National Institute for Health and Care Excellence

Final

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

[E] Comparative effectiveness of different types of rehabilitation services

NICE guideline NG181

Evidence review

August 2020

Final

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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Review question: What is the comparative effectiveness of different types of rehabilitation services?

Introduction

Rehabilitation services can be provided in different ways: for example, inpatient rehabilitation units can be hospital based or community based and could be provided by the NHS or independent sector. This review aims to compared the effectiveness of different types of rehabilitation services.

The title of the guideline changed to “Rehabilitation for adults with complex psychosis” during development. The previous title of the guideline has been retained in the evidence reviews for consistency with the wording used in the review protocols.

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 related severe mental health conditions

Intervention	• Inpatient
	  ○ Hospital based high dependency unit
	  ○ Community based inpatient unit
	  ○ Longer term high dependency/complex care
	• Community
	  ○ Community rehabilitation team
	  ○ Community mental health/recovery team

Comparison	• Inpatient rehabilitation services compared with each other • Community rehabilitation services compared with each other • Early versus late • Private versus NHS • Local versus out of area • Locked versus open community

Outcomes	**Critical**
	• Social functioning (including management of own mental + physical health)
	• Positive outcome of rehabilitation:
	  ○ for inpatients - discharge to a sustained community placement (successful community living/ accommodation instability / placement breakdown)
	  ○ for those in community placement – sustained move to a less supported placement
	  ○ for those with carers - reduction in amount of support required

	from carers **Important** • Contact with criminal justice system. • Achievement of personal recovery goals. • Attendances at A&E. • Number of days as inpatient • Activities of daily living. • Quality of life

A & E: accident and emergency, NHS: national health service

For further details, see the review protocol in appendix A.

Clinical evidence

Included studies

Three studies were identified for this review, 1 systematic review (Dieterich 2017), 1 cluster randomised controlled trial (RCT; Gater 1997) and 1 RCT (Sellwood 1999). The included studies are summarised in Table 2.

The systematic review compared intensive case management with non-intensive case management (Dieterich 2017), the cluster RCT study compared multidisciplinary care with traditional inpatient hospital care (Gater 1997), and the other RCT compared home based rehabilitation with outpatient rehabilitation (Sellwood 1999). 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.

Summary of clinical studies included in the evidence review

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

Table 2: Summary of included studies

Study	Population	Intervention	Comparison	Outcomes
Dieterich 2017 Systematic review	Severe mental illness in the community.	Intensive case management: Comprehensive range of treatment, rehabilitation, and support services, including assertive community treatment, assertive outreach model and case management model with a caseload of 20 people or less	Non intensive case management: Comprehensive range of treatment, rehabilitation, and support services, including assertive community treatment, assertive outreach model and case management model, with a case load of more than 20 people	• Social functioning: ○ Compliance with medication - average endpoint sub-scale score (ROMI) - by long term (> 12 months) ○ Average endpoint score (LSP, high = poor) - by long term (> 12 months) • Positive outcome of rehabilitation: Reduction in support ○ Accommodation status (various measurements; follow up > 12 months) • Contact with criminal justice system ○ Imprisoned ○ Arrested • Achievement of personal

Study	Population	Intervention	Comparison	Outcomes
				recovery goals: ○ Global state - average endpoint score (HoNOS) - by long term (> 12 months) • Number of days as inpatient ○ Average number of days in hospital per month • Quality of life: Average endpoint score (various scales)
Gater 1997 Cluster RCT United Kingdom	N=108 Diagnosis Schizophrenia, 16 to 65 years old, symptoms or medication started at least 2 years before the study	Intervention: Multi-disciplinary community team with close links with primary care	Treatment as usual: Traditional services at district general hospital psychiatric unit	• Activities of daily living (personal care, shopping, getting meals, managing the household chores)
Sellwood 1999 RCT United Kingdom	N=65 Diagnosis Schizophrenia, Mean age 42.5 years for home based rehabilitation and 38.2 years for outpatient rehabilitation, duration of illness 2 years or more	Home-based rehabilitation (n=29): It was composed of a highly individualised treatment package prepared by an occupational therapist and a clinical psychologist in partnership with the patient and any other agencies that were involved, including informal carers.	Hospital outpatient rehabilitation (N=36): The outpatient treatment intervention consisted of outpatient follow-up every 2 to 3 months by a consultant psychiatrist or a trainee psychiatrist, with support from community psychiatric nursing, day hospital and outpatient (hospital-based) occupational therapy, and outpatient psychology.	• Social functioning: ○ Social functioning scale • Quality of life: ○ Lancashire Quality of Life Scale

HoNOS: health of the nation outcomes scales; LSP: Life skills profile; RCT: randomised controlled trial; ROMI: rating of medication influences

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

A systematic review of the economic literature was conducted but no economic studies were identified which were applicable to this review question.

Excluded studies

Studies not included in this review with reasons for their exclusions are provided in Appendix K – Excluded studies.

Summary of studies included in the economic evidence review

No economic evidence was identified for this review (and so there are no economic evidence tables).

Economic model

A costing analysis was developed, comparing the costs between a hypothetical reduction in out-of-area placements with the current rate of out-of-area placements. The rationale for economic modelling, the methodology adopted, the results and conclusions from this economic analysis are described in detail in Appendix J. This section provides a summary of the methods employed and the results of the economic analysis.

Overview of methods

The model was structured as a decision tree with an extended Markov component. The model follows a cohort of patients through a rehabilitation pathway in 2 treatment strategies. The pathway begins at the point a patient is transferred to an independent or NHS rehabilitation ward through to different 'states' of independent living arrangements: residential care, supported accommodation and floating support. An independent or NHS ward can also be categorised as being as an out-of-area placement (OAP) or local placement. An OAP was defined as a patient being placed in a different clinical commissioning group (CCG) area to the CCG that was funding it. The data used in the model for OAPs was extracted from The Mental health rehabilitation inpatient services report (CQC 2018). No data on OAPs was identified in the accompanying clinical review. The 'current' treatment strategy, set as the comparator in this analysis follows patients based on current estimates of referral rates to OAPs. The intervention treatment strategy is a hypothetical reduction in out-of-area placements. This reduction, it is estimated, would also include an increase in referrals to local placements, mostly NHS rehabilitation units that have a reduced average length of stay. The model supposes that this would also have downstream effects on discharge rates and costs further down a rehabilitation pathway that includes support for independent living in the community. In addition, the hypothetical pathway supposes that patients living in the community would progress to increasingly independent living at a faster rate as there was evidence that many people with complex psychosis are also in a higher category of supported housing than is required.

The model setting was for the NHS and the population were adults (aged 18 years and older) with complex psychosis and related severe mental health conditions. The

decision point of the model begins with a cohort of 3408 patients who are already placed in either an independent or NHS ward (CQC 2018).

The perspective was that of the NHS and Personal Social Services (PSS). The price year is in accordance with NHS Reference Costs 2017/18. Cost data prior to 2018 were adjusted for inflation. Discounting, at a rate of 3.5% was applied to all costs that are incurred after the first year, as per the NICE reference case. Costing for the decision tree part of the model is extracted from the same CQC report that provided probabilities for patients being placed in rehabilitation wards out-of-area or locally. It is important to note that these are reported as the *median* unit costs rather than the mean values and no data on the range of costs were reported, although they could be assumed to be right skewed. The length of stay in each type of ward was also informed from the CQC (2018) report. Costs for the community living health states were informed from a study of 619 service users across 14 regions in the UK (Killaspy 2016). The committee thought that these values underestimated their experience of these costs. Therefore, a sensitivity analysis was performed based on higher cost values for independent living accommodation. The cost of a relapse was extracted from NHS reference costs 2017/18.

Main findings

According to the base-case results, the hypothetical pathway resulted in lower costs when compared with the current pathway. The expected costs were £198,538 and £250,785 for the hypothetical and current pathway respectively. According to these results, the hypothetical pathway would have an expected cost saving of £52,247. A Tornado analysis, with incremental costs set as the x-axis, showed that the model results were particular sensitive to the current and hypothetical probabilities of leaving a rehabilitation ward and are key drivers in the model. For all included inputs, an extremely high/low value does not change the results of the deterministic analysis. That is, the hypothetical pathway remains cost saving when compared to the current pathway when values are varied one at a time, holding all other values constant.

Strengths/limitations

This analysis is characterised by a number of limitations. Most significantly, the data for the decision tree part of the model in both treatment strategies was not informed from the accompanying clinical review owing to a lack of data. Inputs used in this model on the rate of OAPs, informed from a CQC (2018) report, was advised by the committee as the best available source of evidence for this patient group. As noted above, the data extracted from the CQC report was from the narrative text, with no information provided on the uncertainty of the input values. Consequently, a probabilistic sensitivity analysis (PSA) was not performed as this would not elicit meaningful analysis beyond the model's inherent structural uncertainty.

There was no published data linking health state utilities with OAPs or stays in local rehabilitation wards. Nor was there utility data between different types of supported living. Therefore, quality-adjusted life years (QALYs) were not computed for this model. The committee were unanimous however that OAPs were associated with poorer clinical outcomes, and that a reduction of these placements would likely lead to an improvement in such outcomes, and consequently a better health-related quality of life than would otherwise be the case. If this is the case, a pathway that reduces OAPs would likely be dominant, that is, both cost saving and more effective.

There is also a limited amount of information on the extent of geographical dislocation reported in the report which could bias the results of this analysis. For example, an OAP is defined as being in a different CCG. However, the committee

were particularly interested in the proportion of people who are placed far away from their home and felt there may be many instances when a patient placed in an OAP may actually be relatively near their home area, albeit in a different CCG. This economic model did not incorporate a cost utility analysis, but it is likely that the further an OAP, the greater a utility decrement.

Subject to the aforementioned serious limitations, this analysis provides some evidence that there may be substantial cost savings from reducing OAPs.

Evidence statements

Clinical evidence statements

Comparison 1. Intensive case management versus non intensive case management

Critical outcomes

Social functioning: Compliance with medication - average endpoint sub-scale score (ROMI) - by long term

Low quality evidence from 1 RCT (N=239) showed that there was no clinically important difference in long-term compliance scores assessed with the ROMI compliance and non-compliance subscales in those receiving intensive case management compared to those receiving non-intensive case management.

Social functioning: Average endpoint score (LSP, high = poor) - by long term

Low quality evidence from 1 RCT (N=239) showed that there was no clinically important difference in LSP social functioning scores in those receiving intensive case management compared to those receiving non-intensive case management.

Positive outcome of rehabilitation: Accommodation status (various measurements; follow up > 12 months)

Low quality evidence from 1 RCT (N=251) showed that there was no clinically important difference in homelessness in those receiving intensive case management compared to those receiving non-intensive case management.

Positive outcome of rehabilitation: Living in supported accommodation (follow up > 12 months)

Low quality evidence from 1 RCT (N=241) showed that there was no clinically important difference in those living in supported accommodation in those receiving intensive case management compared to those receiving non-intensive case management.

Positive outcome of rehabilitation: Accommodation status - long term FUP (8.5 years) - homelessness

Low quality evidence from 1 RCT (N=214) showed that there was no clinically important difference in homelessness at 8.5 years follow-up in those receiving intensive case management compared to those receiving non-intensive case management.

Important outcomes

Contact with criminal justice system (various measurements; follow up > 12 months)

Very low quality evidence from 2 RCTs (N=959) showed that there was no clinically important difference in the number of people imprisoned among those receiving intensive case management compared to those receiving non-intensive case management.

Very low quality evidence from 1 RCT (N=251) showed that there was no clinically important difference in the number of people arrested among those receiving intensive case management compared to those receiving non-intensive case management.

Achievement of personal recovery goals: Global state - average endpoint score (HoNOS, high = poor) - by long term

Low quality evidence from 1 RCT (N=239) showed that there was no clinically important difference in HoNOS scores in those receiving intensive case management compared to those receiving non-intensive case management.

Attendances at Accident and Emergency

No evidence was identified to inform this outcome.

Number of days as inpatient: Average number of days in hospital per month - by about 24 months

Moderate quality evidence from 21 RCTs (n=2220) showed that there was no clinically important difference in the average number of days in hospital per month in those receiving intensive case management compared to those receiving non-intensive case management.

Activities of daily living

No evidence was identified to inform this outcome.

Quality of life: Average endpoint score (various scales)

Low quality evidence from 1 RCT (N=203) showed that there was no clinically important difference in short term - overall life satisfaction Quality of life score in those receiving intensive case management compared to those receiving non-intensive case management.

Low quality evidence from 1 RCT (N=203) showed that there was no clinically important difference in medium term - overall life satisfaction Quality of life score in those receiving intensive case management compared to those receiving non-intensive case management.

Low quality evidence from 1 RCT (N=526) showed that there was no clinically important difference in by long term Lancashire Quality of life Profile (LQoLP) score in those receiving intensive case management compared to those receiving non-intensive case management.

Low quality evidence from 1 RCT (N=166) showed that there was no clinically important difference in long term MANSA Quality of life score in those receiving intensive case management compared to those receiving non-intensive case management.

Low quality evidence from 1 RCT (N=203) showed that there was no clinically important difference in overall life satisfaction Quality of life inventory (QOLI) score in those receiving intensive case management compared to those receiving non-intensive case management.

Comparison 2: Multi-disciplinary community team management versus treatment as usual

Critical outcomes

Social functioning

No evidence was identified to inform this outcome.

Positive outcome of rehabilitation

No evidence was identified to inform this outcome.

Important outcomes

Contact with criminal justice system

No evidence was identified to inform this outcome.

Achievement of personal recovery goals

No evidence was identified to inform this outcome.

Attendances at Accident and Emergency

No evidence was identified to inform this outcome.

Number of days as inpatient

No evidence was identified to inform this outcome.

Activities of daily living (personal care, shopping, getting meals, managing the household chores)

Low quality evidence from 1 RCT (N=107) showed that there was a clinically important increase in activities of daily living skills assessed by needs assessment schedule in those receiving multidisciplinary community team management compared to treatment as usual at 2 years follow-up.

Low quality evidence from 1 RCT (N=35) showed that there was a clinically important increase in activities of daily living skills assessed by needs assessment schedule in those receiving multidisciplinary community team management compared to treatment as usual at 4 years follow-up.

Quality of life

No evidence was identified to inform this outcome.

Comparison 3: Home based rehabilitation versus Hospital outpatient rehabilitation

Critical outcomes

Social functioning

Low quality evidence from 1 RCT (N=65) showed no clinically important difference in the change from baseline in social functioning assessed by social functioning scale in those receiving home based rehabilitation compared to those receiving hospital outpatient based rehabilitation.

Positive outcome of rehabilitation

No evidence was identified to inform this outcome.

Important outcomes

Contact with criminal justice system

No evidence was identified to inform this outcome.

Achievement of personal recovery goals

No evidence was identified to inform this outcome.

Attendances at Accident and Emergency

No evidence was identified to inform this outcome.

Number of days as inpatient

No evidence was identified to inform this outcome.

Activities of daily living

No evidence was identified to inform this outcome.

Quality of life

Moderate quality evidence from 1 RCT (n=65) showed a clinically important increase from baseline in quality of life assessed by Lancashire Quality of life scale in those receiving home based rehabilitation compared to those receiving hospital outpatient based rehabilitation (n=65, MD=21 (95% CI 11.34 to 30.66))

Economic evidence statements

There was evidence from the guideline cost analysis that showed a hypothetical rehabilitation pathway, with a reduction in out-of-area placements in inpatient rehabilitation wards, results in cost savings when compared with current rates of out of area placements. This evidence was directly applicable to the UK context. However, owing to the structural uncertainty of the model, this analysis can be characterised as having potentially severe limitations.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

Social functioning and positive outcome of rehabilitation were critical outcomes, because effective rehabilitation should enable many service users to participate in society with increased independence. Other important outcomes were selected because rehabilitation may affect overall recovery and reduce the need for healthcare. Important outcomes related to personal recovery were: achievement of personal recovery goals, activities of daily living and quality of life. Important adverse outcomes related to relapse of mental health problems were contact with criminal justice system, number of days as inpatient and attendances at Accident and Emergency.

The quality of the evidence

Evidence about social function was assessed as low quality using GRADE. There was very low to moderate quality evidence about positive outcome of rehabilitation (reduction in amount of support needed), contact with the criminal justice system, achievement of recovery and number of days as an inpatient. There was low quality evidence about quality of life and activities of daily living.

Evidence from RCTs was downgraded for risk of bias (due to lack of blinding or attrition bias) and for imprecision.

There was a lack of evidence comparing different types of inpatient rehabilitation services, locked versus open community, early versus late rehabilitation and private versus NHS services.

Benefits and harms

The evidence did not find a clinically significant difference in the outcomes social functioning, positive outcome of rehabilitation, contact with the criminal justice system, achievement of personal recovery goals, number of days as an inpatient and quality of life in people receiving a comprehensive range of treatment, rehabilitation, and support services with a caseload of 20 people or less compared to those receiving similar services with a caseload of more than 20 people. The committee discussed that, based on the evidence informing this comparison it was difficult to recommend one type of rehabilitation over the other and hence the committee did not

make a recommendation regarding caseloads. While discussing different types of rehabilitation in inpatient and community rehabilitation settings, the committee acknowledged that inpatient rehabilitation would be more appropriate for some service users and so they recommended a local rehabilitation pathway including both inpatient (high-dependency units and community units), and community rehabilitation services (people supported by the community mental health rehabilitation team in supported accommodation). They thought that this local rehabilitation pathway would help to reduce inappropriate care – for example being 'stuck' in an acute inpatient unit or out-of-area placement. The committee agreed that the rehabilitation pathway should be arranged at the local level (local authority level) to allow full integration between health and social care (housing is currently arranged at local authority level), and to minimise the number of people who would need to be sent out of area for care.

The committee did not specify the number of inpatient or community units needed in each local rehabilitation pathway, given that needs vary according to the local population. Instead they agreed that the joint strategic needs assessment would provide the information needed to commission the balance of services needed in each area. The committee identified key groups to be aware of in the needs assessment – those people that are most likely to need local rehabilitation services, and those people who might need high dependency, highly specialist or longer term rehabilitation services.

There was some evidence, and committee experience, supporting the provision of community rehabilitation through a multidisciplinary team. The committee also considered that inpatient rehabilitation services would require a multidisciplinary team to be effective, and so recommended a multidisciplinary team for all settings. The committee were aware that there is a national scheme for accredited rehabilitation psychiatrists. Psychiatrists can achieve this competency through the local Deaneries and the Royal College of Psychiatrists as part of a psychiatrist's training, which is then included in their Certificate of Completion of Specialist Training (CCST) in psychiatry. The committee noted in the recommendation that the multidisciplinary team should include 'rehabilitation psychiatrists', to help avoid psychiatrists with limited rehabilitation competence being assigned to rehabilitation services. The committee were not aware of accreditation schemes for other members of the team. The committee noted that a variety of core roles would need to be included in the multidisciplinary team. Based on their experience they listed some of these core roles in the recommendation as examples but noted that input from other professionals may also be needed. The committee also recommended that this team have access to a number of other health professionals to ensure the provision of sufficient mental and physical healthcare in rehabilitation. People with complex psychosis are a group with high levels of physical health comorbidity so input from physical exercise coaches, dietitians/nutritionists and podiatrists would help promote physical health. Input from welfare rights specialists would also be important because people with complex psychosis will be on welfare benefits and are likely to need advice on their income. Speech and language therapist input would be needed to deal with the additional communication needs that can be experienced by this group. Physiotherapists would be needed to assist those people with mobility issues to be able to engage in more physical activity to mitigate the physical health impact of a more sedentary lifestyle.

The committee agreed that the multidisciplinary community mental health rehabilitation team would manage mental health problems and meet people's rehabilitation and social support needs in the community, coordinating the care of a small group of service users, using a shared team caseload approach. The committee agreed this team should have the flexibility to alter care levels so as to

see people daily at times of relapse or crisis and that the consultant psychiatrists and psychologist on the team should be able to see people at home when needed. The committee acknowledged, based on their experience, that the remit of the community mental health rehabilitation team may vary from one local area to another depending on the provision of other community based services, but that the remit of the team should be clearly specified. It was also agreed by the committee that supported accommodation can be provided in a number of different ways and from their experience the committee felt it important that community mental health rehabilitation teams should be able to provide rehabilitation services to each of these settings.

The committee acknowledged that it would be impractical to provide highly specialist or long term high dependency rehabilitation services in the local rehabilitation pathway. The size of the population requiring these services in the local area is likely to be too small. The committee agreed this would be best achieved at a regional level and may require an out of area placement.

The committee recommend limiting the use of out-of-area placements except to people with these highly specialist needs, which was supported by economic evidence (see below). The committee were aware of evidence suggesting that for many of the people in out-of-area placements, it could be appropriate to offer them rehabilitation in local units (Killaspy 2009). Local units also help to maintain contact between service users and their families, communities and local support networks or activities such as peer support groups. The committee recommended that existing local funding panels should ensure out of area placements are used only when the care cannot be offered locally. They also recommended regular reviews of people receiving care in out-of-area placements by a designated care manager within the community mental health rehabilitation team. The committee shared anecdotal reports of people being in out-of-area placements for many years, without clinical oversight from the person's local area, in placements that were no longer suitable. To avoid people in out-of-area placements becoming isolated, plans should be put in place to return them to their locality at the earliest possible opportunity, and in the meantime they should be supported to maintain contact with friends and family. The committee also agreed that service users and their carers should receive written information about their out-of-area placement, so they have this information to hand and know their rights about the placement.

The committee noted the lack of comparative evidence between services provided by the independent sector and the NHS. The committee acknowledged that the independent sector is an important provider of rehabilitation services; however, the services they provide are often a long way from where the patients and their families live, and from the local area that funds the placement. Many independent units are locked and lengths of stay are considerably longer (hence costlier) than equivalent NHS provision. Although these observed drawbacks were known and considered by the committee, there is little systematic and reliable evidence on the characteristics of users of these services or the effectiveness of these units. The committee therefore recommended a research recommendation on these issues.

Cost effectiveness and resource use

The committee acknowledged that people with complex psychosis will have often been unwell over an extended period and would usually have had multiple readmissions to hospital prior to accessing rehabilitation services. It was noted that many NHS mental health trusts have reduced the number of inpatient rehabilitation units. As a result, the committee were of the view that this reduction has driven the increase in the number of placements in the independent sector, which are often characterised as 'locked rehabilitation' wards and are associated with having a higher

proportion of patients dislocated from a patient's home. It was the committee's view that these 'locked' wards had a length of stay which contravened the principles of rehabilitation and that there would also be substantial cost savings were there to be more community rehabilitation services available for patients to be discharged to. The committee were also in agreement that reducing out-of-area placements would be beneficial for patient outcomes.

A costing analysis was developed for this guideline, comparing the costs between a hypothetical reduction in out-of-area placements with the current rate of out-of-area placements. The model also integrates the impact on downstream costs along the rehabilitation pathway based on discharge rates to supported housing. The results suggested that a reduction in out-of-area placements, and higher rate of referral to more independent living would be cost saving. The committee were also in agreement that reducing out-out-area placements would improve clinical outcomes for people with complex psychosis as well as their quality of life. The cost saving shown in the model is based on people with complex psychosis being referred less often out-of-area, currently mostly in independent wards, and more often to local wards, currently mostly in NHS wards. The committee noted that these results could imply a potentially significant resource impact in the short term, if this requires many trusts to open NHS wards and therefore they were keen to stress that any investment in local facilities should be warranted according to the needs of the local population based on a local rehabilitation service needs assessment. However, it was also noted that their recommendations are consistent with a policy directive to reduce out-of-area placements and are recommended best practice. It was acknowledged that this resource impact might not be as large as implied by this analysis, as the independent sector may be able to make appropriate adjustment to be more geared towards providing a rehabilitation service in accordance with NHS wards.

Whilst the economic analysis implies an overall large cost saving, there may be a high resource impact for Local Authorities as the people are discharged at a faster rate to supported accommodation. Whilst the components of funding vary between individuals, Local Authorities commission the provision of community accommodation for people who have been originally detained under Section 3 of the Mental Health Act 1983 (as amended). To some degree, this resource impact may be offset by faster transitions between different levels of supported accommodation such as a reduction in residential care, and an increase in more independent modes of living such as supported housing and floating support. Nevertheless, the overall health benefits of people spending more time in contact with community based services, and less in inpatient facilities would override any additional resource impact.

The definition of out-of-area placements was informed by the mental health rehabilitation services report (CQC 2018) report which classified an out-of-area placement as placing a person with complex psychosis in a different clinical commissioning group area than their original one. The committee expressed the view that people placed the furthest away from their home would fare the worst regarding clinical outcomes. However, the committee noted that the data, as reported in the CQC (2018) report did not present the extent of geographical dislocation. Nevertheless, it was noted that those in independent wards resided, on average, 49km away from their home address compared with those in NHS wards who resided 14km away.

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Appendices

Appendix A – Review protocols

Review protocol for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

Table 3: Review protocol for comparative effectiveness of different types of rehabilitation services

Field (based on PRISMA-P)	Content
Review question	What is the comparative effectiveness of different types of rehabilitation services?
Type of review question	Intervention review
Objective of the review	This review aims to compare the effectiveness of different models of rehabilitation service provision, both within the community and in inpatient units.
Eligibility criteria – population	Adults (aged 18 years and older) with complex psychosis and other related mental health conditions (as defined in scope). Studies with mixed populations should include at least 66% with complex psychosis and related severe mental health conditions. Mixed study population will be examined in a sensitivity analysis as a potential source of heterogeneity.

Eligibility criteria – intervention(s)	Rehabilitation services:
	• Inpatient
	  ○ Hospital based high dependency unit
	  ○ Community based inpatient unit
	  ○ Longer term high dependency/complex care
	• Community
	  ○ Community rehabilitation team
	  ○ Community mental health/recovery team

Eligibility criteria – comparator(s)/control	• Inpatient rehabilitation services compared with each other • Community rehabilitation services compared with each other. • Early versus late

Field (based on PRISMA-P)	Content
	• Private versus NHS

Outcomes and prioritisation	**Critical**
	• Social functioning (including management of own mental + physical health)
	• Positive outcome of rehabilitation:
	  ○ for inpatients - discharge to a sustained community placement (successful community living/ accommodation instability / placement breakdown)
	  ○ for those in community placement – sustained move to a less supported placement
	  ○ for those with carers - reduction in amount of support required from carers
	Important
	• Contact with criminal justice system
	• Achievement of personal recovery goals
	• Attendances at A&E
	• Number of days as inpatient
	• Activities of daily living
	• Quality of life

Eligibility criteria – study design	RCTs. If no RCTs are available for any of the interventions, comparative observational studies will be considered.
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	Confounders that will be used to explore heterogeneity: • Local availability of the rehab. service (e.g out of are treatments (OATs)) • Value based culture / social engagement (including therapeutic relationships – family, carers; team sports/activities) • Family involvement • Black, Asian and minority ethnic groups • Differences in healthcare systems

Field (based on PRISMA-P)	Content
	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. 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	Potential 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 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 2014
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 2014.

Field (based on PRISMA-P)	Content
	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 2014
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 2014.
Confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual 2014
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 developed the evidence review. The committee was convened by the National Guideline Alliance (NGA) and chaired by Dr Gillian Baird in line with section 3 of Developing NICE guidelines: the manual 2014. Staff from the NGA undertook systematic literature searches, appraised the evidence, conducted meta-analysis and cost effectiveness analysis where appropriate, and drafted the guideline in collaboration with the committee. For details please see the methods see supplementary document.
Sources of funding/support	The NGA is funded by NICE and hosted by the Royal College of Obstetricians and Gynaecologists.
Name of sponsor	The NGA is funded by NICE and hosted by the Royal College of Obstetricians and Gynaecologists.
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 applicable

A&E: accident and emergency; 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; MID: minimally important difference; NGA: National Guideline Alliance; NHS: National health service; NICE: National Institute for Health and Care Excellence; OATS: out of area treatments; RCT: randomised controlled trial; RoB: risk of bias; SD: standard deviation

Appendix B – Literature search strategies

Literature search strategies for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

Databases: Embase/Medline/PsycInfo

Date searched: 04/02/2019

#	Searches
1	exp psychosis/
2	exp schizophrenia/
3	schizoaffective psychosis/
4	exp bipolar disorder/
5	Depressive psychosis/
6	Delusional disorder/
7	mental disease/
8	or/1-7
9	8 use emczd
10	Psychotic disorders/
11	exp schizophrenia/ or exp "schizophrenia spectrum and other psychotic disorders"/
12	exp "Bipolar and Related Disorders"/
13	mental disorders/
14	or/10-13
15	14 use ppez
16	exp psychosis/
17	exp schizophrenia/ or "fragmentation (schizophrenia)"/
18	schizoaffective disorder/
19	exp bipolar disorder/
20	delusions/
21	mental disorders/
22	or/16-21
23	22 use psyh
24	(psychos?s or psychotic).tw.
25	(schizophren* or schizoaffective*).tw.
26	((bipolar or bipolar type) adj2 (disorder* or disease or spectrum)).tw.
27	(delusion* adj3 (disorder* or disease)).tw.
28	(psychiatric adj2 (illness* or disease* or disorder* or disabilit* or problem*)).tw.
29	((severe or serious) adj3 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*))).tw.
30	(complex adj2 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*))).tw.
31	or/24-30
32	9 or 15 or 23 or 31
33	High dependency unit/
34	Rehabilitation center/
35	Community based rehabilitation/
36	*community mental health center/
37	or/33-36
38	37 use emczd
39	rehabilitation centers/
40	*Community Mental Health Centers/
41	or/39-40
42	41 use ppez
43	*Community Mental Health Centers/

#	Searches
44	rehabilitation centers/
45	43 or 44
46	45 use psyh
47	high dependency.tw.
48	((inpatient or in-patient or long-stay) adj2 (rehabilitation or rehabilitative)).tw.
49	(rehab* adj2 ward*).tw.
50	(lock* adj2 ward* adj2 treatment*).tw.
51	(open adj2 ward* adj2 (rehabilitation or treatment*)).tw.
52	(Low adj2 secure).tw.
53	((lock* or open) adj communit*).tw.
54	(communit* adj3 rehabilitation).tw.
55	(community-based and rehabilitation).tw.
56	(Community-based adj3 (inpatient or in-patient)).tw.
57	(communit* adj2 team*).tw.
58	community mental health team*.tw.
59	(communit* adj2 placement).tw.
60	(Rehabilitation adj2 service*).tw.
61	"out of area".tw.
62	38 or 42 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61
63	32 and 62
64	limit 63 to (yr="1990 - current" and english language)
65	limit 64 to yr="2005 -current"
66	limit 64 to yr="1990 - 2004"
67	remove duplicates from 65
68	remove duplicates from 66
69	67 or 68

Database: Cochrane Library

Date searched: 04/02/2019

#	Searches
1	MeSH descriptor: [Psychotic Disorders] explode all trees
2	(psychos?s or psychotic):ti,ab,kw
3	MeSH descriptor: [Schizophrenia] explode all trees
4	MeSH descriptor: [Schizophrenia Spectrum and Other Psychotic Disorders] explode all trees
5	(schizophren* or schizoaffective*):ti,ab,kw
6	MeSH descriptor: [Bipolar Disorder] explode all trees
7	(((bipolar or bipolar type) near/2 (disorder* or disease or spectrum))):ti,ab,kw
8	MeSH descriptor: [Delusions] this term only
9	((delusion* near/3 (disorder* or disease))):ti,ab,kw
10	MeSH descriptor: [Mental Disorders] this term only
11	((psychiatric near/2 (illness* or disease* or disorder* or disabilit* or problem*))):ti,ab,kw
12	(((severe or serious) near/3 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*)))):ti,ab,kw
13	((complex near/2 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*)))):ti,ab,kw
14	(#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13)
15	MeSH descriptor: [Rehabilitation Centers] this term only
16	MeSH descriptor: [Community Mental Health Centers] this term only
17	(high dependency):ti,ab,kw
18	((inpatient or in-patient or long-stay) near/2 (rehabilitation or rehabilitative)):ti,ab,kw
19	(rehab* near/2 ward*):ti,ab,kw
20	(lock* near/2 ward* near/2 treatment*):ti,ab,kw

#	Searches
21	(open near/2 ward* near/2 (rehabilitation or treatment*)):ti,ab,kw
22	(Low near/2 secure):ti,ab,kw
23	((lock* or open) near communit*):ti,ab,kw
24	(communit* near/3 rehabilitation):ti,ab,kw
25	(community-based and rehabilitation):ti,ab,kw
26	(Community-based near/3 (inpatient or in-patient)):ti,ab,kw
27	(communit* near/2 team*):ti,ab,kw
28	(community mental health team*):ti,ab,kw
29	(communit* near/2 placement):ti,ab,kw
30	(Rehabilitation near/2 service*):ti,ab,kw
31	("out of area"):ti,ab,kw
32	(communit* near/2 recover* near/2 (team* or service*)):ti,ab,kw
33	(#15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32)
34	#14 AND #33 with Cochrane Library publication date Between Jan 1990 and Feb 2019

Database: CRD

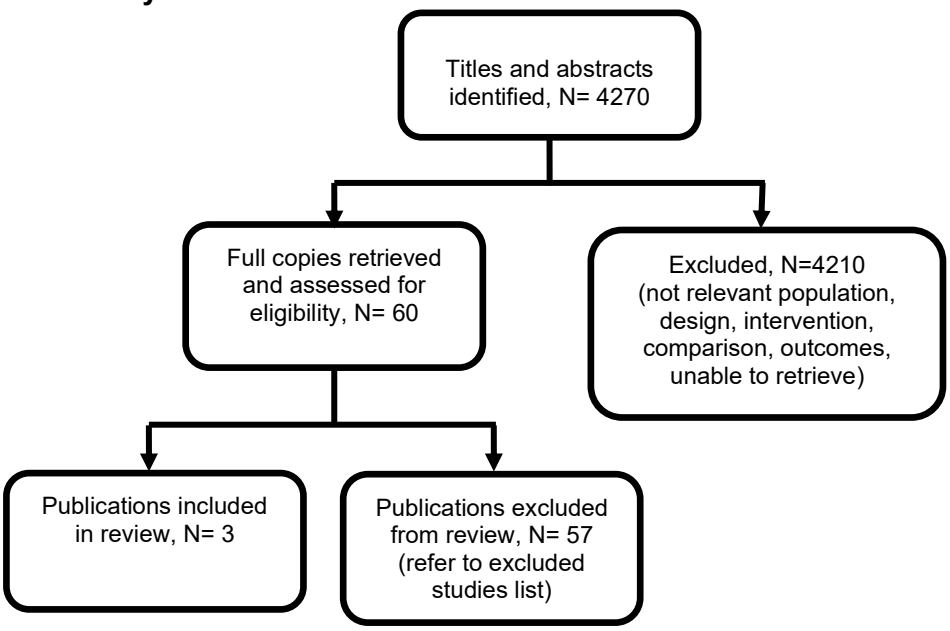
Date searched: 04/02/2019

#	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

Appendix C – Clinical evidence study selection

Clinical study selection for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

Figure 1: Study selection flow chart



Appendix D – Clinical evidence tables

Clinical evidence tables for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

Table 4: Clinical evidence tables (insert using Smart Paste from STAR and then reformat if needed

Study details	Participants	Interventions	Outcomes and Results	Comments
Full citation Dieterich, M., Irving, C. B., Bergman, H., Khokhar, M. A., Park, B., Marshall, M., Intensive case management for severe mental illness, Cochrane Database of Systematic Reviews, 2017 (1) (no pagination), 2017 **Ref Id** 894151 **Country/ies where the study was carried out** International: included trials from Australia, Canada, USA, Europe; and one trial from China. **Study type** Systematic review **Aim of the study**	**Sample size** 40 trials with 7524 participants were included. **Characteristics** 20/40 trials included patients with "severe mental illness" - the definition of this varied across studies from schizophrenic disorder alone to wider diagnostic groups including schizophrenic, affective, and personality disorder. 18/40 trials involved patients with various diagnoses but the majority had a psychotic disorder. In two trials it was unclear what diagnostic criteria were used. The overall mean age (reported in 32/40 trials)	**Interventions** 29 trials compared intensive case management (ICM) with standard care. 12 trials compared ICM with non-ICM. Intensive case management was defined as: where the majority of people received a package of care based on the: Assertive Community Treatment model, Assertive Outreach model or Case Management model. With a caseload of 20 people or less. Non-intensive case management was defined as: where the majority of people received a package of care based on the: Assertive Community Treatment model, Assertive Outreach model or Case Management model. With a caseload of more than 20 people. Standard care was defined as: where the majority of people	**Results** Primary outcome was service use (days in hospital and not remaining in contact with psychiatric services). Secondary outcomes were: service use (readmission, use of emergency services, adverse effects, global state, social functioning, mental state, behaviour, quality of life, satisfaction and costs. Follow-up was grouped as follows: short term (up to 6 months), medium term (6 to 12 months) and long term (over 12 months).	**Limitations** ROBIS checklist summary Concerns regarding specification of study eligibility criteria. LOW CONCERN Concerns regarding methods used to identify and/or select studies. LOW CONCERN Concerns regarding methods used to collect data and appraise studies. LOW CONCERN Concerns regarding methods used to synthesize results. LOW CONCERN Risk of bias: Low Risk of bias for individual outcomes is based on the critical appraisal reported in the review **Other information** None

Study details	Participants	Interventions	Outcomes and Results	Comments
1) To compare the effectiveness of intensive case management versus standard care in people with severe mental illnesses 2) To compare the effectiveness of intensive case management versus non intensive case management in people with severe mental illnesses **Study dates** Literature search date was 2015. **Source of funding** The study was carried out by the Cochrane Schizophrenia Group. The National Institute for Health Research (NIHR) is the largest single funder of this group.	was 38 years. All trials were in the community setting. **Inclusion criteria** Studies with: 1) Study design: Randomised controlled trials (RCTs), quasi randomised controlled trials and economic evaluations accompanying RCTs 2) Population: Age between 18 and 65 years and a diagnosis of severe mental illness or schizophrenia, schizophrenia-like disorders, bipolar disorder, depression with psychotic features or/ and personality disorder; and not having acute illness and being treated in a community setting 3) Intervention: Intensive case management including assertive community treatment, assertive outreach model and case management model, with a case load of	received a community or outpatient model of care not specifically shaped on either the model of Assertive Community Treatment and Case Management, and not working within a designated named package or approach to care. Standard care was variable across trials in different countries at different time periods. Presence of further specialised services, such as rehabilitation or psychotherapist services, were variable within standard care services. In some studies, both ICM and standard care incorporated services for substance abuse treatment and homelessness care. The comparison ICM vs Non ICM is of relevance to the guideline because it compares: a comprehensive range of treatment, rehabilitation, and support services with a caseload of 20 people or less versus similar range of treatment, rehabilitation, and support services with a case load higher than 20.		

Study details	Participants	Interventions	Outcomes and Results	Comments
	up to 20 people for intensive and more than 20 for non-intensive case management. 4) Outcomes: Service use, adverse effects, global state, social functioning, mental state, behaviour, quality of life, satisfaction, costs **Exclusion criteria** 1) Studies with observational study design 2) Studies with participants having substance abuse disorder alone			
Full citation Gater, R., Goldberg, D., Jackson, G., Jennett, N., Lowson, K., Ratcliffe, J., Saraf, T., Warner, R., The care of patients with chronic schizophrenia: A comparison between two services, Psychological medicine, 27, 1325-1336, 1997 **Ref Id** 974403 **Country/ies where the study was carried out** United Kingdom	**Sample size** 108 **Characteristics** Age (mean): Intervention: 47 years Control: 43 years Females: Intervention: 31% Control: 51% Time since first recorded contact with psychiatric services (years): Intervention: 15 years Control: 14 years	**Interventions** Intervention: Multi-disciplinary community team with close links with primary care Control: Traditional services at district general hospital psychiatric unit	**Results** Activities of daily living assessed using Needs for Care schedule (personal care, shopping, getting meals, managing the household chores): At 2-year follow-up: Intervention: 40/48 Control: 36/59 At 4-year follow-up: Intervention: 11/14 Control: 7/21 Quality of life (assessed using Lancashire Quality of Life Scale):	**Limitations** Risk of bias assessed with Cochrane risk of bias assessment tool Risk of bias assessed using the Cochrane risk of bias assessment tool Random sequence generation: unclear risk; Allocation concealment: unclear risk, allocation concealment not described Blinding of participants and personnel: high risk; blinding of participants not described Blinding of outcome assessment:

Study details	Participants	Interventions	Outcomes and Results	Comments
Study type Cluster RCT **Aim of the study** To compare the effectiveness of multi-disciplinary community team service with close links to primary care with traditional psychiatric service in district general hospital psychiatric unit Study dates Details not reported. The intervention was offered during 1990 (as mentioned in reference to staff working time equivalent on pg. 1327) **Source of funding** This study was funded by the Department of Health and the North West Regional Health Authority.	**Inclusion criteria** 1) Age between 16 and 65 years 2) Diagnosis of schizophrenia 3) Symptoms or medication started at least 2 years before the study **Exclusion criteria** 1) Only patients with severe handicap 2) Severe forensic problems 3) Drug dependence			low risk; assessors not blinded to allocation, but bias minimized by consensus ratings with two blind raters Attrition bias: high risk; 20% patients referred declined to take part in the study. Selective reporting: low risk; all outcomes reported in sufficient detail for analysis Other bias: low risk **Other information** None
Full citation Lavelle, E; Ijaz, A; Killaspy, H, Mental Health Rehabilitation and Recovery Services in	**Sample size** 229 patients recruited from 5 centres. 126 (63%) were receiving mental health rehabilitation services and	**Interventions** Rehabilitation services (N=126): 12% were in inpatient rehab wards, 19% in high support hostel, 16% in medium support	**Results** Successful progress over the 18 month study period was defined in two ways: 1) If recruited as an	**Limitations** RoBINs-I checklist summary: Bias due to confounding: (moderate - some differences

Study details	Participants	Interventions	Outcomes and Results	Comments
Ireland: a multicentre study of current service provision, characteristics of service users and outcomes for those with and without access to these services, 2011 **Ref Id** 1000656 **Country/ies where the study was carried out** Ireland **Study type** Multicentre audit **Aim of the study** i) describe current rehabilitation service provision in Ireland; ii) describe a representative sample of users of these services and investigate clinical outcomes and costs for those receiving and those wait listed for rehabilitation; iii) investigate service and service user characteristics associated with better clinical outcomes.	were included in the comparison. **Characteristics** Diagnosis: 82% schizophrenia, 8% schizoaffective disorder, 10% bipolar disorder. 64% participants were male with a mean age of 45 years. **Inclusion criteria** Clinical diagnosis of a severe and enduring mental health problems (schizophrenia, schizoaffective disorder, bipolar affective disorder) and a history of high use of inpatient services (at least six admissions over their lifetime or at least three admissions or 180 inpatient days within the last two years). Treated in one of five mental health services located in urban and rural areas of Ireland: St Ita's Hospital, Dublin; St Loman's Hospital, Dublin; Cavan/Monaghan; Clare; St Senan's Hospital, Wexford. Each centre	hostel, 10% in low support hostel, 20% with family or friends, 22% were independent tenancy or own home. For the waiting list control group: 66/74 (89%) were living in the community and 8/74 (11%) were inpatients.	inpatient, having been discharged from hospital and able to maintain a community placement without placement breakdown or readmission to hospital; if recruited as a community patient, maintaining the community placement or moving to less supported accommodation without any admission to hospital; Successful progress in rehabilitation was more likely in those receiving rehabilitation in community compared to those in hospital settings. (n = 126, OR 14.39, 95% CI 3.79 to 54.54) at 18 months follow-up.	between those in rehabilitation & those on wait-list in terms of employment & accommodation) Bias in selection of participants into the study: (low) Bias in classification of interventions: (moderate - rehabilitation based on Vision for Change criteria for specialist mental health rehabilitation services but potential differences between units) Bias due to deviations from intended interventions: low Bias due to missing data: low Bias in measurement of outcomes: low Bias in selection of the reported result: low Overall bias: moderate risk of bias **Other information** None

Study details	Participants	Interventions	Outcomes and Results	Comments
Study dates 2007 - 2010 **Source of funding** Funded by the Mental Health Commission Research Scholarship Programme	aimed to recruit 25 participants in receipt of rehabilitation services and 15 participants receiving standard care from the local mental health service who had been referred for rehabilitation (wait listed). **Exclusion criteria** In order to minimise a "dose" effect of rehabilitation, those patients most recently taken on for rehabilitation (within the last 12 months) were recruited first. Recruitment was extended to those who had received rehabilitation longer than this only if 25 participants had not been recruited in a given rehabilitation centre.			
Full citation Sellwood, W., Thomas, C. S., Tarrier, N., Jones, S., Clewes, J., James, A., Welford, M., Palmer, J., McCarthy, E., A randomised controlled trial of home-based rehabilitation versus	**Sample size** 65 **Characteristics** Age (mean, SD): Home-based rehabilitation (n=29): 42.5(9.9) years Hospital outpatient	**Interventions** Home-based rehabilitation (n=29): The home-based rehabilitation intervention was in addition to any existing treatment, and was composed of a highly individualised treatment package prepared by an occupational therapist and a clinical	**Results** Follow up: 9 months Social function (assessed using Social functioning scale, mean(SD)) Home-based rehabilitation (n=29): Pre-intervention:	**Limitations** Risk of bias assessed with Cochrane risk of bias assessment tool Risk of bias assessed using the Cochrane risk of bias assessment tool Random sequence generation: unclear risk;

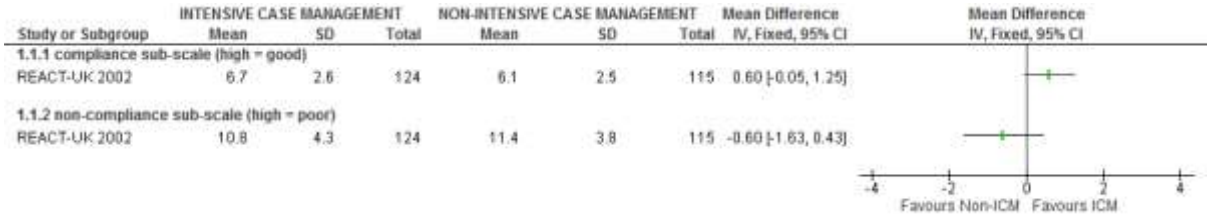
Study details	Participants	Interventions	Outcomes and Results	Comments
outpatient-based rehabilitation for patients suffering from chronic schizophrenia, Social Psychiatry & Psychiatric EpidemiologySoc Psychiatry Psychiatr Epidemiol, 34, 250-3, 1999 **Ref Id** 766915 **Country/ies where the study was carried out** United Kingdom **Study type** RCT **Aim of the study** To compare the effectiveness of home based rehabilitation versus outpatient based rehabilitation service in people with chronic schizophrenia **Study dates** 1993 to 1995 **Source of funding** Not reported	rehabilitation (n=36): 38.2(8.6) years Age at first admission (mean, SD): Home-based rehabilitation (n=29): 26.2(6.7) years Hospital outpatient rehabilitation (n=36): 25.9(6.8) years Living group: Home-based rehabilitation: Alone: 10/29, Family: 8/29, Staffed home: 10/29, Unstaffed home: 1/29, Other:0/29; Hospital outpatient rehabilitation: Alone: 6/36, Family: 14/36, Staffed home: 10/36, Unstaffed home: 2/36, Other:4/36 **Inclusion criteria** 1) Diagnosis of schizophrenia using DSM IV criteria 2) Duration of illness 2 years or more **Exclusion criteria**	psychologist in partnership with the patient and any other agencies that were involved, including informal carers. The home-based treatment was individualised and tailored according to patient needs and included problems of everyday living such as domestic and self-care, budgeting, shopping and cooking; time management, work and leisure; and psychosocial interventions such as prevention of psychotic relapse, cognitive behavioural approaches for positive symptom management, family intervention and modification of challenging behaviour. Hospital outpatient rehabilitation (n=36): The outpatient treatment intervention consisted of outpatient follow-up every 2 to 3 months by a consultant psychiatrist or a trainee psychiatrist, with support from community psychiatric nursing, day hospital and outpatient (hospital-based) occupational therapy, and outpatient psychology.	98.3(10.3) Post-intervention: 101.2 (10.4) Hospital outpatient rehabilitation (n=36): Pre-intervention: 99.6 (8.7) Post-intervention: 101.1 (9.6) Quality of life (assessed using Lancashire Quality of Life Scale, mean(SD)) Home-based rehabilitation (n=29): Pre-intervention: 41.4 (26.1) Post-intervention: 55.1 (26.2) Hospital outpatient rehabilitation (n=36): Pre-intervention: 58.2 (30.0) Post-intervention: 50.9 (30.0)	Allocation concealment: unclear risk, allocation concealment not described Blinding of participants and personnel: high risk; blinding of participants not described Blinding of outcome assessment: low risk; blinding of assessors Attrition bias: high risk; 30% patients referred declined to take part in the study, 22% before and a further 8% after randomisation. 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
	1) Age more than 65 years 2) Those with primarily alcohol or drug related problems			

Appendix E – Forest plots

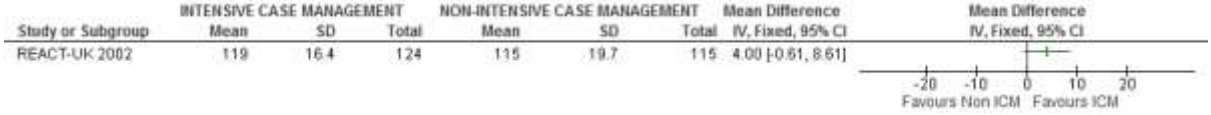
Forest plots for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

Figure 2: Comparison 1. Intensive case management versus non intensive case management; Social functioning: Compliance with medication - average endpoint sub-scale score (ROMI) - by long term



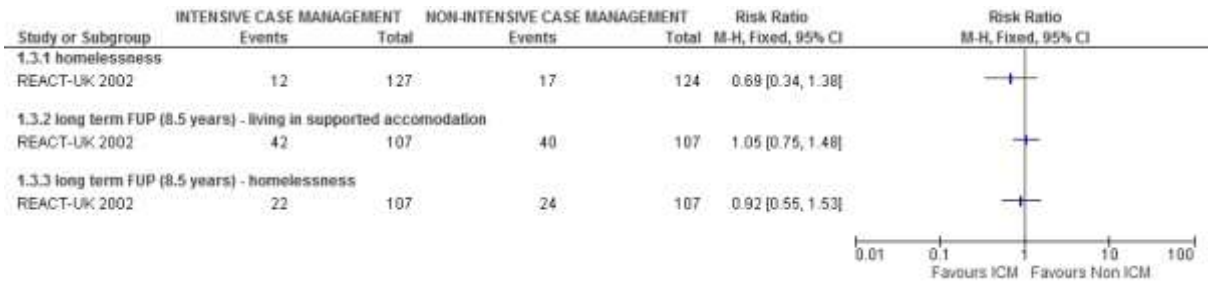
CI: confidence interval; ICM: intensive case management; IV: inverse variance; ROMI: rating of medication influences; SD: Standard deviation

Figure 3: Comparison 1. Intensive case management versus non intensive case management; Social functioning: Average endpoint score (LSP, high = poor) - by long term



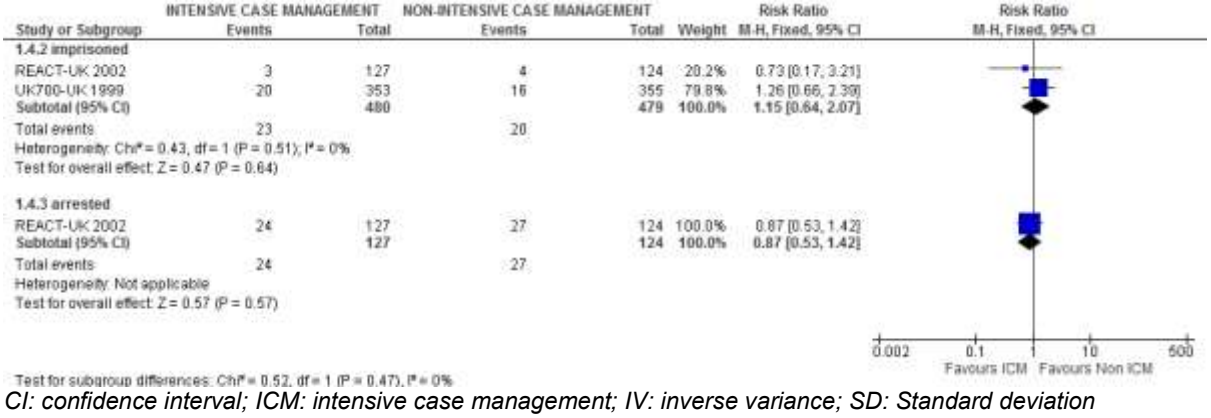
CI: confidence interval; ICM: intensive case management; IV: inverse variance; LSP: life skills profile; SD: Standard deviation

Figure 4: Comparison 1. Intensive case management versus non intensive case management; Reduction in support: Accommodation status (various measurements; follow up > 12 months)



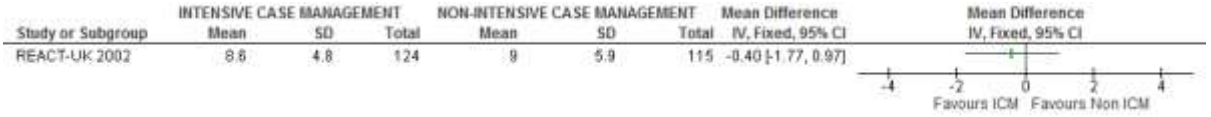
CI: confidence interval; ICM: intensive case management

Figure 5: Comparison 1. Intensive case management versus non intensive case management; Contact with criminal justice system (various measurements; follow up > 12 months)



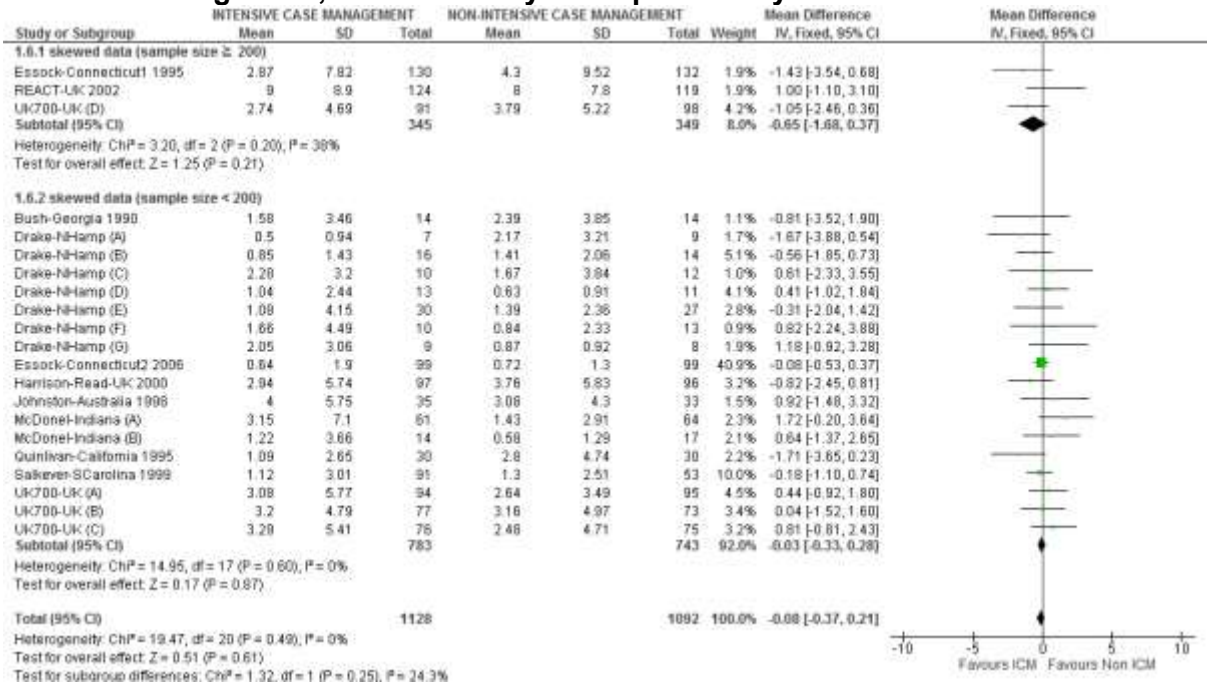
CI: confidence interval; ICM: intensive case management; IV: inverse variance; SD: Standard deviation

Figure 6: Comparison 1. Intensive case management versus non intensive case management; Personal recovery: Global state - average endpoint score (HoNOS, high = poor) - by long term



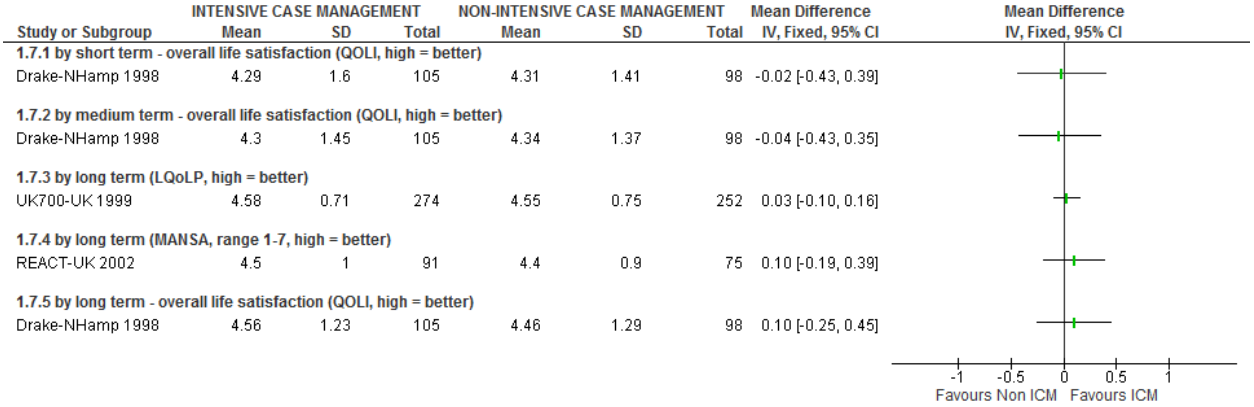
CI: confidence interval; HoNOS: health of the nation outcomes scales; ICM: intensive case management; IV: inverse variance; SD: Standard deviation

Figure 7: Comparison 1. Intensive case management versus non intensive case management; Number of days as inpatient - by about 24 months



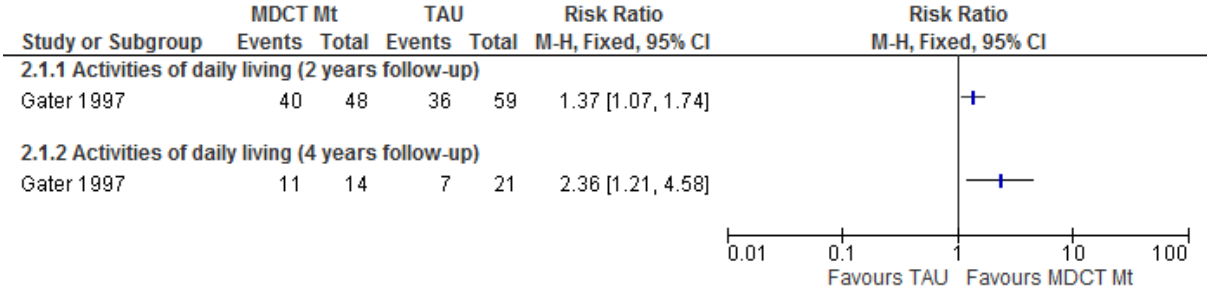
CI: confidence interval; ICM: intensive case management; IV: inverse variance; SD: Standard deviation

Figure 8: Comparison 1. Intensive case management versus non intensive case management; Quality of life: Average endpoint score (various scales)



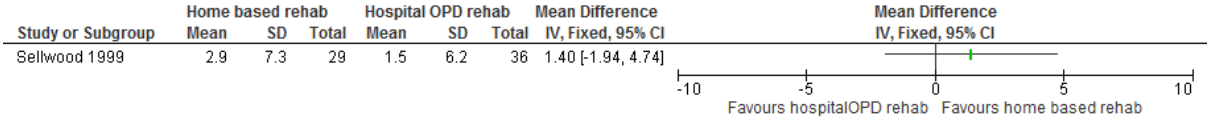
CI: confidence interval; ICM: intensive case management; IV: inverse variance; LQoLP: lancashire quality of life profile; QOLI: quality of life inventory, MANSA: Manchester short assessment of quality of life; MD: mean difference; SD: Standard deviation

Figure 9: Comparison 2: Multi-disciplinary community team management versus TAU. Activities of daily living at 2 and 4 years follow up, measured by Needs assessment schedule



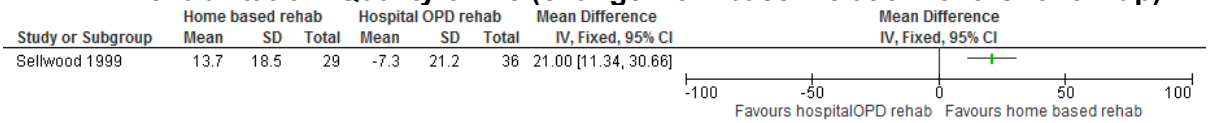
CI: confidence interval; MDCT Mt: :multi-disciplinary community team management; TAU: treatment as usual

Figure 10: Comparison 3: Home based rehabilitation versus Hospital OPD based rehabilitation. Social functioning (change from baseline at 9 month follow up)



CI: confidence interval; IV: inverse variance; OPD: outpatient department; SD: Standard deviation

Figure 11: Comparison 3: Home based rehabilitation versus Hospital OPD based rehabilitation. Quality of life (change from baseline at 9 months follow up)



CI: confidence interval; IV: inverse variance; OPD: outpatient department; SD: Standard deviation

1

Appendix F – GRADE tables

GRADE tables for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

Table 5: Clinical evidence profile for Comparison 1. Intensive case management versus non intensive case management

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intensive Case Management	Non-Intensive Case Management	Relative (95% CI)	Absolute		
Social functioning: Compliance with medication - average endpoint sub-scale score (ROMI) - long term follow-up - compliance sub-scale (high = good) (Better indicated by higher values)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	124	115	-	MD 0.6 higher (0.05 lower to 1.25 higher)	LOW	CRITICAL
Social functioning: Compliance with medication - average endpoint sub-scale score (ROMI) - by long term - non-compliance sub-scale (high = poor) (Better indicated by lower values)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	124	115	-	MD 0.6 lower (1.63 lower to 0.43 higher)	LOW	CRITICAL
Social functioning: Average endpoint score (LSP, high = poor) - long term follow up (Better indicated by lower values)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	124	115	-	MD 4 higher (0.61 lower to 8.61 higher)	LOW	CRITICAL
Positive outcome of rehab: Accommodation status (various measurements; follow up > 12 months) - homelessness												

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intensive Case Management	Non-Intensive Case Management	Relative (95% CI)	Absolute		
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	none	12/127 (9.4%)	17/124 (13.7%)	RR 0.69 (0.34 to 1.38)	43 fewer per 1000 (from 90 fewer to 52 more)	VERY LOW	CRITICAL
Positive outcome of rehab: Accommodation status (various measurements; follow up > 12 months) - long term follow up (8.5 years) - living in supported accommodation												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	none	42/107 (39.3%)	40/107 (37.4%)	RR 1.05 (0.75 to 1.48)	19 more per 1000 (from 93 fewer to 179 more)	VERY LOW	CRITICAL
Positive outcome of rehab: Accommodation status (various measurements; follow up > 12 months) - long term follow up (8.5 years) - homelessness												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[3]	none	22/107 (20.6%)	24/107 (22.4%)	RR 0.92 (0.55 to 1.53)	18 fewer per 1000 (from 101 fewer to 119 more)	LOW	CRITICAL
Contact with criminal justice system (various measurements; follow up > 12 months) - imprisoned												
2	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	none	23/480 (4.8%)	20/479 (4.2%)	RR 1.15 (0.64 to 2.07)	6 more per 1000 (from 15 fewer to 45 more)	VERY LOW	IMPORTANT
Contact with criminal justice system (various measurements; follow up > 12 months) - arrested												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	none	24/127 (18.9%)	27/124 (21.8%)	RR 0.87 (0.53 to 1.42)	28 fewer per 1000 (from 102 fewer to 91 more)	VERY LOW	IMPORTANT
Recovery: Global state - average endpoint score (HoNOS, high = poor) - at long term follow-up (Better indicated by lower values)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	124	115	-	MD 0.4 lower (1.77 lower to	LOW	IMPORTANT

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intensive Case Management	Non-Intensive Case Management	Relative (95% CI)	Absolute	Quality	Importance
										0.97 higher)		
Average number of days in hospital per month - by about 24 months (Better indicated by lower values)												
21	randomised trials	serious[4]	no serious inconsistency	no serious indirectness	no serious imprecision	none	1128	1092	-	MD 0.08 lower (0.37 lower to 0.21 higher)	MODERATE	IMPORTANT
Average number of days in hospital per month - by about 24 months - skewed data (sample size ≧ 200) (Better indicated by lower values)												
3	randomised trials	serious[4]	no serious inconsistency	no serious indirectness	serious[2]	none	345	349	-	MD 0.65 lower (1.68 lower to 0.37 higher)	LOW	IMPORTANT
Average number of days in hospital per month - by about 24 months - skewed data (sample size < 200) (Better indicated by lower values)												
18	randomised trials	serious[4]	no serious inconsistency	no serious indirectness	no serious imprecision	none	783	743	-	MD 0.03 lower (0.33 lower to 0.28 higher)	MODERATE	IMPORTANT
Quality of life: Average endpoint score (various scales) - by short term - overall life satisfaction (QOLI, high = better) (Better indicated by higher values)												
1	randomised trials	serious[4]	no serious inconsistency	no serious indirectness	serious[2]	none	105	98	-	MD 0.02 lower (0.43 lower to 0.39 higher)	LOW	IMPORTANT
Quality of life: Average endpoint score (various scales) - by medium term - overall life satisfaction (QOLI, high = better) (Better indicated by higher values)												
1	randomised trials	serious[4]	no serious inconsistency	no serious indirectness	serious2	none	105	98	-	MD 0.04 lower (0.43 lower to 0.35	LOW	IMPORTANT

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intensive Case Management	Non-Intensive Case Management	Relative (95% CI)	Absolute		
										higher)		
Quality of life: Average endpoint score (various scales) - by long term (LQoLP, high = better) (Better indicated by higher values)												
1	randomised trials	serious[4]	no serious inconsistency	no serious indirectness	serious[2]	none	274	252	-	MD 0.03 higher (0.1 lower to 0.16 higher)	LOW	IMPORTANT
Quality of life: Average endpoint score (various scales) - by long term (MANSA, range 1-7, high = better) (Better indicated by higher values)												
1	randomised trials	serious[4]	no serious inconsistency	no serious indirectness	serious[2]	none	91	75	-	MD 0.1 higher (0.19 lower to 0.39 higher)	LOW	IMPORTANT
Quality of life: Average endpoint score (various scales) - by long term - overall life satisfaction (QOLI, high = better) (Better indicated by higher values)												
1	randomised trials	serious[4]	no serious inconsistency	no serious indirectness	serious[2]	none	105	98	-	MD 0.1 higher (0.25 lower to 0.45 higher)	LOW	IMPORTANT

CI: confidence interval; LQoLP: Lancashire quality of life profile; LSP: life skills profile; ROMI: rating of medication influences; QOLI: quality of life inventory, MANSA: Manchester short assessment of quality of life; MD: mean difference; RR: relative risk
1 Downgraded by 1 level for risk of bias: problematic to blind
2 Downgraded by 1 level for imprecision: as confidence interval crosses 1 MID
3 Downgraded by 2 levels for very serious imprecision as CI crosses 2 MIDs
4 Downgraded by 1 level due to serious risk of bias in included studies

Table 6: Clinical evidence profile for Comparison 2: Multi-disciplinary community team management versus treatment as usual

Quality assessment	No of patients	Effect	Quality	Importance

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Multi-disciplinary community team	TAU	Relative (95% CI)	Absolute		
Activities of daily living skills (follow-up mean 2 years)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	40/48 (83.3%)	36/59 (61%)	RR 1.37 (1.07 to 1.74)	226 more per 1000 (from 43 more to 452 more)	LOW	IMPORTANT
Activities of daily living skills (follow-up mean 4 years)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	11/14 (78.6%)	7/21 (33.3%)	RR 2.36 (1.21 to 4.58)	453 more per 1000 (from 70 more to 1000 more)	LOW	IMPORTANT

CI: confidence interval; RR: relative risk; TAU: treatment as usual
1 Downgraded by 1 level for serious risk of bias in the included study due to attrition bias
2 Downgraded by 1 level due to serious imprecision as confidence interval crosses 1 MID

Table 7: Clinical evidence profile for Comparison 3: Home based rehabilitation versus Hospital outpatient department based rehabilitation

Quality assessment							No of patients		Effect			
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Home based rehabilitation	Hospital OPD based rehabilitation	Relative (95% CI)	Absolute	Quality	Importance
Social functioning (SFS: change from baseline at 9 month follow-up) (follow-up mean 9 months; Better indicated by higher values)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	29	36	-	MD 1.4 higher (1.94	LOW	CRITICAL

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Home based rehabilitation	Hospital OPD based rehabilitation	Relative (95% CI)	Absolute		
										lower to 4.74 higher)		
Quality of life (Lancashire Quality of Life Scale; change from baseline at 9 month follow-up) (follow-up mean 9 months; Better indicated by higher values)												
1	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	29	36	-	MD 21 higher (11.34 higher to 30.66 higher)	MODERATE	IMPORTANT

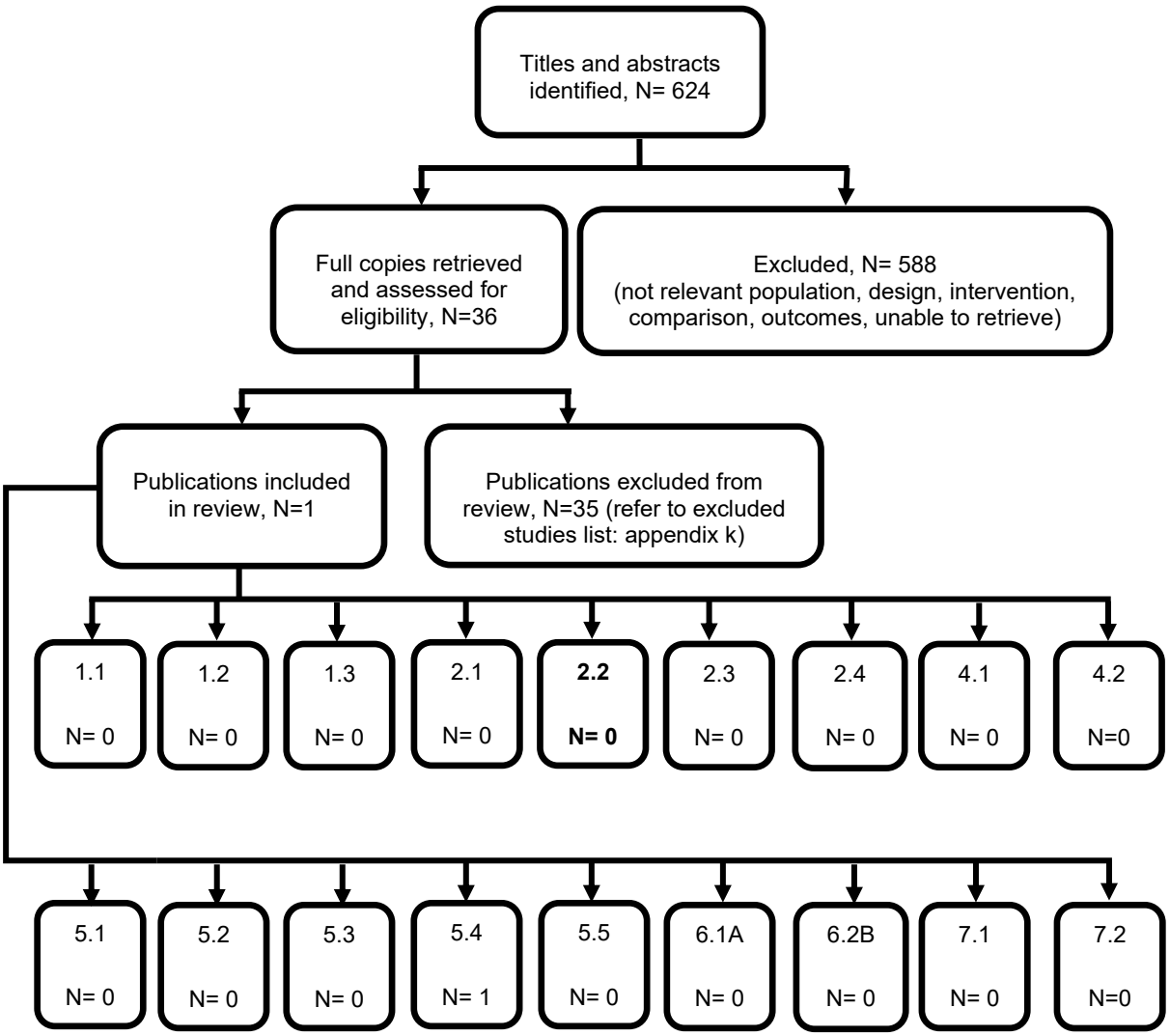
CI: confidence interval; MD: mean difference; OPD: outpatient department; SFS: social functioning scale
1 Downgraded by 1 level for serious risk of bias in the included study due to attrition bias
2 Downgraded by 1 level due to serious imprecision as confidence interval crosses 1 MID

Appendix G – Economic evidence study selection

Economic evidence study selection for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

A global health economic literature search was undertaken, covering all review questions in this guideline. However, as shown in Figure 12, no evidence was identified which was applicable to review question 2.2

Figure 12: Health economic study selection flow chart



Appendix H – Economic evidence tables

Economic evidence tables for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

No evidence was identified which was applicable to this review question.

Appendix I – Economic evidence profiles

Economic evidence profiles for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

No evidence was identified which was applicable to this review question.

Appendix J – Economic analysis

Economic evidence analysis for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

1.1 Introduction

Disinvestment in NHS rehabilitation services, after the publication of the National Service Framework for Mental Health led to a rise in provision of 'out-of-area placements' (OAPs) in the independent sector for people with longer term and complex mental health problems who could not be discharged within the community from acute admission wards (Joint Commissioning Panel for Mental Health [JCPHM] 2016). Because of this disinvestment, it has been identified that there was a reduction of nearly a third of local inpatient rehabilitation services from the level that existed in 2009.

The JCPHM guidance for commissioners emphasises the importance of local care pathways for people with complex mental health needs and to minimise the use of OAPs. However, a report by the Care Quality Commission (CQC), expressed concern about the high number of beds in rehabilitation wards that are situated a long way from a patient's home address, meaning that people can become isolated from their friends, families and their mental health team (CQC 2017). A later report included data based on an information request to all providers in England that manage mental health rehabilitation inpatient services, yielding data on 85% to 90% of all rehabilitation wards (CQC 2018). The CQC (2017)report found that 78% of patients placed out-of-area were in an independent sector bed and recommended that the Department of Health and Social Care (DHSC) and NHS England agree a plan to:

> "*Engage local health and care systems in a programme of work to reduce the number of patients placed in mental health rehabilitation wards that are out of area*".

In addition, a policy directive from NHS England in the NHS Mental Health Implementation Plan 2019/20 – 2023/24 breaks down funding for; "new integrated community models for adults with severe mental illness (including care for people with eating disorders, mental health rehabilitation needs and a personality disorder diagnosis."

The scope for this guideline identified the incidence of OAPs as a key concern. The guideline committee also agreed that this was a priority area for the guideline due to

the potentially significant changes to the structure of services. For these reasons, this topic was prioritised for economic analysis.

No economic evaluations on this topic were identified in the global health economic search. In addition, no studies were identified in the accompanying clinical review on outcomes pertaining to OAPs. The committee felt this was an important topic that warranted economic analysis and were unanimous that reducing OAP would be beneficial for patient outcomes. Therefore, a de novo economic model was constructed, despite the limited availability of data elicited from the guideline systematic review. As a result of the limitations surrounding the clinical review and the difficulty with expressing effectiveness in terms of QALYs, the model was structured as a 'what-if' costing analysis to compare the downstream costs of out-of-area placements at the current rate with a hypothetical reduction, whereby a reduction of such placements occurs.

1.2 Methods

1.2.1 Costing analysis

A costing analysis was developed in Microsoft Excel® to compare the costs between a hypothetical reduction in out of area placements and its impact along the pathway with the current rate of OAPs. The analysis was conducted from the perspective of the NHS and PSS, as outlined in the NICE Reference Case.

The results are expressed as the incremental cost (Ci – Cc) where Ci and Cc represent the cost of a *hypothetical* pathway, and *current* pathway respectively.

1.2.2 Population

The model setting was for the NHS and the population were adults (aged 18 years and older) with complex psychosis and related severe mental health conditions. Specifically, the decision point of the model begins with a cohort of 3408 patients who are already placed in either an independent or NHS ward (CQC 2018).

1.2.2 Strategies assessed and overview of model structure

This model compares current bed occupancy situated out-of-area with a hypothetical scenario where a reduction of OAPs takes place. In both scenarios, rehabilitation wards serve as part of a pathway which includes discharge to community living, broadly defined as: residential care services, supported accommodation and floating outreach services, with each leading to progressively more independent living.

The model was structured as a decision tree with an extended Markov component, as shown in Figure 13 and Figure 14. The structure of the model follows a cohort of patients through a rehabilitation pathway, from an independent or NHS ward and moving on to 3 types of supported accommodation. The time for which each patient is followed in the pathway is 5 years. This time horizon was advised by the committee as being sufficiently long to capture all incremental differences in costs.

The decision tree part of the model is based solely on data extracted from the CQC (2018) report which included probabilities of a patient being placed out of area or locally. In either scenario, a patient can be placed in an independent ward, or an NHS ward. As a result, a patient can end up in 1 of 4 'health states'.

1. OAP → Independent rehabilitation ward
2. OAP → NHS rehabilitation ward

3. Local → Independent rehabilitation ward
4. Local → NHS rehabilitation ward

At each of these 4 end 'states', a patient is discharged to a community placement. This process is characterised by a 'Markov' model to capture the reoccurrence of patients residing in these health states over the course of 5 years.

The possible states a patient enters as they are discharged from an NHS/independent ward are:

1. remain in independent/NHS ward
2. referral to residential services
3. referral to supported accommodation
4. referral to floating outreach.

Probabilities for transitions to and from each state were calculated in yearly cycles. In each cycle, a patient either can remain in a particular state, or be discharged further along the pathway to more independent living. The committee felt that in some cases, patients would not necessarily transition in a linear fashion towards more independent living, therefore, transition from more independent living to less independent living (i.e. floating support to supported accommodation) was also included. Relapse, characterised as 'inpatient admission' was included in the model as a 'tunnel' state. That is, patients in any one of the community living health states could experience a relapse, and would return to their original abode. The committee advised that in nearly all cases, patients would re-enter the original accommodation from which they left within 1 year. As there was no data to suggest otherwise, relapse rates were assumed to be the same in both treatment strategies.

Figure 13: Decision tree for being placed in an out-of-area rehabilitation ward or local placement.

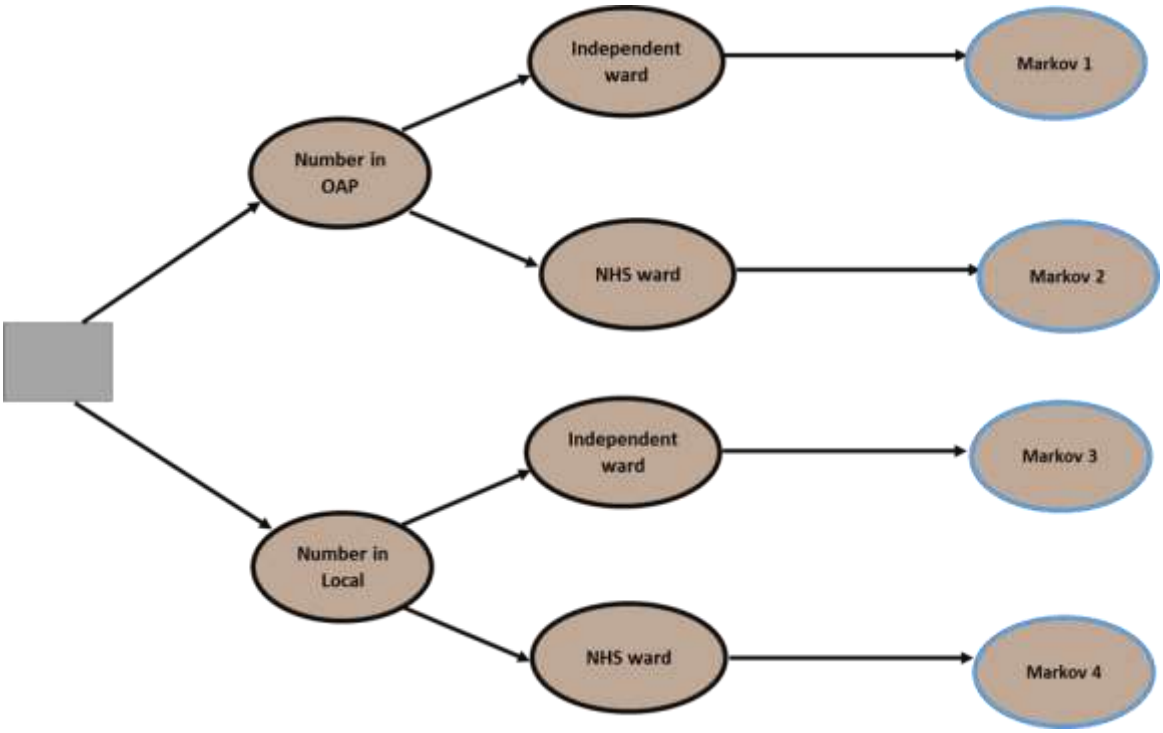
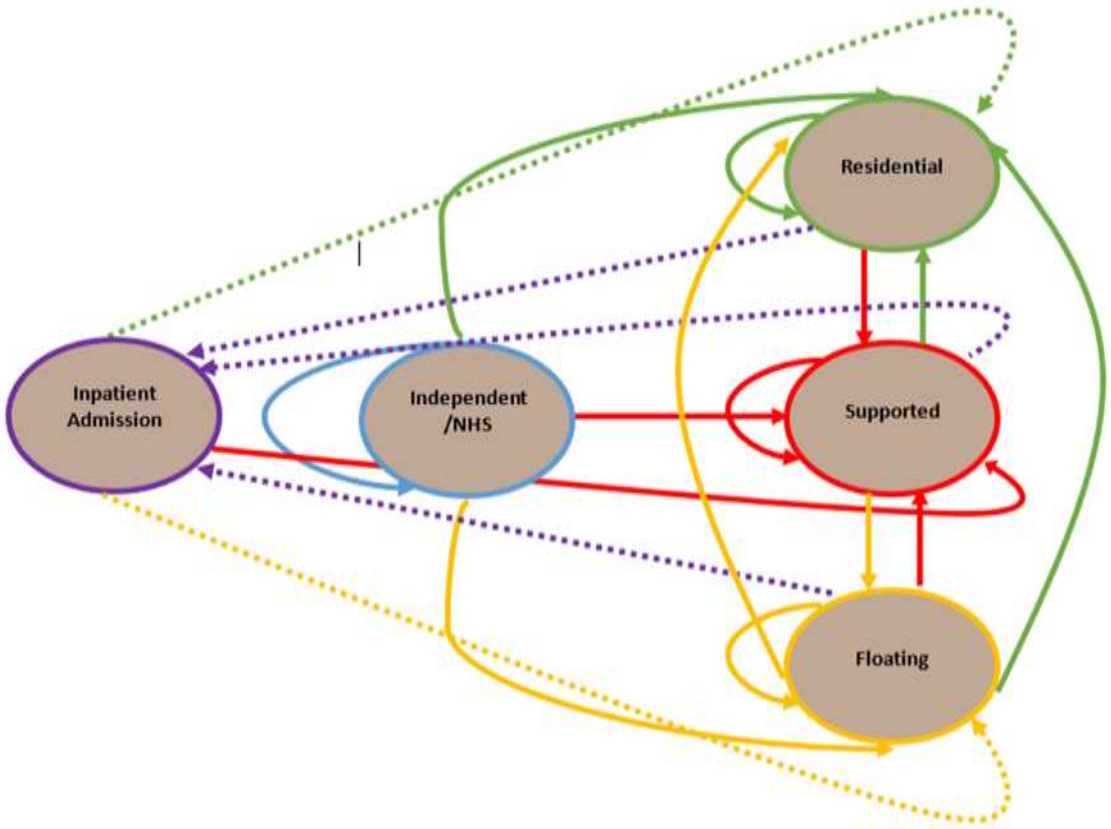


Figure 14: Markov schematic to follow patients as they are discharged from rehabilitation wards



1.2.3 Model inputs

1.2.3.1 Out of area and local placements

Data from the CQC (2018) report "Mental health rehabilitation inpatient services: Ward types, bed numbers and use by clinical commissioning groups and NHS trusts" was used to inform the baseline probabilities of being placed out-of-area or in a local placement ward. The report also included information on the probability of being placed in an independent ward or NHS ward once a patient is placed either out-of-area or locally. Table 8 lists the probabilities as reported in the CQC report. These are the main inputs used in the decision tree part of the mode.

Table 8: Model inputs for the 'current' pathway. These inputs inform the decision tree part of the model

Variable	Value	Description & Source
Starting cohort	3408	CQC 2018 – All patients who were funded by CCGs
Probability in OAP	0.63	CQC 2018
Probability in local placement	0.37	CQC 2018
Proportion of OAP in independent ward	0.78	CQC 2018
Proportion of OAP in NHS ward	0.22	CQC 2018
Proportion of local placements which are independent wards	0.22	CQC 2018
Proportion of local placements which are NHS wards	0.78	CQC 2018

The CQC (2018) report includes data obtained from an information request of between 85% and 90% of all rehabilitation wards in England. Two-thirds of the patients were men, 11% of patients were subject to a restriction order and 75% were detained under the Mental Health Act. The report also notes that CCGs funded 92% of the placements, with the rest funded by an NHS Trust, NHS England or 'Other'. Overall, 3,408 patients were funded by CCGs. This cohort figure is subject to data analysis in the report and is used as the starting cohort in this model.

The majority (63%) of the 3,408 patients funded by a CCG were 'out of area' placements, with 'out-of-area' defined in the CQC (2018) report as a placement bed in a different CCG area to the area that was funding the placement. Of the patients who were in the same area as the CCG funder, 78% were in an NHS ward.

The treatment strategy that acts as the 'intervention' in this model is where there is a hypothetical reduction in the probability of a patient being placed in an OAP. It was the committees' view that there is rarely a clinical reason as to why a patient would be placed in an OAP as opposed to a local placement. Thus, it was assumed in the hypothetical comparison that the probability of being placed in an OAP would reduce to 10%. The committee believed this to be a conservative estimate and so various estimates were tested in a sensitivity analysis. It was also assumed that all the other probabilities in this part of the model would remain constant. That is, once a person is placed in an OAP ward, they would then still be 78% likely to be placed in an independent ward and 22% likely to be placed in an NHS ward.

The table below shows the variables and values used as inputs in the conjectural pathway, assuming that there is a reduction in OAPs.

Table 9: Model inputs for hypothetical pathway

Parameter	Value	Description & Source
Starting cohort	3408	CQC 2018 – All patients who were funded by CCGs
Probability in OAP	0.10[a]	Assumption – based on committee view that people rarely need to be placed out of area
Probability in local placement	0.90[b]	Assumption – based on committee view that people rarely need to be placed out of area – and thus would be

Parameter	Value	Description & Source
		placed locally
Proportion of OAP in an independent ward	0.78	CQC 2018 – assume remaining constant
Proportion of OAP in an NHS ward	0.22	CQC 2018 – assume remaining constant
Proportion of local in an independent ward	0.22	CQC 2018 – assume remaining constant
Proportion of local in an NHS ward	0.78	CQC 2018 – assume remaining constant

(a)(b)This hypothetical probability differs to the current pathway probability equivalent

The average length of stay on a ward was reported as a median. The median length of stay on an independent rehabilitation ward was 444 days whist the median length of stay on an NHS ward was 230 days. These values were in the narrative of the CQC (2018) report and are listed in Table 10. No data on mean or the range of data was provided. Although the range was not provided, it is most likely that the median values are an underestimate of the mean length of stay since the distribution is likely to be right skewed data.

Table 10: Average length of stay by ward type

Ward Type	Length (median days) [a]	Source
Independent rehabilitation ward	444	CQC 2018
NHS rehabilitation ward	230	CQC 2018

(a) Mean not provided. Median may be an underestimation of the mean length of time spent in a ward

1.2.3.2 Integrating pathway

Probabilities for inpatients leaving either an independent or NHS rehabilitation ward and moving on to a community placement were derived from the guideline systematic review in evidence report G. These probabilities were reported over a period between 12 to 30 months and are listed in Table 11. These probabilities are classified as 'Ctp' to reflect transitions under current practice. Probabilities reported at 30 months were computed as a 12-month probability via a rate according to the following formula:

$$r = -[\ln(1 - p)/t]$$

$$p = 1 - \exp\{-rt\}$$

In the table below, 'Ctp' refers to the 'Current transition probability'. That is, the probability of a patient leaving/entering a given health state. The second element of each variable name indicates where the patient has come from and the third element indicates a patient destination within a given year. For example, the variable 'Ctp_supported_residential' refers to a transition probability in the 'current' treatment strategy, whereby a patient leaves a supported accommodation unit and 'enters' a residential care home.

Table 11: Transition probabilities: Inpatient ward to community living

Variable [a]	Probability	Source
Ctp_ward_residential	0.28	Killaspy 2016
Ctp_supported_residential	0.05	Committee assumption
Ctp_float_residential	0.01	Committee assumption
Ctp_ward_supported	0.55	Killaspy 2016
Ctp_float_supported	0.05	Committee assumption

Variable [a]	Probability	Source
Ctp_res_supported	0.04	Killaspy 2019*
Ctp_ward_floating	0.00	Killaspy 2016
Ctp_supported_floating	0.18	Killaspy 2019*
Ctp_residential_floating	0.05	Committee assumption
Ctp_residential_inpatient	0.00	Killaspy 2019*
Ctp_supported_inpatient	0.05	Killaspy 2019*
Ctp_floating_inpatient	0.02	Killaspy 2019*
Ctp_inpatient_residential	0.00	Killaspy 2019*
Ctp_inpatient_supported	0.05	Killaspy 2019*
Ctp_inpatient_floating	0.02	Killaspy 2019*

* 30 month probabilities converted into instantaneous rate and then into a probability over 12 months

(a) 'Ctp': Current transition probability

No effectiveness data were included in the accompanying clinical review. However, included studies from evidence review G did compare data on patients who were assessed as 'ready to be discharged' (Killaspy 2016; Killaspy 2019). Therefore, the hypothetical pathway added the percentage of patients that were clinically ready to be discharged to the probability of those who are already discharged. Table 12 displays the probabilities used to inform the increase in transitions in the hypothetical pathway.

Table 12: Transition probabilities: inpatient ward to community living in the hypothetical pathway

Variable	Probability	Source
Ptp_ward_sup	0.65	Committee assumption
Ptp_support_float	0.32	Killaspy 2019* – Able to be moved on, who haven't
Ptp_res_float	0.08	Killaspy 2019* – Able to be moved on, who haven't

* 30 month probabilities converted into instantaneous rate and then into a probability over 12 months

No data was found for transitions between different types of community placements, though the committee believed that it was important to include transitions between these community placements (i.e. floating outreach to supported accommodation) to reflect actual practice. Owing to a lack of alternative data, assumptions of these values were discussed and agreed amongst the committee.

1.2.3.3 Costs

Costing reflects the UK NHS and PSS perspective of the analysis. The price year is in accordance with NHS reference costs 2017/18, which reflects the most up to date cost year. Cost data prior to 2018 were adjusted for inflation according to the 'Health Services' index using the Consumer Price Index (CPI) – Health (Personal Social Services Research Unit [PSSRU] 2018). Discounting, at a rate of 3.5% was applied to all costs that are incurred after the first year, as per the NICE reference case.

The average unit cost per day of a bed in an NHS or independent ward was informed from the CQC (2018) report. The report highlights that this figure was derived from 77% of providers and that several large independent organisations chose not to provide information, citing commercial sensitivity. It is important to note that these

costs are the *median*, not the mean of the sample. No details on dispersion of cost data are provided in the report, though median values may under-estimate the mean value if the distribution of costs is right skewed. It was not entirely clear what is costed in either the CQC (2018) report or Killaspy (2016). The extent to which these values matter are explored in a sensitivity analysis with extreme values.

Costs for residential care, supported accommodation and floating support were extracted from Killaspy (2016) which provided the mean cost per resident per week and the range. The cost of relapse was presumed to be that of an admission to acute inpatient care units. The NHS reference costs, 2018/18 code 'MHCC13 – Cluster 13: Ongoing or recurrent psychosis (high symptom and disability)' was advised as the relevant population group by the committee's expert opinion with the unit cost per occupied bed day extracted as the relevant cost estimate. A list of all the costs included in the model is displayed below.

Table 13: Costs

Unit Costs	Value	Source
Cost of an independent rehabilitation ward bed (daily)	£354	CQC 2018
Cost of an NHS rehabilitation ward bed (daily)	£350	CQC 2018
Cost of a residential placement (weekly)	£654 [a]	Killaspy 2016
Cost of a placement in supported accommodation (weekly)	£324 [a]	Killaspy 2016
Cost of placement in floating (weekly)	£109 [a]	Killaspy 2016
Cost of readmission to acute care (daily – Cluster 13)	£408	NHS reference costs – 2017/18 – MHCC13

(a) Adjusted for inflation

1.2.3.4 Sensitivity analysis

It is important to note that the model inputs are highly uncertain, therefore the results from the model should be interpreted with caution. A PSA was not undertaken because many inputs were reported without information on dispersion and such an analysis would not address the inherent structural uncertainty in the model.

In order to visualise the key drivers of the model, a series of one-way sensitivity analyse were undertaken whilst holding all other inputs constant. As most of the input parameters in the model did not include information on dispersion, all model values were varied according to a high/low 20% of the deterministic value. The degree to which varying one input impacts on the deterministic incremental costs are stacked in rank order and have an appearance of a 'Tornado'. In a Tornado analysis, the x-axis is typically the incremental net monetary benefit. However, as this model did not include QALY estimates, the x-axis reflects the incremental costs between the current and hypothetical pathway. It is important to note that parameters are not varied simultaneously. However, probabilities for being placed out-of-area or locally were varied concurrently so that probabilities always equalled 100%. For example, the probability of being placed out of area in the current pathway is 63%, and the probability of being placed locally is 37%. If the probability of being placed in an OAP is increased to a high value of 76%, the probability of being placed locally would be 24%.

In order to address the uncertainty in the sources of certain data, further scenario analyses were undertaken to test if this changed the results of the model. These scenarios are listed in Table 14.

Table 14: Scenario analysis

Parameter changed	Default parameter(s) value(s)	Value tested	Rationale
Community care costs	Residential Care: £654 Supported accommodation: £324 Floating outreach: £109	Residential Care: £950 Supported accommodation: £700 Floating outreach: £400	Committee expertise suggested that current values were far lower than their own experience. Estimates based on committees' view that housing benefit would be a key component for floating outreach and supported accommodation. Also, one committee member suggested that residential care costs would usually be higher
Hypothetical probability of being placed out of area	0.10	Range of values: 0.01 to 0.5	Committee believed this to be a conservative, albeit important input parameter and wanted to see how different values effected the result

1.2.3.5 Model validation

The following areas of the model were checked for quality assurance:

- backlog of previous model versions
- plausibility and accuracy of inputs and assumptions were discussed with the committee
- sensitivity analysis using zero and extreme values to check if the results changed in the expected direction
- input parameters in all arms set to an equal value to check if the costs in all arms became equal.
- formulae, macros and coding in Visual Basic (VBA) checked step by step to check if they worked properly.

1.3 Results

1.3.1 Base case results

The incremental costs of the hypothetical pathway versus the current pathway indicate a cost saving of £52,247 from following the hypothetical pathway.

Table 19: Estimated costs of a current and hypothetical pathway: per person

Estimated costs: per person

Current practice	Hypothetical pathway	Difference
£250,785	£198,538	-£52,247

The estimated resource savings presented in the table below are based on a cohort of 3,408 patients (CQC 2018).

Table 18: Estimated costs of a current and hypothetical pathway: 3408 people

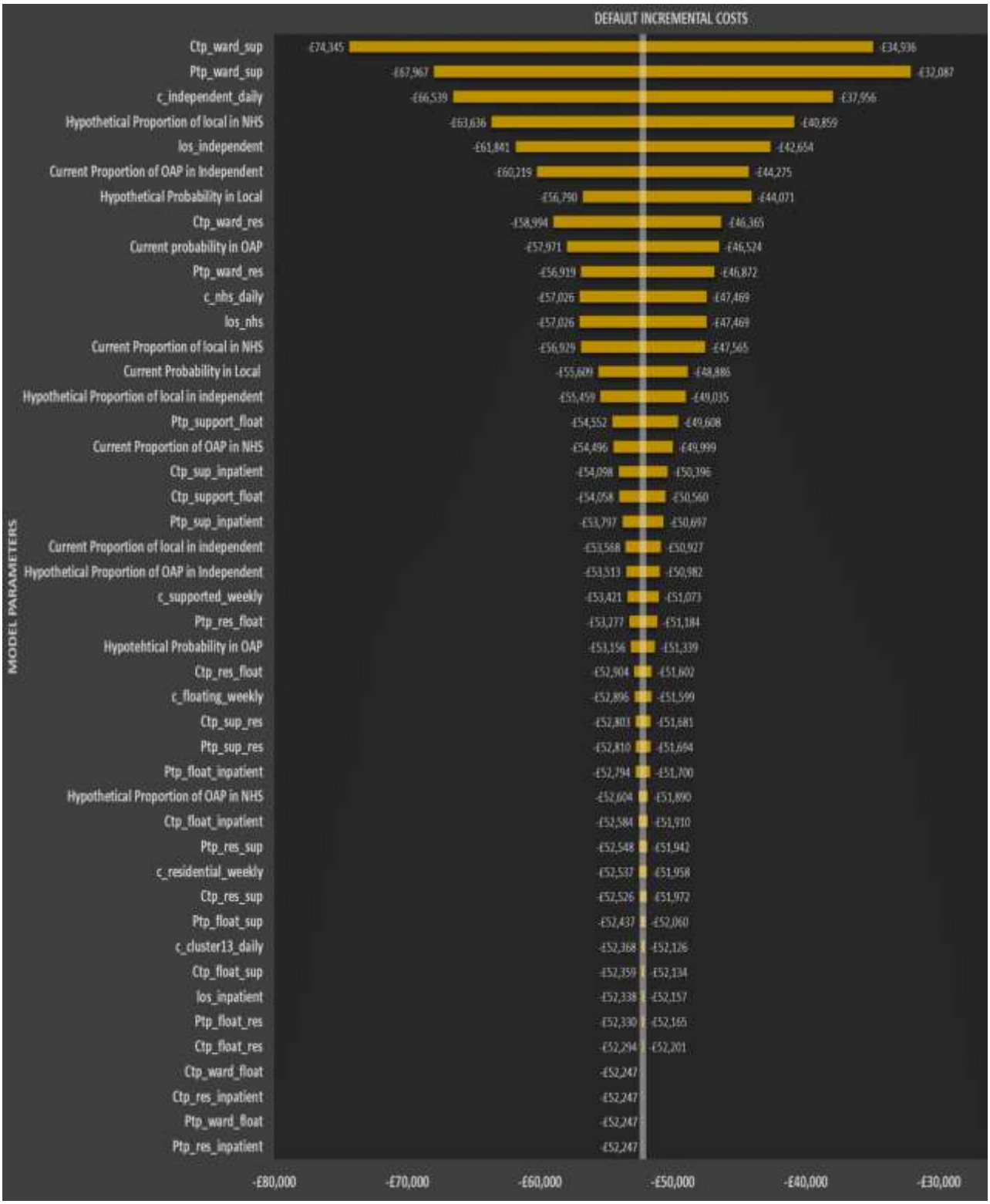
Estimated costs: 3,408 people (CQC 2018)		
Current practice	**Hypothetical pathway**	**Difference**
£854,676,755	£676,618,108	-£178,058,646

The above results point towards an estimated cost saving of £178,058,646 from the hypothetical pathway over 5 years. This figure is likely to be a conservative estimate as it is estimated that this cohort represents 80-90% of the total population that are in rehabilitation with “hard to treat” symptoms” (CQC 2018). The table below presents the results in the same format for each person.

1.3.2 Tornado analysis

A series of one-way sensitivity analyses was undertaken to assess the impact of a change to the default value of all model variables. Each parameter was varied consecutively, rather than simultaneously and then returned to its original value. The results are shown in Figure 15.

Figure 15: Tornado diagram displaying the effect of a high/low of each parameter on the incremental costs.



The white translucent line in the centre of the diagram represents the deterministic incremental costs (-£52,247). Each bar represents the extent to which a parameter affects the incremental costs and is displayed in rank order. The wider the coloured bar, the greater the impact a change to a low/high value of a given parameter has on the incremental costs. This analysis shows that the current and hypothetical probabilities of leaving a rehabilitation ward are key drivers in the model (represented as 'Ctp_ward_sup' and 'Ptp_ward_sup' respectively). This makes intuitive sense as, if keeping all other inputs such as costs and other transition probabilities constant, leaving an inpatient rehabilitation ward and moving on to community living is associated with substantial cost savings from a decrease in the cost of placement.

It can also be seen that, in all instances, the extreme high/low value does not change the results of the deterministic analysis. That is, the hypothetical pathway remains cost saving when compared to the current pathway when varied one at a time.

1.3.3 Scenario analysis

Various scenario analyses were conducted to further explore key areas of uncertainty. The results of a scenario where the costs of community care are increased is displayed in Table 15. It can be seen that setting the community care costs to plausibly high values at the same time has very little impact on the incremental costs. This also corresponds with the Tornado analysis that shows costs of community care have a negligible effect on the results.

Table 15: Scenario analysis for a high estimate of community care costs

Increasing costs of care in the community	Default parameter(s) value(s)	New value	New incremental costs
Residential care	£654	£950	
Supported accommodation	£324	£700	
Floating outreach	£109	£400	
			-£51,062

The hypothetical probability of being placed out-of-area ('Hypothetical probability in OAP'), 10%, was believed by the committee to be a conservative estimate. This was reasoned as being that there is little clinical need for one to be placed out of area. The sensitivity analysis in Figure 16 below demonstrates that across a range of plausible estimates, the incremental costs remain negative, as demonstrated by the straight line. This means that the hypothetical pathway, all else remaining constant, is still cost saving. This is also demonstrated when the hypothetical probabilities from being placed out of area are equal to 63%, the equivalent value as the probability of being placed in an OAP in the current pathway. This is because the hypothetical pathway includes transition probabilities with a higher probability of discharge.

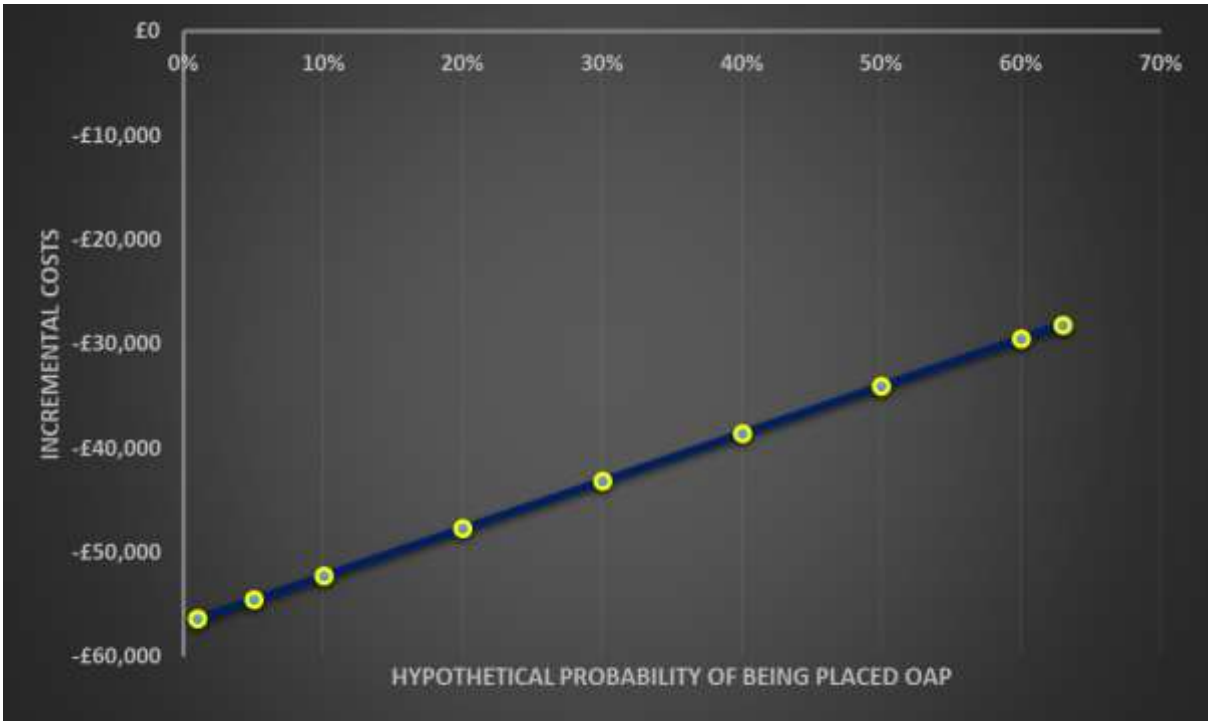
Table 16: Range of values for the parameter 'Hypothetical probability in OAP'

Value tested	Effect on incremental costs
0.01	-£56,336
0.05	-£54,519
0.1	-£52,247
0.2	-£47,705
0.3	-£43,162

Value tested	Effect on incremental costs
0.4	-£38,620
0.5	-£34,077
0.6	-£29,535
0.63 [a]	-£28,172

(a) Same value as probability in current pathway

Figure 16: Sensitivity analysis for a range of plausible values for the hypothetical probability of being placed out-of-area



1.4 Discussion

This economic analysis provides evidence that a hypothetical scenario, whereby there is a large decrease in patients being placed in out-of-area, in-patient rehabilitation wards is cost saving. This cost saving is further enhanced if current discharge rates to community settings, in particular supported accommodation, are increased to include those who are assessed as clinically ready to be discharged but who have not been. The results of this analysis are also in accordance with the NHS Mental Health Implementation Plan 2019/20 – 2023/24 that calls for a reduction in inappropriate out-of-area placements.

The cost saving per person is £52,247 from following the hypothetical pathway. Whilst the absolute cost saving appears substantial in this analysis, this may be a conservative estimate given it is based on a cohort of 3,408 patients, the number of patients funded by CCGs. The CQC (2018) report suggests there are potentially between 4500-5000 rehabilitation beds in England. A further cause for the results being conservative is that length of stay on rehabilitation wards is expressed as a median, rather than the mean and is based on those patients in their current ward, not taking into account that there may be a number of people who have also spent time in other rehabilitation wards.

A key driver of the cost saving is the reduction of placements out-of-area in independent rehabilitation wards. The current inputs in the model are based on data that show that when a patient is placed in an OAP, they are more likely to be placed in an independent ward than an NHS rehabilitation ward, with independent wards characterised by lengthier stays. The hypothetical pathway in this model, where it assumes there is a significant reduction in OAPs, assumes the probability of an OAP being in an independent or NHS ward remains constant, therefore, this model suggests a potentially significant resource impact for NHS wards. In reality, it may be the case that a policy directive that reduces OAPs could cause market changes that would see independent providers reorganise facilities to be more geared towards providing a rehabilitation service in line with NHS wards. Hence, the resource impact to NHS wards in this model could be overstated, as the model does not account for the market changes that occur after the fact. Moreover, the committee advised that many currently in OAPs could readily be discharged to supported accommodation.

It is important to note the considerable limitations surrounding the model parameters when interpreting the results. The accompanying clinical review did not include studies that compared private versus NHS or local versus OAP (as listed in the protocol). The CQC (2018) report which underpins this analysis is the result of an information request to all providers that manage mental health rehabilitation inpatient services. The data presented is in a disaggregated format, and key probabilities and cost inputs used in this model have been derived from the narrative parts of the report. It is not possible from the way the data is presented to calculate how such figures are derived. Furthermore, key inputs such as cost data are not described in detail so there may be other relevant costs that this model misses out.

There is also limited information on the geographical extent of dislocation reported in the report which could bias the results of this analysis. For example, an OAP is defined as being in a different CCG. However, the committee were particularly interested in the proportion of people who are placed far away from their home and felt that there may be many instances when somebody placed in an OAP may actually be relatively near their home. This model did not include a cost utility analysis, but it is likely that the further an OAP, the greater a utility decrement owing to disconnection from family members, support networks and rehabilitation services that enhance activities of daily living skills. The lesser utility decrement from the hypothetical pathway and the negative incremental costs would imply that the hypothetical pathway would be dominant, and therefore cost effective

Another limitation is that there is a strong likelihood that the community living costs are underestimated in this analysis. Nevertheless, a Tornado analysis and scenario analysis on extreme values suggests the model output is robust at high and low estimates of these values.

1.5 Conclusion

Subject to the substantial limitations in the data underpinning the model, this analysis does provide support for the recommendations made by the committee with respect to reducing out-of-area placements and that there may be large cost savings as a result of this recommendation. The suggested changes are effectively a reallocation of current capital resources, though may entail a significant resource impact in the short run if the changes result in increased uptake of inpatient rehabilitation services within NHS wards.

1.6 References

JCPHM 2016

Guidance for commissioners of rehabilitation services for people with complex mental health needs. Joint Commissioning Panel for Mental Health. UK, 2016

CQC 2017

The state of care in mental health services 2014-2017. Care Quality Commission. UK, 2017

CQC 2018

Mental health rehabilitation inpatient services. Care Quality Commission. UK, 2018

Killaspy 2016

Killaspy, H., Marston, L., Green, N., Harrison, I., Lean, M., Holloway, F., Craig, T., Leavey, G., Arbuthnott, M., Koeser, L., McCrone, P., Omar, R. Z., King, M., Clinical outcomes and costs for people with complex psychosis; a naturalistic prospective cohort study of mental health rehabilitation service users in England, BMC Psychiatry, 16 (1) (no pagination), 2016

Killaspy 2019

Killaspy, H., Priebe, S., McPherson, P., Zenasni, Z., Greenberg, L., McCrone, P., Dowling, S., Harrison, I., Krotofil, J., Dalton-Locke, C. and McGranahan, R., Predictors of moving on from mental health supported accommodation in England: national cohort study. The British Journal of Psychiatry, pp.1-7. 2019

NHS 2019

NHS Mental Health Implementation Plan 2019/20 – 2023/24. NHS 2019

Appendix K – Excluded studies

Excluded clinical and economic studies for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

Clinical studies

Table 17: Excluded studies and reasons for their exclusion

Study	Reason for Exclusion
Bhugra, D., Ayonrinde, O., Butler, G., Leese, M., Thornicroft, G., A randomised controlled trial of assertive outreach vs. treatment as usual for black people with severe mental illness, Epidemiology and Psychiatric Sciences, 20, 83-89, 2011	Assertive outreach (AO) vs treatment as usual (TAU). AO did not include vocational rehabilitation. Other rehabilitation not mentioned
Boardman, Anthony P., Hodgson, Richard E., Lewis, Martyn, Allen, Keith, North Staffordshire Community Beds Study: Longitudinal evaluation of psychiatric in-patient units attached to community mental health centres: I: Methods, outcome and patient satisfaction, The British Journal of Psychiatry, 175, 70-78, 1999	Study related to services designed to supplement acute inpatient care
Bradford, D. W., Gaynes, B. N., Kim, M. M., Kaufman, J. S., Weinberger, M., Can shelter-based interventions improve treatment engagement in homeless individuals with psychiatric and/or substance misuse disorders?: a randomized controlled trial, Medical Care, 43, 763-768, 2005	<10% had psychosis.
Brekke, J. S., Ansel, M., Long, J., Slade, E., Weinstein, M., Intensity and continuity of services and functional outcomes in the rehabilitation of persons with schizophrenia, Psychiatric Services, 50, 248-256, 1999	Does not compare different rehabilitation units.
Burnam, M. A., Morton, S. C., McGlynn, E. A., Petersen, L. P., Stecher, B. M., Hayes, C., Vaccaro, J. V., An experimental evaluation of residential and nonresidential treatment for dually diagnosed homeless adults, Journal of Addictive Diseases, 14, 111-34, 1995	<50% had schizophrenia. Number with bipolar disorder not reported
Calsyn, R. J., Yonker, R. D., Lemming, M. R., Morse, G. A., Klinkenberg, W. D., Impact of assertive community treatment and client characteristics on criminal justice outcomes in dual disorder homeless individuals, Criminal Behaviour and Mental Health, 15, 236-248, 2005	Included in Dieterich 2017 systematic review.
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	Included in Dieterich 2017 systematic review.
Coldwell, C. M., Bender, W. S., The effectiveness of assertive community treatment for homeless populations with severe mental illness: A meta-analysis, American Journal of Psychiatry, 164, 393-399, 2007	Systematic review of ACT - studies included in Dieterich 2017 systematic review.

Study	Reason for Exclusion
Compton, M. T., Kelley, M. E., Pope, A., Smith, K., Broussard, B., Reed, T. A., DiPolito, J. A., Druss, B. G., Li, C., Haynes, N. L., Opening doors to recovery: Recidivism and recovery among persons with serious mental illnesses and repeated hospitalizations, Psychiatric Services, 67, 169-175, 2016	Non-randomised - before and after study.
Connolly, J., Marks, I., Lawrence, R., McNamee, G., Muijen, M., Observations from community care for serious mental illness during a controlled study, Psychiatric Bulletin, 20, 3-7, 1996	Daily living program intervention - does not appear to involve rehabilitation. Trial results not reported in this paper.
Craig, T. K. J., Garety, P., Power, P., Rahaman, N., Colbert, S., Fornells-Ambrojo, M., Dunn, G., The Lambeth Early Onset (LEO) Team: Randomised controlled trial of the effectiveness of specialised care for early psychosis, British Medical Journal, 329, 1067-1070, 2004	Early psychosis population. Trial focuses Assertive Outreach for patients presenting for the first or second time.
Cusack, K. J., Morrissey, J. P., Cuddeback, G. S., Prins, A., Williams, D. M., Criminal justice involvement, behavioral health service use, and costs of forensic assertive community treatment: a randomized trial, Community Mental Health Journal, 46, 356-63, 2010	Population were all imprisoned at the time of enrolment.
Fardig, R., Lewander, T., Melin, L., Folke, F., Fredriksson, A., A randomized controlled trial of the illness management and recovery program for persons with schizophrenia, Psychiatric Services, 62, 606-12, 2011	All patients were in the same outpatient rehab units - but some received illness management intervention (relevant for RQ 5.2).
Gold, P. B., Meisler, N., Santos, A. B., Keleher, J., Becker, D. R., Knoedler, W. H., Carnemolla, M. A., Williams, O. H., Toscano, R., Stormer, G., The Program of Assertive Community Treatment: Implementation and Dissemination of an Evidence-Based Model of Community-Based Care for Persons with Severe and Persistent Mental Illness, Cognitive and Behavioral Practice, 10, 290-303, 2003	Expert review of ACT.
Gooch, C., Leff, J., Factors affecting the success of community placement: the TAPS project 26, Psychological Medicine, 26, 511-20, 1996	Does not involve a rehabilitation intervention
Havassy, B. E., Shopshire, M. S., Quigley, L. A., Effects of substance dependence on outcomes of patients in a randomized trial of two case management models, Psychiatric Services, 51, 639-44, 2000	Included in Dieterich 2017 systematic review.
Herdelin, Andrea C., Scott, Diane L., Experimental studies of the Program of Assertive Community Treatment (PACT), Journal of Disability Policy Studies, 10, 53-89, 1999	Systematic review of ACT - studies included in Dieterich 2017 systematic review.
Herinckx, H. A., Kinney, R. F., Clarke, G. N., Paulson, R. I., Assertive community treatment versus usual care in engaging and retaining clients with severe mental illness, Psychiatric services (Washington, D.C.), 48, 1297-1306, 1997	Included in Dieterich 2017 systematic review.
Heslin, M., Patel, A., Stahl, D., Gardner-Sood, P., Mushore, M., Smith, S., Greenwood, K., Onagbesan, O., O'Brien, C., Fung, C., Ohlsen, R., Hopkins, D., Lowe, P., Arbuthnot, M., Mutatsa, S., Todd, G., Kolliakou, A., Lally, J., Stubbs, B., Ismail, K., David, A., Murray, R., Atakan, Z., Gaughran, F., Randomised controlled trial to improve health and reduce substance use in established psychosis (IMPaCT): Cost-	Health promotion intervention - check for RQ 5.4.

Study	Reason for Exclusion
effectiveness of integrated psychosocial health promotion, BMC Psychiatry, 17 (1) (no pagination), 2017	
Holloway, F., Carson, J., Intensive case management for the severely mentally ill. Controlled trial, British Journal of Psychiatry, 172, 19-22, 1998	Included in Dieterich 2017 systematic review.
Kavanagh, Annette, Lavelle, Ena, The impact of a rehabilitation and recovery service on patient groups residing in high support community residences, Irish Journal of Psychological Medicine, 25, 5-10, 2008	Non comparative. See Lavelle 2011 for comparative data from this cohort.
Killaspy, H., Bebbington, P., Blizard, R., Johnson, S., Nolan, F., Pilling, S., King, M., The REACT study: Randomised evaluation of assertive community treatment in north London, British Medical Journal, 332, 815-818, 2006	Included in Dieterich 2017 systematic review.
Killaspy, H., Harden, C., Holloway, F., King, M., What do mental health rehabilitation services do and what are they for? A national survey in England, Journal of Mental Health, 14, 157-165, 2005	Survey of rehabilitation service models in England.
Killaspy, H., Johnson, S., Pierce, B., Bebbington, P., Pilling, S., Nolan, F., King, M., Successful engagement: A mixed methods study of the approaches of assertive community treatment and community mental health teams in the REACT trial, Social Psychiatry and Psychiatric Epidemiology, 44, 532-540, 2009	Included in Dieterich 2017 systematic review.
Killaspy, H., Marston, L., Green, N., Harrison, I., Lean, M., Holloway, F., Craig, T., Leavey, G., Arbuthnott, M., Koeser, L., McCrone, P., Omar, R. Z., King, M., Clinical outcomes and costs for people with complex psychosis; a naturalistic prospective cohort study of mental health rehabilitation service users in England, BMC Psychiatry, 16 (1) (no pagination), 2016	No direct comparison of outcomes in different types of unit. Include for RQ 2.4.
Killaspy, H., Marston, L., Omar, R. Z., Green, N., Harrison, I., Lean, M., Holloway, F., Craig, T., Leavey, G., King, M., Service quality and clinical outcomes: An example from mental health rehabilitation services in England, British Journal of Psychiatry, 202, 28-34, 2013	Features of rehabilitation units associated with quality measures
Killaspy, H., Mas-Exposito, L., Marston, L., King, M., Ten year outcomes of participants in the REACT (Randomised Evaluation of Assertive Community Treatment in North London) study, BMC Psychiatry, 14, 296, 2014	Included in Dieterich 2017 systematic review.
Killaspy, H., Rambarran, D., Harden, C., Fearon, D., Caren, G., McClinton, K., A comparison of service users placed out of their local area and local rehabilitation service users, Journal of Mental Health, 18, 111-120, 2009	Compares characteristics of service users in OATS and those in local rehab services.
Killaspy, H., Ritchie, C. W., Greer, E., Robertson, M., Treating the homeless mentally ill: Does a designated inpatient facility improve outcome?, Journal of Mental Health, 13, 593-599, 2004	Observational study of case management / assertive outreach. RCT evidence available for this intervention.
Killaspy, Helen, Kingett, Stella, Bebbington, Paul, Blizard, Robert, Johnson, Sonia, Nolan, Fiona, Pilling, Stephen, King, Michael, Randomised evaluation of assertive community treatment: 3-year outcomes, The British Journal of Psychiatry, 195, 81-82, 2009	Included in Dieterich 2017 systematic review.
Kroon, H., Boevink, W., Van Vugt, M., Delespaul, P., Van Os, J., TREE: a Dutch multi-centre (cluster) randomized	Conference abstract

Study	Reason for Exclusion
trial of a recovery program of/for persons with severe mental illness, Psychiatrische praxis, 38, 2011	
Kuipers, E., Holloway, F., Rabe-Hesketh, S., Tennakoon, L., An RCT of early intervention in psychosis: croydon Outreach and Assertive Support Team (COAST), Social psychiatry and psychiatric epidemiology, 39, 358-363, 2004	Early intervention for psychosis. 5 years or less since their first episode.
Lafave, H. G., De Souza, H. R., Gerber, G. J., Assertive community treatment of severe mental illness: A Canadian experience, Psychiatric Services, 47, 757-759, 1996	Included in Dieterich 2017 systematic review.
Leff, J., Aiding resocialization of the chronic psychotic patient, International Clinical Psychopharmacology, 12, S19-S24, 1997	Expert review
Macpherson, R., Edwards, T. R., Chilvers, R., David, C., Elliott, H. J., Twenty-four hour care for schizophrenia, Cochrane Database of Systematic ReviewsCochrane Database Syst Rev, CD004409, 2009	The only included study in this systematic review (Hyde 1987) does not meet the date cut off for inclusion.
Malm, U. I., Ivarsson, BÅ, Allebeck, P., Durability of the efficacy of integrated care in schizophrenia: a five-year randomized controlled study, Psychiatric services (Washington, D.C.), 65, 1054-1057, 2014	Included in Dieterich 2017 systematic review.
Malm, U., Lewander, T., Uku,, Consumer satisfaction in schizophrenia. A 2-year randomized controlled study of two community-based treatment programs, Nordic Journal of Psychiatry, 55 Suppl 44, 91-96, 2001	Included in Dieterich 2017 systematic review.
Malone, D., Marriott, S., Newton-Howes, G., Simmonds, S., Tyrer, P., Community mental health teams (CMHTs) for people with severe mental illnesses and disordered personality, Cochrane Database of Systematic Reviews, (3) (no pagination), 2007	Systematic review - studies included in Dieterich 2017 systematic review.
Marks, I. M., Connolly, J., Muijen, M., Audini, B., McNamee, G., Lawrence, R. E., Home-based versus hospital-based care for people with serious mental illness, British Journal of Psychiatry, 165, 179-194, 1994	Included in Dieterich 2017 systematic review.
Marshall, M., Crowther, R., Almaraz-Serrano, A., Creed, F., Sledge, W., Kluiter, H., Roberts, C., Hill, E., Wiersma, D., Bond, G. R., Huxley, P., Tyrer, P., Systematic reviews of the effectiveness of day care for people with severe mental disorders: (1) acute day hospital versus admission; (2) vocational rehabilitation; (3) day hospital versus outpatient care, Health Technology Assessment (Winchester, England)Health Technol Assess, 5, 1-75, 2001	None of the included studies met the inclusion criteria for the review question, either population not relevant or study beyond date cut off for inclusion.
Marshall, M., Lockwood, A., WITHDRAWN: Assertive community treatment for people with severe mental disorders, Cochrane database of systematic reviews (Online), 4, CD001089, 2011	Cochrane Review - withdrawn from publication.
Martins, V., Silva, T., Silva, C., Jesus, M., Cagigal, C., Franco, C., The role of treatment in day hospital in dual disorders patients, Heroin Addiction and Related Clinical Problems, 20 (Supplement 2), 27-28, 2018	Conference abstract
Maxwell, A., Tsoutsoulis, K., Menon Tarur Padinjareveettil, A., Zivkovic, F., Rogers, J. M., Longitudinal analysis of statistical and clinically significant psychosocial change following mental health rehabilitation, Disability & Rehabilitation, 1-13, 2018	Cannot extract useful data - follow-up only available for 33/210 patients.

Study	Reason for Exclusion
Mohamed, Somaia, Kasckow, John W., Granholm, Eric, Jeste, Dilip V., Community-based treatment of schizophrenia and other severe mental illnesses, 205-222, 2003	Book chapter
Morse, G. A., Calsyn, R. J., Klinkenberg, W. D., Trusty, M. L., Gerber, F., Smith, R., Tempelhoff, B., Ahmad, L., An experimental comparison of three types of case management for homeless mentally ill persons, Psychiatric Services, 48, 497-503, 1997	Included in Dieterich 2017 systematic review.
Muijen, M., Cooney, M., Strathdee, G., Bell, R., Hudson, A., Community psychiatric nurse teams: intensive support versus generic care, British Journal of Psychiatry, 165, 211-7, 1994	Included in Dieterich 2017 systematic review.
Muijen, M., Marks, I., Connolly, J., Audini, B., Home based care and standard hospital care for patients with severe mental illness: a randomised controlled trial, BMJ (clinical research ed.), 304, 749-754, 1992	Included in Dieterich 2017 systematic review.
Muller-Clemm, Werner J., Halting the "revolving door" of serious mental illness: Evaluating an assertive case management program, Dissertation Abstracts International: Section B: The Sciences and Engineering, 58, 5133, 1998	Thesis
O'Campo, P., Stergiopoulos, V., Nir, P., Levy, M., Misir, V., Chum, A., Arbach, B., Nisenbaum, R., To, M. J., Hwang, S. W., How did a Housing First intervention improve health and social outcomes among homeless adults with mental illness in Toronto? Two-year outcomes from a randomised trial, BMJ Open, 6, e010581, 2016	Housing first intervention - check for RQ 6.1a.
Paton, F., Wright, K., Ayre, N., Dare, C., Johnson, S., Lloyd-Evans, B., Simpson, A., Webber, M., Meader, N., Improving outcomes for people in mental health crisis: A rapid synthesis of the evidence for available models of care, Health Technology Assessment, 20, 1-69, xi-xix, 2016	Models of care for mental health crisis
Rutter, D., Tyrer, P., Emmanuel, J., Weaver, T., Byford, S., Hallam, A., Simmonds, S., Ferguson, B., Internal vs. external care management in severe mental illness: Randomized controlled trial and qualitative study, Journal of Mental Health, 13, 453-466, 2004	Compares intensive case management by case managers inside vs outside the CMHT.
Salyers, M. P., McGuire, A. B., Rollins, A. L., Bond, G. R., Mueser, K. T., Macy, V. R., Integrating assertive community treatment and illness management and recovery for consumers with severe mental illness, Community Mental Health Journal, 46, 319-29, 2010	Included in Dieterich 2017 systematic review.
Simmonds, S., Coid, J., Joseph, P., Marriott, S., Tyrer, P., Community mental health team management in severe mental illness: A systematic review, British Journal of Psychiatry, 178, 497-502, 2001	Systematic review - studies included in Dieterich 2017 systematic review.
Slade, M., Bird, V., Clarke, E., Le Boutillier, C., McCrone, P., Macpherson, R., Pesola, F., Wallace, G., Williams, J., Leamy, M., Supporting recovery in patients with psychosis through care by community-based adult mental health teams (REFOCUS): a multisite, cluster, randomised, controlled trial, The Lancet. Psychiatry, 2, 503-514, 2015	Not specific to rehabilitation
Slade, M., Bird, V., Le Boutillier, C., Williams, J., McCrone, P., Leamy, M., REFOCUS Trial: Protocol for a cluster randomised controlled trial of a pro-recovery intervention	Trial protocol - see Slade 2015 for full publication

Study	Reason for Exclusion
within community based mental health teams, BMC Psychiatry, 11 (no pagination), 2011	
Sun, L. H., Li, X. Z., Yuan, L. J., Zhang, Y. L., Differences of curative efficacy, relapse rate and cost between female patients with chronic schizophrenia under community-based rehabilitation and inpatient care, Chinese journal of clinical rehabilitation, 9, 28-30, 2005	Study based in China
Sytema, S., Wunderink, L., Bloemers, W., Roorda, L., Wiersma, D., Assertive community treatment in the Netherlands: a randomized controlled trial, Acta Psychiatrica Scandinavica, 116, 105-112, 2007	Included in Dieterich 2017 systematic review.

Economic studies

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

Table 18: 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 (Structured abstract), Schizophrenia ResearchSchizophr Res, 112, 158-163, 2009	Available as abstract only.
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	Available as abstract only.

Study	Reason for Exclusion
community care for former long-stay psychiatric hospital patients (Structured abstract), Journal of Mental HealthJ Ment Health, 5, 379-94, 1996	
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 randomized 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, 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	Study not an economic evaluation.
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	Cost effectiveness study, but population of interest is not focussed on rehabilitation for people with complex psychosis.

Study	Reason for Exclusion
therapy in schizophrenia: Durability of the effects and cost-utility analysis, Psychiatry ResearchPsychiatry Res, 254, 198-204, 2017	
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.
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,	Structured abstract. Does not match any review question considered in this guideline.

Study	Reason for Exclusion
Pharmacogenetic testing in the clinical management of schizophrenia: a decision-analytic model (Structured abstract), Journal of Clinical Psychopharmacology, 25, 427-434, 2005	
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.
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.

Study	Reason for Exclusion
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.

Appendix L – Research recommendations

Research recommendations for review question 2.2: What is the comparative effectiveness of different types of rehabilitation services?

Research question

What is the clinical and cost-effectiveness of inpatient rehabilitation provided by the independent sector compared with that provided by the NHS?

Why this is important?

The independent sector is an important provider of inpatient rehabilitation services. However, they are often a long way from where the patients and their families live and from the Clinical Commissioning Group that fund the placement. Many of these units are locked and lengths of stay are considerably longer (hence costlier) than equivalent NHS provision. However, there is little systematic and reliable evidence on the characteristics of users of these services or the effectiveness of these units to enable comparison with equivalent NHS services.

Table 19: Research recommendation rationale

Research question	What is the clinical and cost-effectiveness of inpatient rehabilitation provided by the independent sector compared with that provided by the NHS?
Why is this needed	
Importance to 'patients' or the population	Patients should receive the most appropriate, best quality care for their mental health. Concerns about the location and nature of provision may be balanced by evidence of better outcomes. Patients and their families need this information to better inform choice.
Relevance to NICE guidance	Ability to be clearer about the strengths and limitations of this provision for future guidance
Relevance to the NHS	Provide information on the cost-effectiveness of this service provision
National priorities	Best value for money provision of high quality health care
Current evidence base	Current evidence largely from independent inspection reports (CQC) and panel member views
Equality	Applies to all patients in these settings
Feasibility	Independent sector providers also want to have data on service quality and outcomes
Other comments	None

CQC: Care Quality Commission

Table 20: Research recommendation modified PICO table

Criterion	Explanation
Population	Residents 18+ with complex psychosis, currently resident in independent

Criterion	Explanation
	sector residential rehabilitation unit
Intervention	Service quality and patient outcomes
Comparator	Service quality and patient outcomes
Outcomes	Quality of care, patient clinical and functional impairments, costs
Study design	Quasi experimental comparison of independent and NHS inpatient rehabilitation units across the country
Timeframe	3 years
Additional information	None