

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

[A] Identifying people who would benefit most from mental health 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

Disclaimer

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Identifying people who would benefit most from mental health rehabilitation services

Review question: What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

Introduction

Mental health rehabilitation services work with people with a range of severe and complex mental health problems and comorbidities. Clients of these services may have varied characteristics which impact on their rehabilitation progress and influence the effectiveness of mental health rehabilitation. This may include their sociodemographic characteristics, length of contact with mental health services, severity of symptoms, functional impairment and social support.

The aim of this review question was to identify service user characteristics associated with 'successful progress' for people receiving mental health rehabilitation services in order to understand whether rehabilitation services are more (or less) effective for individuals with certain characteristics. 'Successful progress' was defined as either being discharged from an inpatient rehabilitation unit to the community without readmission, or, if the study focussed on people in the community, progressing to a more independent setting (e.g. moving from higher to lower staffed supported accommodation, or from supported accommodation to independent accommodation).

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, predictive factors and outcome characteristics of this review.

Table 1: Summary of the protocol

Population	People with complex psychosis and related severe mental health conditions who have received rehabilitation services
Predictive factors	Personal predictive factors, including: <ul style="list-style-type: none"> • Age • Gender • Detention under the MHA/MCA • Forensic history • Risk to others and to self • Cognitive factors (e.g. cognitive impairment) • Ethnicity

	<ul style="list-style-type: none"> • Duration of contact with mental health services • Time from first acute admission to start of rehabilitation • Diagnosis • Number of previous admissions • Social functioning (Life Skills Profile) • Needs (Camberwell Assessment of Needs) • Medication adherence • Problematic drug or alcohol use
Comparison	Not applicable
Outcome	<p>Positive outcome of rehabilitation defined as:</p> <ul style="list-style-type: none"> • For inpatients - discharge to a sustained community placement • For those in community placement - sustained move to a less supported placement • For those with carers - reduction in amount of support required from carers <p>In the absence of evidence about positive outcome of rehabilitation the following outcomes will be considered:</p> <ul style="list-style-type: none"> • Readmission to inpatient services • Length of readmission • Social function • Service user satisfaction • Quality of life • Personal recovery

MHA: Mental Health Act; MCA: Mental Capacity Act

For full details see the review protocol in appendix A

Clinical evidence

Included studies

Four observational studies, including 3 cohort studies and 1 case-control study (N=938) were included in the review (Bredski 2011; de Girolamo 2014; Killaspy 2016; Killaspy 2013).

Studies are summarised in Table 2.

See also literature search strategy in appendix B and clinical evidence study selection 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	Predictive factors	Outcomes
Bredski 2011 Case-control study United Kingdom	N=65 Patients in rehabilitation service wards; mean age 37.3 (SD 12.01) years, majority male (69.2%) and most of them having a diagnosis of schizophrenia (84.6%)	<ul style="list-style-type: none"> • History of previous forensic care 	<ul style="list-style-type: none"> • Discharge from rehabilitation in-patient service Follow-up duration: 6 years
de Girolamo 2014 Prospective cohort study Italy	N=403 Patients staying in 23 residential facilities with age between 18 and 64 years, majority male (66.7%) and a primary psychiatric diagnosis	<ul style="list-style-type: none"> • Diagnosis • Mean illness duration • Psychopathology • Social functioning • Social support • Working skills 	<ul style="list-style-type: none"> • Home discharge from residential facilities Follow-up duration: 1 year
Killaspy 2016 Prospective cohort study United Kingdom	N=329 Patients of 50 inpatient mental health rehabilitation units in England, majority male (65%) and most with a diagnosis of schizophrenia (68%)	<ul style="list-style-type: none"> • History of fire-setting • History of self-harm • Length of current admission • Engagement in activity 	<ul style="list-style-type: none"> • Successful discharge/ ready for discharge to community Follow-up duration: 1 year
Killaspy 2013 Retrospective cohort study United Kingdom	N=141 All clients of an inpatient and residential rehabilitation service, with mean age 44 years, mostly male (68%) and having a diagnosis of schizophrenia or schizoaffective disorder (93%)	<ul style="list-style-type: none"> • Age • Gender • Ethnicity • Marital status • Years contact with psychiatric services • Previous admissions • Difference in years from first contact to first rehabilitation admission • Diagnosis • Years in placement • Detained involuntarily • Problematic alcohol use • Problematic substance use • Needs • Family history of psychiatric illness • History of physical health problems • History of separation from parents in childhood • History of physical abuse 	<ul style="list-style-type: none"> • Successful progression to more independent living Follow-up duration: 5 years

Study	Population	Predictive factors	Outcomes
		<ul style="list-style-type: none"> • History of sexual abuse • Medication non-adherence • Social function • Challenging behaviours 	

N=Number of total subjects; *SD*: standard deviation

Table 3: Personal predictive factors analysed in the included studies

Predictive factors	Bredski 2011	DeGirolamo 2014	Killaspy 2016	Killaspy 2013
Age	-	-	-	√
Gender	-	-	-	○
Detention	-	-	-	√
Forensic history	○ ¹	-	-	-
Risk to others and to self	-	-	√	-
Ethnicity	-	-	-	○
Duration of contact with mental health services	-	-	-	○
Length of current admission in rehabilitation unit	-	○	√	-
Mean illness duration	-	√	-	-
Time from first acute admission to start of rehabilitation	-	-	-	○
Diagnosis	-	√	-	○
Number of previous admissions	-	-	-	○
Social functioning	-	○	-	√
Medical adherence	-	-	-	√
Problematic drug or alcohol use	-	-	-	○
Social support	-	√	-	-
Psychopathology	-	√	-	-
Working skills	-	√	-	-
History of physical abuse	-	-	-	√
History of sexual abuse	-	-	-	○
Challenging behaviours	-	-	-	√
Engagement in activities	-	-	√	-
Family history of psychiatric illness	-	-	-	○
Marital status	-	-	-	○
History of separation from parents in childhood	-	-	-	○
Needs	-	-	-	○
History of physical health problems	-	-	-	○

√ Factor included in final multivariable model

○ Factor analysed – but not included in final multivariable model

- Factor not considered in analysis

¹ This study only reported univariate analysis

See appendix D for clinical evidence tables.

Quality assessment of clinical outcomes included in the evidence review

See appendix F for full GRADE tables.

Economic evidence

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

Economic model

Economic modelling was not undertaken for this question because other topics were agreed as higher priorities for economic evaluation.

Evidence statements

Gender, ethnicity, marital status, needs, history of sexual abuse, history of physical health problems, history of separation from parents in childhood, family history of psychiatric illness and problematic drug or alcohol use

Low quality evidence from 1 cohort study (N=124) found no significant association between gender, ethnicity, marital status, needs, history of sexual abuse, history of physical health problems, history of separation from parents in childhood, family history of psychiatric illness or problematic drug or alcohol use and successful progression in rehabilitation. These factors were analysed in the study but not included in the final predictive model.

Age at admission

Low quality evidence from 1 cohort study (N=124) found no significant association between age at admission and successful progression to more independent living at 5 years follow-up, among people with complex psychosis and related severe mental health conditions receiving inpatient and residential rehabilitation services.

Involuntary Detention

Low quality evidence from 1 cohort study (N=124) found no significant association between involuntary detention and successful progression to more independent living at 5 years follow-up, among people with complex psychosis and related severe mental health conditions receiving inpatient and residential rehabilitation services.

Duration of illness

Moderate quality evidence from 1 cohort study (N=393) found a significant association between the duration of illness less than 15 years and home discharge at 1 year follow-up compared to more than 15 years illness duration, among people with complex psychosis and related severe mental health conditions receiving rehabilitation services in non-hospital residential facilities.

Risk to others

High quality evidence from 1 cohort study (N=329) found a significant association between history of fire-setting and was significantly associated with a reduced chance of successful discharge or readiness for discharge to the community at 1 year follow-up compared to no history of fire-setting, among people with complex psychosis and related severe mental health conditions receiving inpatient rehabilitation services.

Risk to self

High quality evidence from 1 cohort study (N=329) found a significant association between history of self-harm and successful discharge or readiness to discharge to

community rehabilitation service at 1 year follow-up compared to no history of self-harm, among people with complex psychosis and related severe mental health conditions receiving inpatient rehabilitation services.

Medication adherence

Moderate quality evidence from 1 cohort study (N=124) found a significant association between medication adherence and successful progression to more independent living at 5 years follow-up compared to medication non-adherence, among people with complex psychosis and related severe mental health conditions receiving inpatient and residential rehabilitation services.

Social support

Moderate quality evidence from 1 cohort study (N=393) found a significant association between availability of social support and home discharge at 1 year follow-up compared to no social support, among people with complex psychosis and related severe mental health conditions receiving rehabilitation services in non-hospital residential facilities.

Diagnosis

Moderate quality evidence from 1 cohort study (N=393) found a significant association between diagnosis of schizophrenia no home discharge at 1 year follow-up compared to unipolar depression, among people with complex psychosis and related severe mental health conditions receiving rehabilitation services in non-hospital residential facilities.

Psychopathology

Moderate quality evidence from 1 cohort study (N=393) found a significant association between low psychopathology score and home discharge at 1 year follow-up compared to moderate score, among people with complex psychosis and related severe mental health conditions receiving rehabilitation services in non-hospital residential facilities.

Working skills

Moderate quality evidence from 1 cohort study (N=393) found a significant association between a high working skills score (better working skills) and home discharge at 1 year follow-up compared to low score, among people with complex psychosis and related severe mental health conditions receiving rehabilitation services in non-hospital residential facilities.

Social function

Low quality evidence from 1 cohort study (N=124) found no significant association between social function score and successful progression to more independent living at 5 years follow-up, among people with complex psychosis and related severe mental health conditions receiving inpatient and residential rehabilitation services.

Challenging behaviour

Low quality evidence from 1 cohort study (N=124) found no significant association between challenging behaviour score and successful progression to more independent living at 5 years follow-up, among people with complex psychosis and related severe mental health conditions receiving inpatient and residential rehabilitation services.

History of physical abuse

Low quality evidence from 1 cohort study (N=124) found no significant association between history of physical abuse and successful progression to more independent living at 5 years follow-up, among people with complex psychosis and related severe mental health conditions receiving inpatient and residential rehabilitation services.

Length of current admission in rehabilitation unit

Moderate quality evidence from 1 cohort study (N=329) found no significant association between the length of current admission in rehabilitation unit and successful discharge or readiness to discharge to community rehabilitation service at 1 year follow-up, among people with complex psychosis and related severe mental health conditions receiving inpatient rehabilitation services.

Engagement in activities score

High quality evidence from 1 cohort study (N=329) found a significant association between high engagement in activities score and successful discharge or readiness to discharge to community rehabilitation service at 1 year follow-up compared to a low score, among people with complex psychosis and related severe mental health conditions receiving inpatient rehabilitation services.

History of care in forensic services

Very low quality evidence from 1 case-control study (N=65) found a significant association between history of care in forensic services and reduced chance of discharge at 6 years follow-up, among people with complex psychosis and related severe mental health conditions receiving inpatient rehabilitation service.

See appendix E for Forest plots.

The committee's discussion of the evidence**Interpreting the evidence****The outcomes that matter most**

The main objective of this review was to identify service user characteristics associated with successful progress in rehabilitation services, and so a positive outcome of rehabilitation was the main outcome for this review. Positive outcome of rehabilitation differs based on the rehabilitation settings, so it was defined separately for each setting. For inpatients, it was defined as discharge to a sustained community placement; for those in community placement, it was defined as sustained move to a less supported placement, and for those with carers, it was defined as a reduction in amount of support required from carers.

The quality of the evidence

A modification of the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) methodology was used to evaluate the quality of the evidence for, and confidence in, each outcome in the evidence review.

Evidence for the predictive factors engagement in activities, risk to others (history of fire setting) and risk to self (history of self-harm) was of high quality. Evidence for the predictive factors duration of illness, social support, diagnosis, psychopathology, medication adherence, length of current admission and working skills was of moderate quality. The main reason the evidence was downgraded, was for

indirectness of the outcome which was reported as home discharge, instead of any discharge to a less supported placement like supported accommodation, but some evidence was also downgraded for imprecision arising out of small sample size.

Evidence for the predictive factors age, involuntary detention, social function, challenging behaviour and history of physical abuse was of low quality. The evidence was downgraded for very serious imprecision resulting from the small sample size.

Evidence for the predictive factor of forensic history was of very low quality. The evidence was downgraded for serious risk of bias arising from inclusion of data from univariate analysis; and indirectness of the outcome which was reported as those discharged from the inpatient rehabilitation ward, instead of discharge to a sustained community placement. There was no evidence found for the predictive factor cognitive impairment.

Benefits and harms

The evidence showed that shorter duration of illness and lower psychopathology scores were associated with successful progress in rehabilitation services. There was also evidence that risk to others (fire-setting) and history of care in forensic services were associated with less successful rehabilitation outcomes, and the committee discussed that these factors may be indicators of more severe mental illness, and therefore agreed that it may discriminate against people with more severe disease if they were excluded from rehabilitation on the basis of these criteria.

Based on this evidence the committee agreed that duration of illness and history of care in forensic services were indicators of level of need and could be useful information when planning the local rehabilitation pathway. They recommended that the Joint Strategic Needs Assessment should include the number of people who have recurrent admissions or extended stays in acute inpatient units and psychiatric intensive care units, as these people may require longer term rehabilitation. They also recommended it should include the number of people who are receiving care from forensic services but will need to continue their rehabilitation locally when risks or behaviours that challenge have been sufficiently addressed, as these people may require high dependency care during their rehabilitation.

The committee also recommended, based on their experience that staff should be trained and skilled to assess and work with people with the risks that service users in that service usually present.

There was evidence that history of risk to self (self-harm) could lead to more successful progression in rehabilitation. The committee discussed the evidence and noted that the study included self-harm at any point in the person's history, and these acts of self-harm may have been many years earlier. The committee also discussed that this finding may be due to people who self-harm having more positive symptoms (compared to negative symptoms) or may indicate mood symptoms which may be associated with better prognosis. The committee considered it would not be appropriate to recommend self-harm either as a factor to use when identifying people who are suitable for rehabilitation, or as a consideration for a good rehabilitation service based on the limited evidence.

There was some evidence on the diagnosis of mental illness as a predictor of rehabilitation outcomes, showing that successful progress was less likely for people diagnosed with schizophrenia compared to unipolar depression. However, as the scope of the guideline was rehabilitation for complex psychosis, people diagnosed with unipolar depression would not be within its scope to consider this comparison and hence this evidence was not taken into consideration for recommendations.

Evidence showed that medication adherence, social support and engagement in activities that promote activities of daily living and work skills were associated with successful progress in rehabilitation services. The committee discussed, however, that the review had been designed to predict service user characteristics that would lead to more successful progress through rehabilitation, and not to identify the characteristics of a successful rehabilitation service, such as those that incorporated programmes for medication adherence, social support, activities and work skills. The committee were aware that these factors may just be indicators of a group with favourable prognosis who would experience better outcomes regardless of rehabilitation, and it is not certain from this evidence alone that targeting rehabilitation toward improving these personal factors would be effective. However, the committee noted that these factors appear to be important contributors to rehabilitation outcomes, and support the evidence identified in other systematic reviews in this guideline, of interventions to improve activities of daily living, social function, and engagement in community living.

There was no evidence identified for personal factors associated with progress in patients with complex comorbid conditions in highly specialist or longer term inpatient rehabilitation services. The committee discussed that concerns have been raised by the CQC about the quality of life of this group and it is important to know the factors associated with sustained community discharge and better quality of life in this group. Hence they made a research recommendation to identify patient and service characteristics associated with better outcomes for this group.

Cost effectiveness and resource use

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

The committee made their recommendations in conjunction with evidence identified elsewhere in this guideline (see evidence reviews D, E, F & Q) which demonstrated that rehabilitation for this patient group is clinically effective and cost saving.

It is current practice that patients with a history of repeated admissions are already referred for rehabilitation. However, due to a lack of provision in some areas, the committee believed that many are referred to 'locked' wards which are counterproductive to a rehabilitation ethos and are often a long way from a patient's home area. It is unlikely that better identification would lead to a resource impact in itself as the committee believed that there is already an under provision of such services. Where rehabilitation services are existent, it is likely there may be an overall cost saving as better identification of characteristics linked to successful discharge would see more people discharged at a faster rate to progressively more independent living. This step-down approach is incrementally less costly and is less staff resource intensive as people are able to live more independently.

Other considerations

The evidence found no significant association between successful progress in rehabilitation services and age, gender or ethnicity. Given these findings, and the legal obligations under the Equality Act 2010, the committee recommended people with complex psychosis should be offered a rehabilitation service. They agreed this rehabilitation service should be offered regardless of age, gender, ethnicity, and other characteristics protected by the Act.

References

Bredski 2011

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Killaspy, H., Zis, P.(2013). Predictors of outcomes for users of mental health rehabilitation services: a 5-year retrospective cohort study in inner London, UK, *Social Psychiatry and Psychiatric Epidemiology*, 48, 1005-1012.

Appendices

Appendix A – Review protocols

Review protocol for Question 1.1 What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions

Field (based on PRISMA-P)	Content
Review question	What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?
Type of review question	Predictive factors
Objective of the review	The objective of the review is to identify personal factors associated with positive outcome of rehabilitation, which may help guide referral to rehabilitation services.
Eligibility criteria – population/disease/condition/issue/domain	People with complex psychosis and related severe mental health conditions who have received rehabilitation services. 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)/exposure(s)/prognostic factor(s)	Personal predictive factors, including: <ul style="list-style-type: none"> • Age • Gender • Detention under the MHA/MCA • Forensic history • Risk to others and to self • Cognitive factors (e.g. cognitive impairment) • Ethnicity • Duration of contact with mental health services • Time from first acute admission to start of rehabilitation • Diagnosis • Number of previous admissions

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Field (based on PRISMA-P)	Content
	<ul style="list-style-type: none"> • Social functioning (Life Skills Profile) • Needs (Camberwell Assessment of Needs) • Medication adherence • Problematic drug or alcohol use <p>Studies reporting multivariable analysis including personal predictive factors will be included</p>
Eligibility criteria – comparator(s)/control or reference (gold) standard	Not applicable
Outcomes and prioritisation	<ul style="list-style-type: none"> • Positive outcome of rehabilitation defined as: <ul style="list-style-type: none"> ○ for inpatients - discharge to a sustained community placement ○ for those in community placement - sustained move to a less supported placement ○ for those with carers - reduction in amount of support required from carers <p>In the absence of evidence about positive outcome of rehabilitation the following outcomes will be considered:</p> <ul style="list-style-type: none"> • Readmission to inpatient services • Length of readmission • Social function • Service user satisfaction • Quality of life • Personal recovery <p>Follow-up should be at least one year after starting rehabilitation</p>
Eligibility criteria – study design	Cohort studies, case-control studies
Other inclusion exclusion criteria	<p>Date limit: 1990</p> <p>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.</p> <p>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.</p>

Field (based on PRISMA-P)	Content
Proposed sensitivity/sub-group analysis, or meta-regression	<p>Sub-groups: Inpatient vs. community setting</p> <p>In case of heterogeneity: sensitivity analysis by country, pre-versus post 1990, study quality and whether studies included mixed populations.</p> <p>The type of rehabilitation and treatment received is likely to be a confounder. If a study includes people in different settings/types of rehabilitation then the important characteristics of rehabilitation should be included as variables in the model (e.g. unit location, unit type).</p>
Selection process – duplicate screening/selection/analysis	<p>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 at least 10% of the total. 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.</p>
Data management (software)	<p>NGA STAR software will be used for study sifting, data extraction, recording quality assessment using checklists and generating bibliographies/citations.</p> <p>RevMan will be used to generate plots and for any meta-analysis.</p>
Information sources – databases and dates	<p>Potential sources to be searched: Medline, Medline In-Process, CCTR, CDSR, DARE, HTA, Embase, PsycINFO</p> <p>Limits (e.g. date, study design):</p> <p>Apply standard animal/non-English language exclusion</p> <p>Dates: from 1990</p>

Field (based on PRISMA-P)	Content
Identify if an update	This review question is not an update
Author contacts	For details please see https://www.nice.org.uk/guidance/indevelopment/gid-ng10092
Highlight if amendment to previous protocol	For details please see section 4.5 of Developing NICE guidelines: the manual
Search strategy – for one database	For details please see appendix B
Data collection process – forms/duplicate	A standardised evidence table format will be used, and published as appendix D (clinical evidence tables) or H (economic evidence tables).
Data items – define all variables to be collected	For details please see evidence tables in appendix D (clinical evidence tables) or H (economic evidence tables).
Methods for assessing bias at outcome/study level	Standard study checklists were used to critically appraise individual studies. For details please see section 6.2 of Developing NICE guidelines: the manual
Criteria for quantitative synthesis	For details please see section 6.4 of Developing NICE guidelines: the manual
Methods for quantitative analysis – combining studies and exploring (in)consistency	For details please see the methods supplementary document.
Meta-bias assessment – publication bias, selective reporting bias	For details please see section 6.2 of Developing NICE guidelines: the manual .
Confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual Modified GRADE will be used
Rationale/context – what is known	For details please see the introduction to the evidence review in the main file.
Describe contributions of authors and guarantor	A multidisciplinary committee [add link to history page of the guideline] developed the evidence review. The committee was convened by the NGA and chaired by Gillian Baird in line with section 3 of Developing NICE guidelines: the manual . Staff from NGA undertook systematic literature searches, appraised the evidence, conducted meta-analysis and cost-effectiveness analysis where appropriate, and drafted the evidence review in collaboration with the committee. For details please see Developing NICE guidelines: the manual .
Sources of funding/support	NGA is funded by NICE and hosted by RCOG
Name of sponsor	NGA is funded by NICE and hosted by RCOG

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Field (based on PRISMA-P)	Content
Roles of sponsor	NICE funds NGA to develop guidelines for those working in the NHS, public health and social care in England.
PROSPERO registration number	Not registered with PROSPERO

CCTR: Cochrane Controlled Trials Register; CDSR: Cochrane Database of Systematic Reviews; DARE: Database of Abstracts of Reviews of Effects; GC: Guideline Committee; GRADE: Grading of Recommendations Assessment, Development and Evaluation; HTA: Health Technology Assessment; MHA: Mental Health Act; MCA: Mental Capacity Act; NGA: National Guideline Alliance; NICE: National Institute for Health and Care Excellence; NHS: National Health Service; RCOG: Royal College of Obstetricians and Gynaecologists; UK: United Kingdom; USA: United States of America

Appendix B – Literature search strategies

Literature search strategies for review question: 1.1 What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

Databases: Embase/Medline/PsycINFO

Date of search: 06/09/2018

#	Searches
1	exp psychosis/ use emczd
2	Psychotic disorders/ use ppez
3	exp psychosis/ use psyh
4	(psychos?s or psychotic).tw.
5	exp schizophrenia/ use emczd
6	exp schizophrenia/ or exp "schizophrenia spectrum and other psychotic disorders"/ use ppez
7	(exp schizophrenia/ or "fragmentation (schizophrenia)") use psyh
8	schizoaffective psychosis/ use emczd
9	schizoaffective disorder/ use psyh
10	(schizophren* or schizoaffective*).tw.
11	exp bipolar disorder/ use emczd
12	exp "Bipolar and Related Disorders"/ use ppez
13	exp bipolar disorder/ use psyh
14	((bipolar or bipolar type) adj2 (disorder* or disease or spectrum)).tw.

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#	Searches
15	Depressive psychosis/ use emczd
16	Delusional disorder/ use emczd
17	delusions/ use psyh
18	(delusion* adj3 (disorder* or disease)).tw.
19	mental disease/ use emczd
20	mental disorders/ use ppez
21	mental disorders/ use psyh
22	(psychiatric adj2 (illness* or disease* or disorder* or disabilit* or problem*)).tw.
23	((severe or serious) adj3 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*))).tw.
24	(complex adj2 (mental adj2 (illness* or disease* or disorder* or disabilit* or problem*))).tw.
25	or/1-24
26	(Rehabilitation/ or cognitive rehabilitation/ or community based rehabilitation/ or psychosocial rehabilitation/ or rehabilitation care/ or rehabilitation center/) use emczd
27	(exp rehabilitation/ or exp rehabilitation centers/) use ppez
28	(Rehabilitation/ or cognitive rehabilitation/ or neuropsychological rehabilitation/ or psychosocial rehabilitation/ or independent living programs/ or rehabilitation centers/ or rehabilitation counselling/) use psyh
29	residential care/ use emczd
30	(residential facilities/ or assisted living facilities/ or halfway houses/) use ppez
31	(residential care institutions/ or halfway houses/ or assisted living/) use psyh
32	(resident* adj (care or centre or center)).tw.
33	(halfway house* or assist* living).tw.
34	((inpatient or in-patient or long-stay) adj3 (psychiatric or mental health)).tw.
35	(Support* adj (hous* or accommodat* or living)).tw.
36	(rehabilitation or rehabilitative or rehabilitate).tw.
37	rehabilitation.fs.
38	or/26-37
39	Prediction/ use emczd
40	Prediction/ use psyh
41	Predict*.ti.
42	((predict* or factor*) adj3 outcome*).tw.
43	((Long term or longterm or longitudinal) adj2 outcome*).tw.
44	(predict* and (Discharge adj3 (care home* or carehome* or communit* or hospital* or successful*))).tw.
45	(predict* and (deinstitutionali?ation or personal recovery or quality of life or readmission* or social function*)).tw.
46	((Outcome assessment/ or Treatment outcome/) and ("length of stay"/ or long term care/)) use emczd

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#	Searches
47	("Outcome Assessment (Health Care)" or Treatment outcome/) and ("length of stay" or long term care/) use ppez
48	((psychotherapeutic outcomes/ or treatment outcomes/) and exp treatment duration/) use psych
49	or/39-48
50	25 and 38 and 49
51	Letter/ use ppez
52	letter.pt. or letter/ use emezd
53	note.pt.
54	editorial.pt.
55	Editorial/ use ppez
56	News/ use ppez
57	news media/ use psych
58	exp Historical Article/ use ppez
59	Anecdotes as Topic/ use ppez
60	Comment/ use ppez
61	Case Report/ use ppez
62	case report/ or case study/ use emezd
63	Case report/ use psych
64	(letter or comment*).ti.
65	or/51-64
66	randomized controlled trial/ use ppez
67	randomized controlled trial/ use emezd
68	random*.ti,ab.
69	cohort studies/ use ppez
70	cohort analysis/ use emezd
71	cohort analysis/ use psych
72	case-control studies/ use ppez
73	case control study/ use emezd
74	or/66-73
75	65 not 74
76	animals/ not humans/ use ppez
77	animal/ not human/ use emezd
78	nonhuman/ use emezd
79	"primates (nonhuman)"

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#	Searches
80	exp Animals, Laboratory/ use ppez
81	exp Animal Experimentation/ use ppez
82	exp Animal Experiment/ use emczd
83	exp Experimental Animal/ use emczd
84	animal research/ use psyh
85	exp Models, Animal/ use ppez
86	animal model/ use emczd
87	animal models/ use psyh
88	exp Rodentia/ use ppez
89	exp Rodent/ use emczd
90	rodents/ use psyh
91	(rat or rats or mouse or mice).ti.
92	or/75-91
93	50 not 92
94	limit 93 to (yr="1970 - current" and english language)
95	remove duplicates from 94

Database: Cochrane Library

Date of search: 06/09/2018

#	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	(schizophren* or schizo affective*):ti,ab,kw
5	MeSH descriptor: [Bipolar Disorder] explode all trees
6	(((bipolar or bipolar type) near/2 (disorder* or disease or spectrum))):ti,ab,kw
7	MeSH descriptor: [Delusions] this term only
8	((delusion* near/3 (disorder* or disease))):ti,ab,kw
9	MeSH descriptor: [Mental Disorders] this term only
10	((psychiatric near/2 (illness* or disease* or disorder* or disabilit* or problem*))):ti,ab,kw
11	(((severe or serious) near/3 (mental near/2 (illness* or disease* or disorder* or disabilit* or problem*))):ti,ab,kw
12	((complex near/2 (mental near/2 (illness* or disease* or disorder* or disabilit* or problem*))):ti,ab,kw

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#	Searches
13	{or #1-#12}
14	MeSH descriptor: [Rehabilitation] this term only
15	MeSH descriptor: [Rehabilitation, Vocational] this term only
16	MeSH descriptor: [Residential Facilities] this term only
17	MeSH descriptor: [Assisted Living Facilities] this term only
18	MeSH descriptor: [Halfway Houses] this term only
19	((resident* near (care or centre or center))):ti,ab,kw
20	((((inpatient or in-patient or long-stay) near/3 (psychiatric or mental health))):ti,ab,kw
21	((((Support*) near (hous* or accommodat* or living))):ti,ab,kw
22	((halfway house* or assist* living)):ti,ab,kw
23	(rehabilitation or rehabilitative or rehabilitate):ti,ab,kw
24	{or #14 - #23}
25	(predict*):ti
26	((predict* or factor\$) near/3 outcome*):ti,ab,kw
27	((Long term or longterm or longitudinal) near/2 outcome*):ti,ab,kw
28	((predict* and (Discharge near/3 (care home* or carehome* or communit* or hospital* or successful*)))):ti,ab,kw
29	((predict* and (deinstitutionali?ation or personal recovery or quality of life or readmission* or social function*)))):ti,ab,kw
30	MeSH descriptor: [Outcome Assessment (Health Care)] 2 tree(s) exploded
31	MeSH descriptor: [Treatment Outcome] 2 tree(s) exploded
32	{or #30 - #31}
33	MeSH descriptor: [Length of Stay] explode all trees
34	MeSH descriptor: [Long-Term Care] this term only
35	{or #33 - #34}
36	#32 and #35
37	#25 or #26 or #27 or #28 or #29 or #36
38	#13 and #24 and #37 with Cochrane Library publication date between Jan 1970 and Sep 2018

Database: CRD

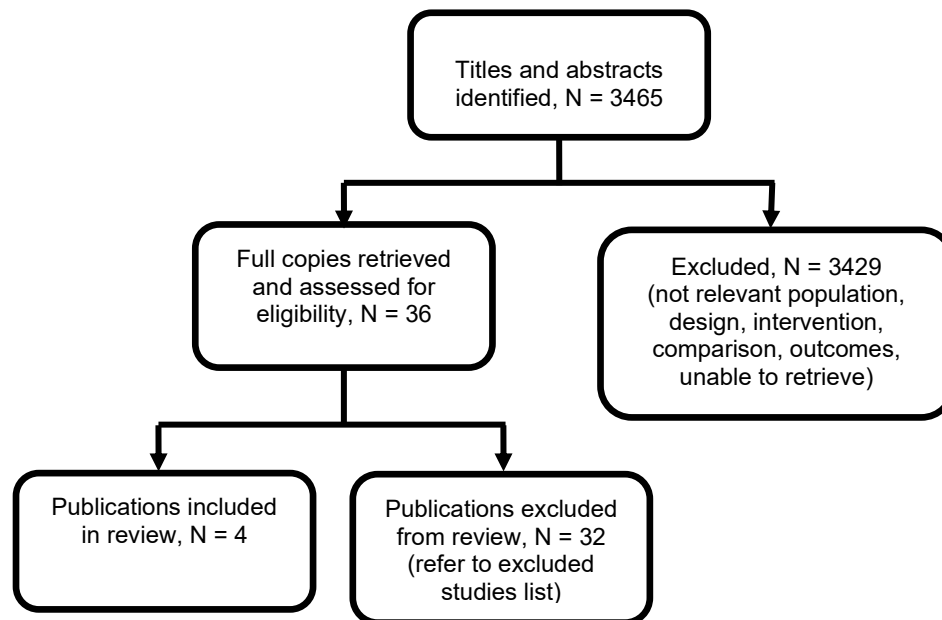
Date of search: 06/09/2018

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#	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 schizoffective*) 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 evidence study selection for Question 1.1 What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions



Appendix D – Clinical evidence tables

Evidence tables for review question: 1.1 What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

Table 4: Evidence tables

Study details	Participants	Prognostic factors	Methods	Outcomes and Results	Comments
<p>Full citation Bredski, J., Watson, A., Mountain, D. A., Clunie, F., Lawrie, S. M., The prediction of discharge from in-patient psychiatric rehabilitation: A case-control study, BMC Psychiatry, 11 (no pagination), 2011</p> <p>Ref Id 893782</p> <p>Country/ies where the study was carried out United Kingdom</p> <p>Study type Case control study</p> <p>Aim of the study</p>	<p>Sample size 65</p> <p>Characteristics Age: Mean (SD) Discharged group (n=34):35.8 (12.3) Non-discharged group (n=31):39.1 (11.7) Gender: Male: 45/65(69.2%) Female: 20/65(30.7%)</p> <p>Diagnosis: Schizophrenia (any type): 55/65(84.6%) Schizoaffective disorder: 5/65(7.7%) Bipolar affective disorder: 2/65(3.1%) Other psychotic illness: 2/65(3.1%) Alcohol related brain damage: 1/65(1.5%)</p>	<p>Interventions Rehabilitation services: The rehabilitation service included four wards of in-patient service with 4 wards with 74 beds and a community Rehabilitation Team. Two wards offered high-dependency rehabilitation for people with a high level of symptoms as well as significant risk histories and challenging behaviours. The two other wards provided longer-term complex care for people with a high level of disability from a complex mix of conditions who also present a risk to</p>	<p>Details There were no significant differences between the two groups in terms of age, sex or diagnosis</p>	<p>Results Predictive factors : Self-harm/suicide attempts Previous forensic care Aggression Sexual offences/incidents Disengagement Absconding Previous prison stay Alcohol dependence Other substance dependence Harmful use of alcohol Harmful use of other substances Previous forensic care: Discharged group: 2/34(5.9%) Non discharged group: 9/31(29.0%)</p>	<p>Limitations Assessment of risk of bias using Quality in prognostic studies(QUIPS) risk of bias assessment tool: 1) Study participation: The study sample represents the population of interest on key characteristics. The baseline study sample is adequately described for key characteristics. Inclusion and exclusion criteria are adequately described. There is adequate participation in the study by eligible individuals. 2) Study attrition: No attrition. 3) Prognostic factor measurement: A clear description of prognostic factors is provided. Only those prognostic factors which could be reliably measured are included. The</p>

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Study details	Participants	Prognostic factors	Methods	Outcomes and Results	Comments
<p>To recognise the factors associated with discharge from an in-patient rehabilitation service</p> <p>Study dates 1st April 2004 to 1st April 2010</p> <p>Source of funding This study did not receive any funding</p>	<p>Inclusion criteria Patients admitted to the rehabilitation service wards during the study period at the Royal Edinburgh Hospital, admitted after 1st April 2004.</p> <p>Exclusion criteria No exclusion criteria were used</p>	<p>themselves or others.</p>			<p>method and setting of measurement of prognostic factor is the same for all study participants. Adequate proportion of the study sample has complete data for prognostic factor variable.</p> <p>4) Outcome measurement: Outcomes are clearly defined. The method and setting of outcome measurement is the same for all study participants.</p> <p>5) Study confounding: Some potential confounders are accounted for in the study design by matching. Potential confounders are not accounted for in the analysis.</p> <p>6) Statistical analysis and reporting: Multivariate analysis is not reported. Data from univariate analysis was utilized.</p> <p>Other information -</p>
<p>Full citation de Girolamo, G., Candini, V., Buizza, C., Ferrari, C., Boero, M. E., Giobbio, G. M.,</p>	<p>Sample size 403</p> <p>Characteristics</p>	<p>Interventions Rehabilitation Services : Social skills training in 80 % of facilities</p>	<p>Details Follow-up period: 1 year Lost to follow up:2</p>	<p>Results Number and percentage of people discharged from residential facility:</p>	<p>Limitations Assessment of risk of bias using Quality in prognostic studies (QUIPS) risk of bias assessment tool:</p>

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Study details	Participants	Prognostic factors	Methods	Outcomes and Results	Comments
<p>Goldschmidt, N., Greppo, S., Iozzino, L., Maggi, P., Melegari, A., Pasqualetti, P., Rossi, G., Is psychiatric residential facility discharge possible and predictable? A multivariate analytical approach applied to a prospective study in Italy, <i>Social Psychiatry and Psychiatric Epidemiology</i>, 49, 157-167, 2014</p> <p>Ref Id 855001</p> <p>Country/ies where the study was carried out Italy</p> <p>Study type Prospective cohort study</p> <p>Aim of the study To describe characteristics of residential facility patients during study</p>	<p>1) Mean age: 49 years (SD = 10)</p> <p>2) Gender: 66.7% male</p> <p>3) Primary diagnosis: Number(percentage) Schizophrenic disorders : 272 (67.5) Personality disorders: 72 (17.9) Other disorders: 59 (14.6)</p> <p>4) Length of stay in residential facility: Number(percentage) ≤ 3 years: 245(60.8) 3-6 years: 76(18.9) >6 years: 80(19.8)</p> <p>Inclusion criteria</p> <p>1) Age between 18 and 64 years</p> <p>2) Patients staying in the St John of God Order's 23 residential facilities</p> <p>3) A primary psychiatric diagnosis</p> <p>Exclusion criteria</p> <p>1) Age 65 years or older</p> <p>2) Primary diagnosis of organic mental disorder</p>	<p>Individual and group psychoeducation in 65 %</p> <p>Job training in 65 %</p> <p>Expressive/manual activities in all residential facilities</p> <p>Predictive factors</p> <ul style="list-style-type: none"> • Diagnosis • Mean illness duration • Psychopathology • Social functioning • Social support • Working skills 	<p>Refused to follow up: 14</p> <p>Death : 10 (1 due to suicide)</p>	<p>Total discharges: 104 (25.8%)</p> <p>Home discharge: 55 (13.6%)</p> <p>Discharge to other residential facilities: 33 (8.2%)</p> <p>Supported housing: 9 (2.2%)</p> <p>Prison: 6 (1.5%)</p> <p>Home discharged–stayer differences in service user characteristics (at baseline):(Number, percentage)</p> <p>1) Primary diagnosis</p> <p>Home discharged(N=55)</p> <p>Schizophrenic disorders: 23 (41.8 %)</p> <p>Personality disorders: 17 (30.9 %)</p> <p>Unipolar depression: 12 (21.8 %)</p> <p>Stayers(N=338)</p> <p>Schizophrenic disorders: 242 (76.6 %)</p> <p>Personality disorders: 54 (17.1 %)</p> <p>Unipolar depression: 20 (6.3 %)</p>	<p>1) Study participation: The study sample represents the population of interest on key characteristics. The baseline study sample is adequately described for key characteristics. Inclusion and exclusion criteria are adequately described. There is adequate participation in the study by eligible individuals.</p> <p>2) Study attrition: Response rate is adequate. Outcome data on 393 out of 403 participants is available. Reasons for loss to follow-up are provided.</p> <p>3) Prognostic factor measurement: Prognostic factors are clearly defined. Standard methods used to measure prognostic factors to limit misclassification bias. The method and setting of measurement of prognostic factor is the same for all study participants. Adequate proportion of the study sample has complete data for prognostic factor variable.</p> <p>4) Outcome measurement: Outcomes are clearly</p>

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Study details	Participants	Prognostic factors	Methods	Outcomes and Results	Comments
<p>period, identify predictors and features linked with discharge at the 1-year follow-up and to assess clinicians' predictions about each patient's likelihood of home discharge</p> <p>Study dates September 2010</p> <p>Source of funding The study was funded by a grant from the Associazione Fatebenefratelli for Research (AFAR).</p>				<p>2) Mean illness duration (years) Home discharged(N=55): 16.3 (SD = 11.5) Stayers(N=338): 23.9 (SD = 10.9)</p> <p>3) Length of residential facility stay (years) Home discharged(N=55): 2.3 (SD = 1.96) Stayers(N=338): 4.6 (SD = 5.8)</p> <p>4) Social support in the last year Home discharged(N=55) Available and effective: 28 (50.9 %) Ineffective or absent: 27 (49.1 %) Stayers(N=338) Available and effective: 93 (27.7 %) Ineffective or absent: 243 (72.3 %)</p> <p>5) Currently married or cohabiting* Home discharged (N=55): 11(20%) Stayers (N=338): 33(9.8%)</p>	<p>defined and measured. The method and setting of outcome measurement is the same for all study participants.</p> <p>5) Study confounding: The method and setting of confounding measurement are the same for all study participants. Important potential confounders are accounted for in the analysis</p> <p>6) Statistical analysis and reporting: There is sufficient presentation of data to assess the adequacy of the analysis. The strategy for model building is appropriate and is based on a conceptual framework or model. The selected statistical model is adequate for the design of the study. There is no selective reporting of results.</p> <p>Other information There was indirectness of outcome which was reported as home discharge, instead of sustained move to a less supported placement. The odds ratio for home discharge with working skills</p>

Study details	Participants	Prognostic factors	Methods	Outcomes and Results	Comments
				<p>6) Employed in a supported work* Home discharged (N=55): 8 (14.5%) Stayers (N=338): 17(5%) *Number of subjects were calculated by NGA team based on the percentage of subjects reported in the research article Results from logistic regression model included in the forest plots</p>	<p>is reported as 4.6 (1.2–11.5) (low versus high score). The description in the text and also the raw data reported in Table 3, both of suggest that better working skills (high SLOF) were associated with home discharge. Hence the odds ratio has been interpreted as higher working skills associated with a greater likelihood of home discharge.</p>
<p>Full citation 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</p>	<p>Sample size 329</p> <p>Characteristics Gender: Male 65%) Ethnicity: White (90%) Diagnosis: Schizophrenia (68%)</p> <p>Inclusion criteria Patients at 50 mental health rehabilitation units, which scored above the median on the Quality Indicator for Rehabilitative Care assessment in national survey</p>	<p>Interventions Rehabilitation services: Mental health rehabilitation services in the United Kingdom provide specialist, tertiary care to those with complex needs and cannot be discharged from a standard inpatient mental health unit.</p>	<p>Details Length of follow up: 12 months Data analysis method: Random effects regression models</p>	<p>Results Successful discharge: 187 (56%) Ready for discharge but no suitable vacancy: 48(14%)</p>	<p>Limitations Assessment of risk of bias using Quality in prognostic studies(QUIPS) risk of bias assessment tool: 1) Study participation: The study sample represents the population of interest on key characteristics. The baseline study sample is adequately described for key characteristics. Inclusion and exclusion criteria are adequately described. There is adequate participation in the study by eligible individuals.</p>

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Study details	Participants	Prognostic factors	Methods	Outcomes and Results	Comments
<p>Psychiatry, 16 (1) (no pagination), 2016</p> <p>Ref Id 894905</p> <p>Country/ies where the study was carried out United Kingdom</p> <p>Study type Prospective cohort study</p> <p>Aim of the study To study longitudinal outcomes and costs for patients in mental health rehabilitation services and the predictors of successful discharge outcome.</p> <p>Study dates July 2011 to December 2012</p> <p>Source of funding This study was funded by the National Institute of Health</p>	<p>of inpatient mental health rehabilitation units in England during the recruitment phase of the study (July 2011 to December 2012)</p> <p>Exclusion criteria</p> <ol style="list-style-type: none"> 1) Patients who were on leave or those who had absconded) from the unit at the time of recruitment 2) Patients who lacked adequate English to give informed consent 3) Patients who were occupying a respite bed rather than a rehabilitation bed in the unit 4) Patients who were assessed as having capacity to give informed consent but declined to participate were not recruited 				<p>2) Study attrition: Response rate is adequate. Data on 329 participants out of 362 recruited is available. Reasons for loss to follow-up are provided.</p> <p>3) Prognostic factor measurement: Prognostic factors are clearly defined and reliably measured using standard scales. The method and setting of measurement of prognostic factor is the same for all study participants. Adequate proportion of the study sample has complete data for prognostic factor variable.</p> <p>4) Outcome measurement: Outcomes are clearly defined including duration of follow-up and level and extent of the outcome construct. The method and setting of outcome measurement is the same for all study participants.</p> <p>5) Study confounding: The method and setting of confounding measurement are the same for all study participants. Important potential confounders are</p>

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Study details	Participants	Prognostic factors	Methods	Outcomes and Results	Comments
Research through a Programme Grant for Applied Research (RP-PG-0707-10093).					accounted for in the analysis. 6) Statistical analysis and reporting: There is sufficient presentation of data to assess the adequacy of the analysis. The strategy for model building is appropriate and is based on a conceptual framework or model. The selected statistical model is adequate for the design of the study. There is no selective reporting of results. Other information -
Full citation Killaspy, H., Zis, P., Predictors of outcomes for users of mental health rehabilitation services: a 5-year retrospective cohort study in inner London, UK, Social Psychiatry and Psychiatric Epidemiology, 48, 1005-1012, 2013 Ref Id 894908	Sample size 141 Characteristics Mean age: 44 years Gender: Males (n=84; 68%) Diagnosis: Schizophrenia or schizoaffective disorder (n=115;93%) Mean length of illness: 22 years (SD=12). Accommodation: In hospital rehabilitation: 47(33.3%) Community rehabilitation: 44(31.2%)	Interventions Rehabilitation services: Psychiatric rehabilitation services in this study aimed to facilitate recovery, autonomy and successful community living in the users. The services collaborated with service users and their families to agree individually tailored treatment and care plans, with medical and psychological	Details Follow up duration: 5 years Lost from study due to death: 17(12%)	Results Total number of patients available for follow up at 5 years: 124 Number of patients discharged: 50(40.3%) Number of patients who remained stable: 33(23.6%) Number of patients relapsed: 41(33.1%) Service user characteristics as predictors of outcome	Limitations Assessment of risk of bias using Quality in prognostic studies(QUIPS) risk of bias assessment tool: 1) Study participation: The study sample represents the population of interest on key characteristics. The baseline study sample is adequately described for key characteristics. Exclusion criteria is not described. There is adequate participation in the study by eligible individuals.

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Study details	Participants	Prognostic factors	Methods	Outcomes and Results	Comments
<p>Country/ies where the study was carried out United Kingdom</p> <p>Study type Retrospective cohort study</p> <p>Aim of the study To study the outcomes at 5 year duration for users of psychiatric rehabilitation services for complex, longer term mental health problems</p> <p>Study dates 2005 to 2010</p> <p>Source of funding One of the study authors was supported by funding from the Legacy "In memory of Maria Zaousi".</p>	<p>Supported accommodation: 50(35.4%)</p> <p>Inclusion criteria Clients of inpatient and residential rehabilitation services of Camden and Islington NHS Foundation Trust rehabilitation service during the study recruitment period</p> <p>Exclusion criteria Not described</p>	<p>interventions and occupational therapy that aim to reduce symptoms and to enable skills in activities of daily living and engagement in community activities.</p>		<p>(in univariate or multivariate analyses):</p> <ul style="list-style-type: none"> • Age • Gender • Ethnicity • Marital status • Years contact with psychiatric services • Previous admissions • Difference in years from first contact to first rehabilitation admission • Diagnosis • Years in placement • Detained involuntarily • Problematic alcohol use • Problematic substance use • Needs • Family history of psychiatric illness • History of physical health problems • History of separation from parents in childhood • History of physical abuse • History of sexual abuse 	<p>2) Study attrition: Response rate is adequate. Data on 124 out of 141 study participants is available. Reasons for loss to follow-up are provided.</p> <p>3) Prognostic factor measurement: Prognostic factors are clearly defined and reliably measured using standard scales. The method and setting of measurement of prognostic factor is the same for all study participants. Adequate proportion of the study sample has complete data for prognostic factor variable.</p> <p>4) Outcome measurement: Outcomes are clearly defined including duration of follow-up and level and extent of the outcome construct. The method and setting of outcome measurement is the same for all study participants.</p> <p>5) Study confounding: The method and setting of confounding measurement are the same for all study participants. Important potential confounders are</p>

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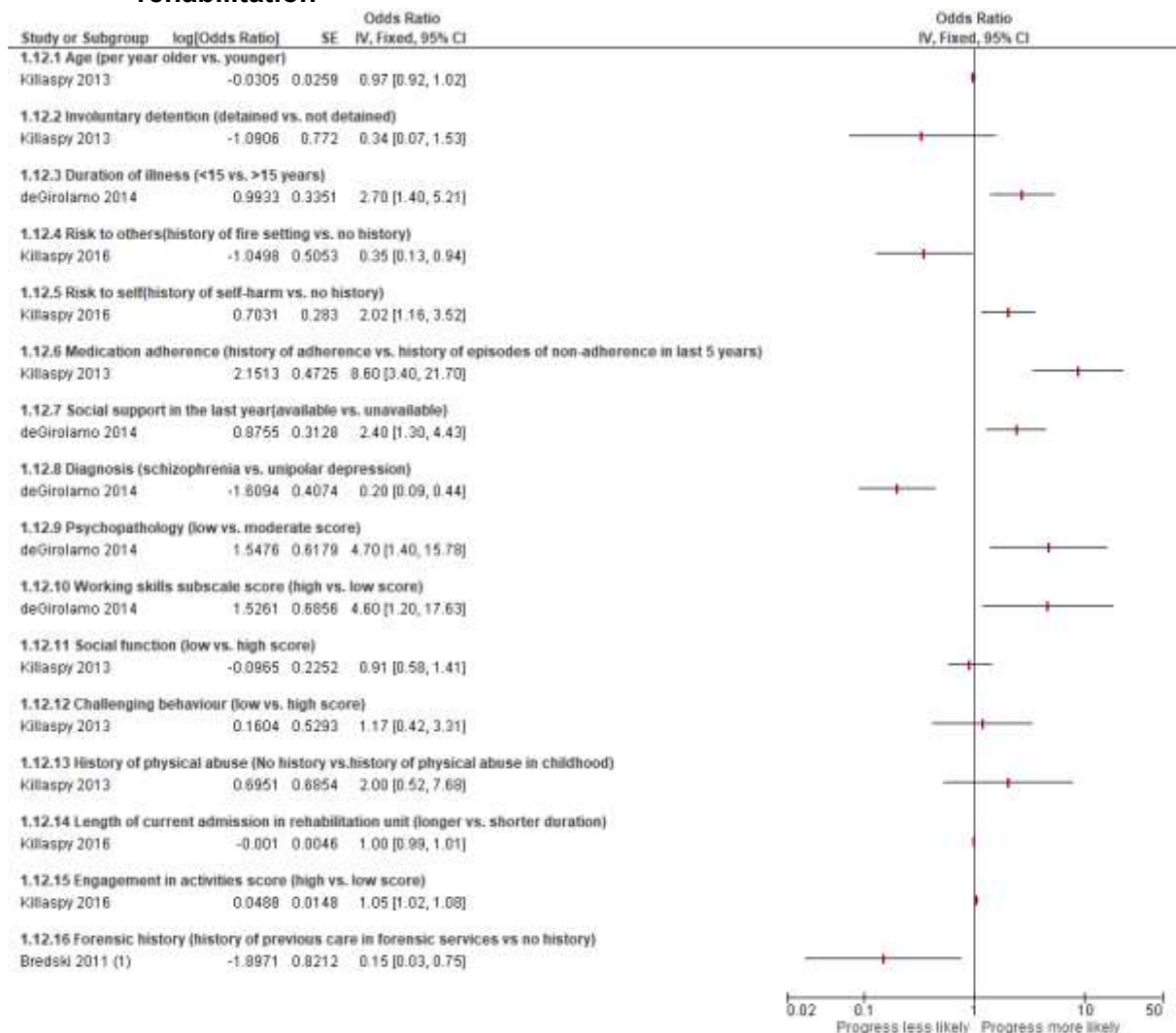
Study details	Participants	Prognostic factors	Methods	Outcomes and Results	Comments
				<ul style="list-style-type: none"> • Medication non-adherence • Social function • Challenging behaviours <p>Results of the multivariate regression analysis are reported in the forest plots.</p>	<p>accounted for in the analysis.</p> <p>6) Statistical analysis and reporting: There is sufficient presentation of data to assess the adequacy of the analysis. The strategy for model building is appropriate and is based on a conceptual framework or model. The selected statistical model is adequate for the design of the study. There is no selective reporting of results.</p> <p>Other information</p> <p>-</p>

n: number of subjects in the group; *NHS*: National health service; *NGA*: National Guideline Alliance; *QUIPS*: Quality in prognostic studies; *SD*: standard deviation

Appendix E – Forest plots

Forest plots for review question: 1.1 What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

Figure 1: Service user characteristics associated with successful progress in rehabilitation



Footnotes

(1) *Odds ratio calculated from data of univariate analysis reported in the study

CI: confidence interval; IV: inverse variance; SE: standard error

Appendix F – GRADE tables

GRADE tables for review question: 1.1 What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

Table 5: Clinical evidence profile for predictors of rehabilitation progress

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Rehabilitation progress	No progress/deterioration	Relative (95% CI)	Absolute		
Predictive factors of rehabilitation progress - Gender at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress – Ethnicity at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress – Marital status at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress – Needs at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress – History of sexual abuse at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress – History of physical health problems at 5 years follow-up												

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Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Rehabilitation progress	No progress/deterioration	Relative (95% CI)	Absolute		
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress – History of separation from parents in childhood at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress – Family history of psychiatric illness at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress – Problematic drug use at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress – Problematic alcohol use at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	NR (P not significant)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress - Age (per year older vs. younger) at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	OR 0.97 (0.92 to 1.02)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress - Involuntary detention (detained vs. not detained) at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	OR 0.34 (0.07 to 1.53)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress - Duration of illness (<15 vs. >15 years) at 1 year follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	serious ²	no serious imprecision	none	55	338	OR 2.7 (1.4 to 5.21)	-	MODERATE	CRITICAL
Predictive factors of rehabilitation progress - Risk to others (history of fire setting vs. no history) at 1 year follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	235	94	OR 0.35 (0.13 to 0.94)	-	HIGH	CRITICAL
Predictive factors of rehabilitation progress - Risk to self (history of self-harm vs. no history) at 1 year follow-up												

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Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Rehabilitation progress	No progress/deterioration	Relative (95% CI)	Absolute		
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	235	94	OR 2.02 (1.16 to 3.52)	-	HIGH	CRITICAL
Predictive factors of rehabilitation progress - Medication adherence (history of adherence vs. history of episodes of non-adherence) at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	OR 8.6 (3.4 to 21.7)	-	MODERATE	CRITICAL
Predictive factors of rehabilitation progress - Social support in the last year (available vs. unavailable) at 1 year follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	serious ²	no serious imprecision	none	55	338	OR 2.4 (1.3 to 4.43)	-	MODERATE	CRITICAL
Predictive factors of rehabilitation progress - Diagnosis (schizophrenia vs. unipolar depression) at 1 year follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	serious ²	no serious imprecision	none	55	338	OR 0.2 (0.09 to 0.44)	-	MODERATE	CRITICAL
Predictive factors of rehabilitation progress - Psychopathology (low vs. moderate score) at 1 year follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	serious ²	no serious imprecision	none	55	338	OR 4.7 (1.4 to 15.78)	-	MODERATE	CRITICAL
Predictive factors of rehabilitation progress - Working skills subscale score (low vs. high score) at 1 year follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	serious ²	no serious imprecision	none	55	338	OR 4.6 (1.2 to 17.63)	-	MODERATE	CRITICAL
Predictive factors of rehabilitation progress - Social function (low vs. high score) at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	OR 0.91 (0.58 to 1.41)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress - Challenging behaviour (low vs. high score) at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	OR 1.17 (0.42 to 3.31)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress - History of physical abuse (history vs. no history of physical abuse in childhood) at 5 years follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	very serious ¹	none	50	74	OR 2 (0.52 to 7.68)	-	LOW	CRITICAL
Predictive factors of rehabilitation progress - Length of current admission in rehabilitation unit (longer vs. shorter duration) at 1 year follow-up												

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Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Rehabilitation progress	No progress/deterioration	Relative (95% CI)	Absolute		
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	235	94	OR 1 (0.99 to 1.01)	-	MODERATE	CRITICAL
Predictive factors of rehabilitation progress - Engagement in activities score (low vs. high score) at 1 year follow-up												
1	observational studies	no serious risk of bias	no serious inconsistency	no serious indirectness	no serious imprecision	none	235	94	OR 1.05 (1.02 to 1.08)	-	HIGH	CRITICAL
Predictive factors of rehabilitation progress - Forensic history (history of previous care in forensic services vs no history) at 6 years follow-up												
1	observational studies	serious ³	no serious inconsistency	serious ⁴	very serious ¹	none	34	31	OR 0.15 (0.03 to 0.75)	-	VERY LOW	CRITICAL

CI: confidence interval; NR: not reported; OR: Odds ratio

¹The quality of evidence was downgraded by 2 levels due to very serious imprecision resulting from small sample size (<150)

²The quality of evidence was downgraded by 1 level due to serious indirectness of outcome which was reported as home discharge, instead of any discharge to a less supported placement like supported accommodation

³The quality of evidence was downgraded by 1 level due to serious risk of bias resulting from inclusion of data from univariate analysis

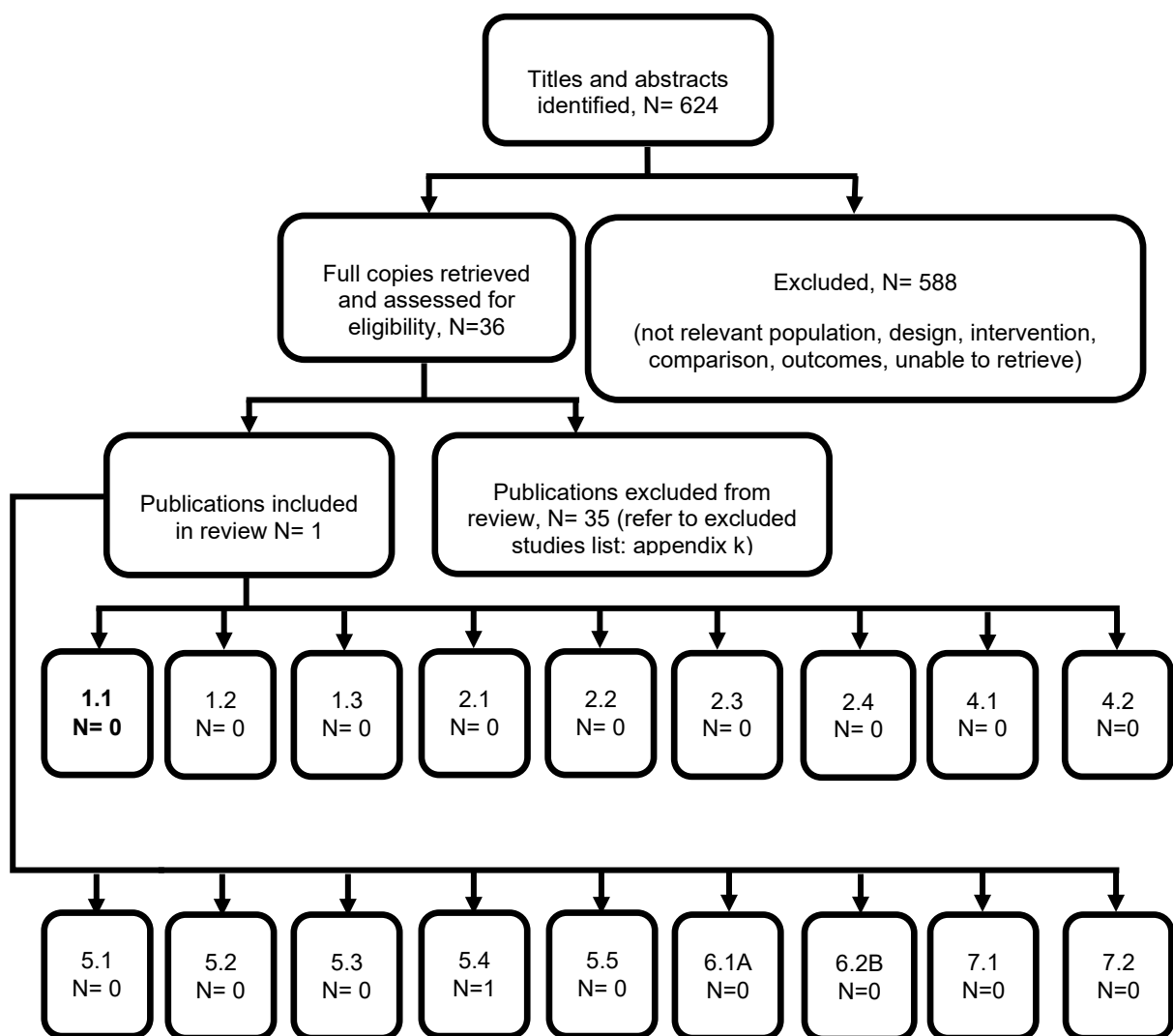
⁴The quality of evidence was downgraded by 1 level due to serious indirectness of outcome which was reported as those discharged from the inpatient rehabilitation ward, instead of any discharge to a less supported placement

Appendix G – Economic evidence study selection

Economic evidence study selection for review question 1.1: What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

A global health economic literature search was undertaken, covering all review questions in this guideline. However, as shown in Figure 2, no evidence was identified which was applicable for review question 1.1.

Figure 2: Health economic study selection flow chart



Appendix H – Economic evidence tables

Economic evidence tables for review question 1.1: What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

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

Appendix I – Health economic evidence profiles

Economic evidence profiles for review question 1.1: What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

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

Appendix J – Health economic analysis

Economic evidence analysis for review question 1.1: What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

No economic analysis was carried out for this review question.

Appendix K – Excluded studies

Excluded studies for review question: 1.1 What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

Clinical studies

Study	Reason for Exclusion
Bolton, Brian, Improving the prediction of rehabilitation outcomes by computer generated pattern analysis, <i>Rehabilitation Research & Practice Review</i> , 3, 51-53, 1972	Unclear diagnosis: details about the diagnosis of rehabilitation clients not available.
Brooks, William D., Key predictors of vocational rehabilitation outcomes among clients with psychiatric disturbance, <i>Dissertation Abstracts International</i> , 42, 608, 1981	Dissertation publication including mixed population with psychosis patients constituting less than 66% population
Coleman, Brenda M., Psychiatrically disabled Tennessee Vocational Rehabilitation clientele: A three year analysis of psychosocial and other demographic variables, <i>Dissertation Abstracts International</i> , 46, 3290, 1986	Dissertation abstract
Hultqvist, J., Markstrom, U., Tjornstrand, C., Eklund, M., Quality of life among people with psychiatric disabilities attending community-based day centres or Clubhouses, <i>Scandinavian Journal of Caring Sciences</i> , 08, 08, 2018	Follow up duration less than 1 year
Kaplan, Laura Miriam, Factors predicting success in a residential treatment program for the mentally ill homeless, <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> , 58, 2125, 1997	Dissertation abstract
Kavanagh, A., Nkire, N., Lavelle, E., Characteristics and progress of patients who receive inpatient rehabilitation services, <i>Irish Journal of Psychological Medicine</i> , 26, 64-68, 2009	Data not available regarding the association between service user characteristics and rehabilitation progress
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, <i>British Journal of Psychiatry</i> , 202, 28-34, 2013	Does not include analysis regarding service user characteristics predicting rehabilitation outcomes.
Kurtz, M. M., Rose, J., Wexler, B. E., Predictors of participation in community outpatient psychosocial rehabilitation in schizophrenia, <i>Community Mental Health Journal</i> , 47, 622-627, 2011	Outcome of interest not reported
Lancaster, Rebecca Sue, Predicting work performance in schizophrenia: The role of clinical symptoms, neurocognition, emotion perception, and coping, <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> , 65, 6051, 2005	Dissertation abstract
Lanfredi, M., De Girolamo, G., Candini, V., Buizza, C., Ferrari, C., Boero, M. E., Giobbio, G. M., Goldschmidt, N., Greppo, S., Iozzino, L., Maggi, P., Melegari, A. L., Pasqualetti, P., Rossi, G., Predictors of quality of life in a	Conference abstract

Study	Reason for Exclusion
sample of inpatients with schizophrenia in 23 residential facilities in northern Italy, <i>European Psychiatry. Conference: 21st European Congress of Psychiatry, EPA, 28, 2013</i>	
Lim, C., Barrio, C., Hernandez, M., Barragan, A., Yamada, A. M., Brekke, J. S., Remission of symptoms in community-based psychosocial rehabilitation services for individuals with schizophrenia, <i>Psychiatric Rehabilitation Journal, 39, 42-46, 2016</i>	Follow up period after rehabilitation less than 1 year
Lim, Caroline, Barrio, Concepcion, Hernandez, Mercedes, Barragan, Armando, Brekke, John S., Recovery from schizophrenia in community-based psychosocial rehabilitation settings: Rates and predictors, <i>Research on Social Work Practice, 27, 538-551, 2017</i>	Not enough data to estimate predictors of recovery at 1 year follow up
McGurk, S. R., Mueser, K. T., Cognitive and Clinical Predictors of Work Outcomes in Clients with Schizophrenia Receiving Supported Employment Services: 4-year Follow-Up, <i>Administration and Policy in Mental Health and Mental Health Services Research, 1-9, 2006</i>	Outcomes of interest not reported
McInerney, S. J., Finnerty, S., Walsh, E., Spelman, L., Edgar, N. E., Hallahan, B., McDonald, C., Quality of life and social functioning of former long-stay psychiatric patients transferred into the community: a 10 year follow up study, <i>Social Psychiatry & Psychiatric Epidemiology, 53, 795-801, 2018</i>	Not related to rehabilitation outcomes, but outcomes following transfer to community
Melle, I., Friis, S., Hauff, E., Vaglum, P., Social functioning of patients with schizophrenia in high-income welfare societies, <i>Psychiatric Services, 51, 223-228, 2000</i>	Not related to rehabilitation outcomes, but social functioning following transfer to community
Menezes, P. R., Rodrigues, L. C., Mann, A. H., Predictors of clinical and social outcomes after hospitalization in schizophrenia, <i>European Archives of Psychiatry & Clinical Neuroscience, 247, 137-45, 1997</i>	Study carried out in Brazil, which is not included in the country limit list.
Michon, H. W. C., van Weeghel, J., Kroon, H., Schene, A. H., Person-related predictors of employment outcomes after participation in psychiatric vocational rehabilitation programmes, <i>Social Psychiatry and Psychiatric Epidemiology, 40, 408-416, 2005</i>	Includes predictors of employment outcomes, and not rehabilitation outcomes
Moritz, S., Krausz, M., Gottwalz, E., Lambert, M., Perro, C., Ganzer, S., Naber, D., Cognitive dysfunction at baseline predicts symptomatic 1-year outcome in first-episode schizophrenics, <i>Psychopathology, 33, 48-51, 2000</i>	Not related to rehabilitation outcomes
Nordt, C., Muller, B., Rossler, W., Lauber, C., Predictors and course of vocational status, income, and quality of life in people with severe mental illness: a naturalistic study, <i>Social Science & Medicine, 65, 1420-9, 2007</i>	Not related to outcomes following participation in rehabilitation programme
Nuechterlein, K. H., Subotnik, K. L., Green, M. F., Ventura, J., Asarnow, R. F., Gitlin, M. J., Yee, C. M., Gretchen-Doorly, D., Mintz, J., Neurocognitive predictors of work outcome in recent-onset schizophrenia, <i>Schizophrenia Bulletin, 37 Suppl 2, S33-40, 2011</i>	Not related to rehabilitation outcomes

Study	Reason for Exclusion
Nygren, U., Markstrom, U., Bernspang, B., Svensson, B., Hansson, L., Sandlund, M., Predictors of vocational outcomes using individual placement and support for people with mental illness, <i>Work (Reading, Mass.)</i> , 45, 31-39, 2013	Mixed population with less than 66% with a primary diagnosis of psychosis
O'Keeffe, J., Conway, R., McGuire, B., A systematic review examining factors predicting favourable outcome in cognitive behavioural interventions for psychosis, <i>Schizophrenia Research</i> , 183, 22-30, 2017	Related to effectiveness of CBT interventions. Does not report outcomes related to rehabilitation.
Presly, A. S., Grubb, A. B., Semple, D., Predictors of successful rehabilitation in long-stay patients, <i>Acta Psychiatrica Scandinavica</i> , 66, 83-8, 1982	Mixed population with less than 66% population with psychosis
Rogers, E. S., Anthony, W. A., Cohen, M., Davies, R. R., Prediction of vocational outcome based on clinical and demographic indicators among vocationally ready clients, <i>Community Mental Health Journal</i> , 33, 99-112, 1997	Reports predictors of work related skills and outcomes, and does not report rehabilitation outcomes
Ross, G., Menapace, R. H., Teitelman, E., Level of psychological functioning as a predictor of psychiatric rehabilitation outcome, <i>Hospital and Community Psychiatry</i> , 32, 795-797, 1981	Study includes mixed population, without details about its composition. Data not available regarding the association between service user characteristics and rehabilitation progress
Titone, John C., Predicting vocational rehabilitation outcome among clients with a psychiatric disability, <i>Dissertation Abstracts International</i> , 49, 1625, 1988	Dissertation abstract
Trieman, N., Leff, J., Long-term outcome of long-stay psychiatric in-patients considered unsuitable to live in the community. TAPS Project 44.[Erratum appears in <i>Br J Psychiatry</i> . 2003 Jul;183:80-1], <i>British Journal of Psychiatry</i> , 181, 428-32, 2002	Data not available regarding the association between service user characteristics and rehabilitation progress
Tsang, H. W. H., Leung, A. Y., Chung, R. C. K., Bell, M., Cheung, W. M., Review on vocational predictors: A systematic review of predictors of vocational outcomes among individuals with schizophrenia: An update since 1998, <i>Australian and New Zealand Journal of Psychiatry</i> , 44, 495-504, 2010	Does not report rehabilitation outcomes of interest
Tully, Thomas J., An analysis of predictors of success and failure in rehabilitation of mental health caseload clients in the Dallas, Texas, area, <i>Dissertation Abstracts International</i> , 35, 4172, 1975	Dissertation abstract
Watzke, S., Brieger, P., Kuss, O., Schoettke, H., Wiedl, K. H., A longitudinal study of learning potential and rehabilitation outcome in schizophrenia, <i>Psychiatric Services</i> , 59, 248-255, 2008	Data not available regarding the association between service user characteristics and rehabilitation progress
Wykes, T., Dunn, G., Cognitive deficit and the prediction of rehabilitation success in a chronic psychiatric group, <i>Psychological Medicine</i> , 22, 389-398, 1992	Only 28 out of 49 subjects (57%) had a diagnosis of psychosis
Wykes, T., Sturt, E., Katz, R., The prediction of rehabilitative success after three years. The use of social, symptom and cognitive variables, <i>British Journal of Psychiatry</i> , 157, 865-870, 1990	Only 28 out of 49 subjects (57%) had a diagnosis of psychosis

CBT: *cognitive behavioural therapy*;

Economic studies

A global economic literature search was undertaken for this guideline, covering all 18 review questions. 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 6: 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), <i>British Journal of Psychiatry</i> Br 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, <i>Health Technology Assessment (Winchester, England)</i> Health Technol Assess, 20, 1-46, 2016	Does not match any review questions considered in the guideline.
Barton, Gr, Hodgskins, J, Mugford, M, Jones, Pb, Croudace, T, Fowler, D, Cognitive behaviour therapy for improving social recovery in psychosis: cost-effectiveness analysis (Structured abstract), <i>Schizophrenia Research</i> Schizophr 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?, <i>Acta Psychiatrica Scandinavica, Supplementum</i> Acta Psychiatr Scand Suppl, 9-16, 2006	Not an economic evaluation.
Beecham, J, Knapp, M, McGilloway, S, Kavanagh, S, Fenyo, A, Donnelly, M, Mays, N, Leaving hospital II: the cost-effectiveness of community care for former long-stay psychiatric hospital patients (Structured abstract), <i>Journal of Mental Health</i> J Ment Health, 5, 379-94, 1996	Available as abstract only.
Beecham, J., Knapp, M., Fenyo, A., Costs, needs, and outcomes, <i>Schizophrenia Bulletin</i> Schizophr 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, <i>Schizophrenia Bulletin</i> Schizophr Bull, 17, 407-10, 1991	Not an economic evaluation. Date is prior to 2000

Study	Reason for Exclusion
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, <i>Psychiatric Services</i> <i>Psychiatr Serv</i> , 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, <i>Australian & New Zealand Journal of Psychiatry</i> <i>Aust N Z J Psychiatry</i> , 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, <i>Archives of Psychiatric Nursing</i> <i>Arch Psychiatr Nurs</i> , 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, <i>Health Services Research</i> <i>Health Serv Res</i> , 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), <i>Health Technology Assessment (Winchester, England)</i> <i>Health Technol Assess</i> , 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, <i>Social Psychiatry & Psychiatric Epidemiology</i> <i>Soc Psychiatry Psychiatr Epidemiol</i> , 30, 171-84, 1995	Practice has changed somewhat since 1980s - not a cost effectiveness study.
Garrido, G., Penades, R., Barrios, M., Aragay, N., Ramos, I., Valles, V., Faixa, C., Vendrell, J. M., Computer-assisted cognitive remediation therapy in schizophrenia: Durability of the effects and cost-utility analysis, <i>Psychiatry Research</i> <i>Psychiatry Res</i> , 254, 198-204, 2017	Cost effectiveness study, but population of interest is not focussed on rehabilitation for people with complex psychosis.
Hallam, A., Beecham, J., Knapp, M., Fenyo, A., The costs of accommodation and care. Community provision for former long-stay	Economic evaluation predates 2000. Organisation and provision of care may have changed by some degree.

Study	Reason for Exclusion
psychiatric hospital patients, European Archives of Psychiatry & Clinical NeuroscienceEur Arch Psychiatry Clin Neurosci, 243, 304-10, 1994	
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, Pharmacogenetic testing in the clinical management of schizophrenia: a decision-analytic model (Structured abstract), Journal of	Structured abstract. Does not match any review question considered in this guideline.

Study	Reason for Exclusion
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	Taiwan is not an OECD country.

Study	Reason for Exclusion
(Structured abstract), Psychiatry and Clinical Neurosciences, 59, 385-394, 2005	
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: 1.1 What service user characteristics are associated with successful progress in rehabilitation services for people with complex psychosis and related severe mental health conditions?

Research question

What are the service and service user characteristics of highly specialist and longer-term high-dependency rehabilitation units that are associated with better outcomes?

Why this is important

Highly specialised inpatient rehabilitation units and longer term high dependency inpatient rehabilitation units exist for a small number of people with complex psychosis who have problems that are not currently accommodated within local inpatient rehabilitation settings (such as those with co-morbid conditions including acquired brain injury or developmental disorders such as autistic spectrum disorders), or who require longer to benefit from the treatment and support provided by standard inpatient high dependency rehabilitation services. It is not known what service user characteristics or service provision is associated with better outcomes for these groups, including step-down to less specialist inpatient care and successful discharge to supported accommodation in the community.

Table 7: Research recommendation rationale

Research question	What are the service and service user characteristics of highly specialist rehabilitation units and longer-term high-dependency rehabilitation units that are associated with better outcomes?
Why is this needed	
Importance to 'patients' or the population	Patients with particularly complex comorbid conditions that cannot manage in less specialised settings often spend very long periods of time (sometimes many years) in highly specialist or longer term inpatient rehabilitation services. Concerns have been raised by the CQC about the quality of life of this group. It is important to know what patient and service characteristics can support them to progress successfully in their rehabilitation and achieve sustained community discharge and better quality of life.
Relevance to NICE guidance	No evidence available to inform guidance
Relevance to the NHS	Although these specialist services should only be needed by a relatively small number of patients, the CQC have raised concerns that people are being placed in them unnecessarily and for too long, with associated high costs of care to the NHS. Greater knowledge of the characteristics of

Research question	What are the service and service user characteristics of highly specialist rehabilitation units and longer-term high-dependency rehabilitation units that are associated with better outcomes?
	these services and of those who can benefit from them is needed
National priorities	Fits with NHSI's 'Getting It Right First Time' initiative for mental health rehabilitation
Current evidence base	Accepted practice but no informative research
Equality	All patients 18+ years of age resident in one of these services
Feasibility	Good. The services are straightforward to identify. Service characteristics can be described and quality assessed by existing measures. Patient characteristics can be obtained from anonymised clinical records with appropriate safeguards. Some may have capacity to permit more detailed assessment.
Other comments	None

CQC: Care quality commission; NHS: National health service; NHSI: NHS improvement; NICE: National institute for health and care excellence

Table 8: Research recommendation modified PICO table

Criterion	Explanation
Population	Patients aged 18+ with complex psychosis using highly specialist and longer-term high-dependency rehabilitation units.
Intervention	Personal predictive factors.
Comparator	Not applicable
Outcomes	<p>Critical</p> <ul style="list-style-type: none"> • discharge to a sustained less supported placement <p>Important</p> <ul style="list-style-type: none"> • Readmission to inpatient services • Length of readmission • Social function • Service user satisfaction • Quality of life • Personal recovery
Study design	Cohort study or case-control study
Timeframe	At least one year after starting rehabilitation
Additional information	None