**Rehabilitation Effectiveness for Activities for Life (REAL)**

**Phase 1 analysis plan**

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Last Updated 13/04/2011

## Introduction

The Rehabilitation Effectiveness for Activities for Life (REAL) is a multiphase project. This analysis plan will only include phase 1. Phase 1 is an exploratory phase to determine the number and quality of inpatient rehabilitation provision in England. Unit managers and service users within each unit will be interviewed using separate standardised tools. Pertinent background information will also be collected from service users (socio demographics) and the unit managers (characteristics of the unit).

## Objectives

1. To determine the current quality and provision of mental health rehabilitation services in England.

2. To evaluate the range of quality of rehabilitation services in England.

3. To assess the characteristics of service users.

4. To determine whether service user quality of life, autonomy, therapeutic milieu and experiences of care are related to the quality of the unit.

5. To see whether the quality of the unit is related to service user characteristics.

## Study design

This phase of REAL is cross sectional. Rehabilitation unit managers will be interviewed for up to five days (as close together as possible) to gain data about the unit at that point in time. Each service user selected for involvement in the study will be interviewed once within a month of the unit manager's interview.

## Study population

Analyses will be carried out on the data from service users from the rehabilitation units included in the study. The study aimed to interview up to 10 service users from each inpatient rehabilitation unit visited. There will be data from >500 service users available for analysis.

Additionally, analyses will be on up to 168 inpatient rehabilitation units in England.

## Outcomes

*Service user outcomes*

Experiences of care (measured by Your Treatment and Care (YTC)) .[48] This consists of 25 questions related to admission and treatment, ward environment and primary nurse. This is scored by adding the positive responses from each service user to give a score between 0 and 25.

Quality of life (measured by the Manchester Short Assessment of Quality of Life (MANSA)) .[47] This consists of 12 questions on service users' satisfaction with

various aspects of their life. This scale is a mean of the items, giving a total possible range of 1 to 7.

Autonomy (measured by the Resident Choice Scale) .[46] This is a series of 22 questions regarding service users' choices in various aspects of their life. Within the overall scale, there are eight subscales (major home decisions, staffing issues, employment/ daytime activity, personal appearance, leisure/ relationships, household appearance/ possessions, meals, household routines). The overall scale gives a score between 8 and 88.

Therapeutic milieu (measured by the Good Milieu Index (GMI).[49] This comprises of five questions related to satisfaction the various aspects of the unit and life on it. Each question is five point likert scale responses coded 1 to 5, with the overall score ranging from 5 to 25.

*Rehabilitation service outcomes*
Quality Indicator for Rehabilitative Care (QuIRC) .[43] This is a tool to assess the quality of care available to people with long term mental health problems. It has seven domains (built environment; therapeutic environment; treatments and interventions; self-management), each producing their own score as a percentage. An overall score (also as a percentage) can also be produced; although is not going to be utilised in this study. A higher percentage indicates better quality of care available. To get a handle of the overall performance of a unit, the number of domains above the median will be calculated, then dichotomised to 0 to 3 domains above the median (coded 0) versus 4 to 7 domains above the median (coded 1).

**Covariates (variable names are given in brackets)**
*Service user outcomes*
- QuIRC domains and number of domains above the population median, dichotomised to 0 to 3 domains versus 4 to 7 domains
- Mental Illness Needs Index (MINI) score[45]
- Location of unit, dichotomised to hospital (ward in a hospital) versus community (community based facility, house/ unit within hospital grounds (not a ward)) (collapsing of ITEM140A)
- Age (AGE)
- Gender (GENDER)
- Global Assessment of Functioning (GAF)[50] score (Q100)

The association between gender and the outcomes will be tested; if it is not statistically significant, it will be removed from the models.

*Rehabilitation service outcomes*
- Location of unit, hospital versus community (collapsing of ITEM140A)
- MINI[45]
- Percentage male (ITEM003/ITEM002)
- Mean age (Collapse by unit mean AGE)
- Mean GAF[50] (Collapse by unit mean Q100)
- Percentage detained under the Mental Health Act (ITEM005)
- ~~Mean length of stay (PROF003)~~ **AMENDMENT 13/04/2011** it was decided that this variable should be dropped because it is poorly estimated (the unit managers often guess the mean length of stay) and also there is a high percentage of missing data for this variable (37%).

Some covariates (age, GAF) were only measured at the service user level, so will be collapsed by rehabilitation unit to give mean values for continuous variables and percentages with the given characteristic for categorical variables.

**Statistical analysis**
Data will be analysed using Stata version 11.

Initially descriptive data from both the rehabilitation units and the service users will be calculated to fulfil objectives 1, 2 and 3.

Notes about specific variables
The use of out of area placements (percentage of service users discharged to an out of area placement in previous 12 months) (PROF012* and PROF013*, calculated as (sum of PROF13*/ sum of PROF12* + PROF13*)x100).

*Service user outcomes*
These outcomes will be clustered by rehabilitation unit in clusters of up to ten service users (so far 2 to 9) as up to ten service users were questioned in each unit. Linear regression models allowing for clustering will be used. Residuals will be tested for Normality. If residuals are not Normally distributed, then the outcomes will be transformed to Normality or alternative models will be considered. Each outcome will be considered separately but will include the same covariates listed above; with only one QuIRC domain or the dichotomous overall variable in each model (giving eight models for each outcome). Results will be presented as regression coefficients and confidence intervals. Methods to account for multiple testing will be considered. These analyses relate to objective 4.

*Rehabilitation service outcomes*
Assuming the residuals are Normally distributed, multiple linear regression will be used with QuIRC domains as the outcomes and using the covariates listed in the previous section. To examine which covariates explain the variation in QuIRC, the $R^2$ measure will be used.. Regression coefficients and changes in $R^2$ will be used to assess which variable(s) have the greatest impact on the outcome; 95% confidence intervals will not be presented because the study uses the population of inpatient rehabilitation units in England. If the residuals are not Normally distributed it will be necessary to transform the QuIRC domains to make them Normally distributed or consider alternative methods.

The dichotomous QuIRC summary outcome will be analysed using logistic regression, including the same covariates as listed previously. Odds ratios will be presented; 95% confidence intervals will not be presented because the data come from the population of rehabilitation units in England. These analyses relate to objective 5.

Analyses will be considered with and without service user variables, given that they are a sample from each unit.

*Missing data*
For both outcome groups, the amount of missing data will be explored both for outcomes and covariates. If there is substantial missing data, predictors of missingness will be sought with clinical input and it would be necessary to adjust for these in analyses.

**AMENDMENT 13/04/2011** – MANSA has a substantial percentage of missing data because the question relating to the service users' satisfaction with their sex life being poorly answered so predictors of missingness of the MANSA will be sought.

Outcomes

**Update 13/04/2011** - Based on the final data (Rehabilitation units, n=133; Service Users, n=751) there are no missing data for the QuIRC domains; however there is substantial missing data for the service user outcomes:

MANSA – 17% missing
Residents' Choice Scale – 9% missing
GMI – 3% missing
Your Treatment and Care – 4% missing

Covariates

Location of unit (hospital or community) (collapsing of ITEM140A) – 0% missing
Percentage male (ITEM003/ITEM002) – both variables, 0% missing
Percentage detained under the Mental Health Act (ITEM005) – 2% missing
Mean length of stay (PROF003) – 37% missing

Age (AGE) – 0%
Gender (GENDER) – 0.3% missing
Global Assessment of Functioning (GAF) score (Q100) – 0% missing

Depending on the extent and patterns of missing data it may be necessary to employ multiple imputation to the data. If this is required, this will be treated as a sensitivity analysis, with the primary analysis being complete case as explained previously.