27 (41%)), and smoking cessation (abstinent: Int: n=5/25 (20%); Con: 5/27 (19%)). *Significance testing not reported* ● 2 of 4 **consumer beliefs and knowledge** outcomes demonstrated a positive effect:

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		consumers and staff (feedback obtained from site managers and research assistants in an 'end of program' questionnaire)		*Implementation strategies:* Training (1–2-hour session and online training material): smoking cessation relevant to a mental health setting, behavioural strategies to support smoking cessation, and optimal use of NRT	knowledge of NRT ('improved from baseline': Int: n=13/25 (52%); Con: n=9/27 (33%)) and confidence of quitting ('improved from baseline': Int: n=11/25 (44%); Con: n=8/27 (30%)). 2 of 4 outcomes demonstrated a negative effect: knowledge of resources ('improved from baseline': Int: n=6/25 (24%); Con: n=10/27 (37%)) and importance ('improved from baseline': Int: n=5/25 (20%); Con: n=6/27 (22%)). *Significance testing not reported* Difference from baseline to 3-month follow-up in the intervention compared to control ● 3 of 4 **consumer behaviour change** outcomes demonstrated a positive effect: smoking reduction ('<=10 cigarettes per day': Int: n=8/34 (24%) baseline, n=15/31 (48%) at 3-month; Con: n=11/30 (37%) baseline, n=5/23 (22%) at 3-month), nicotine dependence (low dependence: Int: n=0/34 (0%) baseline, n=5/28 (18%) 3-month; Con: n=5/30 (17%) baseline, n=2/18 (11%) at 3-month), self-reported change in tobacco use ('reduced or stopped': n=26/31 (84%); Con: 9/23 (39%) 3-month). 1 of 4 demonstrated a negative effect: smoking

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					cessation (abstinent: Int: n=3/31 (10%); Con: n=5/23 (22%)). *Significance testing not reported* ● 3 of 4 **consumer beliefs and knowledge** outcomes demonstrated a positive effect: knowledge of NRT ('improved from baseline': Int: n=13/31 (42%); Con: n=5/23 (22%)), knowledge of resources ('improved from baseline': Int: n=9/31 (29%); Con: n=5/23 (22%)) and confidence of quitting ('improved from baseline': Int: n=11/31 (35%); Con: n=6/23 (26%)). 1 of 4 outcomes demonstrated a negative effect: importance ('improved from baseline': Int: n=7/31 (23%); Con: n=8/23 (35%)). *Significance testing not reported*
Gill 2012[42], Australia Outreach: CMO (One Door, formerly the Schizophrenia Fellowship)	Consumers (*n*=55) *High priority subgroups:* No	Evaluate the New Moves Program targeting physical health and recovery for people with a mental illness Single-group pre-post (uncontrolled); Methods NR	IV	*Intervention:* lifestyle intervention; Multiple health behaviours: physical activity, nutrition, smoking and alcohol; Face-to-face group sessions, weekly two-hour sessions over 16 weeks delivered by New Moves Educators, including peer educators	At program completion (16 weeks): ● 2 of 3 **consumer physical health** outcomes demonstrated a positive effect: cardiovascular fitness (significant, p-value NR) and waist circumference (significant, p-value NR). 1 of 3 demonstrated no effect weight loss (p=n.s., value NR)

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				Co-production: None reported *Details:* Each two-hour session includes: a discussion/ information topic, cardiovascular exercise, designed to be fun and socially interactive, strength-training exercise, a healthy meal/snack, including preparation of the meal *Implementation strategies:* NR	
Gyllensten 2017[31], Sweden Residential: Communal supported houses	Service users (n=73) of the Swedish communal social psychiatry and who live in supported housing conditions with a mental health diagnosis (mostly schizophrenia, other psychosis, affective disorders or severe neuropsychological disorders) *High priority subgroup:*	To study the effectiveness of Exergames on physical activity habits, physical fitness, physical health parameters and social interactions in comparison to a control condition for persons with SMI living in communal supported houses (12–13 persons living together in an apartment with their own	II	*Intervention:* e-health activities; Physical activity; Face-to-face, group, delivered by research team *Co-production: None reported* *Details:* The intervention group used Exergames controlled by body movements and the control group used ordinary TV games in a sitting position controlled by hand	At 10-month follow-up: ●● 0 of 2 **consumer behaviour change** outcomes demonstrated a positive effect. No effect found for: physical activity habits or fitness (6-minute walk test) (significance cut-off not provided). Both groups reported smoking less ($p<0.001$) ●● 0 of 4 **consumer physical health** outcomes demonstrated a positive effect: blood pressure, weight, waist circumference or BMI. Significance testing NR

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	Yes – Social Housing (100%)	room and a joint living room/kitchen, supervised by 6–7 staff-supported house, during 24h). Additionally, to identify factors and experiences that promote or impede the use of the Exergames in communal supported houses Two-group CRCT (intervention, control) and additional qualitative component; Focus group interviews and objective physical measurement		*Implementation strategies:* Staff education and training provided by technical staff	
Kelly 2014[62], US Outreach: CMO	Consumers (*n*=21) *High priority subgroups:* No	"The purpose of this study was to examine the preliminary effectiveness and promise of a peer-delivered comprehensive health care engagement and self-management	II	*Intervention:* Peer-delivered health care engagement and self-management intervention; Health care engagement and self-management; Face-to-face provided by one trained peer navigator	At 6 months follow-up: ● 1 of 6 **consumer physical health** outcomes demonstrated a positive effect: interference of pain with daily functioning (p<.05). 5 of 6 outcomes demonstrated positive trends: pain severity (p<.10), number of health problems (p<.10), number of total medications (p<.10),

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		intervention. The intervention was designed to reduce barriers to healthcare utilization and improve the health and well-being of individuals with SMI" 2 group RCT (intervention, control); Survey		*Co-production*: Peers were involved in tailoring the intervention components *Details:* The "Bridge" peer-delivered health navigation intervention is a comprehensive healthcare engagement and self-management model, where clients are taught the skills to access and manage their health care effectively. Average of 3 contacts per month; ranged from 10 mins to 4 hours; 6-month intervention period *Implementation strategies:* NR	and number of physical health medications (*p*<.10). 1 of 6 demonstrated no effect: number of mental health medications (p<.10) ●● 0 of 1 **consumer beliefs and knowledge** outcomes demonstrated a positive effect: health care efficacy (p>0.05) ● 2 of 4 **consumer service use** outcomes demonstrated a positive effect: reduced preference for emergency room use (*p*<.001) and increased preference for primary care use (*p*<.001). 2 of 4 demonstrated no effect: number of routine care visits and number of emergency/urgent care visits, p's>0.05
Kelly 2020[32], Australia Outreach: CMO (NEAMI)	Consumers were current Neami clients, aged ≥18 years, and had identified a health-related goal (n=43) *High priority subgroup:* No	To evaluate the feasibility of delivering a healthy lifestyle intervention, Better Health Choices (BHC), in circumstances that reflect routine care, namely peer worker	II	*Intervention:* Peer-delivered healthy lifestyle intervention; Multiple health behaviours - PA, fruit/veg, screen time, smoking, alcohol; Telephone, delivered fortnightly by peer workers over 16 weeks	At 16 weeks follow-up: ● 5 of 12 **consumer behaviour change** outcomes: Leisure screen time (p<.001), total physical activity (p=.012), walking (p<.001), moderate activity (p<.001), vigorous activity (p<.001). No significant change for: OTI tobacco smoking (Opiate Treatment Index), cigarettes

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Publication, year, country Setting[1]	Population High priority subgroups (HPS)	Research question; design Data collection method(s)	NHMRC grade	Intervention (type; focus; mode of delivery) Details Implementation strategies	Outcomes and results
		delivery of BHC to consumers of a community mental health service. The study also examined preliminary outcomes of the intervention Two-group RCT (intervention, control); Phone interview and questionnaires		*Co-production:* None reported *Details:* BHC is an 8-session manualised telephone-delivered intervention that uses motivational interviewing and cognitive behavioural strategies to target: low fruit and vegetable intake, leisure screen time and, where appropriate, smoking and alcohol *Implementation strategies:* Staff training for peer workers	per day, standard drinks per day, fruit serves, vegetable serves, fruit consumption or vegetable consumption (Australian Recommended Food Score Index) **Other relevant outcomes:** ● Consumer satisfaction high (post only). All participants rated the quality of the service they received as 'good' or 'excellent'
Looijmans 2017[34], The Netherlands Residential: 18 Sheltered and 11 long-term clinical care teams of two psychiatric institutions	Patients with SMI all from sheltered and long-term clinical care teams (n=29 teams, 20-65 patients per team) of two mental health organisations were included in the study if they participated in the annual routine outcome monitoring	Determine the effectiveness of a 12-month lifestyle intervention addressing the obesogenic environment with respect to diet and physical activity to improve waist circumference and cardiometabolic risk factors vs care as usual	II	*Intervention:* Lifestyle intervention (targeting obesogenic environment); Weight loss, diet and exercise; Face-to-face, Lifestyle coaches trained teams and usual staff *Co-production*: Team-tailored lifestyle plan considered staff and patient preferences *Details:* Lifestyle coaches spent on average 8 hours on activities with	At 12 months follow-up: ●● 0 of 3 **consumer physical health** outcomes demonstrated a positive effect. Waist circumference lower in intervention group compared to control (1.28cm; but difference not significant); no effect on BMI (p=.27) and metabolic z-score (p>.05)

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	High priority subgroup: No	Two-group CRCT (intervention, control); Objective measures collected by trained nurses in annual routine outcome monitoring screenings. Fasting blood sample obtained via hospital laboratory		patients (6 contact hours, 2 hours preparation) over 12 months Lifestyle coaches created a team-tailored lifestyle plan based on four pre-established lifestyle goals: stimulate physical activity; increase supply/availability of healthy food products; organise at least one activity per week focused on a healthy diet; and to improve the obesogenic environment at an organisational level. 3-month implementation phase and 9-month monitoring phase *Implementation strategies:* Lifestyle coaches spent 8 hours per week on training of staff and organisational aspects, such as developing information materials, meetings with staff and project management	

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Mangurian 2013[49], US Outpatient/ambulatory: 2 outpatient clinics	Primarily CALD consumers with SMI (n=80 at baseline): schizophrenia spectrum disorders, major depressive disorder, bipolar disorder, other and a BMI≥25 *High priority subgroup:* Yes – CALD (59% Spanish speaking only)	To determine feasibility of implementation of a culturally modified behavioural intervention for overweight and obese Latinos with SMI Quasi-experimental two-group, pre-post (intervention; brief control); Face-to-face questionnaire delivery; physical health assessment	IV	*Intervention:* Lifestyle intervention; Weight loss, physical activity and healthy eating; Face-to-face, delivered by bilingual, registered dietitian *Co-production:* None reported *Details:* Culturally modified, behavioural therapy weight loss program. 20 classes of 60 minutes over 14 weeks (twice weekly for weeks 1–6; once weekly weeks 7–14). Classes included 'weigh-in', instructional information, exercise component, and discussion of healthy snacks. Provision of healthy eating handout, personal scale and pedometer. Modifications included Spanish translation, incorporation of traditional Dominican food; incorporation of culturally informed exercises/activities; incorporation of cultural values; and removal of references less relevant for inner-	At 14, 26 and 40 weeks: ●● 0 of 4 **consumer physical health** outcomes demonstrated a positive effect compared to control. No significant difference between groups for mean weight, weight loss, BMI, SF-12 health scale (p's>0.05) **Other relevant outcomes**: ● **Consumer satisfaction** high (post only). Client Satisfaction Questionnaire *M*=28.6 (SD 2.8) (possible range 8-32) *Note:* Results not reported for one outcome (ATP-III criteria for metabolic syndrome)

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				city populations of low socio-economic status (e.g. ownership of car) *Control/Comparison intervention:* Single 45-minute nutrition class, healthy eating handout, pedometer *Implementation strategies:* A usual provider (nurse) sat in on the course to be trained for future delivery (no additional expense)	
Martin 2014[43], US Unclear: Amistad – further information on setting not clear	Individuals with SMI (n=118), who were members of Amistad (i.e. voluntary walk-ins to the centre) *High priority subgroup:* No	Evaluate the impacts and challenges of implementing the Healthy Amistad program (a comprehensive lifestyle intervention that used a Peer Support and Recovery program as its platform for operations) Single-group pre-post (uncontrolled); Annual	IV	*Intervention:* Peer-supported and recovery program lifestyle intervention; Multiple health behaviours – physical activity, nutrition, tobacco cessation; Health care access; Face-to-face; delivered by a Peer Patient Navigator (PPN), Peer Activities Coordinator (PAC), and other usual staff *Co-production:* None reported	At 12 months follow-up: ● 1 of 1 **consumer behaviour change** outcomes demonstrated positive outcomes: consumers smoking <1 pack cigarettes/day increased (52% to 57%). Significance testing NR ● 2 of 3 c**onsumer physical health** outcomes demonstrated positive outcomes: mean blood pressure decreased (133/85 to 126/81); weight loss (281.4 lbs to 273.4lbs). No change in

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Publication, year, country Setting[1]	Population High priority subgroups (HPS)	Research question; design Data collection method(s)	NHMRC grade	Intervention (type; focus; mode of delivery) Details Implementation strategies	Outcomes and results
		survey, objective physical measurement, key informant interviews, and observation by research assistants (post only, to assess quality of implementation)		*Details:* PPN: health advocate and life coach for members. Worked with members to increase opportunities for physical activity, improve nutrition, tobacco cessation, and access to needed health care. Assist members to receive non-emergency health services, and to decrease consumers being denied care by physician due to reoccurring issues such as non-compliance, expenses etc. PAC: develop and implement physically active programming for participants Staff offered variety of self-help groups: smoking cessation, diabetes self-care, conflict resolution Cafeteria menu improved	'general health' (outcome not defined). Significance testing NR ● 1 of 2 **consumer service access** outcomes demonstrated positive outcomes: emergency room visits >once in 6 months decreased (58% to 37%). No change in 'health care access' (outcome not defined). Significance testing NR ● **Other relevant outcomes:** **Implementation/process related outcomes:** Activity Coordinator reported an increase in the number and variety of group activities; several healthier menu items were made available; PPN reported that of the eight members that attended smoking cessation classes, three reduced smoking, and two quit smoking

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				Implementation strategies: Creation/employment of specific roles to deliver program: PPN and PAC	
McGrath 2018[57], Australia Outpatient: CMO (Neami)	Providers (completed post-training survey *n*=197; sample size for pre-post evaluation NR), staff members from Neami National sites in Victoria or NSW *High priority subgroups:* No	The program developed contextually appropriate professional development for Neami Community Rehabilitation and Support Workers to improve oral health promotion practices Mixed methods: one-group pre-post (uncontrolled), two-group post cross-sectional survey, one-group post cross-sectional training survey; Online and face-to-face surveys with staff and annual appraisals of health promotion action	IV	*Intervention:* Staff professional development*;* Oral health*;* Face-to-face (30-minute weekly sessions) and online training for support workers delivered by Bachelor of Oral Health students *Co-production*: Consumers and staff members were involved in tailoring the intervention components *Details: '*Smile for Health' is a partnership program between Neami National and the Melbourne Dental School that aims to deliver contextually appropriate professional development for Neami Community Rehabilitation	Post-training: ●● 2 of 2 **provider knowledge and attitudes** outcomes demonstrated a positive effect: oral health knowledge (p<.05) and attitudes towards oral health ("those who received training perceived fewer barriers to promoting oral health when working with consumers"; *significance testing NR, comparison unclear* ● 1 of 1 **provider care provision** outcomes demonstrated a positive effect: provision of oral health support (p<0.05). **Other relevant outcomes:** ● Satisfaction with training was significantly higher following face-to-face training than online training (*p*=.04); the majority were 'very' or 'extremely' satisfied with training

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				and Support Workers to improve oral health promotion practices *Implementation strategies:* Health Promotion Site Champions (HPSCs) in each site coordinated program implementation within their team; staff training: communication and support skills	
Mechling 2019[38], US Outpatient Psychosocial rehabilitation program clubhouse	Diagnosis of severe and persistent mental illness (SPMI), including schizophrenia spectrum disorder, depressive disorder, anxiety disorder; (n=33 intervention, 21 control - completed) *High priority subgroups:* No	Examine the effects of a multi-target, multi-disciplinary executed Healthy Lifestyle Intervention (HLI) in a group of clients with SPMI who attend a community-based mental health facility. Quasi-experimental between subject group with repeated measures; Survey and objective physical measurements	III-2	*Intervention:* Lifestyle intervention*;* Physical activity and nutrition*;* Face-to-face, delivered by study investigators, usual staff, and nursing students *Co-production:* None reported *Details:* 6-month intervention period consisting of exercise groups, accompaniment of consumers to gym, and weekly nutrition group *Implementation strategies:* NR	At 3- and 6-months follow-up: ●● 0 of 4 **consumer physical health** outcomes demonstrated significant improvements compared to control: Weight, BMI, waist circumference, blood pressure (p's>0.05) ● 1 of 1 **consumer self-efficacy** outcomes showed positive results: intervention participants had significant higher exercise self-efficacy compared to control at 3 (*p*=.000) and 6 months (*p*=.000). *Note:* Baseline differences not accounted for, with intervention group scoring significantly higher at baseline

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Publication, year, country **Setting**[1]	**Population** **High priority subgroups (HPS)**	**Research question; design** **Data collection method(s)**	**NHMRC grade**	**Intervention (type; focus; mode of delivery)** **Details** **Implementation strategies**	**Outcomes and results**
Mission Australia 2013[44]**,** Australia Outreach: CMO (Mission Australia)	Consumers (n=14): Housing and Accommodation Support Initiative (HASI) consumers living in the Northern Sydney Local Health District, both current and on the waiting list referred after an initial assessment from a GP, and experiencing physical ill-health due to smoking, obesity, and/or poor diet and lifestyle *High priority subgroups:* Includes consumers in/seeking social housing.	Evaluate the 'Healthy in Mind and Body' (HMB) program: a comprehensive program of support for consumers experiencing mental illness and poor cardio-metabolic health, obesity and diabetes Single-group pre-post (uncontrolled); Survey delivered by staff	IV	*Intervention type:* Lifestyle intervention; Multiple health behaviours – nutrition, exercise and smoking; as well as weight loss and waist circumference reduction; Face-to-face, delivered by 4 key staff members for 6 months (team leader, exercise support and project coordinator, nutritionist and smoking-cessation support person) *Co-production:* None reported *Details:* Three components: (1) exercise and lifestyle program (linking consumers with local gyms, personal trainers and outdoor activities, as well as one-to-one supports such as walking and swimming), (2) nutrition program (support to change eating, cooking and shopping habits such as recipes and fact sheets, suggested website and books, and provision of kitchen	At 6-month follow-up: ● 2 of 3 **consumer physical health** outcomes demonstrated a positive effect: weight loss (85% of participants lost weight) and waist circumference (36% of participants reduced). 1 of 3 demonstrated no effect: smoking cessation (no participants maintained a reduction in smoking). Significance testing NR

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				utensils), and (3) smoking-cessation program (education on health effects of smoking, practical steps to quit and provision of nicotine replacement therapy). *Implementation strategies:* Nil	
Mood Active 2018[55], 2019[40], Australia Outpatient: CMO	Consumers (2018 *n*=12; 2019 n=64) 18-65 years, mild to moderate depression and/or anxiety; not experiencing psychosis or schizophrenia or at risk of self-harm; not participating in a drug and alcohol rehabilitation program *High priority subgroups:* No	Aims to increase the use of exercise as a treatment option for people with depression and anxiety and increase accessibility to affordable exercise option Single-group pre-post (uncontrolled); Surveys and fitness tests pre and post the program	IV	*Intervention:* exercise program; exercise (as treatment option for depression); Face-to-face group exercise program delivered over 8 weeks *Co-production:* None reported *Details:* 8-week exercise program, with 3+ contacts per week (and additional coaching between sessions); a treatment option for mild to moderate depression and anxiety; aims to help participants learn to use exercise as a self-managed treatment option as an alternative or as an adjunct to medication	At the end of the 8-week program: ● 4 of 4 **consumer physical health** outcomes demonstrated a positive effect: resting heart rate (82 pre; 75 post; 60% of participants improved), systolic blood pressure (121 pre; 120 post; 52% of participants improved), diastolic blood pressure (82 pre; 78 post; 64% improved) and cardiovascular fitness (beep test: 3.5 pre; 4.2 post; 79% of participants improved). Significance testing NR ● Program completion low: 52% (2018) and 63% (2019)

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				Implementation strategies: NR	
Morris 2011[30] US Outreach: CMOs in both rural and urban areas	Participants with psychiatric diagnoses, regular smokers (≥5 cigarettes per day), aged 18 years or older, able to provide informed consent and participate in groups, and English-speaking. *High priority subgroup:* No	To investigate the effectiveness of community-based tobacco-cessation interventions for persons with mental illnesses. Two-group RCT (intervention, control); No detail provided (assumed in person at CMO)	II	*Intervention:* Group smoking cessation intervention; Smoking cessation; Group sessions were conducted by two facilitators, who were mental health clinicians with group therapy experience and consisted of up to 10 sessions *Co-production:* None reported *Details:* Quitline plus 'Smoking Cessation for Persons with Schizophrenia' group program was based on a comprehensive treatment manual and includes education on smoking and cessation, positive reinforcement, learning and practising alternative behaviours, enhancing coping skills, supportive relationships and anxiety-reduction strategies	At 6 months follow-up, for either intervention, over time: ● 3 of 3 **consumer behaviour change** outcomes demonstrated a positive effect over time: cigarettes per day (p<.0001) nicotine dependence (p<.01), and SF12 physical health (p<.0001) At 6 months follow-up, effect of Quitline+ compared to Quitline only: ● 1 of 3 **consumer behaviour change** outcomes demonstrated a positive effect: SF12 physical health (p=0.03). 2 of 3 demonstrated no effect: cigarettes per day (p>0.05) and nicotine dependence (p>0.05)

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Publication, year, country Setting[1]	Population High priority subgroups (HPS)	Research question; design Data collection method(s)	NHMRC grade	Intervention (type; focus; mode of delivery) Details Implementation strategies	Outcomes and results
				Implementation strategies: Mental health clinicians training on the treatment model	
Quiñones 2018[50], US Residential: CMO residential living programs.	Consumers had a BMI of at least 25 during their initial assessment; a mental health diagnosis comorbid with a prediabetes diagnosis; capability of providing informed consent, and; provided written permission from their on-site mental health counsellor for participation in the program (n=11) *High priority subgroup:* No.	To provide a detailed description of the adaptation process and refinement of the adapted version of the Diabetes Prevention Program for individuals with SMI (DPP-SMI pilot program) in a large community-based mental health residential program Single-group pre-post (uncontrolled); Weight (weekly weigh-ins), PA – self report, record in a log, Hip and waist circumference ends of program measured by facilitators, physical	IV	*Intervention:* Diabetes prevention program (adapted for SMI); Weight loss; Face-to-face, group and one-on-one sessions, delivered by peer specialist or a mental health counsellor *Co-production:* Focus group to inform intervention *Details:* 22 group sessions consisted of 15 min for weigh-in, 60 min to follow up on past week's goals and discussion of session material, and 15 min for class activity and planning of the following week's session. Some of the sessions' content was modified incorporating new material in response to the needs expressed by the focus group	At 12 weeks follow-up: ● 1 of 1 **consumer behaviour change** outcomes demonstrated a positive effect: physical activity minutes per week increased (160.9 to 267.6) ● 2 of 2 **consumer physical health** outcomes demonstrated a positive effect: BMI decreased (39.9 to 37.1); weight loss (244.2lbs to 224.9lbs). Significance testing NR ● **Other relevant outcomes:** satisfaction: 90% of completers reported improved overall knowledge about health and making healthy changes to their lifestyle

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Publication, year, country Setting[1]	Population High priority subgroups (HPS)	Research question; design Data collection method(s)	NHMRC grade	Intervention (type; focus; mode of delivery) Details Implementation strategies	Outcomes and results
		health and a program satisfaction survey		*Implementation strategies:* NR	
Sadler 2018[35], Australia *Outpatient/ambulatory:* Aged persons community mental health organisations	Consumers aged ≥65 years, referred to and/or case managed by a CMHS between 2014 and 2016, met the Diagnostic and Statistical Manual for Mental Disorders (5th edition, DSM-V) criteria for insomnia disorder (with comorbidity) and major depressive disorder (n=72) *High priority subgroup:* Yes – older people (100%)	To investigate whether CBT-I is an effective treatment for older adults with comorbid insomnia and depression within a community mental health setting; explore whether an advanced form of CBT-I+ produces better outcomes compared to a standard CBT-I program Three-group CRCT (standard CBT, advanced CBT, psycho-education control); Self-report questionnaires, interviews and consensus sleep diary (CSD)	II	*Intervention:* CBT programs; Insomnia; Face-to-face, co-facilitated group sessions led by two therapists over 8 weekly sessions *Co-production:* None reported *Details:* A CBT-based intervention that aims to reduce insomnia and improve sleep by correcting dysfunctional cognitive and behavioural. Two intervention groups CBT-I and CBT-I+. CBT-I receive a weekly session of CBT of 60 to 75 minutes for 8 weeks in small groups of 5 or 6 participants. Participants had therapy workbooks and completed worksheets and homework activities	At 3-month follow-up, in the standard and advanced CBT groups compared to control group: ● 1 of 4 **consumer physical health** outcomes demonstrated a positive effect: insomnia severity (p<.001). 3 of 4 demonstrated no effect: sleep time (p=.735), sleep efficiency (p=.172), and sleep quality (p=.341) At the 3-month follow-up, in the standard CBT group compared to advanced CBT group: ●● 0 out of 4 **consumer physical health** outcomes demonstrated a positive effect: insomnia severity (p>0.05), sleep time (p>0.05), sleep efficiency (p>0.05), and sleep quality (p>0.05)

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				CBT-I+ was an advanced program that was identical to CBT-I with the addition of three more CBT strategies specifically targeting comorbid depression, with slightly longer sessions of 75–90 minutes *Implementation strategies:* Therapists and assessors received training and daily supervision	
Sane Australia 2013[64], Lo 2014[65], Australia Outreach: CMO (Neami)	Pre-post: providers (*n*=NR); focus groups: consumers (n=43) and providers (n=41) *High priority subgroups:* No	The aims of the project were to: 1. Improve the physical health of people living with a mental illness who attend Neami programs. 2. Develop a good practice model for creating best possible health-promoting environments for clients and staff of mental health services	IV	*Intervention:* Integration of health promotion into routine support; Improve provision of support for multiple physical health risks and behaviours (smoking, nutrition, alcohol, physical activity, metabolic risks, sexual health, bowel and bladder health, cancer screening, general health concerns); Face-to-face staff training and support in implementation, and educational resources	Post training and implementation of the health prompt: ● 2 of 2 **provider care provision** outcomes demonstrated a positive effect: asking consumers if they have a GP (frequency increased by 10%) and raising the topic of physical health care needs ('often': increased from 28.9% to 41.6%; 'never': decreased from 11.8% to 1.6%). *Significance testing NR* ● 1 of 1 **provider knowledge and attitudes** outcomes demonstrated a positive effect: 90% of participants increased confidence in having health conversations. *Significance testing NR*

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		Mixed methods: single-group pre-post (uncontrolled) and qualitative focus groups with staff and consumers Staff survey (to measure provision of care) and qualitative focus groups with staff and consumers (to determine critical success factors, barriers and enablers to achieving the objectives). Data regarding the offer of the health prompt were also obtained from health records		*Co-production:* Consumers and staff were involved in tailoring of the intervention components. *Details:* Implementation of the 'health prompt' to promote conversations between staff and consumers regarding physical health. All consumers are invited to complete the Health Prompt at their initial assessment and to revisit it every 6 months. *Implementation strategies:* Staff education and training; Site champion: provide feedback both ways from staff to management; Policy development, implementation and monitoring; Train-the-trainer manuals; Audit and feedback to staff and management	**Other relevant outcomes:** ● 92% of staff rated 'health prompt' format as good, very good or excellent. 90% agreed it was easy to use ● 'Health prompt' has been offered at least once to 38% of consumers across all Neami services ● 90% of staff agreed that using the 'Health Prompt' has increased referral pathways and community links for consumers
Sane Australia, ND[45],	Providers (*n*=NR). Two groups of consumers (Sane Australia, ND:	Develop a Peer Health Coach training program for peer support workers	IV	*Intervention:* Peer health coaching; Achieve consumer-identified health goals; Face-to-face, one-	After the program (duration unclear):

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Wolstencroft, ND[51], Australia Outpatient: CMO (Neami; (n=3 sites)	*n*=8, and Wolstencroft, ND: *n*=20) with a clearly defined health goal listed as a priority area on their goal setting and planning sheet *High priority subgroups:* No	and develop and trial the peer health coach program within Neami National service sites Single pre-post (uncontrolled); 2 evaluations undertaken: providers: unclear; consumers: questionnaire pre and post intervention		on-one group coaching provided by trained peer health coaches *Co-production:* Focus group to inform intervention *Details:* The 6-week intervention aims to teach mental health peer support workers how to support and empower consumers who have identified a physical health goal they would like to address as part of their recovery. Six one-hour coaching sessions. Peer health coaches received one-and-a-half-day training in delivery of the intervention *Implementation strategies:* Set of Practice Guideline; Induction training provided to each site; Steering Committee provided leadership and guidance; Peer Health Coach Project Worker coordinated resources for the	● 4 of 6 **consumer physical health** outcomes demonstrated a positive effect: physical activity (exercising 3-4 days per week increased from 28% to 55%; Wolstencroft, ND), overall health ratings (n=4 rating 'poor' or 'fair' pre; n=5 rating 'good' or 'very good' post), vegetable consumption, and fruit consumption ('2-3 serves': increased from 60% to 75%). 2 of 6 demonstrated no effect: physical activity ("no change"; Sane Australia, ND) and presence of health issues ("no change"). Significance testing NR ●● 7 of 10 **consumer beliefs and knowledge** about physical health outcomes demonstrated a positive effect: awareness of risk factors ('good' or 'very good': n=5 pre; n=7 post), ability to self-manage health issues (n=2 pre; n=5 post), making lifestyle changes to improve health (n=6 pre; n=7 post), confident to maintain changes (n=3 pre; n=5 post), perception of ease to maintain changes (n=4 pre; n=5 post), ability to make decisions about management ('satisfactory': n=7 pre; n=8 post), and health literacy ($p<0.05$). 1 of 10 outcomes demonstrated no effect: health knowledge ("no

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				project; Promotional strategy throughout the organisation	change"). 2 of 10 outcomes demonstrated a negative effect: ability to find enjoyable ways to exercise (n=8 pre; n=7 post) and progress towards adopting healthy habits (n=6 pre; n=4 post). Significance testing NR unless otherwise indicated **Other relevant outcomes:** ● Consumer uptake of peer health coaching: 13 participants have completed the full 6 sessions of Peer Health Coaching and 10 have completed Coaching in less than 6 sessions. 14 consumers in progress (as of Sep 2014) ● Consumer satisfaction - Helpfulness of sessions: very (85%); moderately (15%), a little (0%), not at all (0%)
Schuster 2018[56]**,** US Outreach: Community mental health providers across	Patients (n=1229) of the community mental health provider were eligible if they were Medicaid-enrolled adults, aged ≥21 years, with SMI	To describe strategies used to support the implementation of Provider-Supported and Self-Directed in community mental health providers across	IV	*Intervention:* Physical health and wellness coaching; collaboration with physical health providers*;* Physical health and risk factors including smoking cessation, weight management, and improved nutrition and sleep	At 24 months follow-up: *Either intervention, compared to baseline:* ● 1 of 1 **consumer beliefs and knowledge** outcomes demonstrated a positive effect of either intervention: patient activation ('two-point increase')

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Pennsylvania implementing two behavioural health home approaches	(schizophrenia, schizoaffective disorder, bipolar disorder, or major depression), who received services from a participating provider (defined as having at least two claims for outpatient, case management, or peer specialist services during the six months before sample generation) *High priority subgroup:* No	Pennsylvania and evaluate the models' effectiveness at improving outcomes for patients with SMI and important lessons learned Two-group cRCT (self-directed intervention, provider-supported intervention); Online self-report data, existing claims data to ascertain participants' physical and behavioural health services use *Note: while described as a cRCT, this study compares two different interventions, and lacks a control group. It is therefore treated as an*		hygiene; Online (Self Directed) and face-to-face (Provider Supported) *Co-production:* None reported *Details:* *Self-Directed:* Access to a secure online web portal. 'The portal contained personal health information, such as medical conditions and history of their use of primary care and specialty visits and medications; access to self-guided wellness interventions; and trackers for smoking cessation, weight management, and improved nutrition and sleep hygiene', paper copies of resources also available, available in conjunction with wellness coaches *Provider-Supported:* 'Nurses were responsible for educating staff members about common medical	● 1 of 1 **consumer physical health** outcomes demonstrated a positive effect of either intervention: physical health status (p<.0001). ● 1 of 1 **consumer service use** outcomes demonstrated a positive effect of either intervention: increased engagement in primary and specialist care (mean number of visits in previous 12 months) (p<.0157) *Comparison between the* two interventions*:* ●**Consumer beliefs and knowledge:** Differential impact on patient activation. Provider-supported increased patient activation more rapidly (6 months) and sustained over time. Self-directed increased patient activation from 12–18 months. (*p*<.0001) ● **Consumer physical health**: No difference between two interventions for health status (*p*>0.05) ● **Consumer service use outcomes:** No difference between two interventions for engagement in primary and specialist care (mean number of visits in previous 12 months)

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Publication, year, country Setting[1]	Population High priority subgroups (HPS)	Research question; design Data collection method(s)	NHMRC grade	Intervention (type; focus; mode of delivery) Details Implementation strategies	Outcomes and results
		NHMRC level of evidence IV (pre-post)		comorbidities, working with wellness coaches to develop tailored wellness plans, and assisting the coaches with patients' transitions from inpatient to community-based settings. Nurses also helped patients coordinate and obtain preventive, primary, and specialty medical services and monitor progress' *Implementation strategies:* Training care delivery staff members in wellness coaching	
Sims 2017[58], US Outreach: CMO	Consumers (*n*=NR) *High priority subgroups:* No	Purpose of the quality improvement project was to implement a monitoring system for medical health indicators and to use this system to generate referrals and follow-up with appropriate medical providers	IV	*Intervention:* Monitoring and referral system; Monitoring of physical health indicators and referrals to medical providers; Face-to-face, delivered by project manager (practicing ACT nurse) *Co-production:* None reported *Details:* Implementation intervention to develop a	In the final quarter of the 12-month intervention: ● 2 of 2 **service care provision** outcomes demonstrated a positive effect: documentation of blood pressure (increased 58% to 76%) and documentation of weight (increased 50% to 74%). *Significance testing not reported* **Other relevant outcomes:**

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Publication, year, country Setting[1]	Population High priority subgroups (HPS)	Research question; design Data collection method(s)	NHMRC grade	Intervention (type; focus; mode of delivery) Details Implementation strategies	Outcomes and results
		Single-group pre-post (uncontrolled); health record audit		monitoring system for key health indicators, and improve a system to record and track referrals and follow-up to primary care *Implementation strategies:* Organisational guidelines regarding health indicator parameters and client referrals; Guidelines for a referral system; Educational presentation on importance of integrated health care; Workshop aimed at increasing staff understanding	● Clients attended 78% of the 36 referrals made.
Teachout 2011[61], US Residential: CMO (Praxton House).	Consumers (*n*=13) of a specialised residential treatment program with comorbid mental illness and type 2 diabetes *High priority subgroups:* social housing	Program description of a supported housing residence for individuals with co-occurring diabetes and SMI and preliminary health outcome data Single-group pre-post (uncontrolled); Daily logs	IV	*Intervention:* Education and counselling; Diabetes management; Face-to-face delivered by nurse practitioners *Co-production:* None reported *Details:* A specialised residential treatment program tailored to the needs of individuals with co-morbid mental illnesses and	6-month follow-up: ● 2 of 2 **consumer physical health** outcomes demonstrated a positive effect: weight loss (M: 20.35lbs; 100% of participants lost weight) and fasting glucose (27% pre vs 40% at follow-up in recommended range). *Significance testing not reported* **Other relevant outcomes:**

Appendix 5. Table of included studies

Publication, year, country Setting[1]	Population High priority subgroups (HPS)	Research question; design Data collection method(s)	NHMRC grade	Intervention (type; focus; mode of delivery) Details Implementation strategies	Outcomes and results
		of physical health and a survey		diabetes. Weekly education classes over 6 months, and CMO staff in routine supports over 6 months *Implementation strategies:* NR.	● Consumer satisfaction: all participants reported being satisfied with the program ● Mean participant rating of how beneficial the program (1=not at all; 7=extremely) was m=4.33, sd=0.866 ● Other benefits identified at follow-up: being able to ask for support around having/caring for their diabetes (m=3.78, on a 5-point scale) and affecting the way they feel about having diabetes (m=4.33, on a 5-point scale)

[1]Setting coded as: Residential, Outreach, Specialist outpatient/ambulatory services, Home based or Unclear.

NR=not reported; CMO=community mental health organisation; CMHCs=community mental health centres; SMI=Serious mental illness; NRT=Nicotine Replacement Therapy; BMI=Body Mass Index; RCT=Randomised Controlled Trial; CRC =Cluster Randomised Controlled Trial.

● 50% or more of outcome type demonstrated a positive effect
● Less than half of outcome type demonstrated a positive effect
●● None of the collected outcomes are significant.
● Positive change reported descriptively only (significant testing not conducted)
● No change reported descriptively (significance testing not conducted)
● Follow-up data from intervention group only
Note: Where there was a mixed approach to analysis (combining descriptive analysis and significance testing) two different coloured indicators are used to represent results as appropriate.

Appendix 6. Barriers and enablers to mental health CMOs delivering or facilitating preventive and physical health care (extracted from papers addressing review questions 1 and 2)

Publication/ link, year	Barriers and enablers to successful implementation	Factors
Aschbrenner 2017[46]	*Barriers:* • Needing a partner willing and eligible to participate in a partner support intervention *Enablers:* • Augmenting lifestyle interventions with support from friends and family in participants' home and social environments where health behaviours take place	**Client factors** **Tailoring factors**
Ashton 2010[53], 20135[3], 2015[41]	*Barriers:* NR *Enablers:* • Peer-workers can share their 'lived experience' and provide role models for recovery and self-care	**Staff factors**
Bartels 2015[33]	*Barriers:* NR *Enablers:* • The health promotion coach was associated with more than 2.5 times the mean amount of fitness club attendance, which in turn was associated with greater weight loss and improved fitness	- **Staff factors**
Bartels 2018[37]	*Barriers:* NR *Enablers:* • Staff hired specifically for the intervention • Intervention conducted in usual care site	**Staff factors** **Environment/ systemic factors**

Appendix 6. Barriers and enablers to mental health CMOs delivering or facilitating preventive and physical health care (extracted from papers addressing review questions 1 and 2)

Publication/ link, year	Barriers and enablers to successful implementation	Factors
Bryant 2012[39]	*Barriers* • Providing support took too much time, referral to external programs would be preferable *Enablers:* NR	**Staff factors**
Chapman 2019[47]	*Barriers:* NR *Enablers:* • Successful elements involved in program evolution have been evaluation, partnership, and leadership	**Staff factors**
Daumit 2011[48]	*Barriers:* • Intervention may rely on consumer rapport with staff *Enablers:* • Participants helping motivate each other to join in the exercise classes and believe that this type of social support made important contributions to intervention success • Appropriately tailoring the intervention and holding sessions at a time and familiar place where participants already attend regularly, minimised barriers to group participation in a population with transportation, health and social barriers that make them generally poor candidates for traditional behavioural weight loss programs • Including exercise classes provided important opportunities for participants unlikely to reach moderate physical activity goals on their own	**Staff factors** **Client factors** **Tailoring factors**
Ennals 2019[36], Hall 2019[54]	*Barriers:* For consumers: • Physical nicotine addiction • Associated behaviours (friends, rituals [with beer/coffee, stress])	**Client factors**

Appendix 6. Barriers and enablers to mental health CMOs delivering or facilitating preventive and physical health care (extracted from papers addressing review questions 1 and 2)

Publication/ link, year	Barriers and enablers to successful implementation	Factors
	• Mental health medication • Barriers to quitting - in crisis/hospital, not ready to quit For staff: • Negative attitudes, low motivation, limited capacity within existing workload • Lack of belief in the program • Delay between training and program start (resulting in a loss of knowledge and confidence in 'starting the conversation') • Need for more practical training *Enablers:* For consumers: • Greater variety of NRT and for longer • More talking, more check ins • One site found that an information session for consumers was helpful by encouraging participation and generating discussion For staff: • Belief that it works • The right training at the right time • Ongoing support and leadership • Confidence and support for the program which grew over time	**Staff factors** **Tailoring factors** **Staff factors**
Gill 2012[42]	*Barriers:* • Accessibility of transport • Conflicting times with medical appointments, reducing ability to attend *Enablers:* • Changing to weekend sessions to increase appointment attendance	**Client factors** **Tailoring factors**

Appendix 6. Barriers and enablers to mental health CMOs delivering or facilitating preventive and physical health care (extracted from papers addressing review questions 1 and 2)

Publication/ link, year	Barriers and enablers to successful implementation	Factors
Gyllensten 2017[31]	*Barriers:* • Lack of technological knowledge was the biggest impeding factor in the implementation of the Exergames *Enablers:* • Staff who were able to motivate the users by their own interest and engagement	**Client factors** **Staff factors**
Looijmans 2017[34]	*Barriers:* • Structural aspects, such as environmental features of the facility (e.g. PA opportunities in urban v rural settings), available budget, availability of staff members • Attitudes of staff: nurses differed in their experience of conflicting priorities, conflicts with role definitions, and conflicts with own health behaviours • Difficulty in sustaining achieved improvements, despite involvement of regular staff in organising lifestyle activities and embedding lifestyle activities in teams' working routine • Sustainability might only be achieved when staff members are guided on a regular basis by a lifestyle coach whose primary responsibility is to promote the patients' lifestyle *Enablers:* • Logistic changes were possibly more easily implemented than cultural changes • Pragmatic character of the intervention allowed it to be tailored to the resources of the facility	**Environmental/systemic factors** **Staff factors** **Tailoring factors**
Mangurian 2013[49]	*Barriers:* • Subjects were reluctant to have waist circumference measured • Staff reluctance for increased workload *Enablers:* • Frequent weight checks by research staff to play an important role in this weight loss	**Client factors** **Staff factors** **Tailoring factors**

Appendix 6. Barriers and enablers to mental health CMOs delivering or facilitating preventive and physical health care (extracted from papers addressing review questions 1 and 2)

Publication/ link, year	Barriers and enablers to successful implementation	Factors
Martin 2014[43]	*Barriers:* • Hiring persons with a lived experience of mental illness to serve in the roles of PPN and Activities Coordinator: "given their need to deal with their own illness, they were not always as accountable as could be considered ideal for an intervention" *Enablers:* • Hiring persons with a lived experience of mental illness to serve in the roles of PPN and Activities Coordinator: individuals were well accepted by their peers in their new roles	**Staff factors** **Staff factors**
McGrath 2018[57]	*Barriers:* NR *Enablers:* • Training valuable and contextually appropriate, tailored to the needs of the consumer group and aligned with the Collaborative Recovery Model used at Neami	NR **Tailoring factors**
Mission Australia 2013[44]	*Barriers:* • Participants would have benefited from a longer program • More planning of program • Gradual roll out *Enablers:* NR	**Intervention factors** NR
Sadler 2018[35]	*Barriers*: • Intervention too complex *Enablers*:	**Intervention factors** **Intervention factors**

Appendix 6. Barriers and enablers to mental health CMOs delivering or facilitating preventive and physical health care (extracted from papers addressing review questions 1 and 2)

Publication/ link, year	Barriers and enablers to successful implementation	Factors
	• Longer course of therapy (e.g. 12–16 sessions) • A more specialised training package needed	
Sane Australia 2013[64], Lo 2014[65]	*Barriers:* • Financial strain, unstable housing, and long waiting lists • Asking difficult questions (e.g. waist measurement), following up on items and systemic barriers *Enablers:* • Relationship with worker: building rapport and setting the scene; being flexible with the health prompt; offering support • Integration of the Collaborative Recovery Model (CRM) and Health Prompt training • Using the health prompt regularly • Leadership and teamwork	**Environmental/systemic factors** **Staff factors** **Client factors** **Intervention factors**
Sane Australia, ND[45], Wolstencroft, ND[51]	*Barriers:* • Lack of clarity regarding the roles, responsibilities and boundaries • The readiness of the Peer Support workforce to undertake additional roles/duties • Peer Health Coaches required to have at least six months' work experience with the organisation • Lack of internal practice guidelines to support the effective implementation of the initiative • Receiving referrals from support workers. Some sites were unclear which consumers they could refer and what exactly they were referring to *Enablers:* • Supportive organisational culture around peer work and its value in mental health • Promotion of the program to staff and consumers – to increase receipt of referrals into the program. • Provision of adequate support for peer workers as being a critical success factor in retaining and maintaining a peer workforce	**Staff factors** **Environmental/systemic factors** **Environmental/systemic factors**

Appendix 6. Barriers and enablers to mental health CMOs delivering or facilitating preventive and physical health care (extracted from papers addressing review questions 1 and 2)

Publication/ link, year	Barriers and enablers to successful implementation	Factors
Schuster 2018[56]	*Barriers:* • Two-year study period was insufficient to follow sustainability of outcome trends *Enablers:* • Embedding health navigation into the case manager role and training all staff members in supporting a culture of wellness may have been the key elements leading to similar successful outcomes with both approaches	**Intervention factors** **Intervention factors**
Sims 2017[58]	*Barriers:* • Information technology capacity, demands on IT department limited development of appropriate flow sheets for health • Indicator data – as a compromise Excel sheets were used • Lack of resources to complete labs • Filing errors and inability to find records – to move forward with a facilitated health system, new processes would have to be added to systematise the recording of data • Obtaining health indicator lab data was time-consuming • External impediments for referrals not being completed by clients including lack of insurance, lack of money to pay co-pays, etc • Staff conflicting views on whether tasks were the responsibility of non-medical ACT staff members *Enablers:* • Project manager being a practicing ACT nurse within the service provided useful knowledge of the organisation and its current systems	**Environmental/systemic factors** **Staff factors** **Intervention factors**

No barriers or enablers extracted from the following studies: Bartels 2014[63], Kelly 2014[62], 2020[32], Mechling 2019[38], Mood Active 2018[55], 2019[40], Morris 2011[30], Quiñones 2018[50], Teachout 2011[61]

Appendix 7. Other potentially relevant literature

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Appendix 8. Studies descriptively reporting positive outcomes

Key characteristics of interventions, programs, models and initiatives that descriptively reported positive outcomes, or had multiple significant improvements (<50% of outcomes)

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
QUESTION 1: What have been shown to be the most effective preventive health care interventions for mental health consumers delivered by mental health service providers?									
Weight loss interventions									
Quiñones 2018 Evidence level IV	Face-to-face Individual and Group 22 weeks	✓ Weight assessment	✓ Group nutrition guidance				✓ Group discussion of effects of psychotropic medication on weight	✓ Exercise sessions	✓ Coproduction Peer worker
Multiple lifestyle interventions									
Kelly 2020 Evidence level II	Telephone Individual 6 months	✓ Individualised assessment of lifestyle behaviours: diet, leisure			✓ Offer of referral to telephone-delivered healthy lifestyle intervention	✓ Provision of fruit and vegetables	✓ Motivational interviewing and cognitive behavioural strategies to		✓ Peer worker

Appendix 8. Studies descriptively reporting positive outcomes

Key characteristics of interventions, programs, models and initiatives that descriptively reported positive outcomes, or had multiple significant improvements (<50% of outcomes)

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
		screen time, smoking and alcohol					support lifestyle changes		
Martin 2014 Evidence level IV	Face-to-face Individual and Group Not reported							✓ Assistance from health advocates and life coaches to improve lifestyle behaviours (nutrition and smoking cessation) and access to health care	✓ Peer worker
Mission Australia 2013	Face-to-face Individual and Group	✓	✓ Group nutrition and	✓ Recipes and fact sheets on healthy	✓ Referral to exercise and Lifestyle	✓ Provision of NRT	✓ Smoking cessation support	✓	

Appendix 8. Studies descriptively reporting positive outcomes

Key characteristics of interventions, programs, models and initiatives that descriptively reported positive outcomes, or had multiple significant improvements (<50% of outcomes)

Publication **Evidence level**	**Delivery mode** **Intervention duration**	**Assessment & screening**	**Education & advice**	**Educational resources**	**Linkages & referrals**	**Free lifestyle aids**	**Counselling & coaching**	**Assisted, practical support & demonstrations**	**Other key characteristics**
Evidence level IV	6 months	Waist measurement	smoking-cessation guidance	cooking and shopping	program: linking consumers with local gyms, personal trainers and outdoor activities			Physical activity support from personal trainers	
Sane Australia ND, Wolstencroft ND Evidence level IV	Face-to-face Individual and Group 6 months		✓ Support for health goals and to identify and address barriers to health behaviour change				✓ Peer health coaching in physical health goals		✓ Co-production Peer worker
Smoking cessation interventions									

Appendix 8. Studies descriptively reporting positive outcomes

Key characteristics of interventions, programs, models and initiatives that descriptively reported positive outcomes, or had multiple significant improvements (<50% of outcomes)

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
Ennals 2019 Hall 2019 Evidence level III	Face-to-face Individual Variable/tailored: Length of support determined on an individual basis	✓ Assessment of nicotine dependence	✓ Conversations about smoking cessation	✓ Online training material for staff	✓ As part of developing a Tobacco Management Plan (TMP): offered referral to Quitline call-back service and/or referred to pharmacist for free NRT	✓ Offer of referral to pharmacist for two weeks' free NRT	✓ Behavioural strategies to support smoking cessation Development of a tailored tobacco management plan		✓ Individualising
Physical activity interventions									
Mood Active 2018, 2019 Evidence level IV	Face-to-face Group 8 weeks						✓ Additional coaching between exercise sessions	✓ Exercise sessions	

Appendix 8. Studies descriptively reporting positive outcomes

Key characteristics of interventions, programs, models and initiatives that descriptively reported positive outcomes, or had multiple significant improvements (<50% of outcomes)

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
QUESTION 2: What have been shown to be the most effective ways community mental health services can deliver or facilitate physical health care for their mental health consumers?									
Chronic disease management									
Teachout 2011 Evidence level IV	Face-to-face Group and individual 6 months		✓ Weekly education classes by nurse practitioners in specialised residential treatment program		✓ CMO staff in routine supports		✓ Collaboration		Service/clinic co-location
Multiple health risk behaviours/conditions									
Sane Australia 2013, Lo 2014	Face-to-face; individual Post training				✓ Screening prompt to promote guided conversations between staff and consumers to				Guidelines, policies, protocols Tools, prompts, reminders

Appendix 8. Studies descriptively reporting positive outcomes

Key characteristics of interventions, programs, models and initiatives that descriptively reported positive outcomes, or had multiple significant improvements (<50% of outcomes)

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
Evidence level IV					address their physical health needs				Training Provider resource, information Practice change support Audit feedback
Sims 2017 Evidence level IV	Face-to-face Individual Not reported				✓ Face-to-face delivery of quality improvement project: a) development of a monitoring system for key health indicators, and b) improvement of system to record and track referrals and follow-up to primary care				Guidelines, policies, protocols Tools, prompts, reminders Training

Appendix 9. Studies reporting no improvements

Key characteristics of interventions, programs, models and initiatives that reported no improvements

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
QUESTION 1: What have been shown to be the most effective preventive health care interventions for mental health consumers delivered by mental health service providers?									
Weight loss, nutrition, and physical activity interventions									
Aschbrenner 2017 Evidence level IV	Face-to-face Group 12 weeks		✓ Group healthy eating and nutrition guidance			✓ Gym memberships and wearable physical activity tracking devices	✓ Consumer-partner coaching in health-behaviour change Support for coping with mental health symptoms that interfere with health-behaviour change	✓ Exercise sessions with a fitness trainer	✓ Individualising
Chapman 2019 Evidence level IV	Face-to-face Group 8 weeks		✓ Group nutrition guidance			✓ Gym membership	✓ Individualised goal setting for behaviour change	✓ Exercise sessions with exercise physiologist and allied health staff	

Appendix 9. Studies reporting no improvements

Key characteristics of interventions, programs, models and initiatives that reported no improvements

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
Looijmans et al. 2017 Evidence level II	Face-to-face Individual 12 months						✓ Group tailored lifestyle plan	✓ Lifestyle coaches trained staff in organisational aspects (e.g. developing information materials, project management)	✓ Co-production Tailoring
Mangurian et al. 2013 Evidence level IV	Face-to-face Group 14 weeks	✓ Weight assessment	✓ Instructional information and discussion of healthy eating	✓ Healthy-eating handout		✓ Personal scale and pedometer		✓ Exercise sessions and nutrition classes	✓ Cultural adaptation
Mechling & Arms 2019 Evidence level III-2	Face-to-face Group 6 months		✓					✓ Exercise sessions,	

Appendix 9. Studies reporting no improvements

Key characteristics of interventions, programs, models and initiatives that reported no improvements

Publication **Evidence level**	**Delivery mode** **Intervention duration**	**Assessment & screening**	**Education & advice**	**Educational resources**	**Linkages & referrals**	**Free lifestyle aids**	**Counselling & coaching**	**Assisted, practical support & demonstrations**	**Other key characteristics**
			Group nutrition guidance					accompaniment to gym	
Physical activity									
Gyllensten et al. 2017 Evidence level II	Web-based Individual + Group Not reported							✓ Exergame sessions	
Sleep									
Sadler 2018 Evidence level II Advanced CBT	Face-to-face Group 8 weeks		✓ Education on sleep hygiene, sleep restriction, stimulus	✓ Therapy workbooks, homework and activities Positive affirmations (e.g. data			✓ Cognitive restructuring of unhelpful sleep beliefs and relapse prevention Cognitive reframing to reduce depression	✓ Daily positive activity scheduling	

Appendix 9. Studies reporting no improvements

Key characteristics of interventions, programs, models and initiatives that reported no improvements

Publication Evidence level	Delivery mode Intervention duration	Assessment & screening	Education & advice	Educational resources	Linkages & referrals	Free lifestyle aids	Counselling & coaching	Assisted, practical support & demonstrations	Other key characteristics
			control and relaxation	logs and cue cards)					
Standard CBT			✓ Education on sleep hygiene, sleep restriction, stimulus control and relaxation	✓ Therapy workbooks, homework and activities			✓ Cognitive restructuring of unhelpful sleep beliefs and relapse prevention		

All studies addressing Question 2 reported either significant improvements, or descriptively reported improvements

Appendix 10. Studies including referrals or linkages as intervention components

Publication	Referral/linkage information	Referral organisation
Question 1 Studies		
Multiple lifestyle behaviour change interventions (n=2)		
Consumers in the intervention group were offered an 8-session telephone-delivered healthy lifestyle intervention that was developed for people living with severe mental illness	Better Health Choices (BHC) telephone-delivered healthy lifestyle intervention	
Exercise and Lifestyle program: A key feature of this program included linking consumers with local gyms, personal trainers and outdoor activities	Local gyms, personal trainers and outdoor activities	
Smoking cessation (n=3)		
Bryant et al. 2012	Support workers were provided with various resources, including referral forms to the telephone Quitline	Quitline (NSW)
Ennals et al. 2019, Hall 2019	As part of developing a Tobacco Management Plan (TMP), participants were offered a referral to Quitline call-back service and/or referred to pharmacist to provide two weeks of free NRT	Quitline (Victoria) and pharmacist
Morris et al. 2011	Quitline services were initiated through fax referral from participating sites. Quitline services consisted of up to 5 proactive calls. The Quitline provided up to 12 weeks of free NRT patches to all interested participants	Quitline (in US). Quitline services were provided by National Jewish Health. Five existing Quitline counsellors were assigned to work with the study cohort after completing training by the investigators on psychiatric illnesses and symptoms, special considerations when initiating tobacco cessation with this population, and

Appendix 10. Studies including referrals or linkages as intervention components

Publication	Referral/linkage information	Referral organisation
		emergency/crisis procedures. The research team provided ongoing consultation to ensure that Quitline counselling and community interventions were aligned (e.g., messaging to participants)
Question 2 Studies		
Multiple health risks or conditions (n=5)		
Kelly 2014	The Coordinated Linkages component: Helping participants make appointments, communicating with medical care providers, and ensuring follow-up care as well as adherence to medical treatment plans	Preventive, primary and specialty health care services
Bartels 2014	The preventive health care component consists of monthly meetings with a nurse embedded in the mental health setting who evaluates participants' health care needs focusing on facilitating preventive screening, advance care planning, and coordination of primary health care visits	Primary health care
Sane Australia 2013, Lo et al. 2014	Health Prompt aims to increase referral pathways and community links to physical health, nutritional and emotional/psychological support services	Physical health, nutritional and emotional/psychological support services
Schuster 2018 self-directed intervention	Components that were common to both approaches included training care delivery staff members (for example, case managers and wellness nurses) in wellness coaching so they could work with patients in addressing preventable or reversible risk factors for chronic disease; enhance staff and patient engagement with primary care physicians.	Primary care physicians.
Provider intervention	Nurses helped patients coordinate and obtain preventive, primary and specialty medical services	Preventive, primary and specialty medical services
Sims 2017	Facilitated referral model: the organisation conducts physical health screenings, coordinates referrals to primary care, and shares information with primary care providers. An important component of effective care coordination is the use of a tracking system that records important landmarks in the referral process (i.e. referral appointment made, appointment attended, referral consultation note received)	Primary care providers

Appendix 10. Studies including referrals or linkages as intervention components

Publication	Referral/linkage information	Referral organisation
Oral health (n=1)		
McGrath 2018	CMO staff members referred consumers to oral health services	Oral health services