National Institute for Health and Care Excellence

Draft for consultation

Rehabilitation in adults with complex psychosis and related severe mental health conditions

[N] Interventions to improve engagement in healthy living

NICE guideline TBC

Evidence review

January 2020

Draft for Consultation

This evidence review was developed by the National Guideline Alliance which is part of the Royal College of Obstetricians and Gynaecologists

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Interventions to improve engagement in healthy living

Review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Introduction

Engagement in healthy living is crucial for people with complex psychosis and related severe mental health conditions as this population may face additional physical health risks due to the adverse effects of the medications and adverse lifestyle factors. This review aimed to investigate the effectiveness of interventions specific to rehabilitation to improve engagement in healthy living activities like promoting healthy nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring and smoking cessation.

Summary of the protocol

Please see Table 1 for a summary of the Population, Intervention, Comparison and Outcome (PICO) characteristics of this review.

Table 1: Summary of the protocol (PICO table)

Population	Adults (aged 18 years and older) with complex psychosis and other severe mental health conditions (as defined in scope) Currently receiving rehabilitation in an inpatient rehabilitation unit or while living in supported accommodation in the community.
Intervention	Healthy living interventions focused on nutrition, weight, exercise, physical activity, sleep, oral health, accessing health services, health monitoring, and smoking cessation. Classified as follows: Service level interventions (within the rehabilitation unit or supported community accommodation): • Regular health screening / physical health checks • Access to health care: o primary care o dental care o vision and hearing services o secondary health care (with reasonable adjustments) • Access to exercise and physical activity • Within unit health policies: o Smoking cessation policy o Nutritional policy o Adjustments for co-morbidity o Health promotion and advice

	Service user level interventions: • Physical activity programmes (specific for people with mental health problems) • Psychoeducation on health matters ○ Including sleep hygiene • Cognitive therapy on health matters • Peer support • Motivational interviewing / behavioural activation for health matters • Financial facilitators (e.g. health budgets, prescription for exercise)
Comparison	• Standard care • Other class of intervention • No intervention
Outcomes	**Critical** • Engagement with healthy living intervention (dropout rate; measure of transition; sessions attended; sustained healthy behaviour) **Important** • Overall health Status (e.g. SF-36, PHIT) • Keeping health appointments (percentage who have had annual health checks) • Health knowledge • Use of emergency healthcare

SF 36:36-item short form survey; PHIT: personal health intervention tool

For further details see the review protocol in appendix A.

Clinical evidence

Included studies

Seven randomised controlled trials reported in 8 publications (N=1504) were included in the review (Bartels 2014, Bartels 2015, Beebe 2011, Daumit 2013, Masa-Font 2015, McKibbin 2006 and Osborn 2018). Beebe 2013 reported long term outcomes for the trial Beebe 2011. Two studies (McKibbin 2006 and Osborn 2018) compared interventions with education and motivation components to treatment as usual. Four studies (Bartels 2015, Beebe 2011, Daumit 2013 and Masa-Font 2015) compared exercise, motivation and education intervention with treatment as usual and 1 study (Bartels 2014) compared integrated primary care and education intervention with treatment as usual. The included studies are summarised in Table 2.

See the literature search strategy in appendix B and study selection flow chart in appendix C.

Excluded studies

Studies not included in this review with reasons for their exclusions are provided in appendix K.

1 Summary of clinical studies included in the evidence review

2 A summary of the studies that were included in this review are presented in Table 2.

3 **Table 2: Summary of included studies**

Study	Population	Intervention	Comparison	Outcomes
Bartels 2015 Randomised controlled trial USA	N=210 Diagnosis: 6% major depression, 29% bipolar disorder, 32% schizoaffective disorder, and 23% schizophrenia. Mean age was 43.9±11.2 years	"In SHAPE" intervention, (health promotion coach and membership to a public fitness club)	Treatment as usual (fitness club membership alone)	Engagement with healthy living intervention: • Physical activity • Readiness to change diet Follow-up: 18 months
Bartels 2014 Randomised controlled trial USA	N=183 Diagnosis: 28% schizophrenia, 28% schizoaffective disorder, 20% bipolar disorder, 24% major depression. Mean age: 60.2 years.	Combined psychosocial skills training and preventive primary healthcare intervention (Helping Older People Experience Success [HOPES]) for older persons with serious mental illness	Treatment as usual	Overall health status • SF-36 Physical Component score • Charlson Severity Index Keeping health appointments Use of emergency healthcare • Acute medical hospitalisation • A&E visits Follow-up: 3 years
Beebe 2011 & Beebe 2013 Randomised controlled trial USA	N=97 Diagnosis: 71.1% schizoaffective disorder and the remainder schizophrenia. Average age was 46.9 years (SD = 2.0)	Walk, Address Sensations, Learn About Exercise, Cue Exercise Behavior for SSDs (WALC-S), a motivational intervention designed to increase exercise in people with schizophrenia spectrum disorders	Time and attention control group (TAC)	Engagement with healthy living intervention: • Steps per day • Session attendance Follow-up: 18 months

Study	Population	Intervention	Comparison	Outcomes
Daumit 2013 Randomised controlled trial USA	N=291 Diagnosis: 58.1% had schizophrenia or a schizoaffective disorder, 22.0% had bipolar disorder, and 12.0% had major depression. Mean age 44.1 years (SD 11.0),	Tailored group and individual weight-management sessions and group exercise sessions	Standard nutrition and physical-activity information at baseline. Health classes were offered quarterly, with content unrelated to weight.	Use of emergency healthcare • Overnight medical hospitalisation Follow-up: 18 months
Masa-Font 2015 Randomised controlled trial Spain	N=332 Diagnosis: 66% schizophrenia, 17% schizoaffective disorder and 17% bipolar disorder. Over 65% met the criteria for obesity and almost 85% had a high waist circumference.	Intervention included an educational program, a physical activity program (24 sessions (twice weekly carried out over 3 months) and a dietary intervention	Treatment as usual with usual program of regular check-ups with their reference psychiatrist (usually every two months).	Engagement with healthy living intervention: • Physical activity Overall health status • SF-36 Physical Component score Follow-up: 3 months
McKibbin 2006 Randomised controlled trial USA	N=57 Diagnosis: 84% Schizophrenia, 16% Schizoaffective disorder. Mean age 55 years, 35% female. Mean duration of diabetes 9 years.	Diabetes Awareness and Rehabilitation Training, an educational and motivational program.	Usual care plus information	Engagement with healthy living • Physical activity Health knowledge • Diabetes knowledge Follow-up: 6 months
Osborn 2018 Cluster RCT UK	N=327 Diagnosis: schizophrenia 32%, 49% bipolar affective disorder and 19% other psychoses. Mean age 51 years (SD 10), 69% living independently.	Thee Primrose intervention included a set of strategies to change behaviour and reduce cardiovascular risk	Treatment as usual	Overall health status • EQ-5D-5L Use of emergency healthcare • General medical hospitalisation Follow-up: 1 year

A&E: accident and emergency department; EQ-5D-5L: 5 level version of the EuroQol 5-dimensional general health status measure; SD: standard deviation; SF-36: 36-item Short Form Health Survey; IPAQ: international physical activity questionnaire

See the full evidence tables in appendix D and the forest plots in appendix E.

Quality assessment of clinical outcomes included in the evidence review

See the clinical evidence profiles in appendix F.

Economic evidence

Included studies

One economic study was identified which was relevant to this question (Osborn 2018).

See the literature search strategy in appendix B and economic study selection flow chart in appendix G.

Excluded studies

Studies not included in this review with reasons for their exclusions are provided in appendix K.

Summary of studies included in the economic evidence review

See the economic evidence tables in appendix H and economic evidence profiles in appendix I.

The base case results of Osborn 2018 suggest that the Primrose intervention was substantially less costly and marginally less effective than treatment as usual. The resulting ICER of £76,245 per QALY suggests that the Primrose intervention is cost-effective (i.e. £76,245 is saved for each QALY that is lost). However, it should be noted that the substantial cost savings are largely driven by a significant reduction in inpatient mental health care costs. The study reports that the mechanism for this reduction and how it relates to the Primrose intervention is unclear. The results of the probabilistic sensitivity analysis showed that the Primrose intervention had an 89% probability of being cost effective at the NICE threshold of £20,000 per QALY. The analysis was deemed directly applicable to the decision problem in the UK setting as it was conducted from the perspective of the National Health Service and Personal Social Services (NHS & PSS). Some potentially serious limitations were identified in the analysis including the absence of deterministic sensitivity analysis and uncertainty around the input parameters that were included in probabilistic sensitivity analysis.

Economic model

No economic modelling was undertaken for this review because the committee agreed that other topics were higher priorities for economic evaluation.

Evidence statements

Clinical evidence statements

Comparison 1. Education and motivation intervention versus treatment as usual

Critical outcomes

Engagement with healthy living intervention (Yale Physical Activity Scale - total activity index; change from baseline at 6 months' follow-up)

- Low quality evidence from 1 RCT (n=57) showed a clinically important increase in the change in physical activity from baseline to post intervention at 6 months' follow-up in people receiving an education and motivation intervention as compared to those who received treatment as usual.

Important outcomes

Overall health status (EQ-5D-5L at 1 year follow-up)

- Moderate quality evidence from 1 RCT (n=327) showed no clinically important difference between the overall health status assessed post intervention using EQ-5D-5L scale at 1 year follow-up in people receiving an education and motivation intervention as compared to those who received treatment as usual.

Health knowledge (diabetes knowledge change in % of correct answers from baseline at 6 months follow-up)

- Low quality evidence from 1 RCT (n=57) showed a clinically important increase in the diabetes knowledge at 6 months follow-up in people receiving education and motivation intervention as compared to those who received treatment as usual.

Keeping up health appointments

No evidence was identified to inform this outcome.

Use of emergency healthcare

- Very low quality evidence from 1 RCT (n=327) showed no clinically important difference between the rate of general medical hospitalisation at 1 year follow-up in people receiving an education and motivation intervention as compared to those who received treatment as usual.

Comparison 2. Exercise, education and motivation intervention versus treatment as usual

Critical outcomes

Engagement with healthy living intervention (Physical activity: IPAQ score change from baseline at 3 months follow up)

- Low quality evidence from 1 RCT (n=326) showed no clinically important difference in the change from baseline to post intervention IPAQ score at 3 months follow up in people receiving exercise, education and motivation intervention as compared to those who received treatment as usual.

Engagement with healthy living intervention (Physical activity: IPAQ score change from baseline at 12 months follow up)

- Low quality evidence from 1 RCT (n=210) showed no clinically important difference in the change from baseline to post intervention IPAQ score at 12 months follow up in people receiving exercise, education and motivation intervention as compared to those who received treatment as usual.

Engagement with healthy living intervention (Readiness to change dietary behaviours - change from baseline at 12 months follow up)

- Very low quality evidence from 1 RCT (n=210) showed a clinically important difference in readiness to change dietary behaviours at 12 months follow up in people receiving exercise, education and motivation intervention as compared to those who received treatment as usual.

Engagement with healthy living intervention (minutes walked per day at 4 months follow-up)

- Low quality evidence from 1 RCT (n=97) showed no clinically important difference in the minutes walked per day at 4 months follow up in people receiving exercise, education and motivation intervention as compared to those who received treatment as usual.

Engagement with healthy living intervention (steps per day at 18 months follow-up)

- Very low quality evidence from 1 RCT (n=22) showed no clinically important difference in the steps walked per day at 18 months follow up in people receiving exercise, education and motivation intervention as compared to those who received treatment as usual.

Engagement with healthy living intervention (persistence in weeks)

- Very low quality evidence from 1 RCT (n=97) showed no clinically important difference in the persistence in attending the intervention sessions in people receiving exercise, education and motivation intervention as compared to those who received treatment as usual.

Important outcomes

Overall health status (SF-36 Physical Component Score, change from baseline at 3 months follow-up)

- Moderate quality evidence from 1 RCT (n=331) showed a clinically important difference in the change in overall health status from baseline at 3 months follow-up in people receiving an exercise, education and motivation intervention as compared to those who received treatment as usual.

Health knowledge

No evidence was identified to inform this outcome.

Keeping up health appointments

No evidence was identified to inform this outcome.

Use of emergency healthcare (overnight medical hospitalisations at 18 months follow-up)

- Very low quality evidence from 1 RCT (n=291) showed no clinically important difference in the rate of overnight medical hospitalisations at 18-months of follow-up in people receiving exercise, education and motivation intervention as compared to those who received treatment as usual.

Comparison 3. Integrated primary care and education intervention versus treatment as usual

Critical outcomes

Engagement with healthy living intervention

No evidence was identified to inform this outcome.

Important outcomes

Overall health status (SF-36 Physical Component Score, change from baseline)

- Low quality evidence from 1 RCT (n=129) showed no clinically important difference in the change in overall health status from baseline to post intervention at 3 year follow-up in people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Overall health status (Charlson Severity index, change from baseline)

- Low quality evidence from 1 RCT (n=129) showed no clinically important difference in the overall health status at 3 year follow-up in people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Health knowledge

No evidence was identified to inform this outcome.

Keeping up health appointments (Routine blood pressure test)

- Low quality evidence from 1 RCT (n=183) showed no clinically important difference in accessing routine blood pressure test at 3 year follow-up in the people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Keeping up health appointments (Eye examination)

- Low quality evidence from 1 RCT (n=183) showed an increase in access to eye examinations at 3 year follow-up in the people receiving integrated primary care and education intervention as compared to those who received treatment as usual, although there was uncertainty in the effect estimate.

Keeping up health appointments (Visual acuity test)

- Very low quality evidence from 1 RCT (n=183) showed an increase in access to visual acuity tests at 3 year follow-up in the people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Keeping up health appointments (Hearing test)

- Very low quality evidence from 1 RCT (n=183) showed a clinically important increase in access to hearing tests at 3 year follow-up in people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Keeping up health appointments (Cholesterol test)

- Low quality evidence from 1 RCT (n=183) showed no clinically important difference in accessing cholesterol test at 3 year follow-up in the people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Keeping up health appointments (Flu vaccination)

- Very low quality evidence from 1 RCT (n=183) showed a clinically important increase in access to flu vaccination at 3 year follow-up in the people receiving integrated primary care and education intervention as compared to those who received treatment as usual, although there was uncertainty about the effect estimate.

Keeping up health appointments (Colon cancer screening)

- Low quality evidence from 1 RCT (n=183) showed no clinically important difference in accessing colon cancer screening at 3 year follow-up in the people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Keeping up health appointments (Breast cancer screening (women))

- Very low quality evidence from 1 RCT (n=104) showed a clinically important increase in access to breast cancer screening at 3 year follow-up in the women receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Keeping up health appointments (Cervical cancer screening (women))

- Very low quality evidence from 1 RCT (n=104) showed a clinically important increase in access to cervical cancer screening at 3 year follow-up in the women receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Keeping up health appointments (Advance care plan directive)

- Low quality evidence from 1 RCT (n=183) showed a clinically important increase in access to advance care plan directives at 3 year follow-up in the people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Use of emergency healthcare (Patients with 1 or more acute medical hospitalization at 3 year follow-up)

- Very low quality evidence from 1 RCT (n=183) showed no clinically important difference in the number of patients with 1 or more acute medical hospitalizations at 3 year follow-up in the people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Use of emergency healthcare (Patients with 1 or more A&E visit at 3 year follow-up)

- Very low quality evidence from 1 RCT (n=183) showed no clinically important difference in Patients with 1 or more A&E visit at 3 year follow-up in people receiving integrated primary care and education intervention as compared to those who received treatment as usual.

Economic evidence statements

- Evidence from 1 UK cost-utility analysis conducted alongside an RCT (n=327), suggests that 'Primrose', a primary care intervention for lowering cholesterol and reducing cardiovascular disease risk for people with severe mental illnesses is cost effective when compared with TAU. The study is directly applicable to the NICE decision-making context and is characterised by potentially serious limitations which relate to limited reporting of the probabilistic results.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

The aim of this review was to compare the effectiveness of interventions to improve engagement with healthy living in people with complex psychosis and related severe mental health conditions. Hence, engagement with healthy living intervention (dropout rate; measure of transition; sessions attended; sustained healthy behaviour) was included as the main critical outcome for this review. Improving the overall health status and increasing health knowledge are also some of the main objectives of engagement with healthy living interventions. Hence, the committee selected them as important outcomes. Keeping health appointments was included as an important outcome, given its implications for the people with complex psychosis in terms of accessing healthcare and its potential impact on resources. Use of emergency healthcare was included as an important outcome for decision making, because of the seriousness of this outcome and impact on resources.

The quality of the evidence

The evidence was assessed using GRADE methodology. Evidence for engagement in healthy living interventions ranged from very low to low quality; the reasons for downgrading of evidence were risk of bias in the studies reporting the outcome and imprecision resulting from confidence interval including no effect. The evidence for overall health status was low to moderate quality; the main reason for downgrading of evidence was risk of bias arising from unclear randomisation methods and lack of blinding in the included studies. Like engagement with healthy living intervention, imprecision was also a reason for downgrading the evidence. The evidence for health knowledge was low quality and downgraded due to risk of bias resulting from unclear randomisation methods and lack of blinding. The evidence for keeping health appointments was very low to low quality. The evidence was mainly downgraded for risk of bias from unclear randomisation and blinding methods, but also for imprecision due to confidence interval crossing the line of no effect. The evidence for use of emergency healthcare was very low quality. It was downgraded for risk of bias and imprecision due to confidence interval including no effect.

Where recommendations have been adopted or adapted from other NICE guidance, the evidence from those guidelines is presented in appendix M.

Benefits and harms

Healthy living

There was limited evidence indicating that those receiving an education and motivation intervention had better engagement with healthy living and greater health knowledge than those receiving treatment as usual. There was some evidence that people receiving

exercise, education and motivation intervention had better engagement with healthy living and overall health status than those receiving treatment as usual. Evidence from 1 trial showed that those receiving an integrated primary care and education intervention had more health appointments for eye examination, visual acuity testing, hearing test, flu vaccination, breast cancer screening, cervical cancer screening and had more advance care plan directives than those receiving treatment as usual. The committee discussed the interventions included in the evidence and its applicability to the UK context. Considering the quality of the evidence and its limited applicability of the interventions to the UK context, the committee agreed that the evidence was not strong enough to make a recommendation for UK settings. As a result, no recommendations were directly based on the evidence review, and instead the committee referred to other NICE guidance, and their expertise and experience to draft recommendations for this area.

The committee discussed smoking cessation, and agreed this was one of the most important modifiable risk factors in this population. They noted that people with complex psychosis using rehabilitation services may find accessing standard smoking cessation programs difficult. Given the lack of evidence for a specific intervention in rehabilitation, the committee agreed that the smoking cessation guidance in the NICE guideline on psychosis and schizophrenia in adults (1.1.3.3 to 1.1.3.5) was applicable to the rehabilitation population.

The committee discussed the importance of engagement in healthy eating and physical activity and agreed that recommendation 1.1.3.1 about combined healthy eating and physical activity programme from the NICE guideline on psychosis and schizophrenia in adults would be relevant for this population. The evidence from this review also broadly supports the recommendation.

Based on their knowledge and expertise and evidence from evidence report C, the committee discussed that people with complex psychosis may face additional physical health risks due to the adverse effects of the medications they take and also because of adverse lifestyle factors that may be more prevalent in people with complex psychosis. They may have greater sedentary behaviour and limited physical activity, placing them at a higher risk of physical health problems like obesity, cardiovascular disease, metabolic syndrome, and diabetes. They may have difficulty maintaining oral hygiene due to poor self-care and may be at higher risk of substance abuse, cigarette smoking, alcohol abuse and sexual and reproductive health problems. Recognising this need, the committee made the recommendation to provide access to physical health risk information and ways to address the risks.

The committee acknowledged the need for annual influenza vaccination in people with complex psychosis and other severe mental health conditions. The committee agreed that although the administration of the vaccination would usually be the responsibility of the primary care, there should coordination between primary and secondary care to ensure the vaccination was provided. The committee also considered the need for informal carers to receive free annual influenza vaccination and were aware of the provisions of recommendation 1.6.1 and 1.6.2 from NICE Guideline Flu vaccination: increasing uptake [NG 103]. The committee cross referenced to these recommendations for details of such provision.

Recognising the high oral health problems in this population from evidence report C, and the support that might be required for people with complex psychosis with oral health promotion, the committee referred to NICE guideline Oral health promotion: general dental practice [NG 30] for guidance on managing oral hygiene and accessing dental appointments.

The committee also discussed the importance of good sleep for overall physical health and recovery. Although there was no evidence of specific interventions to improve sleep in the evidence or other NICE guidance, the committee agreed that it was important that advice and support for maintaining sleep hygiene should be provided, and practitioners should avoid environmental barriers that may hinder sleep like night time checks.

Co-ordination of physical health care

Using the limited evidence from the cost-utility analysis of the Primrose intervention (where participants were offered appointments with a nurse to promote health interventions), and their experiences of health promotion in rehabilitation services, the committee agreed that a single trained health professional should co-ordinate people's physical healthcare needs. This person should liaise between all relevant healthcare services and contribute to healthcare plans to ensure that all physical healthcare needs are met. This nominated professional could also perform the physical health check (see evidence report C). The committee did not specify the role of the health professional (for example a doctor, nurse, or healthcare assistant); however, the key point made in the recommendation was that this person should be nominated and maintain continuity.

The committee discussed the items that should be considered in physical health care plans, and recommended they include health promotion interventions, routine screening, monitoring effects of pharmacological treatments (see evidence report H), monitoring of physical health (see evidence report C), monitoring of oral health, treatment plans for any risk factors or health conditions (see evidence report C), any reasonable adjustments needed, and the physical healthcare responsibilities for different healthcare providers (see evidence report C). With regard to screening, the committee were aware of the Public Health England (PHE) strategy 'Supporting the health system to reduce inequalities in screening' which mentions people with severe mental health problems as being at risk of missing out on screening for cancer. The committee agreed that early recognition of cancer was important and people with complex psychosis and related mental health conditions should be screened under national screening programmes. With regard to reasonable adjustments, the committee discussed that some people may have more needs than the others in accessing care. Some people may face challenges in communication and may need support to prepare them for appointments.

Acknowledging the importance of provisions of Mental Capacity Act, and recognising the impact of the processes in delaying treatment and care, the committee agreed it was crucial to embed the provisions of the Mental Capacity Act in preventive support, physical healthcare screening, investigations and treatment, considering approaches to prevent delays in provision of care, and highlighted this in a recommendation.

Cost effectiveness and resource use

One cost utility analysis was identified for this review (Osborn 2018). This study was an economic evaluation attached to an RCT included in the accompanying clinical review. The committee noted that there was little difference in effectiveness (as measured in by quality-adjusted life years) between the intervention and the comparator. The committee also acknowledged that the driver of cost effectiveness in the study was a reduction in inpatient admissions in the intervention arm, which could have occurred by chance. The committee considered this evidence with their own experience and recommended a single trained health professional should co-ordinate people's physical healthcare needs and perform physical health checks.

For the other recommendations, the committee undertook a qualitative assessment of their recommendations regarding cost effectiveness. A number of the recommendations which relate to smoking cessation, oral health promotion, physical activity, flu vaccination and comorbidities reflect existing NICE guidance and so would not entail any extra costs. Recommendations on information provision and sleep hygiene are also unlikely to entail additional costs. With regard to reasonable adjustments to access physical healthcare, for this hard-to-treat group there may be some extra costs in facilitating access; however, this is a statutory requirement.

Other factors the committee took into account

The committee noted that the care for adults receiving rehabilitation for complex psychosis and related mental health conditions should follow the principles outlined in NICE guidance on service user experience in adult mental health (CG136) and patient experience in adult NHS services (CG138). The committee agreed that the general principles of care in NICE Guidelines Psychosis and schizophrenia in adults: prevention and management (CG 178) and Bipolar disorder: assessment and management (CG185) are also relevant for the people with the same condition and receiving rehabilitation.

The committee had not originally planned to adapt recommendations from these other guidelines for this evidence review and had intended to cross-refer to any recommendations about healthy living. Although the committee were in general agreement with the content of these recommendations in some cases the wording was not appropriate for this guideline and for this reason some of them were adapted (see Appendix M).

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Appendices

Appendix A – Review protocols

Review protocol for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Table 3: Review protocol for pharmacological treatments for spasticity

Field (based on PRISMA-P)	Content
Review question	What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?
Type of review question	Intervention
Objective of the review	This review aims to compare the effectiveness of interventions, specific to rehabilitation, to improve healthy living amongst people with complex psychosis and related severe mental illness in community activities.
Eligibility criteria – population	Adults (aged 18 years and older) with complex psychosis and other severe mental health conditions (as defined in scope) Currently receiving rehabilitation in an inpatient rehabilitation unit or while living in supported accommodation in the community.

Eligibility criteria – interventions	Healthy living interventions focused on nutrition, weight, exercise, physical activity, sleep, oral health, accessing health services, health monitoring, and smoking cessation. Classified as follows:
	
	Service level interventions (within the rehabilitation unit or supported community accommodation):
	• Regular health screening / physical health checks
	• Access to health care:
	  ○ primary care
	  ○ dental care
	  ○ vision and hearing services

Field (based on PRISMA-P)	Content
	○ secondary health care (with reasonable adjustments) • Access to exercise and physical activity • Within unit health policies: ○ Smoking cessation policy ○ Nutritional policy ○ Adjustments for co-morbidity ○ Health promotion and advice Service user level interventions: • Physical activity programmes (specific for people with mental health problems) • Psychoeducation on health matters ○ Including sleep hygiene • Cognitive therapy on health matters Peer support • Motivational interviewing / behavioural activation for health matters • Financial facilitators (e.g. health budgets, prescription for exercise)
Eligibility criteria – comparator	• Standard care • Other class of intervention • No intervention
Outcomes and prioritisation	**Critical** • Engagement with healthy living intervention (dropout rate; measure of transition; sessions attended; sustained healthy behaviour) **Important** • Overall health Status (e.g. SF-36, PHIT) • Keeping health appointments (percentage who have had annual health checks) • Health knowledge • Use of emergency healthcare
Eligibility criteria – study design	RCTs. If no RCTs are available for any of the interventions, comparative observational studies will be considered.

Field (based on PRISMA-P)	Content
Other inclusion exclusion criteria	Date limit: 1990 The date limit for studies after 1990 was suggested by the GC considering the change in provision of mental health services from institutionalized care in the 1970s to deinstitutionalise and community based care from 1990s onwards. Country limit: UK, USA, Australasia, Europe, Canada. The GC limited to these countries because they have similar cultures to the UK, given the importance of the cultural setting in which mental health rehabilitation takes place..
Proposed sensitivity/sub-group analysis, or meta-regression	Stratified subgroup analysis: By intervention focus (diet, weight, exercise, activity, sleep, oral health, accessing health services, health monitoring and smoking cessation) by medication Confounders (explored in case of heterogeneity): • Length of long term follow-up • Value based culture / social engagement (including therapeutic relationships – family, carers; team sports/activities) • Family involvement • Group therapy vs individual therapy • Inpatient vs other settings • Black and Asian ethnic minorities • Physical co-morbidities Observational studies should adjust for the following: • Age • Measure of clinical severity • Gender
Selection process – duplicate screening/selection/analysis	A random sample of the references identified in the search will be sifted by a second reviewer. This sample size of this pilot round will be 10% of the total, (with a minimum of 100 studies). All disagreements in study inclusion will be discussed and resolved between the two reviewers. The senior systematic reviewer or guideline lead will be involved if discrepancies cannot be resolved between the two reviewers.
Data management (software)	NGA STAR software will be used for study sifting, data extraction, recording quality assessment using checklists and generating bibliographies/citations.

Field (based on PRISMA-P)	Content
	RevMan will be used to generate plots and for any meta-analysis. 'GRADEpro' will be used to assess the quality of evidence for each outcome.
Information sources – databases and dates	Sources to be searched: Medline, Medline In-Process, CCTR, CDSR, DARE, HTA, Embase, PsycINFO Limits (e.g. date, study design): Apply standard animal/non-English language exclusion Limit to RCTs and systematic reviews in first instance, but download all results Dates: from 1990
Identify if an update	Not an update
Author contacts	For details please see https://www.nice.org.uk/guidance/indevelopment/gid-ng10092
Highlight if amendment to previous protocol	For details please see section 4.5 of Developing NICE guidelines: the manual
Search strategy – for one database	For details please see appendix B
Data collection process – forms/duplicate	A standardised evidence table format will be used, and published as appendix D (clinical evidence tables) or H (economic evidence tables).
Data items – define all variables to be collected	For details please see evidence tables in appendix D (clinical evidence tables) or H (economic evidence tables).
Methods for assessing bias at outcome/study level	Standard study checklists were used to critically appraise individual studies. For details please see section 6.2 of Developing NICE guidelines: the manual The risk of bias across all available evidence was evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/
Criteria for quantitative synthesis	For details please see section 6.4 of Developing NICE guidelines: the manual
Methods for quantitative analysis – combining studies and exploring (in)consistency	For details please see the methods supplementary document.
Meta-bias assessment – publication bias, selective reporting bias	For details please see section 6.2 of Developing NICE guidelines: the manual. Consider exploring publication bias for review questions where it may be more common, such as pharmacological questions, certain disease areas, etc. Describe any steps taken to mitigate against publication bias, such as examining trial registries.

Field (based on PRISMA-P)	Content
Confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual
Rationale/context – what is known	For details please see the introduction to the evidence review in the main file.
Describe contributions of authors and guarantor	A multidisciplinary committee [add link to history page of the guideline] developed the evidence review. The committee was convened by the NGA and chaired by Gillian Baird in line with section 3 of Developing NICE guidelines: the manual. Staff from NGA undertook systematic literature searches, appraised the evidence, conducted meta-analysis and cost-effectiveness analysis where appropriate, and drafted the evidence review in collaboration with the committee. For details please see Developing NICE guidelines: the manual.
Sources of funding/support	NGA is funded by NICE and hosted by RCOG
Name of sponsor	NGA is funded by NICE and hosted by RCOG
Roles of sponsor	NICE funds NGA to develop guidelines for those working in the NHS, public health and social care in England
PROSPERO registration number	Not registered with PROSPERO

CCTR: Cochrane Controlled Trials Register; CDSR: Cochrane Database of Systematic Reviews; DARE: Database of Abstracts of Reviews of Effects; GC: Guideline Committee; GRADE: Grading of Recommendations Assessment, Development and Evaluation; HTA: Health Technology Assessment; GRADE: Grading of Recommendations Assessment, Development and Evaluation; MID: minimally important difference; NGA: National Guideline Alliance; NHS: National health service; NICE: National Institute for Health and Care Excellence; RCT: randomised controlled trial; RoB: risk of bias; SF-36: The short form (36) health survey

1 Appendix B – Literature search strategies

2 Literature search strategies for review question 5.4: What interventions specific 3 to rehabilitation are effective in improving the engagement of people with 4 complex psychosis and related severe mental health conditions in healthy 5 living (nutrition, weight, physical activity, sleep, oral health, accessing health 6 services, health monitoring, smoking cessation)?

7 Databases: Embase/Medline/PsycInfo

8 Date searched: 23/11/2018

#	Searches
1	exp psychosis/ use emczd
2	Psychotic disorders/ use ppez
3	exp psychosis/ use psyh
4	(psychos?s or psychotic).tw.
5	exp schizophrenia/ use emczd
6	exp schizophrenia/ or exp "schizophrenia spectrum and other psychotic disorders"/ use ppez
7	(exp schizophrenia/ or "fragmentation (schizophrenia)"/) use psyh
8	schizoaffective psychosis/ use emczd
9	schizoaffective disorder/ use psyh
10	(schizophren* or schizoaffective*).tw.
11	exp bipolar disorder/ use emczd
12	exp "Bipolar and Related Disorders"/ use ppez
13	exp bipolar disorder/ use psyh
14	((bipolar or bipolar type) adj2 (disorder* or disease or spectrum)).tw.
15	Depressive psychosis/ use emczd
16	Delusional disorder/ use emczd
17	delusions/ use psyh
18	(delusion* adj3 (disorder* or disease)).tw.
19	mental disease/ use emczd
20	mental disorders/ use ppez
21	mental disorders/ use psyh
22	(psychiatric adj2 (illness* or disease* or disorder* or disabilit* or problem*)).tw.
23	((severe or serious) adj3 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*))).tw.
24	(complex adj2 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*))).tw.
25	or/1-24
26	(Rehabilitation/ or cognitive rehabilitation/ or community based rehabilitation/ or psychosocial rehabilitation/ or rehabilitation care/ or rehabilitation center/) use emczd
27	(exp rehabilitation/ or exp rehabilitation centers/) use ppez
28	(Rehabilitation/ or cognitive rehabilitation/ or neuropsychological rehabilitation/ or psychosocial rehabilitation/ or independent living programs/ or rehabilitation centers/ or rehabilitation counselling/) use psyh
29	residential care/ use emczd
30	(residential facilities/ or assisted living facilities/ or halfway houses/) use ppez
31	(residential care institutions/ or halfway houses/ or assisted living/) use psyh
32	(resident* adj (care or centre or center)).tw.
33	(halfway house* or assist* living).tw.
34	((inpatient or in-patient or long-stay) adj3 (psychiatric or mental health)).tw.

#	Searches
35	(Support* adj (hous* or accommodat* or living)).tw.
36	(rehabilitation or rehabilitative or rehabilitate).tw.
37	rehabilitation.fs.
38	or/26-37
39	mass screening/ use emczd
40	mass screening/ use ppez
41	screening/ use psyh
42	*screening/ use emczd
43	multiphasic screening/ use ppez
44	*medical examination/ use emczd
45	physiological monitoring/ use ppez
46	*physical examination/ use emczd
47	exp physical health assessment/ use psyh
48	((health* or physical) adj2 (screen* or exam* or check* or assess* or inspect* or monitor*)).tw.
49	or/39-48
50	*health care access/ use emczd
51	health services accessibility/ use ppez
52	Health Care Utilization/ use psyh
53	(access* adj3 (health or healthcare or care or service*)).tw.
54	or/50-53
55	(*smoking cessation/ or smoking cessation program/) use emczd
56	smoking cessation/ use ppez
57	smoking cessation/ use psyh
58	(smoke-free adj2 (unit* or hospital* or ward* or policy or policies)).tw.
59	(smoking cessation adj3 (policy or policies)).tw.
60	*health promotion/
61	(health* adj3 (promot* or advice)).tw.
62	((health* or hospital* or ward*) adj3 (policy or policies)).tw.
63	(review adj4 (prescrib* or prescription* or medication*)).tw.
64	((policy or policies) and (co-morbid* or comorbid*)).tw.
65	or/55-64
66	*exercise/
67	exp *physical activity/ use emczd
68	physical activity/ use psyh
69	(exp *body weight changes/ or exp *overweight/) use ppez
70	(*body weight change/ or *body weight gain/ or *body weight loss/) use emczd
71	(weight gain/ or weight loss/) use psyh
72	active living/ use psyh
73	(exercise or sport* or gym* or fitness*).tw.
74	(physical adj2 activit*).tw.
75	or/66-74
76	exp lifestyle/
77	health education/
78	health literacy/
79	health knowledge/
80	health behavior/
81	or/76-80
82	psychoeducation/ use emczd
83	psychoeducation/ use psyh

#	Searches
84	cognitive therapy/
85	motivational interviewing/
86	behavioral activation system/ use psyh
87	peer group/ use emczd
88	exp peer group/ use ppez
89	exp social support/
90	or/82-89
91	81 and 90
92	((Peer adj3 (group* or support*)) and (health* adj2 (behavio?r* or life* or literacy or literate or living or intervention*))).tw.
93	(peer-to-peer and (health* adj3 (behavio?r* or life* or literacy or literate or living or intervention*))).tw.
94	(cognitive therapy and (health* adj3 (behavio?r* or life* or literacy or literate or living or intervention*))).tw.
95	(psychoeducat* and (health* adj3 (behavio?r* or life* or literacy or literate or living or intervention*))).tw.
96	(Motivational interview* and (health* adj3 (behavio?r* or life* or literacy or literate or living or intervention*))).tw.
97	(behavio?r* activ* and (health* adj3 (behavio?r* or life* or literacy or literate or living or intervention*))).tw.
98	or/92-97
99	sleep hygiene/ use emczd
100	sleep hygiene/ use ppez
101	(sleep* adj3 hygiene*).tw.
102	(health* adj3 (eat* or diet* nutrition*)).tw.
103	((financial* or monetary or money or fiscal or budget*) adj3 (aid* or incentiv* or facilitat*)).tw.
104	(health* adj3 budget*).tw.
105	or/99-104
106	49 or 54 or 65 or 75 or 91 or 98 or 105
107	25 and 38 and 106
108	limit 107 to (yr="1990 - current" and english language)
109	remove duplicates from 108
110	Letter/ use ppez
111	letter.pt. or letter/ use emczd
112	note.pt.
113	editorial.pt.
114	Editorial/ use ppez
115	News/ use ppez
116	news media/ use psyh
117	exp Historical Article/ use ppez
118	Anecdotes as Topic/ use ppez
119	Comment/ use ppez
120	Case Report/ use ppez
121	case report/ or case study/ use emczd
122	Case report/ use psyh
123	(letter or comment*).ti.
124	or/110-123
125	randomised controlled trial/ use ppez
126	randomised controlled trial/ use emczd
127	random*.ti,ab.
128	cohort studies/ use ppez
129	cohort analysis/ use emczd
130	cohort analysis/ use psyh
131	case-control studies/ use ppez

#	Searches
132	case control study/ use emczd
133	or/125-132
134	124 not 133
135	animals/ not humans/ use ppez
136	animal/ not human/ use emczd
137	nonhuman/ use emczd
138	"primates (nonhuman)"/
139	exp Animals, Laboratory/ use ppez
140	exp Animal Experimentation/ use ppez
141	exp Animal Experiment/ use emczd
142	exp Experimental Animal/ use emczd
143	animal research/ use psyh
144	exp Models, Animal/ use ppez
145	animal model/ use emczd
146	animal models/ use psyh
147	exp Rodentia/ use ppez
148	exp Rodent/ use emczd
149	rodents/ use psyh
150	(rat or rats or mouse or mice).ti.
151	or/134-150
152	109 not 151

1

2 **Database: Cochrane Library**

3 Date searched: 23/11/2018

#	Search
1	MeSH descriptor: [Psychotic Disorders] explode all trees
2	(psychos?s or psychotic):ti,ab,kw
3	MeSH descriptor: [Schizophrenia] explode all trees
4	(schizophren* or schizoaffective*):ti,ab,kw
5	MeSH descriptor: [Bipolar Disorder] explode all trees
6	(((bipolar or bipolar type) near/2 (disorder* or disease or spectrum))):ti,ab,kw
7	MeSH descriptor: [Delusions] this term only
8	((delusion* near/3 (disorder* or disease))):ti,ab,kw
9	MeSH descriptor: [Mental Disorders] this term only
10	((psychiatric near/2 (illness* or disease* or disorder* or disabilit* or problem*))):ti,ab,kw
11	(((severe or serious) near/3 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*)))):ti,ab,kw
12	((complex near/2 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*)))):ti,ab,kw
13	(#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12)
14	MeSH descriptor: [Rehabilitation] this term only
15	MeSH descriptor: [Rehabilitation, Vocational] this term only
16	MeSH descriptor: [Residential Facilities] this term only
17	MeSH descriptor: [Assisted Living Facilities] this term only
18	MeSH descriptor: [Halfway Houses] this term only
19	((resident* near (care or centre or center))):ti,ab,kw
20	(((inpatient or in-patient or long-stay) near/3 (psychiatric or mental health))):ti,ab,kw
21	(((Support*) near (hous* or accommodat* or living))):ti,ab,kw

#	Search
22	((halfway house* or assist* living)):ti,ab,kw
23	(rehabilitation or rehabilitative or rehabilitate):ti,ab,kw
24	(#14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23)
25	#13 and #24
26	MeSH descriptor: [Mass Screening] this term only
27	MeSH descriptor: [Monitoring, Physiologic] this term only
28	MeSH descriptor: [Multiphasic Screening] this term only
29	((health* or physical) near/2 (screen* or exam* or check* or assess* or inspect* or monitor*)):kw,ti,ab
30	MeSH descriptor: [Health Services Accessibility] this term only
31	(access* near/3 (health or healthcare or care or service*)):kw,ti,ab
32	MeSH descriptor: [Smoking Cessation] this term only
33	(smoke-free near/2 (unit* or hospital* or ward* or policy or policies)):kw,ti,ab
34	(smoking cessation near/3 (policy or policies)):kw,ti,ab
35	MeSH descriptor: [Health Promotion] explode all trees
36	(health* near/2 (promot* or advice)):kw,ti,ab
37	((health* or hospital* or ward*) near/3 (policy or policies)):kw,ti,ab
38	(review near/4 (prescrib* or prescription* or medication*)):kw,ti,ab
39	((policy or policies) and (co-morbid* or comorbid*)):kw,ti,ab
40	MeSH descriptor: [Exercise] this term only
41	MeSH descriptor: [Body Weight Changes] explode all trees
42	MeSH descriptor: [Overweight] explode all trees
43	(exercise or sport* or gym* or fitness*):kw,ti,ab
44	(physical near/2 activit*):kw,ti,ab
45	MeSH descriptor: [Life Style] explode all trees
46	MeSH descriptor: [Health Education] this term only
47	MeSH descriptor: [Health Literacy] this term only
48	MeSH descriptor: [Health Knowledge, Attitudes, Practice] this term only
49	(#45 or #46 or #47 or #48)
50	MeSH descriptor: [Cognitive Therapy] this term only
51	MeSH descriptor: [Motivational Interviewing] this term only
52	MeSH descriptor: [Peer Group] explode all trees
53	MeSH descriptor: [Social Support] explode all trees
54	(#50 or #51 or #52 or #53)
55	#49 and #54
56	((Peer near/3 (group* or support*)) and (health* near/2 (behavio?r* or eat* or diet* or life* or literacy or literate or living or nutrition*))):kw,ti,ab
57	(peer-to-peer and (health* near/2 (behavio?r* or eat* or diet* or life* or literacy or literate or living or nutrition*))):kw,ti,ab
58	(cognitive therapy and (health* near/2 (behavio?r* or eat* or diet* or life* or literacy or literate or living or nutrition*))):kw,ti,ab
59	(psychoeducat* and (health* near/2 (behavio?r* or eat* or diet* or life* or literacy or literate or living or nutrition*))):kw,ti,ab
60	(Motivational interview* and (health* near/2 (behavio?r* or eat* or diet* or life* or literacy or literate or living or nutrition*))):kw,ti,ab
61	(behavio?r* activ* and (health* near/2 (behavio?r* or eat* or diet* or life* or literacy or literate or living or nutrition*))):kw,ti,ab
62	MeSH descriptor: [Sleep Hygiene] this term only
63	(sleep* near/3 hygiene*):kw,ti,ab
64	(health* near/3 (eat* or diet* nutrition*)):kw,ti,ab
65	((financial* or monetary or money or fiscal or budget*) near/3 (aid* or incentiv* or facilitat*)):kw,ti,ab

#	Search
66	(health* near/3 budget*):kw,ti,ab
67	(#26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44)
68	(#55 or #56 or #57 or #58 or #59 or #60 or #61 or #62 or #63 or #64 or #65 or #66)
69	#67 or #68
70	#25 and #69 with Cochrane Library publication date Between Jan 1990 and Dec 2018

1

2 **Database: CRD**

3 Date searched: 23/11/2018

#	Searches
1	MeSH DESCRIPTOR Psychotic Disorders EXPLODE ALL TREES IN DARE,HTA
2	(psychos*s or psychotic) IN DARE, HTA
3	MeSH DESCRIPTOR Schizophrenia EXPLODE ALL TREES IN DARE,HTA
4	(schizophren* or schizoaffective*) IN DARE, HTA
5	MeSH DESCRIPTOR Bipolar Disorder EXPLODE ALL TREES IN DARE,HTA
6	(((bipolar or bipolar type) NEAR2 (disorder* or disease or spectrum))) IN DARE, HTA
7	MeSH DESCRIPTOR Delusions IN DARE,HTA
8	(delusion* NEAR3 (disorder* or disease)) IN DARE, HTA
9	MeSH DESCRIPTOR Mental Disorders IN DARE,HTA
10	(psychiatric NEAR2 (illness* or disease* or disorder* or disabilit* or problem*)) IN DARE, HTA
11	((severe or serious) NEAR3 (mental NEAR2 (illness* or disease* or disorder* or disabilit* or problem*))) IN DARE, HTA
12	(complex NEAR2 (mental NEAR2 (illness* or disease* or disorder* or disabilit* or problem*))) IN DARE, HTA
13	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12
14	MeSH DESCRIPTOR Rehabilitation IN DARE,HTA
15	MeSH DESCRIPTOR Rehabilitation, Vocational IN DARE,HTA
16	MeSH DESCRIPTOR Residential Facilities IN DARE,HTA
17	MeSH DESCRIPTOR Assisted Living Facilities IN DARE,HTA
18	MeSH DESCRIPTOR Halfway Houses IN DARE,HTA
19	(resident* NEAR (care or centre or center)) IN DARE, HTA
20	((inpatient or in-patient or long-stay) NEAR3 (psychiatric or mental health)) IN DARE, HTA
21	((Support*) NEAR (hous* or accommodat* or living)) IN DARE, HTA
22	(halfway house* or assist* living) IN DARE, HTA
23	(rehabilitation or rehabilitative or rehabilitate) IN DARE, HTA
24	#14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23
25	#13 AND #24

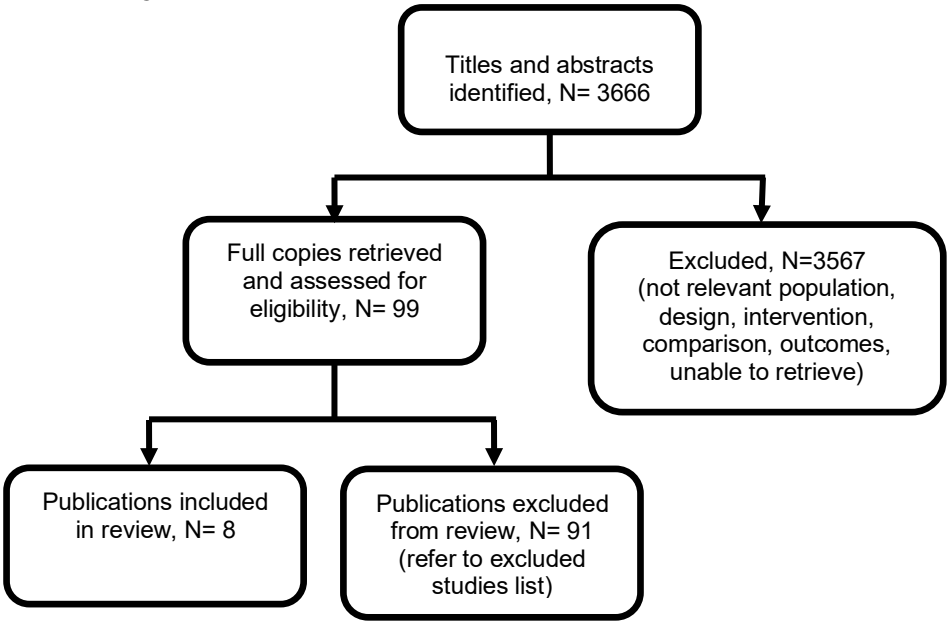
4

5

Appendix C – Clinical evidence study selection

Clinical study selection for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Figure 1: Study selection flow chart



Appendix D – Clinical evidence tables

Clinical evidence tables for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Table 4: Clinical evidence tables

Study details	Participants	Interventions	Outcomes and Results	Comments
Full citation Bartels, S. J., Pratt, S. I., Mueser, K. T., Forester, B. P., Wolfe, R., Cather, C., Xie, H., McHugo, G. J., Bird, B., Aschbrenner, K. A., Naslund, J. A., Feldman, J., Long-term outcomes of a randomised trial of integrated skills training and preventive healthcare for older adults with serious mental illness, American Journal of Geriatric Psychiatry, 22, 1251-61, 2014 **Ref Id** 934203 **Country/ies where the study was carried out** USA	**Sample size** N=183 **Characteristics** Mean age: 60.2 years. Diagnosis: 28% schizophrenia, 28% schizoaffective disorder, 20% bipolar disorder, 24% major depression. **Inclusion criteria** Community-dwelling adults with serious mental illness age 50 or older recruited from two community mental health agencies in Boston, Massachusetts, and one in Nashua, New Hampshire. **Exclusion criteria** Exclusion criteria were residence in a nursing	**Intervention:** The HOPES intervention: a psychosocial intervention comprised of 12 months of weekly skills training classes, twice-monthly community practice trips, and monthly nurse preventive healthcare visits, followed by a 1-year maintenance phase of monthly sessions. HOPES social rehabilitation curriculum, based on social skills training, is manualized and organized into seven modules: Communicating Effectively, Making and Keeping Friends, Making the Most of Leisure Time, Healthy Living, Using Medications Effectively, Living Independently in the Community, and Making the Most of a Health Care Visit. Treatment as usual (TAU): Participants in both groups continued to receive the	**Results** Health status was assessed with the 36-item Short Form Health Survey (SF-36) and an interview-based version of the Charlson Comorbidity Index. Self-report and medical record reviews were used to determine acute service use (e.g., hospitalizations, emergency room visits) and to quantify the proportion of preventive healthcare indicators from recommended screening examinations by the U.S. Preventive Services Task Force.	**Limitations** Risk of bias assessed using the Cochrane risk of bias assessment tool Random sequence generation: unclear risk; stratified block randomization performed with details of random sequence generation within the blocks not described in detail Allocation concealment: unclear risk, allocation concealment not described Blinding of participants and personnel: unclear risk; participants were suggested not to reveal their intervention status to the assessors but blinding of participants not described Blinding of outcome assessment: low risk; blinding for baseline and follow up assessments Attrition bias: low risk for all outcomes; comparable retention rates (87/93, 73/93 and 64/93 for intervention and 82/90, 76/90, 65/90 for treatment as usual at 1,2,3 year follow up) with reasons for drop out described Selective reporting: low risk; all outcomes reported in sufficient detail for analysis

Study details	Participants	Interventions	Outcomes and Results	Comments
Study type RCT **Aim of the study** To report 1, 2, and 3 year outcomes of a combined psychosocial skills training and preventive health care intervention (Helping Older People Experience Success [HOPES]) for older persons with serious mental illness, compared with treatment as usual (TAU) **Study dates** Not reported (grant funding ran from 2001 to 2007) **Source of funding** Grant from the National Institute of Mental Health (R01 MH62324).	home or other institutional setting, primary diagnosis of dementia or significant cognitive impairment as indicated by a Mini Mental Status Exam score less than 20, 21 physical illness expected to cause death within 1 year, or current substance dependence.	same services they had been receiving before the study. Routine mental health services at all sites included pharmacotherapy, case management, or outreach by non-nurse clinicians; individual therapy; and access to rehabilitation services, such as groups and psychoeducation.		Other bias: low risk **Other information** NA
Full citation Bartels, S. J., Pratt, S. I., Aschbrenner, K. A., Barre, L. K., Naslund, J. A., Wolfe, R., Xie, H., McHugo, G. J.,	**Sample size** N=210 **Characteristics** Diagnosis: 16% major depression, 29%	**Interventions** Intervention group "In SHAPE": 12 month health promotion intervention consisting of a fitness club membership and a health	**Results** Physical activity: measured using the short-form International Physical Activity Questionnaire (IPAQ). Summary scores	**Limitations** Risk of bias assessed using the Cochrane risk of bias assessment tool Random sequence generation: unclear risk; stratified block randomization performed with details of random

Study details	Participants	Interventions	Outcomes and Results	Comments
Jimenez, D. E., Jue, K., Feldman, J., Bird, B. L., Pragmatic replication trial of health promotion coaching for obesity in serious mental illness and maintenance of outcomes, American Journal of Psychiatry, 172, 344-52, 2015 **Ref Id** 934202 **Country/ies where the study was carried out** USA **Study type** RCT **Aim of the study** This study was a pragmatic clinical trial, which aimed to replicate positive health outcomes demonstrated in a prior randomised effectiveness study of the In SHAPE program across urban community mental health organizations	bipolar disorder, 32% schizoaffective disorder, and 23% schizophrenia. Mean age was 43.9±11.2 years, mean BMI was 36.8±8.2 kg/m^2 , 51% were female, and 46% were non-White. **Inclusion criteria** Age 21 or older; serious mental illness defined by an axis I diagnosis of major depression, bipolar disorder, schizoaffective disorder, or schizophrenia, (based on the Structured Clinical Interview for DSM–IV); and persistent impairment in multiple areas of functioning (e.g., work, school, self-care) (22); body mass index (BMI) greater than 25; and provision of informed consent for participation. Participants were on stable pharmacological treatment defined as receiving the same psychiatric	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 In SHAPE was delivered by four health promotion coaches who were either mental health case managers with basic certification in fitness training or certified fitness trainers interested in working with individuals with disabilities. Control group: The comparison group consisted of a fitness club membership to the same local fitness clubs (YMCAs) with an introduction in safe use of the exercise equipment.	were calculated for vigorous activities obtaining an estimate of weekly metabolic equivalent expenditure (MET) minutes of vigorous physical activity. Health promotion coaches also collected self-report data on total exercise time per week. Frequency of fitness club visits was tracked using electronic records of membership card swipes at the YMCA.	sequence generation within the blocks not described Allocation concealment: unclear risk, allocation concealment not described Blinding of participants and personnel: unclear risk; insufficient information to permit judgement of low or high risk Blinding of outcome assessment: low risk; blinding for baseline and follow up assessments Attrition bias: low risk for all outcomes; comparable retention rates of 77% & 78% at 18 month follow up Selective reporting: low risk; all outcomes reported in sufficient detail for analysis Other bias: low risk **Other information** None

Study details	Participants	Interventions	Outcomes and Results	Comments
serving an ethnically diverse population. **Study dates** 2007-2011 **Source of funding** Grant from the National Institute of Mental Health: NIMH R01 MH078052.	medications over the prior 2 months. **Exclusion criteria** Exclusion criteria were: residing in a nursing home or other institution; primary diagnosis of dementia or significant cognitive impairment defined as a Mini Mental Status Exam (23) score<24; inability to walk one city block; pregnant or planning to become pregnant within the next 18 months; inability to speak English; terminal illness with mortality expected within 1 year; or current diagnosis of an active substance dependence disorder.			
Full citation Beebe, L. H., Smith, K., Burk, R., McIntyre, K., Dessieux, O., Tavakoli, A., Tennison, C., Velligan, D., Effect of a motivational intervention on exercise behavior in persons with schizophrenia spectrum disorders, Community Mental	**Sample size** N=97 **Characteristics** Diagnosis:71.1% schizoaffective disorder and the remainder schizophrenia. Caucasian 54.6% and male 52.6%. 43.35% lived with family	**Interventions** Intervention group: Walk, Address Sensations, Learn About Exercise, Cue Exercise Behaviour for SSDs (WALC-S), a motivational intervention designed to increase exercise in people with schizophrenia spectrum disorders. Control group**:** a time and attention control group (TAC).	**Results** Walking group attendance was defined as the ratio of number of walking groups attended to total number of walking groups offered. Walking group persistence was defined as the number of weeks the subject attended at least one walking group.	**Limitations** Risk of bias assessed using the Cochrane risk of bias assessment tool Random sequence generation: low risk, computer generated random number table Allocation concealment: unclear risk, allocation concealment not described Blinding of participants and personnel: unclear risk; insufficient information to permit judgement of low or high risk

Study details	Participants	Interventions	Outcomes and Results	Comments
Health Journal, 47, 628-636, 2011 Ref Id 934228 Country/ies where the study was carried out USA Study type RCT **Aim of the study** To evaluate an intervention designed to enhance motivation to exercise in persons with schizophrenia spectrum disorders. **Study dates** Not reported **Source of funding** Supported by a grant from the National Institutes of Mental Health, 1R03MH79047-02.	members. Average age was 46.9 years (SD = 2.0). **Inclusion criteria** Inclusion criteria were: (1) a diagnosis of schizophrenia, schizoaffective disorder or schizophreniform disorder, any subtype, according to the criteria described in the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV, American Psychiatric Association 2000), (2) English speaking, (3) Stable medication regimen (no medication changes within the last month), and (4) medical clearance for moderate exercise in writing from primary care provider. **Exclusion criteria** Exclusion criteria included mental retardation, developmental delay, uncorrected visual, hearing impairments or the following physical	WALC-S and TAC groups met weekly for 4 weeks before a 16 week walking program was offered to all subjects	Walking group compliance was defined as the total number of minutes each subject walked during the walking groups each month.	Blinding of outcome assessment: low risk; two different blinded graduate students provided walking groups to experimental and control subjects Attrition bias: low risk for all outcomes; comparable retention rates for both groups and reasons for exclusion described in detail Selective reporting: low risk; all outcomes reported in sufficient detail for analysis Other bias: low risk **Other information** None

Study details	Participants	Interventions	Outcomes and Results	Comments
	conditions: (1) hospitalization within the past 12 months for angina pectoris, myocardial infarction, or cardiac surgery, (2) congestive heart failure, (3) cardiac pacemaker, (4) heart rate >100 or <50 at rest, (5) uncontrolled hypertension (blood pressure exceeding 140/90 on 3 consecutive readings despite adequate treatment), (6) history of spinal or hip fractures or hip or knee arthroplasty, (7) neuromuscular/orthopaedic limitations to normal, unassisted ambulation.			
Full citation Beebe, L. H., Smith, K. D., Roman, M. W., Burk, R. C., McIntyre, K., Dessieux, O. L., Tavakoli, A., Tennison, C., A pilot study describing physical activity in persons with schizophrenia spectrum disorders (SSDs) after an exercise program, Issues in Mental Health	**Sample size** N=22 (a convenience sample of the original 79 participants) **Characteristics** Diagnosis: 36% Schizophrenia, 64% Schizoaffective disorder. Age from 23–71 years with a mean age of 48.1 years (SD = 13.3). 50% male, 55% were African	**Interventions** See Beebe 2011	**Results** Steps walked per day Minutes walked per day	**Limitations** See Beebe 2011 **Other information** None

Study details	Participants	Interventions	Outcomes and Results	Comments
Nursing, 34, 214-9, 2013 **Ref Id** 934230 **Country/ies where the study was carried out** USA **Study type** RCT **Aim of the study** Longer follow-up of Beebe 2011 trial - to evaluate the long term effects 18 months after the intervention on healthy living. **Study dates** Not reported **Source of funding** See Beebe 2011	American and most lived alone. All participants were prescribed at least one antipsychotic medication **Inclusion criteria** See Beebe 2011 **Exclusion criteria** See Beebe 2011			
Full citation Daumit, G. L., Dickerson, F. B., Wang, N. Y., Dalcin, A., Jerome, G. J., Anderson, C. A. M., Young, D. R., Frick, K. D., Yu, A., Gennusa, Iii	**Sample size** N=291 **Characteristics** 58.1% had schizophrenia or a schizoaffective disorder, 22.0% had	**Interventions** Intervention group: The intervention was composed of three contact types: group weight-management sessions, individual weight-management sessions, and group exercise sessions. The	**Results** Sessions attended Medical hospitalisations, psychiatric hospitalisations	**Limitations** Risk of bias assessed using the Cochrane risk of bias assessment tool Random sequence generation: unclear risk; stratified block randomization performed with details of random sequence generation within the blocks not described in detail

Study details	Participants	Interventions	Outcomes and Results	Comments
J. V., Oefinger, M., Crum, R. M., Charleston, J., Casagrande, S. S., Guallar, E., Goldberg, R. W., Campbell, L. M., Appel, L. J., A behavioral weight-loss intervention in persons with serious mental illness, New England Journal of Medicine, 368, 1594-1602, 2013 **Ref Id** 934539 **Country/ies where the study was carried out** USA **Study type** RCT **Aim of the study** To determine the effectiveness of an 18-month tailored behavioural weight-loss intervention in adults with serious mental illness who were attending community outpatient psychiatric	bipolar disorder, and 12.0% had major depression. Mean age 44.1 years (SD 11.0), 75% male, 55% white. 59% were living in residential program or with care provider. At baseline, the mean BMI was 36.3. **Inclusion criteria** Overweight or obese adults (≥18 years of age) who attended 1 of 10 community psychiatric rehabilitation programs in central Maryland or their affiliated out-patient mental health clinics. **Exclusion criteria** Medical contraindication to weight loss, a cardiovascular event within the previous 6 months, an inability to walk, or an active alcohol-use or substance-use disorder.	intervention aimed at: reducing caloric intake by avoiding sugar-sweetened beverages and junk food, eating five total servings of fruits and vegetables daily, choosing smaller portions and healthy snacks, and participating in moderate-intensity aerobic exercise. Group exercise started at a level appropriate for sedentary persons, with gradual increases in duration and intensity. Trained members of the study staff led all exercise classes for the first 6 months. Subsequently, a trained member of the rehabilitation-program staff offered some exercise sessions using a video specifically prepared for this trial. To reinforce the intervention goals, key behaviours were monitored with the use of a simplified tracking tool and to meet with intervention staff to monitor their weight. Session attendance was incentivized with points that participants traded for small reward items. Control group: Participants in the control group received standard nutrition and physical-activity information at baseline. Health classes		Allocation concealment: unclear risk, allocation concealment not described Blinding of participants and personnel: low risk; not feasible to blind the participants considering the nature of intervention Blinding of outcome assessment: low risk; assessors were blind to the allocation of subjects Attrition bias: low risk for all outcomes; comparable retention rates for intervention group(137/144) and control group (142/147) and the reasons for exclusion described Selective reporting: low risk; all outcomes reported in sufficient detail for analysis Other bias: low risk **Other information** None

Study details	Participants	Interventions	Outcomes and Results	Comments
rehabilitation programs. **Study dates** 2009-2011 **Source of funding** Funded by the National Institute of Mental Health; ACHIEVE ClinicalTrials.gov number, NCT00902694.		were offered quarterly, with content unrelated to weight (e.g., cancer screening).		
Full citation Masa-Font, R., Fernandez-San-Martin, M. I., Martin Lopez, L. M., Alba Munoz, A. M., Oller Canet, S., Martin Royo, J., San Emeterio Echevarria, L., Olona Tabuena, N., Ibarra Jato, M., Barroso Garcia, A., Gonzalez Tejon, S., Tajada Vitales, C., Diaz Mujica, B., Vinas Cabrera, L., Sanchis Catalan, R., Salvador Barbarroja, T., The effectiveness of a program of physical activity and diet to modify cardiovascular risk factors in patients with severe mental illness after 3-month	**Sample size** N=332 **Characteristics** Mean age was 46.7 years and 55% were males. 66% had been diagnosed with schizophrenia, 17% schizoaffective disorder and 17% bipolar disorder. Over 65% met the criteria for obesity and almost 85% had a high waist circumference. **Inclusion criteria** Patients diagnosed with a schizophrenic, schizoaffective or bipolar disorder who been undergoing	**Interventions** Intervention group: The intervention was an educational program, a physical activity program (24 sessions (twice weekly carried out over 3 months) and a dietary intervention (16 X 20 minutes sessions twice a week to provide basic knowledge on healthy dietary habits) in groups with a maximum of 15 people. The intervention was designed by mental health and primary care nurses and physicians. Professionals who carried out the intervention also worked on motivation in terms of both physical activity and diet to achieve the desired changes and objectives.	**Results** Physical activity measured using International Physical Activity Questionnaire (IPAQ) General health measured using SF-36.	**Limitations** Risk of bias assessed using the Cochrane risk of bias assessment tool Random sequence generation: low risk; distribution of subjects was randomised by a computer program run by a researcher external to the professional recruiters Allocation concealment: unclear risk; allocation concealment method not described Blinding of participants and personnel: unclear risk; blinding is mentioned but not described Blinding of outcome assessment: low risk; blinding for baseline and follow up assessments Attrition bias: low risk for all outcomes; all randomised were included in the analysis Selective reporting: low risk; all outcomes reported in sufficient detail for analysis

Study details	Participants	Interventions	Outcomes and Results	Comments
follow-up: CAPiCOR randomised clinical trial.[Erratum appears in Eur Psychiatry. 2017 Mar;41:e1; PMID: 28277243], European Psychiatry: the Journal of the Association of European Psychiatrists, 30, 1028-36, 2015 **Ref Id** 935495 **Country/ies where the study was carried out** Spain **Study type** RCT **Aim of the study** To evaluate the effectiveness of an intervention based on a program of physical activity and diet, coordinated between Primary Care Team and Mental Health Team, to change the weekly physical activity level, BMI and waist circumference in	treatment with an antipsychotic drug for at least 3 months prior to enrolment. Low physical activity levels (short version of the International Physical Activity Questionnaire, IPAQ), BMI values equal to or greater than 25 (overweight and obese patients included), resident in the reference area for a minimum of one year and with a knowledge of the Spanish language. **Exclusion criteria** Any contraindication for physical activity (a severe acute physical illness), an episode of acute mania or a psychotic state one month before enrolment, a drug dependence with active consumption (except nicotine).	Control group: Treatment as usual. The subjects followed the usual program of regular check-ups with their reference psychiatrist (usually every two months) and continued their treatment prescribed.		Other bias: low risk **Other information** None

Study details	Participants	Interventions	Outcomes and Results	Comments
patients with schizophrenia and schizoaffective or bipolar disorders. **Study dates** Not reported. **Source of funding** Grant from the public Institute of Health Carlos III for the project (PI11/01861).				
Full citation McKibbin, C. L., Patterson, T. L., Norman, G., Patrick, K., Jin, H., Roesch, S., Mudaliar, S., Barrio, C., O'Hanlon, K., Griver, K., et al.,, A lifestyle intervention for older schizophrenia patients with diabetes mellitus: a randomised controlled trial, Schizophrenia Research, 86, 36-44, 2006 **Ref Id** 935540 **Country/ies where the study was carried out**	**Sample size** N=64 **Characteristics** Diagnosis: 84% Schizophrenia , 16% Schizoaffective disorder. Mean age 55 years, 35% female. Mean duration of diabetes 9 years. **Inclusion criteria** Age 40 or older, with a physician-confirmed diagnoses of schizophrenia and diabetes mellitus (DM), ambulatory, and with physician approval to participate in lifestyle exercise	**Interventions** Intervention group: Diabetes Awareness and Rehabilitation Training (DART) - an educational and motivational program. Educational component included: 1) introducing one or two topics per session, 2) providing an overview and summary of material, 3) implementing a teach-and-query training method, 4) using mnemonic aids, and 5) printing materials with large font and limiting text. Also concrete behavioural-change strategies including weekly weigh-ins, pedometers, healthy food sampling, and reinforcements (i.e., raffle tickets for small health-related prizes) for attendance and behavioural change.	**Results** Diabetes knowledge (DK) was measured with the 23-item diabetes knowledge test To measure dietary intake, participants were asked to rank how often they consumed 70 different foods in the past month on the Block Brief 2000 Revision of the Health and Habits and History Questionnaire. Physical activity was measured using the Yale Physical Activity Scale and also measured with an accelerometer.	**Limitations** Risk of bias assessed using the Cochrane risk of bias assessment tool Random sequence generation: unclear risk; randomization not described in detail Allocation concealment: unclear risk, allocation concealment not described Blinding of participants and personnel: high risk for subjective outcomes and low risk for objective outcomes; no blinding Blinding of outcome assessment: high risk; blinding not performed Attrition bias: low risk for all outcomes; it is mentioned that retention rates were comparable for both groups with reasons for drop out described Selective reporting: low risk; all outcomes reported in sufficient detail for analysis Other bias: low risk

Study details	Participants	Interventions	Outcomes and Results	Comments
USA **Study type** RCT **Aim of the study** To test the efficacy of a novel, manualised 24-week lifestyle intervention to reduce obesity in middle-aged and older persons with schizophrenia and type-2 diabetes mellitus. **Study dates** Not reported **Source of funding** Supported, in part, by the National Institute of Mental Health grants MH063139, MH66248, MH063139, MH62554, RR00827 and by the Department of Veterans Affairs.	**Exclusion criteria** Unable to complete the assessment battery or a physician-confirmed diagnosis of congestive heart failure.	Control group**:** consisted of usual care provided by the participants' physicians and three brochures from the American Diabetes Association relevant to diabetes management (i.e., basic diabetes education, nutrition, and exercise).		**Other information:** None
Full citation Osborn, D., Burton, A., Hunter, R., Marston, L., Atkins, L., Barnes, T., Blackburn, R., Craig, T., Gilbert, H., Heinkel, S., et al.,, Tomita, A., Herman, D. B., Clinical	**Sample size** N=327 **Characteristics** Diagnosis: schizophrenia 32%, 49% bipolar affective disorder and 19%	**Interventions** Intervention group: The Primrose intervention is a set of strategies to change behaviour and reduce cardiovascular risk. These included setting a behavioural goal, involving	**Results** Behavioural measures included validated physical activity, diet and alcohol questionnaires, and questions on smoking status and number of cigarettes smoked.	**Limitations** Risk of bias assessed using the Cochrane risk of bias assessment tool Random sequence generation: low risk; computer generated random sequence generation

Study details	Participants	Interventions	Outcomes and Results	Comments
and cost-effectiveness of an intervention for reducing cholesterol and cardiovascular risk for people with severe mental illness in English primary care: a cluster randomised controlled trial The role of a critical time intervention on the experience of continuity of care among persons with severe mental illness after hospital discharge, The Lancet. Psychiatry, 203, 65-70, 2018 **Ref Id** 908938 **Country/ies where the study was carried out** UK **Study type** Cluster RCT. **Aim of the study** To compare the clinical effectiveness and cost-effectiveness of an intervention for reducing cholesterol	other psychoses. Mean age 51 years (SD 10), 47% male, 89% white, 69% living independently. **Inclusion criteria** People aged 30–75 years on the Quality and Outcomes Framework register for severe mental illnesses, including schizophrenia, bipolar affective disorder, or other non-organic psychosis, with a mean total cholesterol concentration of 5·0 mmol/L or a total:HDL cholesterol ratio of 4·0 mmol/L or more and one or more additional cardiovascular disease risk factors, including hypertension, diabetes, raised glycated haemoglobin (HbA 1c ;42–47 mmol/mol), raised body-mass index (BMI;>30 kg/m2), or current smoker. **Exclusion criteria** People currently under the care of acute psychiatric services,	supportive others, creating an action plan, recording progress, providing positive feedback, reviewing progress, coping with setbacks, and forming habits. These strategies were incorporated into a 2-day training package and manual for general practice nurses. The intervention involved offering participants appointments on a weekly to fortnightly basis for up to 6 months. Within the appointments, the nurse or health-care assistant and participant focused on agreeing goals to lower cardiovascular disease risk such as adhering to statins, improving diet or physical activity levels, reducing alcohol, or quitting smoking. Tools included health-care plans with goals and actions, signposting to relevant services, and initiating and continuing clinically indicated cardiovascular disease-related prescriptions including statins. Control group: treatment as usual.	Other measures included quality of life, wellbeing, medication adherence (psychiatric and cardiovascular disease medications including statins), uptake of statin medications, and satisfaction with services. Data on health-care service use and medication prescriptions were collected by self-report and from medical records for the health economic analysis	Allocation concealment: unclear risk, allocation concealment methods not described Blinding of participants and personnel: low risk for objective outcomes, high risk for objective outcomes; participants and staff were not blinded to intervention status as this was difficult to achieve due to the nature of intervention Blinding of outcome assessment: low risk; assessors were blind to allocation of groups Attrition bias: low risk for all outcomes; intention to treat analysis performed and reasons for drop out described Selective reporting: low risk; all outcomes reported in sufficient detail for analysis Other bias: low risk **Other information:** None

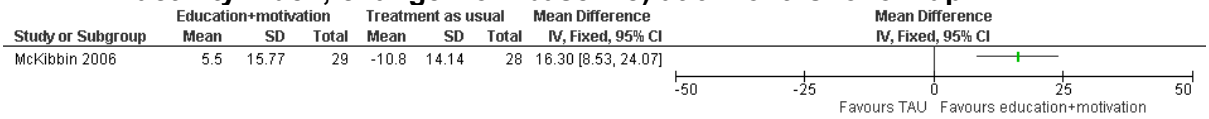
Study details	Participants	Interventions	Outcomes and Results	Comments
and cardiovascular risk with treatment as usual for people with severe mental illness in English primary care. **Study dates** 2013-2017 **Source of funding** Funded by the National Institute for Health Research (NIHR) under its Programme Grants for Applied Research scheme (grant reference number RP-PG-0609-10156).	with organic psychoses or personality disorder diagnoses, with less than 6 months life expectancy, pre-existing cardiovascular disease, or who were pregnant.			

BMI: body mass index; HDL: high-density lipoprotein; NIHR: National Institute for Health Research; TAU: treatment as usual

Appendix E – Forest plots

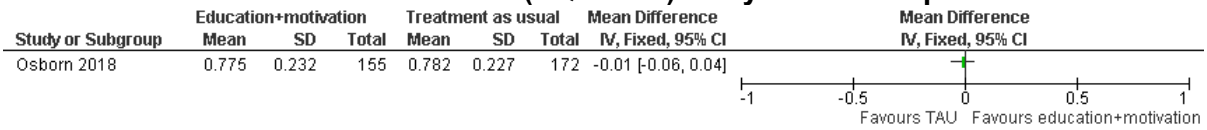
Forest plots for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Figure 2: Comparison 1: Education + motivational intervention versus treatment as usual: engagement with healthy living (Yale Physical Activity Scale total activity index; change from baseline) at 6 months follow-up



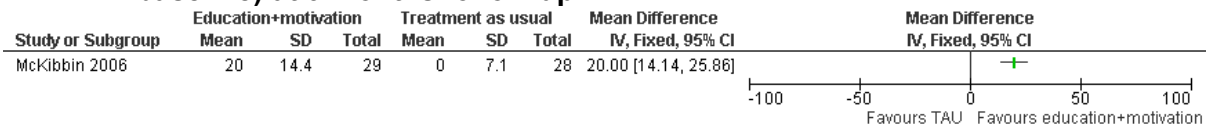
CI: confidence interval; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

Figure 3: Comparison 1: Education + motivational intervention versus treatment as usual: overall health status (EQ-5D-5L) at 1 year follow-up



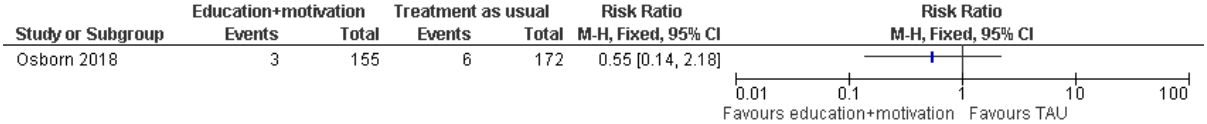
CI: confidence interval; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

Figure 4: Comparison 1: Education + motivational intervention versus treatment as usual: health knowledge (% correct answers about diabetes; change from baseline) at 6 months follow-up



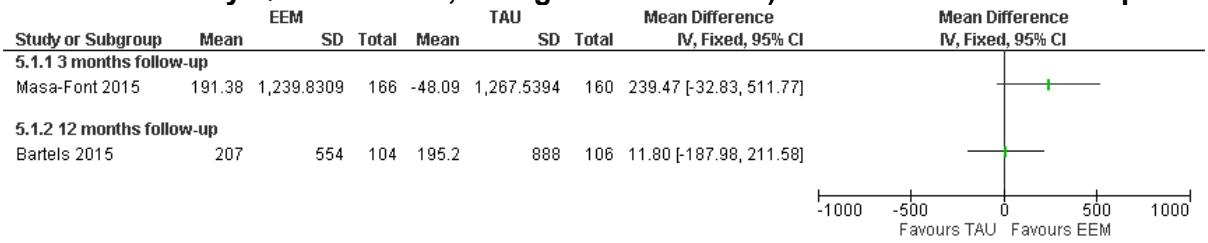
CI: confidence interval; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

Figure 5: Comparison 1: Education + motivational intervention versus treatment as usual: use of emergency healthcare (1 or more general hospital admissions) at 1 year follow-up



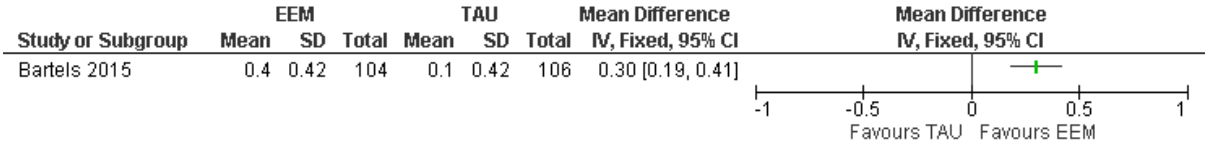
CI: confidence interval; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

Figure 6: Comparison 2: Exercise + education + motivational intervention versus treatment as usual: engagement with healthy living (International Physical Activity Questionnaire; change from baseline) at 3 -12 months follow-up



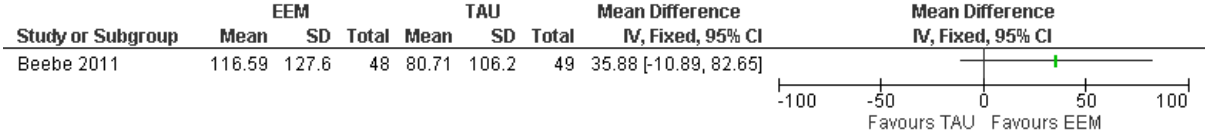
CI: confidence interval; EEM: exercise education motivation; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

Figure 7: Comparison 2: Exercise + education + motivational intervention versus treatment as usual: engagement with healthy living (Readiness to change dietary behaviours; change from baseline) at 12 months follow-up



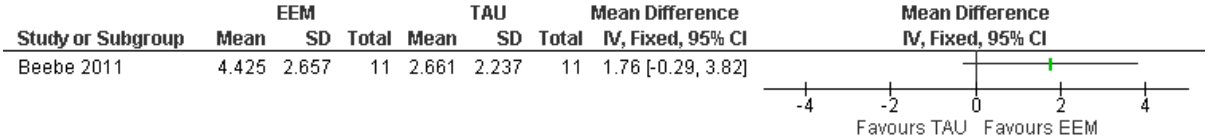
CI: confidence interval; EEM: exercise education motivation; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

Figure 8: Comparison 2: Exercise + education + motivational intervention versus treatment as usual: engagement with healthy living (minutes walked per day) at 4 months of follow-up



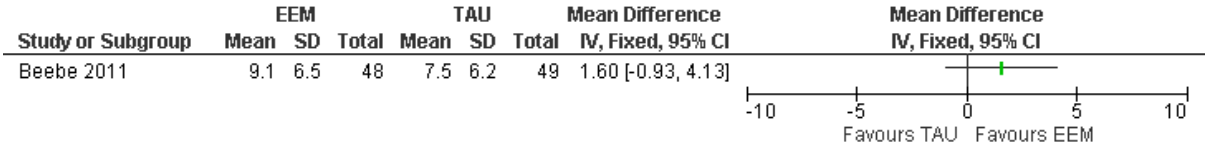
CI: confidence interval; EEM: exercise education motivation; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

Figure 9: Comparison 2: Exercise + education + motivational intervention versus treatment as usual: engagement with healthy living (1000s of steps per day) at 18 months of follow-up



CI: confidence interval; EEM: exercise education motivation; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

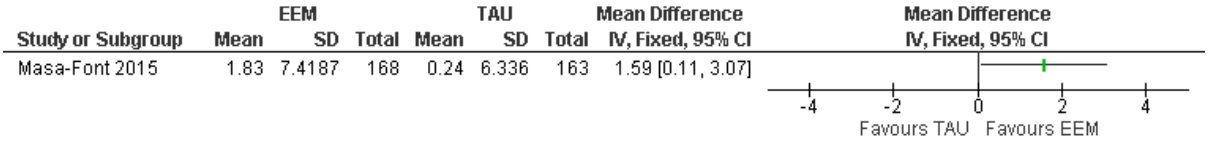
Figure 10: Comparison 2: Exercise + education + motivational intervention versus treatment as usual: engagement with healthy living (persistence of session attendance in weeks) during intervention



CI: confidence interval; EEM: exercise education motivation; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

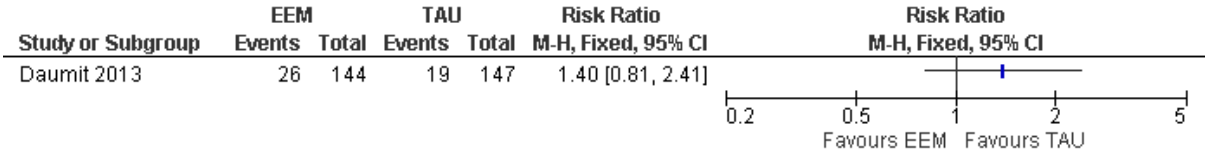
1

Figure 11: Comparison 2: Exercise + education + motivational intervention versus treatment as usual: overall health status (SF-36 Physical Component Score; change from baseline) at 3 months follow-up



CI: confidence interval; EEM: exercise education motivation; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

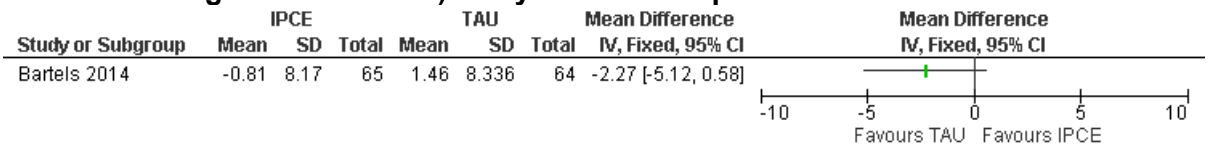
Figure 12: Comparison 2: Exercise + education + motivational intervention versus treatment as usual: use of emergency healthcare (overnight medical hospitalisation) at any time during follow-up



CI: confidence interval; EEM: exercise education motivation; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

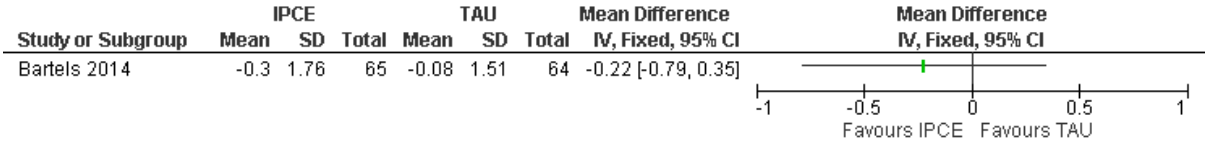
2

Figure 13: Comparison 3: Integrated primary care + education intervention versus treatment as usual: overall health status (SF-36 Physical Component Score; change from baseline) at 3 years follow-up



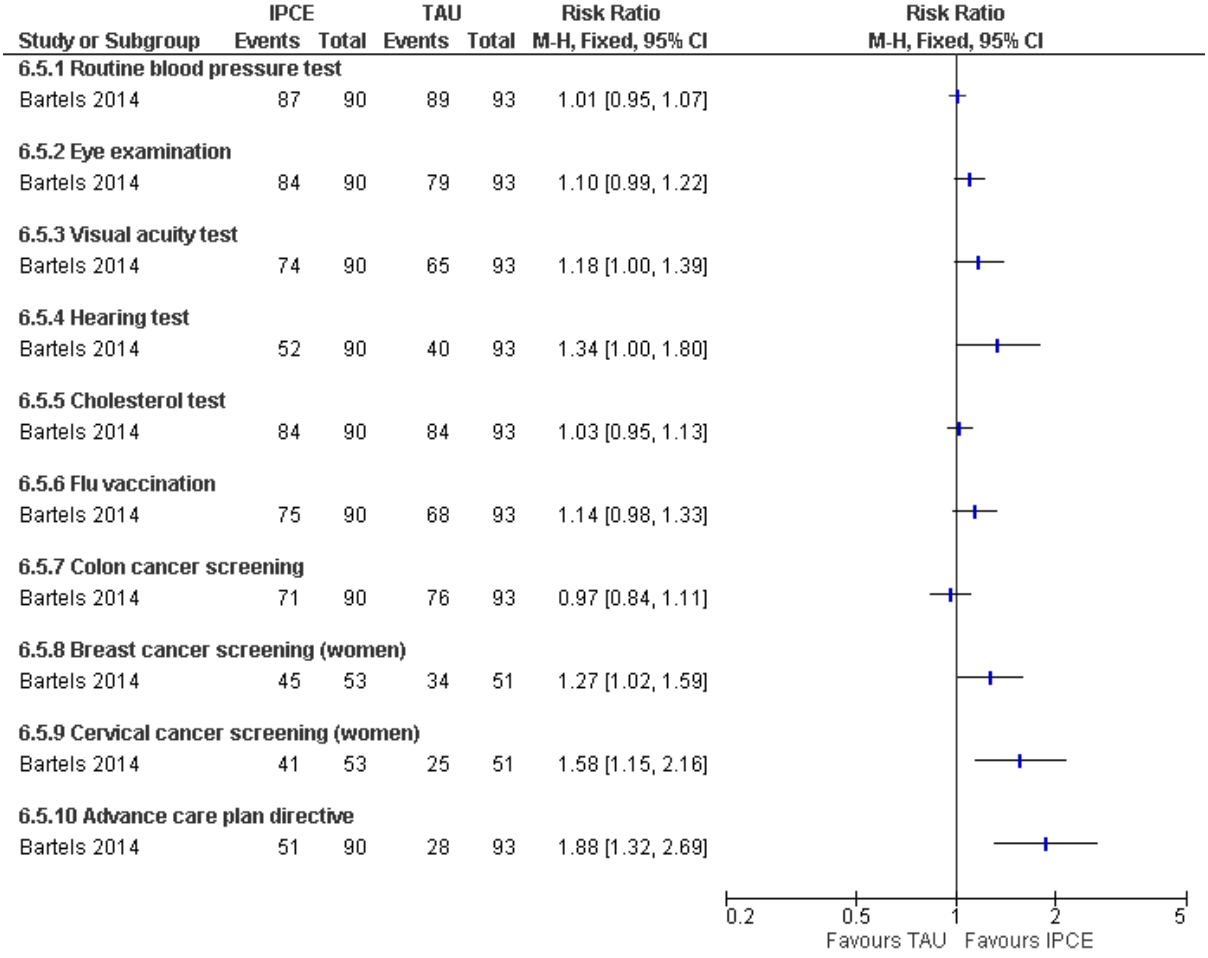
CI: confidence interval; IPCE: integrated primary care and education; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

Figure 14: Comparison 3: Integrated primary care + education intervention versus treatment as usual: overall health status (Charlson Severity Index; change from baseline) at 3 years follow-up



CI: confidence interval; IPCE: integrated primary care and education; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

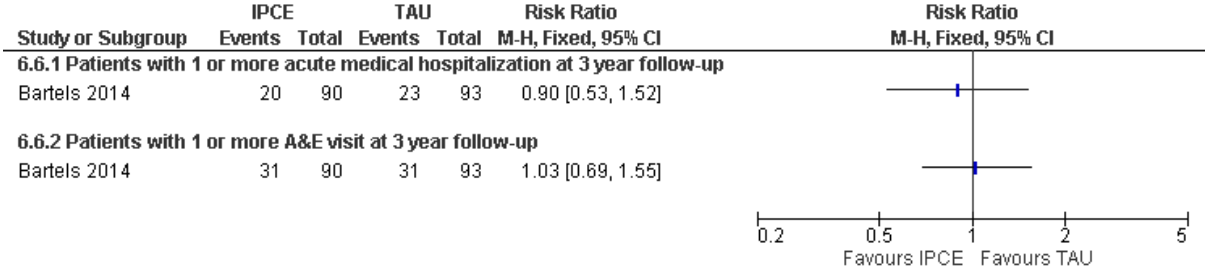
Figure 15: Comparison 3: Integrated primary care + education intervention versus treatment as usual: keeping health care appointments (proportion who received health care appointments at least once) at 3 year follow-up



CI: confidence interval; IPCE: integrated primary care and education; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

1

Figure 16: Comparison 3: Integrated primary care + education intervention versus treatment as usual: use of emergency healthcare (proportion with 1 or more acute medical hospitalization and with 1 more A&E visit) at 3 year follow-up



CI: confidence interval; IPCE: integrated primary care and education; IV: inverse variance; SD: standard deviation; TAU: treatment as usual

1

Appendix F – GRADE tables

GRADE tables for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Table 5: Clinical evidence profile for comparison 1: Education and motivation intervention versus treatment as usual

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Education+ motivation intervention	Treatment as usual	Relative (95% CI)	Absolute	Quality	Importance
Engagement with healthy living intervention as measured by Yale Physical Activity Scale - total activity index at 6 months follow-up (Change from baseline; better indicated by higher values)												
1	randomised trials	very serious [1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	29	28	-	MD 16.3 higher (8.53 to 24.07 higher)	LOW	CRITICAL
Overall health status as measured by EQ-5D-5L at 1 year follow-up (Better indicated by higher values)												
1	randomised trials	serious [2]	no serious inconsistency	no serious indirectness	no serious imprecision	none	155	172	-	MD 0.01 lower (0.06 lower to 0.04 higher)	MODERATE	IMPORTANT
Health knowledge (diabetes knowledge change in % of correct answers from baseline) at 6 months follow-up (Better indicated by higher values)												
1	randomised trials	very serious [1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	29	28	-	MD 20 higher (14.14 to 25.86 higher)	LOW	IMPORTANT
Use of emergency healthcare (Patients with 1 or more general medical hospitalisation) at 1 year follow-up (Better indicated by lower values)												
1	randomised trials	serious [2]	no serious inconsistency	no serious indirectness	very serious [3]	none	3/155 (1.9%)	6/172 (3.5%)	RR 0.55 (0.14 to 2.18)	16 fewer per 1000 (from 30 fewer to 41 more)	VERY LOW	IMPORTANT

CI: confidence interval; MD: mean difference; MID: minimally important difference; SD: standard deviation

1 Very serious risk of bias due to unclear risk of selection bias resulting from unclear randomisation methods and high risk of detection bias as subjects and assessors were not blind to treatment

2 Serious risk of bias due to selection bias arising from unclear allocation concealment methods

3 Very serious imprecision resulting from the confidence interval crossing 2 default MIDs

Table 6: Clinical evidence profile for comparison 2: Exercise, education and motivation intervention versus treatment as usual

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Exercise+ education± motivation intervention	Treatment as usual	Relative (95% CI)	Absolute	Quality	Importance
Engagement with healthy living intervention (IPAQ - metabolic equivalent units expended per week; change from baseline) at 3 months follow up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	166	160	-	MD 239.47 higher (32.83 lower to 511.77 higher)	LOW	CRITICAL
Engagement with healthy living intervention (IPAQ - metabolic equivalent units expended per week; change from baseline) at 12 months follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	104	106	-	MD 11.8 higher (187.98 lower to 211.58 higher)	LOW	CRITICAL
Engagement with healthy living intervention (Readiness to change dietary behaviours - change from baseline) at 12 months follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	104	106	-	MD 0.3 higher (0.19 to 0.41 higher)	VERY LOW	CRITICAL
Engagement with healthy living intervention (minutes walked per day) at 4 months follow-up (Better indicated by higher values)												
1	randomised trials	serious[3]	no serious inconsistency	no serious indirectness	serious[2]	none	48	49	-	MD 35.88 higher (10.89 lower to 82.65 higher)	LOW	CRITICAL
Engagement with healthy living intervention (steps per day) at 18 months follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	11	11	-	MD 1764 higher (288.55 lower to 3816.55 higher)	VERY LOW	CRITICAL
Engagement with healthy living intervention (persistence in weeks) (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	48	49	-	MD 1.6 higher (0.93 lower to 4.13 higher)	VERY LOW	CRITICAL
Overall health status (SF-36 Physical Component Score) at 3 months follow-up (change from baseline; Better indicated by higher values)												
1	randomised trials	serious[3]	no serious inconsistency	no serious indirectness	no serious imprecision	none	168	163	-	MD 1.59 higher (0.11 to 3.07 higher)	MODERATE	IMPORTANT
Use of emergency healthcare (overnight medical hospitalisations)												
1	randomised trials	serious[3]	no serious inconsistency	serious[5]	serious[2]	none	26/144 (18.1%)	19/147 (12.9%)	RR 1.4 (0.81 to 2.41)	52 more per 1000 (from 25 fewer to 182 more)	VERY LOW	IMPORTANT

CI: confidence interval; MD: mean difference; MID: minimally important difference; SD: standard deviation
1 Very serious risk of bias due to selection bias arising from unclear allocation concealment methods and unclear detection bias due to no description about blinding methods
2 Serious imprecision resulting from the confidence interval crossing one default MID
3 Serious risk of bias due to unclear detection bias due to no description about blinding methods
4 Very serious imprecision resulting from the confidence interval crossing 2 MIDs
5 Serious indirectness as outcome reported as overnight hospitalisations instead of use of emergency healthcare

Table 7: Clinical evidence profile for comparison 3: Integrated primary care and education intervention versus treatment as usual

Quality assessment							No of patients		Effect			
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Integrated primary care + education intervention**	**Treatment as usual**	**Relative (95% CI)**	**Absolute**	**Quality**	**Importance**
Overall health status (SF-36 Physical Component Score, change from baseline to post intervention) (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	65	64	-	MD 2.27 lower (5.12 lower to 0.58 higher)	LOW	IMPORTANT
Overall health status (Charlson Severity index) (Better indicated by lower values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	65	64	-	MD 0.22 lower (0.79 lower to 0.35 higher)	LOW	IMPORTANT
Keeping health appointments - Routine blood pressure test at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	87/90 (96.7%)	89/93 (95.7%)	RR 1.01 (0.95 to 1.07)	10 more per 1000 (from 48 fewer to 67 more)	LOW	IMPORTANT
Keeping health appointments - Eye examination at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	84/90 (93.3%)	79/93 (84.9%)	RR 1.1 (0.99 to 1.22)	85 more per 1000 (from 8 fewer to 187 more)	LOW	IMPORTANT
Keeping health appointments - Visual acuity test at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	74/90 (82.2%)	65/93 (69.9%)	RR 1.18 (1 to 1.39)	126 more per 1000 (from 0 more to 273 more)	VERY LOW	IMPORTANT
Keeping health appointments - Hearing test at 3 years follow-up (Better indicated by higher values)												

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Integrated primary care + education intervention	Treatment as usual	Relative (95% CI)	Absolute	Quality	Importance
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	52/90 (57.8%)	40/93 (43%)	RR 1.34 (1 to 1.8)	146 more per 1000 (from 0 more to 344 more)	VERY LOW	IMPORTANT
Keeping health appointments - Cholesterol test at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	84/90 (93.3%)	84/93 (90.3%)	RR 1.03 (0.95 to 1.13)	27 more per 1000 (from 45 fewer to 117 more)	LOW	IMPORTANT
Keeping health appointments - Flu vaccination at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	75/90 (83.3%)	68/93 (73.1%)	RR 1.14 (0.98 to 1.33)	102 more per 1000 (from 15 fewer to 241 more)	VERY LOW	IMPORTANT
Keeping health appointments - Colon cancer screening at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	71/90 (78.9%)	76/93 (81.7%)	RR 0.97 (0.84 to 1.11)	25 fewer per 1000 (from 131 fewer to 90 more)	LOW	IMPORTANT
Keeping health appointments - Breast cancer screening (women) at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	45/53 (84.9%)	34/51 (66.7%)	RR 1.27 (1.02 to 1.59)	180 more per 1000 (from 13 more to 393 more)	VERY LOW	IMPORTANT
Keeping health appointments - Cervical cancer screening (women) at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	41/53 (77.4%)	25/51 (49%)	RR 1.58 (1.15 to 2.16)	284 more per 1000 (from 74 more to 569 more)	VERY LOW	IMPORTANT
Keeping health appointments - Advance care plan directive at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	51/90 (56.7%)	28/93 (30.1%)	RR 1.88 (1.32 to 2.69)	265 more per 1000 (from 96 more to 509 more)	LOW	IMPORTANT
Use of emergency healthcare - Patients with 1 or more acute medical hospitalization at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	none	20/90 (22.2%)	23/93 (24.7%)	RR 0.9 (0.53 to 1.52)	25 fewer per 1000 (from 116 fewer to 129 more)	VERY LOW	IMPORTANT
Use of emergency healthcare - Patients with 1 or more A&E visit at 3 years follow-up (Better indicated by higher values)												
1	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	none	31/90 (34.4%)	31/93 (33.3%)	RR 1.03 (0.69 to 1.55)	10 more per 1000 (from 103 fewer to 183 more)	VERY LOW	IMPORTANT

1 *A&E: accident and emergency; CI: confidence interval; MD: mean difference; MID: minimally important difference; RR: risk ratio*
2 *1 Very serious risk of bias due to selection bias arising from unclear randomization and allocation concealment methods and unclear detection bias due to no description about*
3 *blinding methods*

1 *2 Serious imprecision resulting from the confidence interval crossing 1 MID*
2 *3 Very serious imprecision resulting from the confidence interval crossing 2 MIDs*
3

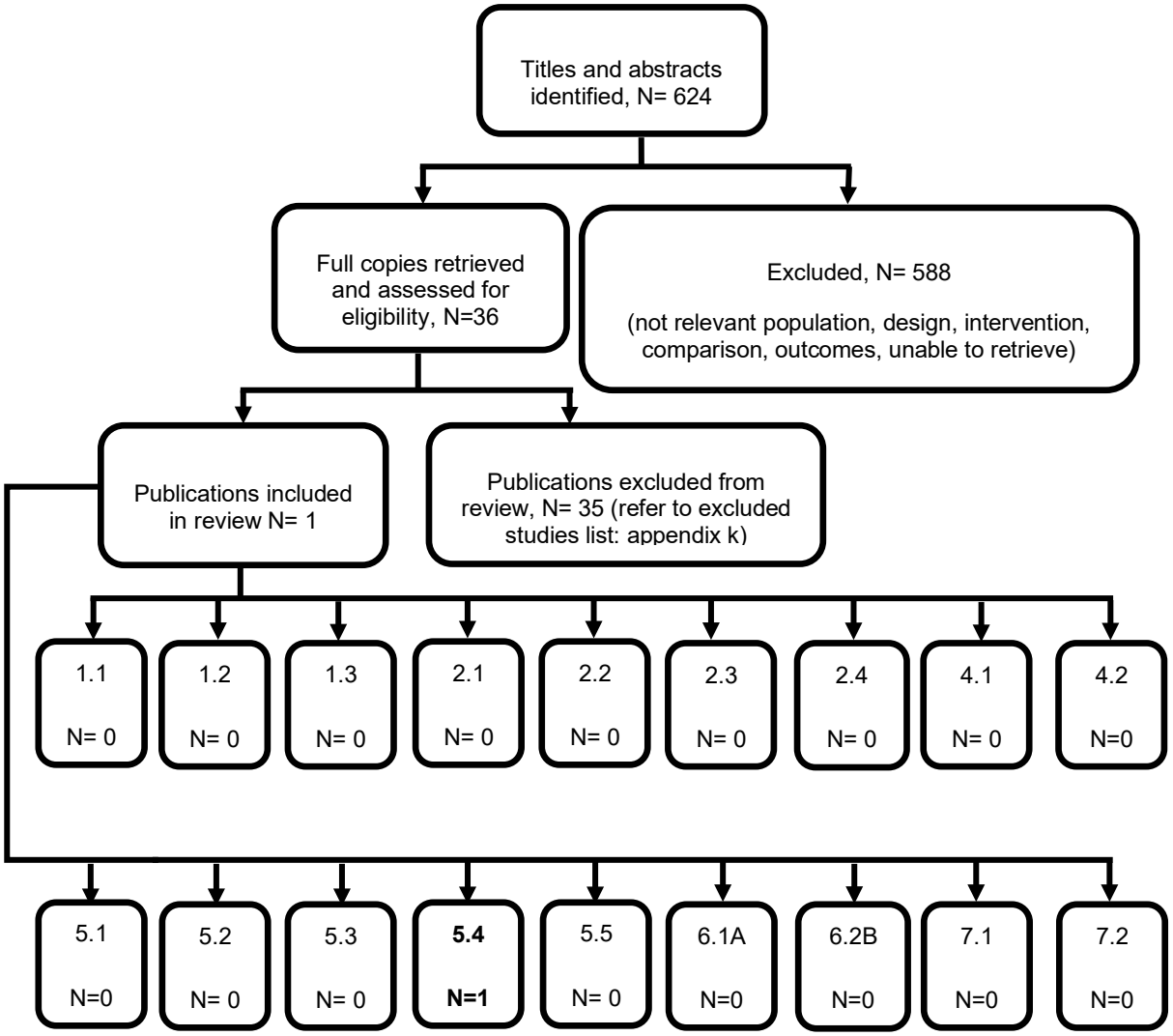
4

Appendix G – Economic evidence study selection

Economic study selection for review question 5.4: What co-existing medical, social (including family, cultural and ethnicity), communication, neurodevelopmental, cognitive or mental health problems pose barriers for people with complex psychosis in accessing rehabilitation services?

A global health economic literature search was undertaken, covering all review questions in this guideline. As shown in Figure 17, one economic study was identified which was applicable for review question 5.1 (evidence report K).

Figure 17: Health economic study selection flow chart



Appendix H – Economic evidence tables

Economic evidence tables for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Table 8: Economic evidence table

Study Country Study type	Intervention Details	Study population Study design Data sources	Costs and outcomes: description and values	Results: Cost-effectiveness	Comments
Author & year: Osborn et al. 2018 Country: UK Study Design: Cost Utility Analysis (CUA) Source of funding: Not reported.	Intervention: Primary care delivered 'Primrose' intervention. Consists of <12 appointments with a trained primary care professional involving manualised interventions for cardiovascular disease prevention (adhering to statins, improving diet/physical activity, reducing alcohol or quitting smoking). Comparator: Treatment as usual (TAU). As patients in this study are a vulnerable group, they would still be screened for cardiovascular disease risk factors. Patients in	Population characteristics: Participants aged 30-75 years with severe mental illnesses (schizophrenia, bipolar disorder, or psychosis), who had raised cholesterol concentrations (5·0 mmol/L) or a total:HDL cholesterol ratio of 4·0 mmol/L or more and one or more modifiable cardiovascular disease risk factors.) Modelling approach: Economic evaluation alongside an RCT. Source of base-line and effectiveness data: Cluster RCT (327) in 76 general practices Data from screening, baseline assessments, and follow-up were collected in the general practices	Mean cost per patient: Comparator: £3,404 Intervention: £2,580 Difference: -£824 Mean QALYs per patient: Comparator: 0.780 QALYs Intervention: 0.769 QALYs Difference: -0.011 QALYs Cost description: Psychiatric inpatient costs Cost of the intervention (staff training, primary care staff and cost of missed appointments). Cost of medication Sources for cost data: Unit costs were sourced from the Unit Costs of Health and Social Care, 2016 and the NHS reference costs, 2015-16	ICER: £76,245/ QALY i.e. £76,245 saved for each QALY lost (reported in the appendix). Sensitivity Analysis: Deterministic sensitivity analysis was not reported. Probabilistic sensitivity analyses: Intervention has a 89% probability of being at cost-effective at a threshold of £20,000/QALY	Perspective: National Health Service and Personal Social Services (NHS & PSS) Currency: GBP Cost year: 2015-2016 Time horizon: 12 months Discounting: NA Applicability: This study was deemed directly applicable as it was a UK based study, conducted according to an

Study Country Study type	Intervention Details	Study population Study design Data sources	Costs and outcomes: description and values	Results: Cost-effectiveness	Comments
	this group were also sent British Heart Foundation Leaflets by mail.	from patient questionnaires and medical records by research nurses.	Cost of prescribed medication was extracted from the British National Formulary, no date was provided. Resource use was calculated from the accompanying clinical RCT. The percentage of applicable patients using health promotion services was calculated at baseline, 6 and 12 months. Outcomes description: EQ-5D-5L data used. Though weighting is not explicitly stated, the reference of Devlin et al. 2017 reflects a composite weighting of discrete choice events and time trade-off.		NHS perspective and reflects current practice. Quality: Potentially serious limitations. Deterministic results and sensitivity analysis not reported. Probabilistic parameters and assigned distributions not reported. EQ-5D meets NICE reference case criteria though the 5L, as of 2019 not has not been validated by NICE.

Appendix I – Economic evidence profiles

Economic evidence profiles for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Table 9: Economic evidence profile

Study	Limitations	Applicability	Other comments	Costs	Effects	Incremental cost effectiveness	Uncertainty
Osborn 2018	Potentially serious limitationsa [a]	Directly applicable [b]	Cost-utility analysis	Comparator: £3,404 Intervention: £2,580 Difference: -£824	Comparator: 0.789 QALYs Intervention: 0.780 QALYs Difference: -0.011 QALYs	£76,245/ QALY i.e. £76,245 saved for each QALY lost	Probabilistic sensitivity analysis indicated an 89% probability that the intervention was cost-effective at a threshold of £20,000 per QALY. No description of probabilistic parameters was reported. Deterministic sensitivity analysis was not reported.

(a) Deterministic results and sensitivity analysis not reported. Inputs for probabilistic analysis not reported. EQ-5D-5L data used.
(b) UK decision-making context. Topic related to relevant review question. Population and setting matches study protocol.

1

Appendix J – Economic analysis

Economic evidence analysis for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

No economic analysis was conducted for this review question.

Appendix K – Excluded studies

Excluded clinical and economic studies for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Clinical studies

Study	Reason for Exclusion
Abdel-Baki, A., Brazzini-Poisson, V., Marois, F., Letendre, E., Karelis, A. D., Effects of aerobic interval training on metabolic complications and cardiorespiratory fitness in young adults with psychotic disorders: a pilot study, Schizophrenia Research, 149, 112-5, 2013	Only first episode psychosis subjects included.
Acil, A. A., Dogan, S., Dogan, O., The effects of physical exercises to mental state and quality of life in patients with schizophrenia, Journal of Psychiatric & Mental Health NursingJ Psychiatr Ment Health Nurs, 15, 808-15, 2008	Does not include outcomes related to engagement in healthy living
Ames, D., Tessier, J., Erickson, Z., Meyer, H., Baker, M., Gelberg, H., Arnold, I., Kwan, C., Chamberlin, V., Rosen, J., Shah, C., Hellemann, G., Lewis, M., Nguyen, C., Sachinvala, N., Amrami, B., Pierre, J., Therapeutic lifestyle changes (TLC) for adults with serious mental illness, Schizophrenia Bulletin, 43 (Supplement 1), S216, 2017	Conference proceedings
Anderson, Rachel L., Lyons, John S., West, Courtney, The prediction of mental health service use in residential care, Community Mental Health Journal, 37, 313-322, 2001	Does not include intervention of interest
Armstrong, H. F., Bartels, M. N., Paslavski, O., Cain, D., Shoval, H. A., Ballon, J. S., Khan, S., Sloan, R. P., Kimhy, D., The impact of aerobic exercise training on cardiopulmonary functioning in individuals with schizophrenia, Schizophrenia Research, 173, 116-7, 2016	Letter to editor. Does not report outcomes related to engagement in healthy living.
Audini, B., Marks, I. M., Lawrence, R. E., Connolly, J., Watts, V., Home-based versus out-patient/in-patient care for people with serious mental illness. Phase II of a controlled study, British Journal of Psychiatry, 165, 204-10, 1994	Does not include intervention related to engagement in healthy living
Austvoll-Dahlgren, A., Forsetlund, L., Munthe-Kaas, H. M., Kirkehei, I., Knowledge Centre for the Health Services at The Norwegian Institute of Public Health (NIPH), NIPH Systematic Reviews, Executive Summaries, 2012	Does not include outcomes related to engagement in healthy living
Babalola, O., Gormez, V., Alwan, N. A., Johnstone, P., Sampson, S., Length of	Does not include outcomes related to engagement in healthy living

hospitalisation for people with severe mental illness, Cochrane Database of Systematic Reviews Cochrane Database Syst Rev, CD000384, 2014	
Bark, N., Revheim, N., Huq, F., Khalderov, V., Ganz, Z. W., Medalia, A., The impact of cognitive remediation on psychiatric symptoms of schizophrenia, Schizophrenia Research, 63, 229-235, 2003	Does not include intervention of interest
Bauer, I. E., Galvez, J. F., Hamilton, J. E., Balanza-Martinez, V., Zunta-Soares, G. B., Soares, J. C., Meyer, T. D., Lifestyle interventions targeting dietary habits and exercise in bipolar disorder: A systematic review, Journal of Psychiatric Research, 74, 1-7, 2016	Included studies from this systematic review did not meet the eligibility criteria, either due to study design or outcome measures
Bauer, M. S., McBride, L., Williford, W. O., Glick, H., Kinosian, B., Altshuler, L., Beresford, T., Kilbourne, A. M., Sajatovic, M., Cooperative Studies Program 430 Study, Team, Collaborative care for bipolar disorder: part I. Intervention and implementation in a randomised effectiveness trial, Psychiatric Services, 57, 927-36, 2006	Does not include intervention of interest
Bauer,M.S., McBride,L., Shea,N., Gavin,C., Holden,F., Kendall,S., Impact of an easy-access VA clinic-based program for patients with bipolar disorder, Psychiatric Services, 48, 491-496, 1997	Does not include outcomes related to engagement in healthy living
Beebe, L. H., Smith, K., Feasibility of the Walk, Address, Learn and Cue (WALC) Intervention for Schizophrenia Spectrum Disorders, Archives of Psychiatric Nursing, 24, 54-62, 2010	Not a randomised study
Beebe, L. H., Smith, K., Burk, R., McIntyre, K., Dessieux, O., Tavakoli, A., Velligan, D., Motivational intervention increases exercise in schizophrenia and co-occurring substance use disorders, Schizophrenia Research, 135, 204-5, 2012	Letter to editor
Beebe, L. H., Tian, L., Morris, N., Goodwin, A., Allen, S. S., Kuldau, J., Effects of exercise on mental and physical health parameters of persons with schizophrenia, Issues in Mental Health Nursing, 26, 661-676, 2005	Outcomes related to engagement in healthy living not reported
Bhatia, T., Mazumdar, S., Wood, J., He, F., Gur, R. E., Gur, R. C., Nimgaonkar, V. L., Deshpande, S. N., A randomised controlled trial of adjunctive yoga and adjunctive physical exercise training for cognitive dysfunction in schizophrenia, Acta Neuropsychiatrica, 29, 102-114, 2017	Does not include outcomes related to engagement in healthy living
Blouin, M., Binet, M., Bouchard, R. H., Roy, M. A., Despres, J. P., Almeras, N., Improvement of metabolic risk profile under second-generation antipsychotics: a pilot intervention study, Canadian Journal of Psychiatry - Revue Canadienne de Psychiatrie, 54, 275-9, 2009	Does not include outcomes related to engagement in healthy living

Bobes, J., Arango, C., Garcia-Garcia, M., Rejas, J., Healthy lifestyle habits and 10-year cardiovascular risk in schizophrenia spectrum disorders: an analysis of the impact of smoking tobacco in the CLAMORS schizophrenia cohort, Schizophrenia Research, 119, 101-9, 2010	Does not include intervention of interest
Broderick, J., Crumlish, N., Waugh, A., Vancampfort, D., Yoga versus non-standard care for schizophrenia, Cochrane Database of Systematic Reviews, 9, CD012052, 2017	Does not report outcomes related to engagement in healthy living
Broderick, J., Knowles, A., Chadwick, J., Vancampfort, D., Yoga versus standard care for schizophrenia, Cochrane Database of Systematic Reviews, CD010554, 2015	Does not report outcomes related to engagement in healthy living
Brown, C., Geiszler, L. C., Lewis, K. J., Arbesman, M., Effectiveness of Interventions for Weight Loss for People With Serious Mental Illness: A Systematic Review and Meta-Analysis, American Journal of Occupational Therapy, 72, 7205190030p1-7205190030p9, 2018	Does not include outcomes related to engagement in healthy living
Brown, C., Goetz, J., Hamera, E., Gajewski, B., Treatment response to the RENEW weight loss intervention in schizophrenia: impact of intervention setting, Schizophrenia Research, 159, 421-5, 2014	Does not include outcomes related to engagement in healthy living
Brown, C., Goetz, J., Van Sciver, A., Sullivan, D., Hamera, E., A psychiatric rehabilitation approach to weight loss, Psychiatric Rehabilitation Journal, 29, 267-273, 2006	Not a randomised study
Brown, C., Read, H., Stanton, M., Zeeb, M., Jonikas, J. A., Jonikas, J., Cook, J. A., Cook, J., A pilot study of the Nutrition and Exercise for Wellness and Recovery (NEW-R): A weight loss program for individuals with serious mental illnesses, Psychiatric Rehabilitation Journal, 38, 371-373, 2015	Not a randomised study
Brown, M. A., Munford, A. M., Life skills training for chronic schizophrenics, Journal of Nervous & Mental DiseaseJ Nerv Ment Dis, 171, 466-70, 1983	Does not include outcomes related to engagement in healthy living
Browne, J., Penn, D. L., Battaglini, C. L., Ludwig, K., Work out by Walking: A Pilot Exercise Program for Individuals With Schizophrenia Spectrum Disorders, Journal of Nervous & Mental Disease, 204, 651-7, 2016	Not a randomised study
Cabassa, L. J., Parcesepe, A., Nicasio, A., Baxter, E., Tsemberis, S., Lewis-Fernandez, R., Health and wellness photovoice project: engaging consumers with serious mental illness in health care interventions, Qualitative health research, 23, 618-630, 2013	Does not include outcomes related to engagement in healthy living

Casagrande, S. S., Dalcin, A., McCarron, P., Appel, L. J., Gayles, D., Hayes, J., Daumit, G., A nutritional intervention to reduce the calorie content of meals served at psychiatric rehabilitation programs, Community Mental Health Journal, 47, 711-715, 2011	It is not clear if the subjects in the psychiatric rehabilitation unit included people with complex psychosis
Casagrande, S. S., Jerome, G. J., Dalcin, A. T., Dickerson, F. B., Anderson, C. A., Appel, L. J., Charleston, J., Crum, R. M., Young, D. R., Guallar, E., et al.,, Randomised trial of achieving healthy lifestyles in psychiatric rehabilitation: the ACHIEVE trial, BMC Psychiatry, 10, 108, 2010	A study protocol
Chafetz, L., White, M., Collins-Bride, G., Cooper, B. A., Nickens, J., Clinical trial of wellness training: health promotion for severely mentally ill adults, Journal of Nervous & Mental DiseaseJ Nerv Ment Dis, 196, 475-83, 2008	Complex psychosis subjects were less than 60% of the study population
Cheng, S. L., Sun, H. F., Yeh, M. L., Effects of an 8-Week Aerobic Dance Program on Health-Related Fitness in Patients With Schizophrenia, The journal of nursing research : JNR, 25, 429-435, 2017	Study conducted in Taiwan
Cimo, A., Stergiopoulos, E., Cheng, C., Bonato, S., Dewa, C. S., Effective lifestyle interventions to improve type II diabetes self-management for those with schizophrenia or schizoaffective disorder: A systematic review, BMC Psychiatry, 12 (1) (no pagination), 2012	Intervention related to self-management of type 2 diabetes
Cook, J. A., Jonikas, J. A., Hamilton, M. M., Goldrick, V., Steigman, P. J., Grey, D. D., Burke, L., Carter, T. M., Razzano, L. A., Copeland, M. E., Impact of Wellness Recovery Action Planning on service utilization and need in a randomised controlled trial, Psychiatric Rehabilitation Journal, 36, 250-257, 2013	Does not include outcomes related to engagement in healthy living
Cramer, H., Lauche, R., Klose, P., Langhorst, J., Dobos, G., Yoga for schizophrenia: a systematic review and meta-analysis, BMC Psychiatry, 13, 32, 2013	Included studies in the systematic review did not meet eligibility criteria either due to population or outcomes
Crawford, M. J., Killaspy, H., Barnes, T. R., Barrett, B., Byford, S., Clayton, K., Dinsmore, J., Floyd, S., Hoadley, A., Johnson, T., Kalaitzaki, E., King, M., Leurent, B., Maratos, A., O'Neill, F. A., Osborn, D., Patterson, S., Soteriou, T., Tyrer, P., Waller, D., Matisse project team, Group art therapy as an adjunctive treatment for people with schizophrenia: a randomised controlled trial (MATISSE), Health Technology Assessment (Winchester, England)Health Technol Assess, 16, iii-iv, 1-76, 2012	Does not include intervention related to engagement in healthy living
Curcic, D., Stojmenovic, T., Djukic-Dejanovic, S., Dikic, N., Vesic-Vukasinovic, M., Radivojevic, N., Andjelkovic, M., Borovcanin, M., Djokic, G.,	Does not include outcomes related to engagement in healthy living

Positive impact of prescribed physical activity on symptoms of schizophrenia: randomised clinical trial, Psychiatria Danubina, 29, 459-465, 2017	
Dauwan, M., Begemann, M. J., Heringa, S. M., Sommer, I. E., Exercise Improves Clinical Symptoms, Quality of Life, Global Functioning, and Depression in Schizophrenia: A Systematic Review and Meta-analysis, Schizophrenia BulletinSchizophr Bull, 42, 588-99, 2016	Does not report outcomes related to engagement in healthy living
Farholm, A., Sorensen, M., Motivation for physical activity and exercise in severe mental illness: A systematic review of intervention studies, International Journal of Mental Health Nursing, 25, 194-205, 2016	Relevant studies from this systematic review have been included
Firth, J., Rosenbaum, S., Stubbs, B., Gorczynski, P., Yung, A. R., Vancampfort, D., Motivating factors and barriers towards exercise in severe mental illness: a systematic review and meta-analysis, Psychological Medicine, 46, 2869-2881, 2016	Does not include outcomes related to engagement in healthy living
Forsberg, K. A., Björkman, T., Sandman, P. O., Sandlund, M., Influence of a lifestyle intervention among persons with a psychiatric disability: a cluster randomised controlled trail on symptoms, quality of life and sense of coherence, Journal of Clinical Nursing, 19, 1519-1528, 2010	Does not report outcomes related to engagement in healthy living
Gelberg, H., Erickson, Z., Kwan, C., Arnold, I., Chamberlin, V., Rosen, J., Shah, C., Nguyen, C., Hellemann, G., Aragaki, D., Kunkel, C., Lewis, M., Sachinvala, N., Sonza, P., Baker, M., Mena, S., Meyer, H., Tessier, J., Pierre, J., Ames, D., Behavioral interventions for antipsychotic medication-associated obesity: A randomised, controlled four-site trial, Schizophrenia Bulletin, 43 (Supplement 1), S118, 2017	Conference abstract
Glynn, S. M., Marder, S. R., Noordsy, D. L., O'Keefe, C., Becker, D. R., Drake, R. E., Sugar, C. A., An RCT Evaluating the Effects of Skills Training and Medication Type on Work Outcomes Among Patients With Schizophrenia, Psychiatric services (Washington, D.C.), 68, 271-277, 2017	Does not report outcomes of interest
Gohner, W., Dietsche, C., Fuchs, R., Increasing physical activity in patients with mental illness-A randomised controlled trial, Patient Education and Counseling, 98, 1385-1392, 2015	Includes only a small proportion of subjects with complex psychosis.
Griswold, K. S., Homish, G. G., Pastore, P. A., Leonard, K. E., A randomised trial: are care navigators effective in connecting patients to primary care after psychiatric crisis?, Community Mental Health Journal, 46, 398-402, 2010	Does not include intervention of interest
Gurusamy, J., Gandhi, S., Damodharan, D., Ganesan, V., Palaniappan, M., Exercise, diet and	Systematic review with no included studies meeting the eligibility criteria

educational interventions for metabolic syndrome in persons with schizophrenia: A systematic review, Asian Journal of Psychiatry, 36, 73-85, 2018	
Harrold, S. A., Libet, J., Pope, C., Lauerer, J. A., Johnson, E., Edlund, B. J., Increasing physical activity for veterans in the Mental Health Intensive Case Management Program: A community-based intervention, Perspectives in psychiatric care, 54, 266-273, 2018	Not a randomised controlled trial
He, J. Y., Long, R. F., Effects of social occupation technique exercises on the social functional recovery of rural schizophrenic patients, Chinese Journal of Clinical Rehabilitation, 9, 48-50, 2005	Does not include outcomes related to engagement in healthy living
Heggelund, J., Nilsberg, G. E., Hoff, J., Morken, G., Helgerud, J., Effects of high aerobic intensity training in patients with schizophrenia - A controlled trial, Nordic Journal of Psychiatry, 65, 269-275, 2011	Not a randomised study
Hempel, A. G., Kownacki, R., Malin, D. H., Ozone, S. J., Cormack, T. S., Sandoval, B. G., 3rd, Leinbach, A. E., Effect of a total smoking ban in a maximum security psychiatric hospital, Behavioral Sciences & the Law, 20, 507-22, 2002	High security forensic settings
Hjorth, P., Davidsen, A. S., Kilian, R., Skrubbeltrang, C., A systematic review of controlled interventions to reduce overweight and obesity in people with schizophrenia, Acta Psychiatrica Scandinavica, 130, 279-89, 2014	Systematic review with no included studies meeting the eligibility criteria
Ho, R. T., Fong, T. C., Wan, A. H., Au-Yeung, F. S., Wong, C. P., Ng, W. Y., Cheung, I. K., Lo, P. H., Ng, S. M., Chan, C. L., et al.,, A randomised controlled trial on the psychophysiological effects of physical exercise and Tai-chi in patients with chronic schizophrenia, Schizophrenia Research, 171, 42-49, 2016	Study conducted in Hong Kong
Hutchison, S. L., Terhorst, L., Murtaugh, S., Gross, S., Kogan, J. N., Shaffer, S. L., Effectiveness of a Staff Promoted Wellness Program to Improve Health in Residents of a Mental Health Long-Term Care Facility, Issues in Mental Health Nursing, 37, 257-264, 2016	Not a randomised controlled trial
Ikai, S., Uchida, H., Mizuno, Y., Tani, H., Nagaoka, M., Tsunoda, K., Mimura, M., Suzuki, T., Effects of chair yoga therapy on physical fitness in patients with psychiatric disorders: A 12-week single-blind randomised controlled trial, Journal of Psychiatric Research, 94, 194-201, 2017	Does not report outcomes related to engagement in healthy living
Kaltsatou, A., Kouidi, E., Fountoulakis, K., Sipka, C., Theochari, V., Kandylis, D., Deligiannis, A., Effects of exercise training with traditional	Did not include outcomes related to engagement in healthy living

dancing on functional capacity and quality of life in patients with schizophrenia: a randomised controlled study, Clinical Rehabilitation, 29, 882-891, 2015	
Kang, R., Wu, Y., Li, Z., Jiang, J., Gao, Q., Yu, Y., Gao, K., Yan, Y., He, Y., Effect of Community-Based Social Skills Training and Tai-Chi Exercise on Outcomes in Patients with Chronic Schizophrenia: A Randomised, One-Year Study, Psychopathology, 49, 345-355, 2016	Study conducted in China
Kelly, E., Duan, L., Cohen, H., Kiger, H., Pancake, L., Brekke, J., Integrating behavioral healthcare for individuals with serious mental illness: a randomised controlled trial of a peer health navigator intervention, Schizophrenia Research, 182, 135-141, 2017	<60% population with complex psychosis
Kilbourne, A. M., Bramlet, M., Barbaresso, M. M., Nord, K. M., Goodrich, D. E., Lai, Z., Post, E. P., Almirall, D., Verchinina, L., Duffy, S. A., Bauer, M. S., SMI life goals: description of a randomised trial of a collaborative care model to improve outcomes for persons with serious mental illness, Contemporary Clinical Trials, 39, 74-85, 2014	Population with major depression 57.4%
Kimhy, D., Khan, S., Ayanrouh, L., Chang, R. W., Hansen, M. C., Lister, A., Ballon, J. S., Vakhrusheva, J., Armstrong, H. F., Bartels, M. N., Sloan, R. P., Use of active-play video games to enhance aerobic fitness in schizophrenia: Feasibility, safety, and adherence, Psychiatric Services, 67, 240-243, 2016	Does not report outcomes related to engagement in healthy living
Kimhy, D., Lauriola, V., Bartels, M. N., Armstrong, H. F., Vakhrusheva, J., Ballon, J. S., Sloan, R. P., Aerobic exercise for cognitive deficits in schizophrenia - The impact of frequency, duration, and fidelity with target training intensity, Schizophrenia Research, 172, 213-5, 2016	Letter to editor
Kisely, S., Baghaie, H., Lalloo, R., Siskind, D., Johnson, N. W., A systematic review and meta-analysis of the association between poor oral health and severe mental illness, Psychosomatic Medicine, 77, 83-92, 2015	Does not include intervention related to engagement in healthy living
Kuo, F. C., Lee, C. H., Hsieh, C. H., Kuo, P., Chen, Y. C., Hung, Y. J., Lifestyle modification and behavior therapy effectively reduce body weight and increase serum level of brain-derived neurotrophic factor in obese non-diabetic patients with schizophrenia, Psychiatry Research, 209, 150-4, 2013	Does not include outcome related to engagement in healthy living
Kwon, J. S., Choi, J. S., Bahk, W. M., Yoon Kim, C., Hyung Kim, C., Chul Shin, Y., Park, B. J., Geun Oh, C., Weight management program for treatment-emergent weight gain in olanzapine-	Does not report outcomes related to engagement in healthy living

treated patients with schizophrenia or schizoaffective disorder: A 12-week randomised controlled clinical trial, Journal of Clinical Psychiatry, 67, 547-53, 2006	
Lesley, M. L., Livingood, K., Livingwood, K., Assessing sustainability of InSHAPE participants' fitness activities in a community mental health setting, Journal of Psychosocial Nursing and Mental Health Services, 53, 46-53, 2015	Qualitative study
Liu, Y., Bo, L., Sampson, S., Roberts, S., Zhang, G., Wu, W., Horticultural therapy for schizophrenia, Cochrane Database of Systematic Reviews, 2014	Does not include outcome related to engagement in healthy living
Loh, S. Y., Abdullah, A., Abu Bakar, A. K., Thambu, M., Nik Jaafar, N. R., Structured Walking and Chronic Institutionalized Schizophrenia Inmates: A pilot RCT Study on Quality of Life, Global journal of health science, 8, 238-248, 2016	Country not in protocol (trial from Malaysia).
Looijmans, A., Stiekema, A. P. M., Bruggeman, R., van der Meer, L., Stolk, R. P., Schoevers, R. A., Jörg, F., Corpeleijn, E., Changing the obesogenic environment to improve cardiometabolic health in residential patients with a severe mental illness: cluster randomised controlled trial, British Journal of Psychiatry, 211, 296-303, 2017	Does not report outcomes related to engagement in healthy living
Mucheru, D. W., Hanlon, M. C., McEvoy, M., MacDonald-Wicks, L., Comparative efficacy of lifestyle intervention strategies on weight outcomes in people with psychosis: a systematic review and network meta-analysis protocol, JBI Database Of Systematic Reviews And Implementation Reports, 15, 1593-1601, 2017	Review protocol
Pearsall, R., Smith, D. J., Pelosi, A., Geddes, J., Exercise therapy in adults with serious mental illness: a systematic review and meta-analysis, BMC Psychiatry, 14, 117, 2014	Relevant studies from this systematic review have been included
Rogers, E. S., Maru, M., Kash-MacDonald, M., Archer-Williams, M., Hashemi, L., Boardman, J., A Randomised Clinical Trial Investigating the Effect of a Healthcare Access Model for Individuals with Severe Psychiatric Disabilities, Community Mental Health Journal, 52, 667-674, 2016	The proportion of subjects with complex psychosis is less than 60%
Rogers, E. S., Smelson, D. A., Gillespie, C. C., Elbel, B., Poole, S., Hagedorn, H. J., Kalman, D., Krebs, P., Fang, Y., Wang, B., et al.,, Telephone Smoking-Cessation Counseling for Smokers in Mental Health Clinics: a Patient-Randomised Controlled Trial, American Journal of Preventive Medicine, 50, 518-527, 2016	Diagnosis of the subjects presenting at the Mental health clinics is unclear

Rosenbaum, S., Tiedemann, A., Sherrington, C., Curtis, J., Ward, P. B., Physical activity interventions for people with mental illness: a systematic review and meta-analysis, Journal of Clinical Psychiatry, 75, 964-74, 2014	Relevant studies from this systematic review have been included
Sajatovic, M., Gunzler, D. D., Kanuch, S. W., Cassidy, K. A., Tatsuoka, C., McCormick, R., Blixen, C. E., Perzynski, A. T., Einstadter, D., Thomas, C. L., Lawless, M. E., Martin, S., Falck-Ytter, C., Seeholzer, E. L., McKibben, C. L., Bauer, M. S., Dawson, N. V., A 60-Week Prospective RCT of a Self-Management Intervention for Individuals With Serious Mental Illness and Diabetes Mellitus, Psychiatric Services, 68, 883-890, 2017	The proportion of subjects with complex psychosis is less than 60%
Scheewe, T. W., Backx, F. J., Takken, T., Jorg, F., van Strater, A. C., Kroes, A. G., Kahn, R. S., Cahn, W., Exercise therapy improves mental and physical health in schizophrenia: a randomised controlled trial, Acta Psychiatrica Scandinavica, 127, 464-73, 2013	Does not include outcomes related to engagement in healthy living
Silva, B. A., Cassilhas, R. C., Attux, C., Cordeiro, Q., Gadelha, A. L., Telles, B. A., Bressan, R. A., Ferreira, F. N., Rodstein, P. H., Daltio, C. S., Tufik, S., de Mello, M. T., A 20-week program of resistance or concurrent exercise improves symptoms of schizophrenia: results of a blind, randomised controlled trial, Revista Brasileira de PsiquiatriaRev Bras Psiquiatr, 37, 271-9, 2015	Country not in protocol (trial from Brazil).
Skrinar,G.S., Huxley,N.A., Hutchinson,D.S., Menninger,E., Glew,P., The role of a fitness intervention on people with serious psychiatric disabilities, Psychiatric rehabilitation journal, 29, 122-127, 2005	Unclear what proportion of included participants were relevant to protocol (all had either DSM-IV mood or psychotic disorder diagnoses)
Soundy, A., Roskell, C., Stubbs, B., Probst, M., Vancampfort, D., Investigating the benefits of sport participation for individuals with schizophrenia: a systematic review, Psychiatria DanubinaPsychiatr, 27, 2-13, 2015	Systematic review with no included studies meeting the eligibility criteria
Stanton, R., Happell, B., Exercise for mental illness: a systematic review of inpatient studies, International Journal of Mental Health Nursing, 23, 232-42, 2014	Relevant studies from this systematic review have been included
Stiekema, A. P. M., Looijmans, A., van der Meer, L., Bruggeman, R., Schoevers, R. A., Corpeleijn, E., Jorg, F., Effects of a lifestyle intervention on psychosocial well-being of severe mentally ill residential patients: ELIPS, a cluster randomised controlled pragmatic trial, Schizophrenia Research, 199, 407-413, 2018	Does not include outcomes related to engagement in healthy living
Stockings, E. A. L., Bowman, J. A., Baker, A. L., Terry, M., Clancy, R., Wye, P. M., Knight, J., Moore, L. H., Adams, M. F., Colyvas, K.,	Includes <60% subjects with complex psychosis

Wiggers, J. H., Impact of a postdischarge smoking cessation intervention for smokers admitted to an inpatient psychiatric facility: A randomised controlled trial, Nicotine and Tobacco Research, 16, 1417-1428, 2014	
Stockings, E. A., Bowman, J. A., Prochaska, J. J., Baker, A. L., Clancy, R., Knight, J., Wye, P. M., Terry, M., Wiggers, J. H., The impact of a smoke-free psychiatric hospitalization on patient smoking outcomes: a systematic review, Australian & New Zealand Journal of Psychiatry, 48, 617-33, 2014	Details of the diagnoses of subjects in psychiatric hospitals in unclear
Tosh, G., Clifton, A., Bachner, M., General physical health advice for people with serious mental illness, Cochrane Database of Systematic Reviews, CD008567, 2011	Does not include outcomes related to engagement in healthy living
Tsoi, D. T., Porwal, M., Webster, A. C., Efficacy and safety of bupropion for smoking cessation and reduction in schizophrenia: systematic review and meta-analysis, British Journal of PsychiatryBr J Psychiatry, 196, 346-53, 2010	Pharmacological intervention for nicotine dependence
Tungpunkom, P., Maayan, N., Soares-Weiser, K., Life skills programmes for chronic mental illnesses, Cochrane Database of Systematic Reviews, 2012	Does not report outcomes related to engagement in healthy living
van Hasselt, F. M., Krabbe, P. F., van Ittersum, D. G., Postma, M. J., Loonen, A. J., Evaluating interventions to improve somatic health in severe mental illness: a systematic review, Acta Psychiatrica Scandinavica, 128, 251-60, 2013	Relevant studies from this systematic review have been included
Vancampfort, D., De Hert, M., Knapen, J., Wampers, M., Demunter, H., Deckx, S., Maurissen, K., Probst, M., State anxiety, psychological stress and positive well-being responses to yoga and aerobic exercise in people with schizophrenia: a pilot study, Disability & Rehabilitation, 33, 684-9, 2011	Does not report outcomes related to engagement in healthy living
Vancampfort, D., Probst, M., Helvik Skjaerven, L., Catalan-Matamoros, D., Lundvik-Gyllensten, A., Gomez-Conesa, A., Ijntema, R., De Hert, M., Systematic review of the benefits of physical therapy within a multidisciplinary care approach for people with schizophrenia, Physical TherapyPhys Ther, 92, 11-23, 2012	Relevant study from this systematic review has been included
Vancampfort, D., Probst, M., Scheewe, T., Maurissen, K., Sweers, K., Knapen, J., De Hert, M., Lack of physical activity during leisure time contributes to an impaired health related quality of life in patients with schizophrenia, Schizophrenia Research Schizophr Res, 129, 122-7, 2011	Not a randomised controlled trial
Vancampfort, D., Rosenbaum, S., Schuch, F. B., Ward, P. B., Probst, M., Stubbs, B., Prevalence	Does not include outcomes related to engagement in healthy living

and predictors of treatment dropout from physical activity interventions in schizophrenia: a meta-analysis, General Hospital PsychiatryGen Hosp Psychiatry, 39, 15-23, 2016	
Vancampfort, D., Rosenbaum, S., Ward, P. B., Stubbs, B., Exercise improves cardiorespiratory fitness in people with schizophrenia: A systematic review and meta-analysis, Schizophrenia ResearchSchizophr Res, 169, 453-7, 2015	Does not include outcomes related to engagement in healthy living
Vancampfort, D., Sweers, K., Probst, M., Mitchell, A. J., Knapen, J., De Hert, M., Quality assessment of physical activity recommendations within clinical practice guidelines for the prevention and treatment of cardio-metabolic risk factors in people with schizophrenia, Community Mental Health JournalCommunity Ment Health J, 47, 703-10, 2011	Does not report intervention related to engagement in healthy living
Vera-Garcia, E., Mayoral-Cleries, F., Vancampfort, D., Stubbs, B., Cuesta-Vargas, A. I., A systematic review of the benefits of physical therapy within a multidisciplinary care approach for people with schizophrenia: An update, Psychiatry Research, 229, 828-39, 2015	Relevant studies from this systematic review have been included

1 Economic studies

2 A global economic literature search was undertaken for this guideline, covering all 18 review
3 questions. The table below is a list of excluded studies across the entire guideline and
4 studies listed were not necessarily identified for this review question.

5 **Table 10: Excluded studies from the economic component of the review**

Study	Reason for Exclusion
Aitchison, K J, Kerwin, R W, Cost-effectiveness of clozapine: a UK clinic-based study (Structured abstract), British Journal of PsychiatryBr J Psychiatry, 171, 125-130, 1997	Available as abstract only.
Barnes, T. R., Leeson, V. C., Paton, C., Costelloe, C., Simon, J., Kiss, N., Osborn, D., Killaspy, H., Craig, T. K., Lewis, S., Keown, P., Ismail, S., Crawford, M., Baldwin, D., Lewis, G., Geddes, J., Kumar, M., Pathak, R., Taylor, S., Antidepressant Controlled Trial For Negative Symptoms In Schizophrenia (ACTIONS): a double-blind, placebo-controlled, randomised clinical trial, Health Technology Assessment (Winchester, England)Health Technol Assess, 20, 1-46, 2016	Does not match any review questions considered in the guideline.
Barton, Gr, Hodgekins, J, Mugford, M, Jones, Pb, Croudace, T, Fowler, D, Cognitive behaviour therapy for improving social recovery in psychosis: cost-effectiveness analysis	Available as abstract only.

Study	Reason for Exclusion
(Structured abstract), Schizophrenia ResearchSchizophr Res, 112, 158-163, 2009	
Becker, T., Kilian, R., Psychiatric services for people with severe mental illness across western Europe: what can be generalized from current knowledge about differences in provision, costs and outcomes of mental health care?, Acta Psychiatrica Scandinavica, SupplementumActa Psychiatr Scand Suppl, 9-16, 2006	Not an economic evaluation.
Beecham, J, Knapp, M, McGilloway, S, Kavanagh, S, Fenyo, A, Donnelly, M, Mays, N, Leaving hospital II: the cost-effectiveness of community care for former long-stay psychiatric hospital patients (Structured abstract), Journal of Mental HealthJ Ment Health, 5, 379-94, 1996	Available as abstract only.
Beecham, J., Knapp, M., Fenyo, A., Costs, needs, and outcomes, Schizophrenia BulletinSchizophr Bull, 17, 427-39, 1991	Costing analysis prior to year 2000
Burns, T., Raftery, J., Cost of schizophrenia in a randomised trial of home-based treatment, Schizophrenia BulletinSchizophr Bull, 17, 407-10, 1991	Not an economic evaluation. Date is prior to 2000
Bush, P. W., Drake, R. E., Xie, H., McHugo, G. J., Haslett, W. R., The long-term impact of employment on mental health service use and costs for persons with severe mental illness, Psychiatric ServicesPsychiatr Serv, 60, 1024-31, 2009	A United States costing analysis. Outcomes which relate to the Welfare system differs in substantial ways to a UK context.
Chalamat, M., Mihalopoulos, C., Carter, R., Vos, T., Assessing cost-effectiveness in mental health: vocational rehabilitation for schizophrenia and related conditions, Australian & New Zealand Journal of PsychiatryAust N Z J Psychiatry, 39, 693-700, 2005	Australian cost-benefit analysis - welfare system differs from UK context.
Chan, S., Mackenzie, A., Jacobs, P., Cost-effectiveness analysis of case management versus a routine community care organization for patients with chronic schizophrenia, Archives of Psychiatric NursingArch Psychiatr Nurs, 14, 98-104, 2000	Study conducted in Hong Kong. A costing analysis.
Clark, R. E., Teague, G. B., Ricketts, S. K., Bush, P. W., Xie, H., McGuire, T. G., Drake, R. E., McHugo, G. J., Keller, A. M., Zubkoff, M., Cost-effectiveness of assertive community treatment versus standard case management for persons with co-occurring severe mental illness and substance use disorders, Health Services ResearchHealth Serv Res, 33, 1285-308, 1998	Not cost-utility analysis. Cost-effectiveness analysis but does not consider UK setting. Date of study is prior to year 2000.
Crawford, M. J., Killaspy, H., Barnes, T. R., Barrett, B., Byford, S., Clayton, K., Dinsmore, J., Floyd, S., Hoadley, A., Johnson, T., Kalaitzaki,	Study not an economic evaluation.

Study	Reason for Exclusion
E., King, M., Leurent, B., Maratos, A., O'Neill, F. A., Osborn, D., Patterson, S., Soteriou, T., Tyrer, P., Waller, D., Matisse project team, Group art therapy as an adjunctive treatment for people with schizophrenia: a randomised controlled trial (MATISSE), Health Technology Assessment (Winchester, England)Health Technol Assess, 16, iii-iv, 1-76, 2012	
Dauwalder, J. P., Ciompi, L., Cost-effectiveness over 10 years. A study of community-based social psychiatric care in the 1980s, Social Psychiatry & Psychiatric EpidemiologySoc Psychiatry Psychiatr Epidemiol, 30, 171-84, 1995	Practice has changed somewhat since 1980s - not a cost effectiveness study.
Garrido, G., Penades, R., Barrios, M., Aragay, N., Ramos, I., Valles, V., Faixa, C., Vendrell, J. M., Computer-assisted cognitive remediation therapy in schizophrenia: Durability of the effects and cost-utility analysis, Psychiatry ResearchPsychiatry Res, 254, 198-204, 2017	Cost effectiveness study, but population of interest is not focussed on rehabilitation for people with complex psychosis.
Hallam, A., Beecham, J., Knapp, M., Fenyo, A., The costs of accommodation and care. Community provision for former long-stay psychiatric hospital patients, European Archives of Psychiatry & Clinical NeuroscienceEur Arch Psychiatry Clin Neurosci, 243, 304-10, 1994	Economic evaluation predates 2000. Organisation and provision of care may have changed by some degree.
Hu, T. W., Jerrell, J., Cost-effectiveness of alternative approaches in treating severely mentally ill in California, Schizophrenia BulletinSchizophr Bull, 17, 461-8, 1991	A United States costing analysis. Outcomes which relate to the Welfare system differs in substantial ways to a UK context.
Jaeger, J., Berns, S., Douglas, E., Creech, B., Glick, B., Kane, J., Community-based vocational rehabilitation: effectiveness and cost impact of a proposed program model.[Erratum appears in Aust N Z J Psychiatry. 2006 Jun-Jul;40(6-7):611], Australian & New Zealand Journal of PsychiatryAust N Z J Psychiatry, 40, 452-61, 2006	Study is a New Zealand based costing analysis of limited applicability to the UK.
Jonsson, D., Walinder, J., Cost-effectiveness of clozapine treatment in therapy-refractory schizophrenia, Acta Psychiatrica ScandinavicaActa Psychiatr Scand, 92, 199-201, 1995	Costing analysis which predates year 2000.
Knapp, M, Patel, A, Curran, C, Latimer, E, Catty, J, Becker, T, Drake, Re, Fioritti, A, Kilian, R, Lauber, C, Rossler, W, Tomov, T, Busschbach, J, Comas-Herrera, A, White, S, Wiersma, D, Burns, T, Supported employment: cost-effectiveness across six European sites (Structured abstract), World Psychiatry, 12, 60-68, 2013	Available as abstract only.

Study	Reason for Exclusion
Lazar, S. G., The cost-effectiveness of psychotherapy for the major psychiatric diagnoses, Psychodynamic psychiatry, 42, 2014	Review of clinical and cost studies on psychotherapy. Studies cited do not match population for relevant review question.
Leff, J, Sharpley, M, Chisholm, D, Bell, R, Gamble, C, Training community psychiatric nurses in schizophrenia family work: a study of clinical and economic outcomes for patients and relatives (Structured abstract), Journal of Mental HealthJ Ment Health, 10, 189-197, 2001	Structured abstract. Not a cost effectiveness study.
Liffick, E., Mehdiyoun, N. F., Vohs, J. L., Francis, M. M., Breier, A., Utilization and Cost of Health Care Services During the First Episode of Psychosis, Psychiatric ServicesPsychiatr Serv, 68, 131-136, 2017	A United States costing analysis. Outcomes which relate to the Welfare system differs in substantial ways to a UK context.
Mihalopoulos, C., Harris, M., Henry, L., Harrigan, S., McGorry, P., Is early intervention in psychosis cost-effective over the long term?, Schizophrenia BulletinSchizophr Bull, 35, 909-18, 2009	Not a cost utility analysis. Australian costing analysis.
Perlis, R H, Ganz, D A, Avorn, J, Schneeweiss, S, Glynn, R J, Smoller, J W, Wang, P S, Pharmacogenetic testing in the clinical management of schizophrenia: a decision-analytic model (Structured abstract), Journal of Clinical Psychopharmacology, 25, 427-434, 2005	Structured abstract. Does not match any review question considered in this guideline.
Quinlivan, R., Hough, R., Crowell, A., Beach, C., Hofstetter, R., Kenworthy, K., Service utilization and costs of care for severely mentally ill clients in an intensive case management program, Psychiatric ServicesPsychiatr Serv, 46, 365-71, 1995	A United States costing analysis. Outcomes which relate to the Welfare system differs in substantial ways to a UK context.
Roine, E., Roine, R. P., Rasanen, P., Vuori, I., Sintonen, H., Saarto, T., Cost-effectiveness of interventions based on physical exercise in the treatment of various diseases: a systematic literature review, International Journal of Technology Assessment in Health CareInt J Technol Assess Health Care, 25, 427-54, 2009	Literature review on cost effectiveness studies based on physical exercise for various diseases and population groups - none of which are for complex psychosis.
Rosenheck, R A, Evaluating the cost-effectiveness of reduced tardive dyskinesia with second-generation antipsychotics (Structured abstract), British Journal of PsychiatryBr J Psychiatry, 191, 238-245, 2007	Structured abstract. Does not match any review question considered in this guideline.
Rund, B. R., Moe, L., Sollien, T., Fjell, A., Borchgrevink, T., Hallert, M., Naess, P. O., The Psychosis Project: outcome and cost-effectiveness of a psychoeducational treatment programme for schizophrenic adolescents, Acta Psychiatrica ScandinavicaActa Psychiatr Scand, 89, 211-8, 1994	Not an economic evaluation. Cost effectiveness discussed in narrative only, with a few short sentences.

Study	Reason for Exclusion
Sacristan, J A, Gomez, J C, Salvador-Carulla, L, Cost effectiveness analysis of olanzapine versus haloperidol in the treatment of schizophrenia in Spain (Structured abstract), Actas Luso-espanolas de Neurologia, Psiquiatria y Ciencias Afines, 25, 225-234, 1997	Available as abstract only.
Torres-Carbajo, A, Olivares, J M, Merino, H, Vazquez, H, Diaz, A, Cruz, E, Efficacy and effectiveness of an exercise program as community support for schizophrenic patients (Structured abstract), American Journal of Recreation Therapy, 4, 41-47, 2005	Available as abstract only
Wang, P S, Ganz, D A, Benner, J S, Glynn, R J, Avorn, J, Should clozapine continue to be restricted to third-line status for schizophrenia: a decision-analytic model (Structured abstract), Journal of Mental Health Policy and Economics, 7, 77-85, 2004	Available as abstract only.
Yang, Y K, Tarn, Y H, Wang, T Y, Liu, C Y, Laio, Y C, Chou, Y H, Lee, S M, Chen, C C, Pharmacoeconomic evaluation of schizophrenia in Taiwan: model comparison of long-acting risperidone versus olanzapine versus depot haloperidol based on estimated costs (Structured abstract), Psychiatry and Clinical Neurosciences, 59, 385-394, 2005	Taiwan is not an OECD country.
Zhu, B., Ascher-Svanum, H., Faries, D. E., Peng, X., Salkever, D., Slade, E. P., Costs of treating patients with schizophrenia who have illness-related crisis events, BMC Psychiatry, 8, 2008	USA costing analysis. The structure of the US health system means that costs do not translate well into a UK context.

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Appendix L – Research recommendations

Research recommendations for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

No research recommendations were made for this review question.

Appendix M – Evidence behind the reference recommendations

Supporting evidence and rationale/impact for adopted & adapted recommendations for review question 5.4: What interventions specific to rehabilitation are effective in improving the engagement of people with complex psychosis and related severe mental health conditions in healthy living (nutrition, weight, physical activity, sleep, oral health, accessing health services, health monitoring, smoking cessation)?

Recommendation	Original recommendation	Supporting evidence	Committee discussion – rationale and impact
Offer people, and proactively encourage them to engage with, a combined healthy eating and physical activity programme by their mental healthcare provider. [This recommendation is adapted from the NICE guideline on psychosis and schizophrenia in adults]	CG 178 (1.1.3.1) People with psychosis or schizophrenia, especially those taking antipsychotics, should be offered a combined healthy eating and physical activity programme by their mental healthcare provider. [new 2014, amended 2019]	CG 178 [NICE guideline on psychosis and schizophrenia in adults] 2019 exceptional surveillance: "The guideline development group noted that there was evidence to suggest that behavioural interventions to promote physical activity and healthy eating are effective in reducing body weight/BMI in the short-term (6 months). No longer-term data was available at the time of guideline development". (2019 exceptional surveillance: 1 trial reporting STEPWISE intervention) 2014: Low quality evidence from up to 14 trials (N = 1,111) showed that a behavioural physical activity and healthy eating intervention had a significant effect on reducing body weight at the end of treatment and at short-term follow-up. There was no difference between the intervention and control groups at short-term follow-up for weight reduction. There was inconsistent evidence for changes in activity level. Moderate to low quality evidence from up to six trials with 353 participants showed that behavioural interventions to promote physical activity and healthy eating had a small but significant positive effect on quality of life and participant satisfaction at	The committee agreed with the recommendation in CG178 but thought that it should be reworded to emphasise that proactive encouragement is needed to successfully engage some service users in healthy living interventions.

Recommendation	Original recommendation	Supporting evidence	Committee discussion – rationale and impact
		the end of treatment. No data evaluating this at follow-up were identified. (2014)	

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