

Care for Eating Disorders in Oxford AHSN with particular focus on SHaRON at Berkshire Healthcare NHS Foundation Trust

SUMMARY REPORT

Apr 13, 2015

Project Goals

The aim of the Project was to set up a programme of work to baseline care needs of patients with eating disorders in the Oxford AHSN region as a prelude to designing and testing best practice pathways of care. An existing model of care has been implemented in Berkshire Healthcare NHS Foundation Trust (SHaRON). This project will seek to test the hypothesis that this model of care has made a positive difference to patients.

The main objectives of this project were identified as:

- Develop pragmatic criteria to identify patients with eating disorders, both within HES data (secondary care) and within MHMDS data (mental health care)
- Understand the number of patients with eating disorders within Oxford AHSN's area, with a breakdown by CCG/Trust/etc
- Baseline current needs of patients met by the mental health system in the Oxford AHSN area
- Understand the impact of these patients on the rest of the health system in the Oxford AHSN area and elsewhere in England
- Measure outcomes where possible and identify areas for potential further improvement

This report outlines the main findings.

Data set and selection criteria

We used pseudonymised, non-sensitive patient-episode level data¹ that allowed longitudinal analysis across 3 years (2010-11 to 2012-13) and covered care provided to eating disorder patients anywhere in England for patients belonging to Oxford AHSN.

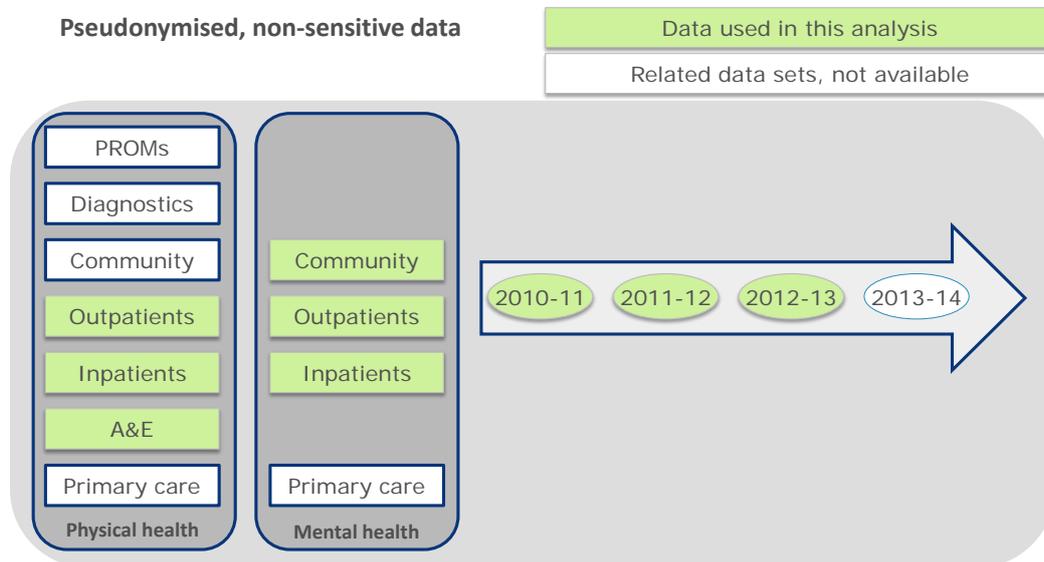


Figure 1 Data used in this analysis

Patients were identified as belonging to Oxford AHSN by using the Lower Super Output Area (LSOA) code associated with each care record and reference tables provided by NHS England linking LSOAs to CCGs, and CCGs to AHSNs.

Patients with eating disorders were identified using **ICD-10 diagnostic codes**. In a crucial difference from other studies in this area, we chose to look at presence of these codes in **both Primary and Secondary Diagnosis** fields – this is because many patients have comorbidities and the data only provides a 3-year window into a condition that may last several years.

¹ Raw data licensed by Janssen Healthcare Innovation from the Health and Social Care Information Centre, 2013

Hospital Episode Statistics: ICD-10

(F50) Eating disorders
 (F50.0) Anorexia nervosa
 (F50.1) Atypical anorexia nervosa
 (F50.2) Bulimia nervosa
 (F50.3) Atypical bulimia nervosa
 (F50.4) Overeating associated with other psychological disturbances
 (F50.5) Vomiting associated with other psychological disturbances
 (F50.8) Other eating disorders
 (F50.9) Eating disorder, unspecified

Presence of code in any
 Diagnosis field (Primary and
 Secondary)

Mental Health Min. Data Set: ICD-10

(F50) Eating disorders
 (F50.0) Anorexia nervosa
 (F50.1) Atypical anorexia nervosa
 (F50.2) Bulimia nervosa
 (F50.3) Atypical bulimia nervosa
 (F50.4) Overeating associated with other psychological disturbances
 (F50.5) Vomiting associated with other psychological disturbances
 (F50.8) Other eating disorders
 (F50.9) Eating disorder, unspecified

Presence of code in any
 Diagnosis field (Primary and
 Secondary)

Figure 2 ICD-10 codes used to identify Eating Disorders cohort

Patients identified from each of the 4 different data sets involved (MHMDS, HES Inpatient, HES Outpatient and HES A&E) were combined to form a set of unique service users.

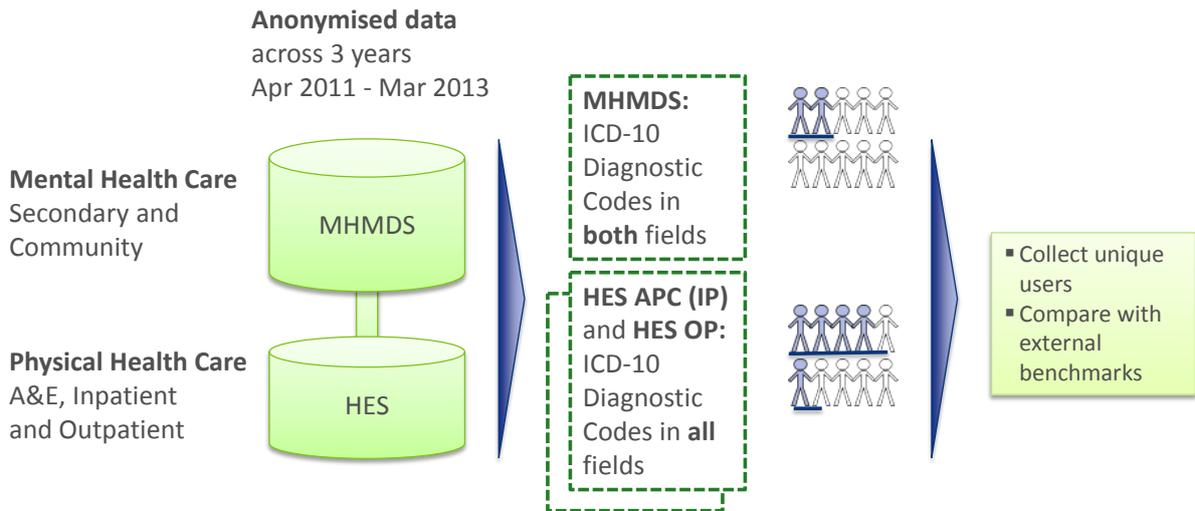


Figure 3 Approach to create unified set of users from multiple data sources

Incidence and prevalence in Oxford AHSN

The methods outlined above give us the following estimate for the cohort of Eating Disorder patients in the Oxford AHSN area.

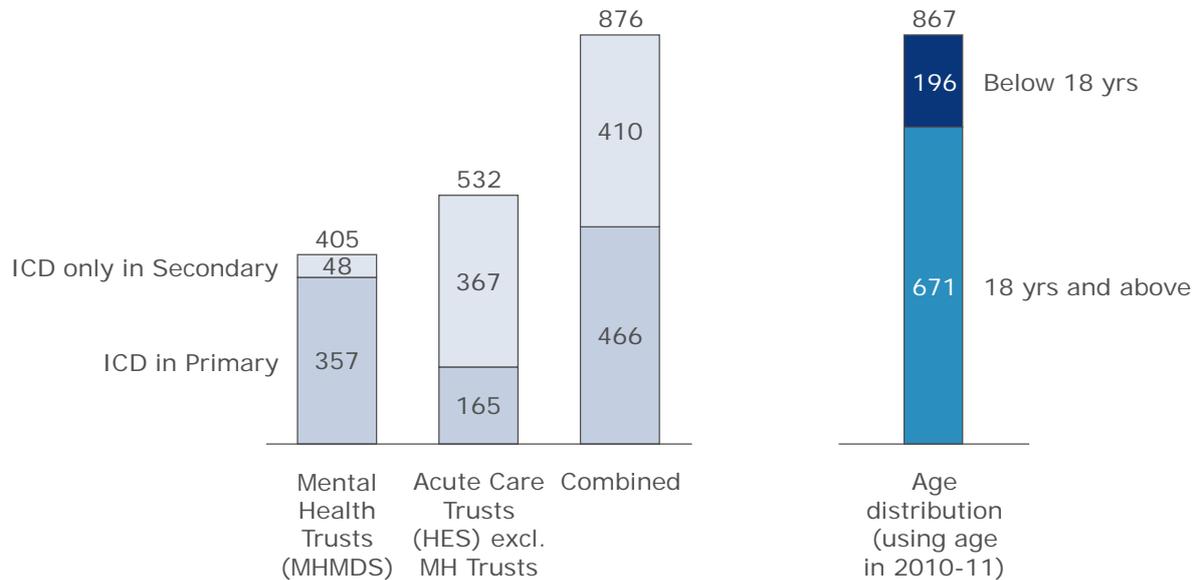


Figure 4 Cohort of Eating Disorder patients in Oxford AHSN (as of 2012-13)

Note that 2/3rd of the users are older than 18 years (since the data covers a 3-yr period, all ages have been adjusted to consider their age in 2010-11). This sub-group is of particular interest because the SHaRON service at Berkshire FT only caters to this age group.

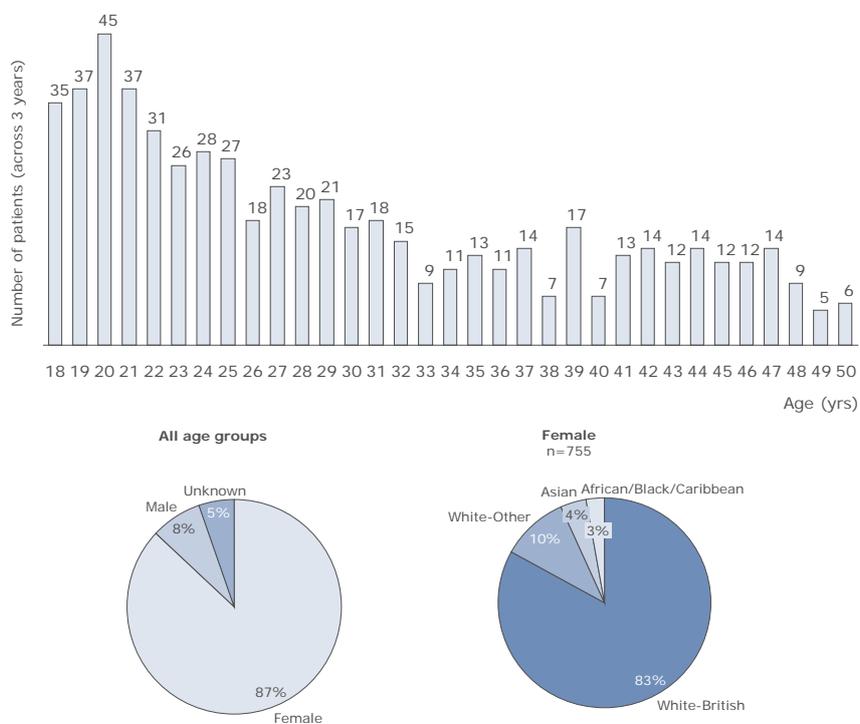


Figure 5 Demographic profile

Most service users are in the 14-35 yrs age group, and White-British Females make up the majority.

Distribution by CCG follows the patterns we would expect from the population distribution.

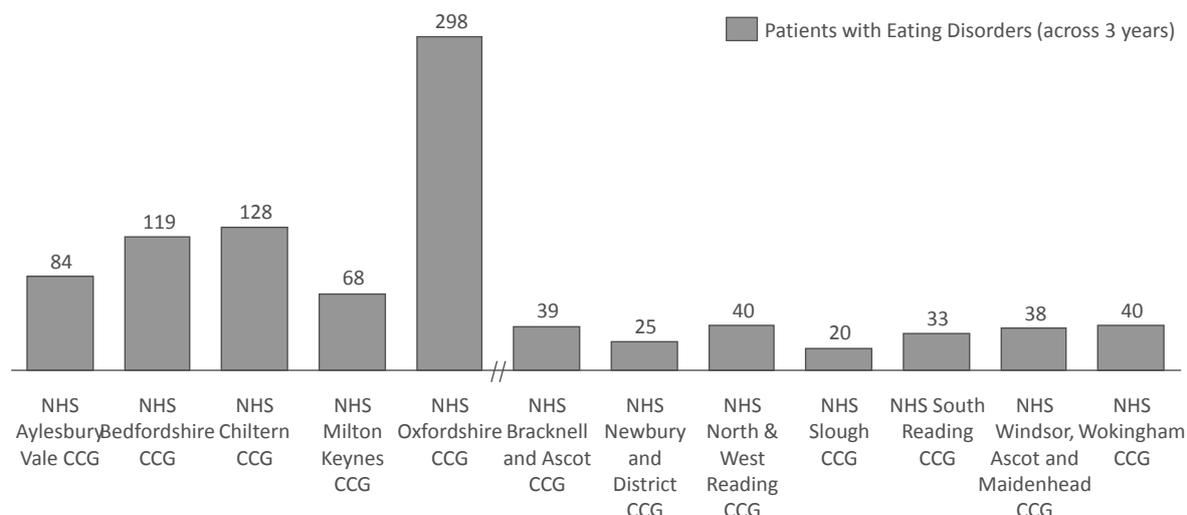


Figure 5 Distribution by CCG in Oxford AHSN (across 3 years)

(A patient who moves locations into areas covered by different CCGs will be counted more than once in the CCG chart; movement within the CCG will not result in double-counting)

We can compare these prevalence numbers to incidence figures from the recently released B-Eat report². Research involving GP data in the UK indicates an increase in the age-standardised annual incidence of all diagnosed eating disorders (for ages 10-49) from 32.3 to 37.2 per 100,000 between 2000 and 2009. This translates to the following incidence numbers for Oxford AHSN's 12 CCGs.

CCGs in Oxford AHSN	Population age 10-49, mid 2013 (ONS)	Age-standardised annual incidence, 2013 (estimate)
NHS Aylesbury Vale CCG	102,038	41
NHS Bedfordshire CCG	220,234	88
NHS Bracknell and Ascot CCG	73,100	29
NHS Chiltern CCG	159,479	64
NHS Milton Keynes CCG	144,096	58
NHS Newbury and District CCG	54,324	22
NHS North & West Reading CCG	50,557	20
NHS Oxfordshire CCG	348,729	139
NHS Slough CCG	84,958	34
NHS South Reading CCG	70,042	28
NHS Windsor, Ascot and Maidenhead CCG	74,413	30
NHS Wokingham CCG	80,749	32
Oxford AHSN	1,462,719	585

² The costs of eating disorders: Social, health and economic impacts, Feb 2015; <http://www.b-eat.co.uk/latest/602>

We can use the data to review trends in resource utilisation across 3 years, in mental and physical health settings.

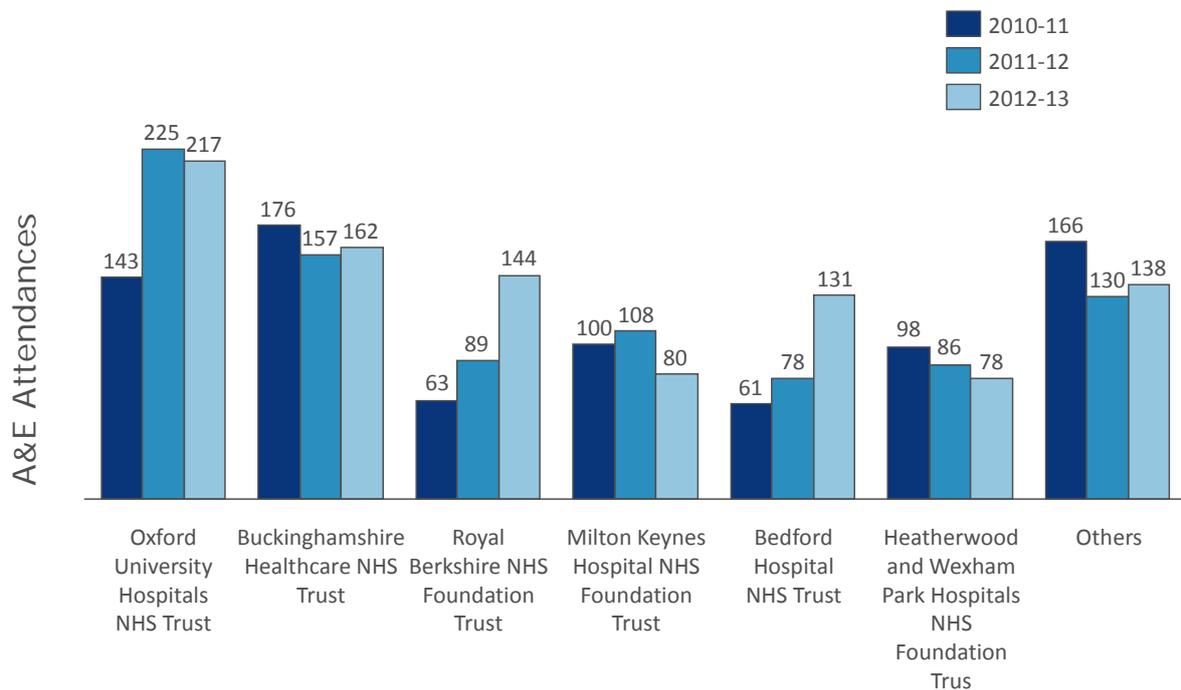


Figure 6 Trend in A&E attendances

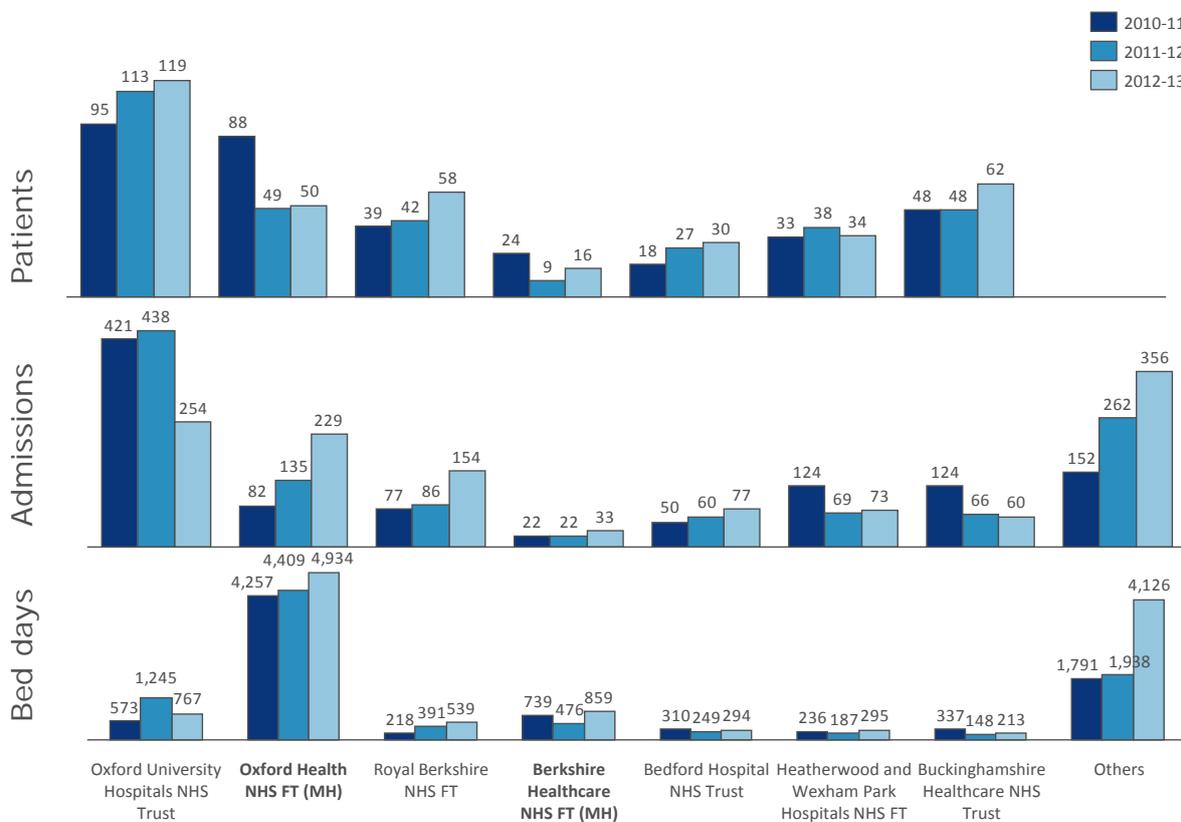


Figure 7 Trend in Inpatient Attendances (mental health Trusts in Bold)

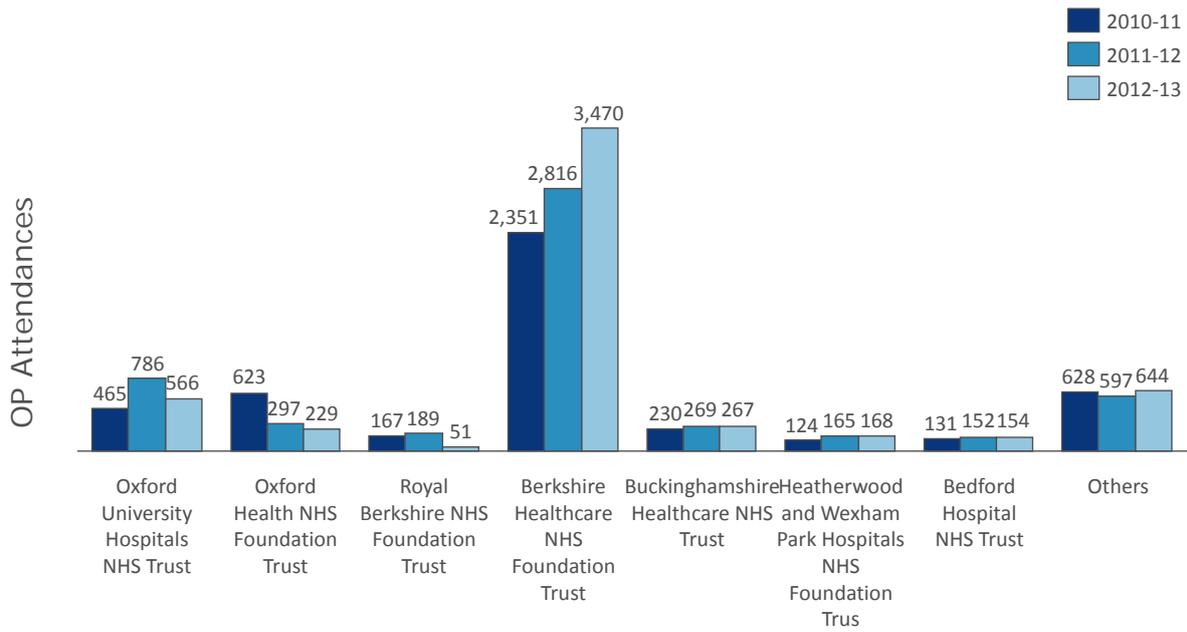


Figure 8 Trend in Outpatient attendances

Of note here is that while Oxford Health FT has the higher number of patients, Berkshire Healthcare FT has by far the **highest number of outpatient appointments** (this will be reviewed in more detail in a later section).

Focus on patients at Berkshire Healthcare NHS FT (presumed SHaRON users)

SHaRON is an online service offered by Berkshire Healthcare NHS Foundation Trust. It has been in continuous use since 2011, and is offered to all patients over the age of 18 (For simplicity, I have targeted analyses at patients aged 18+ in 2010-11, although the data covers 3 years).

There is a need to evaluate the effectiveness of SHaRON, and one way is to compare utilisation/outcomes (or proxies) among comparable cohorts of patients. We have chosen patients aged 18+ in Oxford AHSN, and sub-grouped them in 3 different ways:

- Those who had any interaction with Berkshire Healthcare NHS FT, and those who had none
- Those belonging to the CCGs considered “local” to Berkshire Healthcare NHS FT (7 CCGs termed “Berkshire CCGs”), and those belonging to the other 5 Oxford AHSN CCGs
- Those who interacted particularly with Berkshire’s Outpatient teams, those who interacted with other Trusts’ Outpatient teams, and those with no Outpatient appointments

A simple comparison of age profiles suggests that Berkshire’s patients are not dramatically different from those in other Trusts.

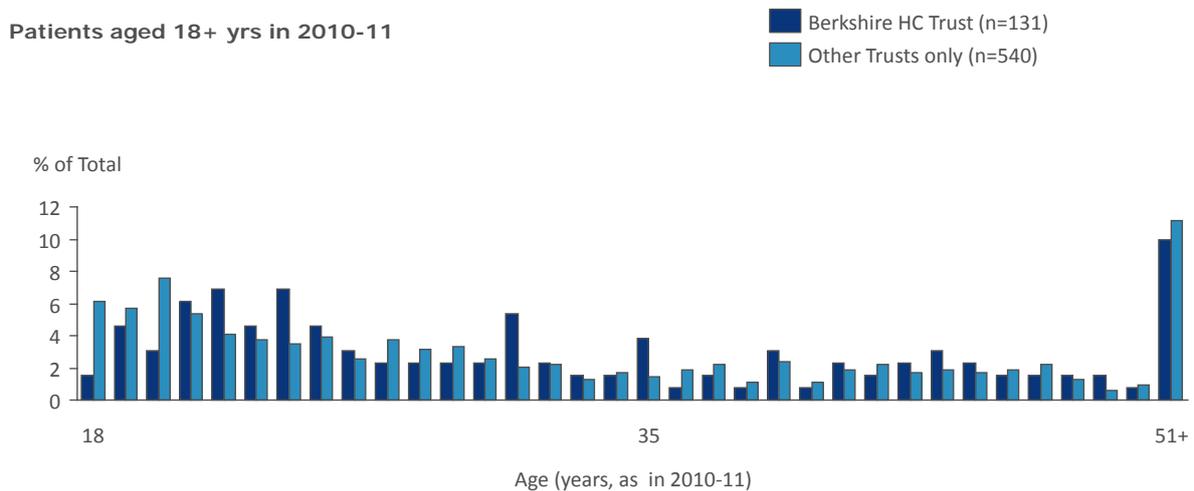


Figure 9 Cohort comparison by age profiles

However, there appear to be significant differences in resource utilisation by patients in these two sub-groups:

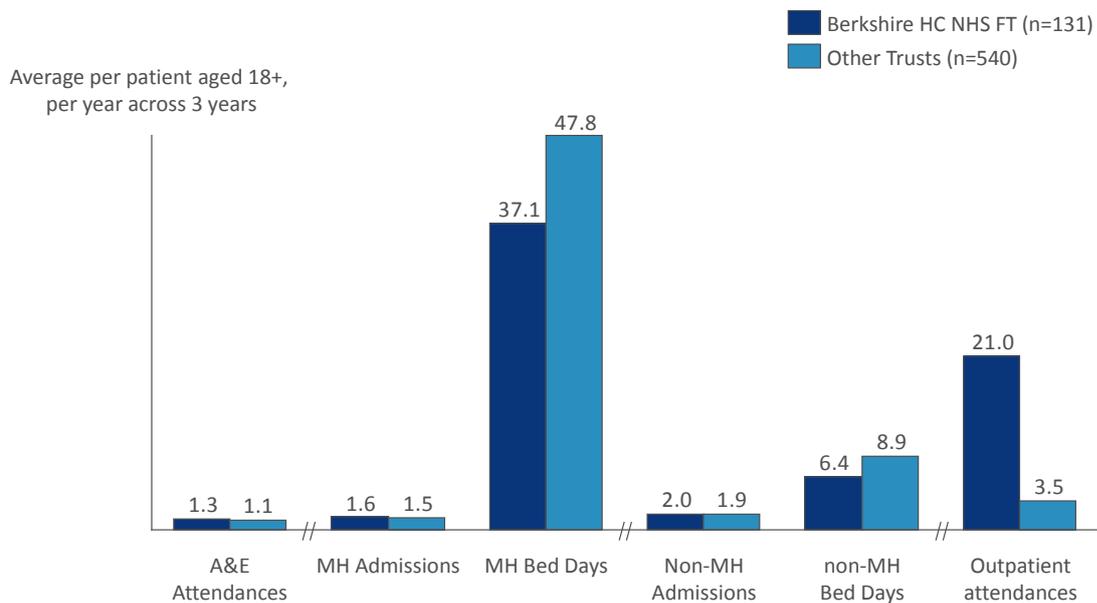


Figure 10 Comparison of average resource utilisation by patients in the Trust-based cohorts

It appears that Berkshire’s patients use fewer mental health bed days and non-mental health bed days, when compared to similar age group patients in other Trusts, while also using significantly more outpatient appointments. Note here that bed days usage is considered across all of England i.e. those who had any interactions with Berkshire FT are included in the Berkshire FT cohort, and their bed days utilised anywhere in England (not just in Berkshire) are used in the above calculation.

This appears to suggest a link between more frequent outpatient interactions and decreased need for mental health inpatient care – this will be tested in the analysis that follows.

This also begets the question of whether care is simply being shifted elsewhere. We can test this by comparing resource utilisation by patients “local” to Berkshire FT, with those from other CCGs.

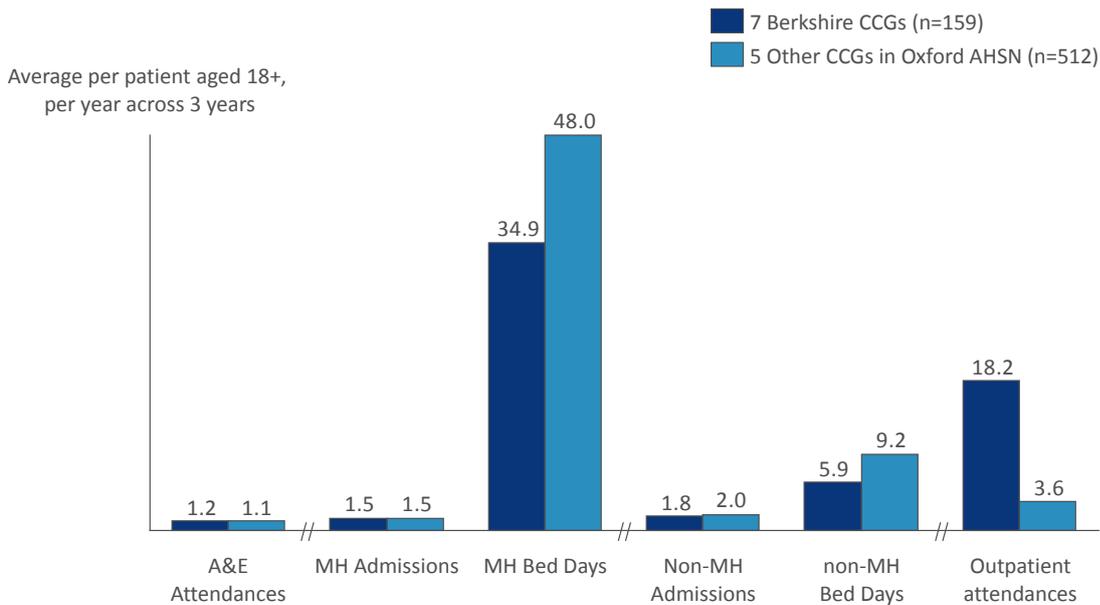


Figure 11 Comparison of average resource utilisation by patients in the location/CCG-based cohorts

The difference in resource utilisation is if anything even more dramatic in this view, and especially so in terms of Outpatient attendances.

The apparent link between Outpatient attendances and inpatient bed days can be explored further by considering the reasons for attendance.

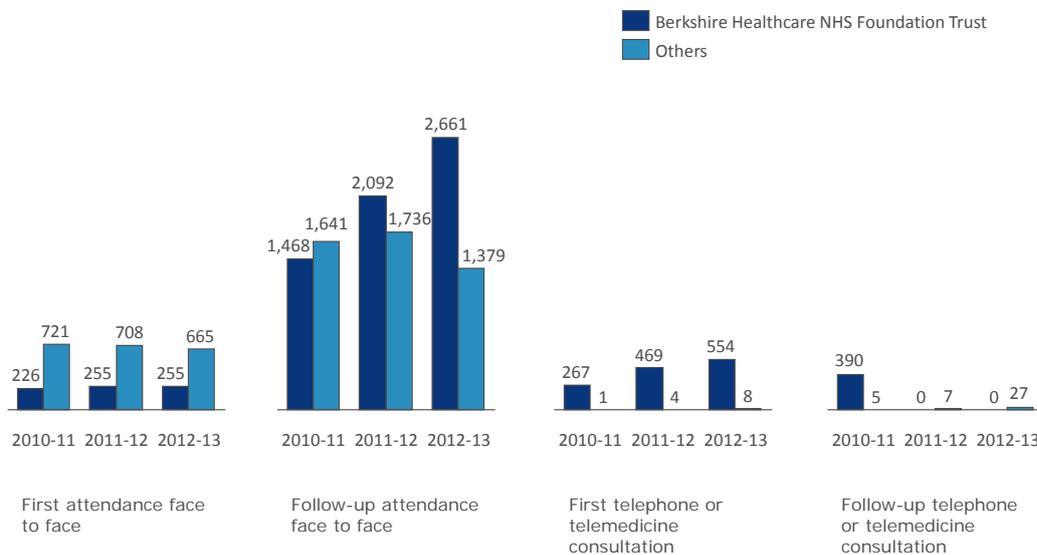


Figure 12 Comparison of Outpatient attendance profiles by patients in the Trust-based cohorts

Clearly, Berkshire is offering much more face-to-face follow-up appointments, and is perhaps alone in shifting care to cheaper telephone or telemedicine settings (which is exactly the service provided via the SHaRON initiative). This lends credence to the assumption that the higher rate of OP attendances is contributing to lower need for inpatient beds.

To test this, we can compare the impact of Outpatient attendances across Trusts.

Patients aged 18+ yrs in 2010-11, across 3 years 2010-2013
average per patient per year

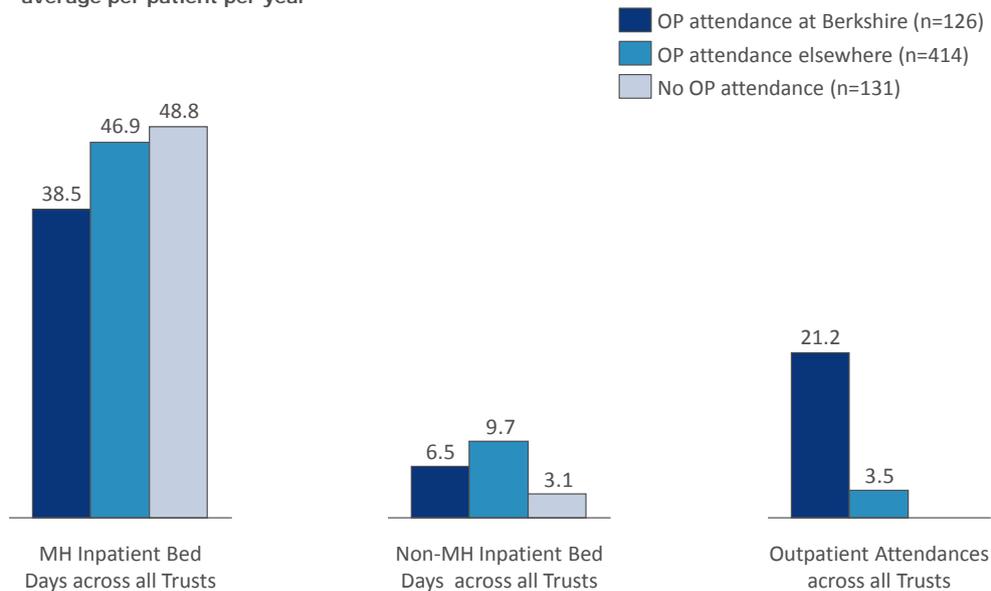


Figure 13 Comparison of average resource utilisation by patients in Outpatient attendance-based cohorts

The data appears to suggest that while Outpatient attendance in general has a positive effect in resource utilisation, the service at Berkshire is perhaps leading to even better outcomes.

Another measure of effectiveness is the number of repeat admissions to mental health inpatient beds. Here again, the data appears to show that patients from “other” CCGs (those not local to Berkshire FT) get admitted to hospital more often than patients local to Berkshire FT.

Patients aged 18+ in 2010-11, across 3 years 2010-2013

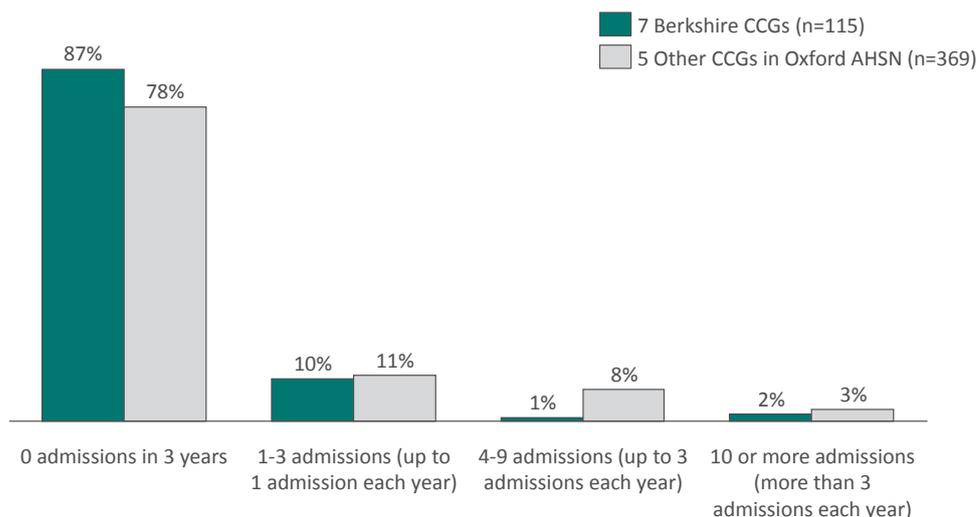


Figure 14 Mental health inpatient admissions across 3 years

Yet another measure of effectiveness – and one claimed by SHaRON – is the rate of re-referrals from primary care into the mental health system. We were unable to verify this using the data available, primarily due to data quality (reliability of recording) issues.

A curious finding above is the non-zero number of inpatient beds used at Berkshire FT, when eating disorder beds were closed at Berkshire FT several years ago. This can be (partly) explained by considering the complexity of patients at Berkshire, particularly on comorbid psychosis. A large proportion of beds recorded (significantly higher than at other Trusts) are for patients admitted for psychosis-related reasons, for whom eating disorders are present as a secondary diagnosis.

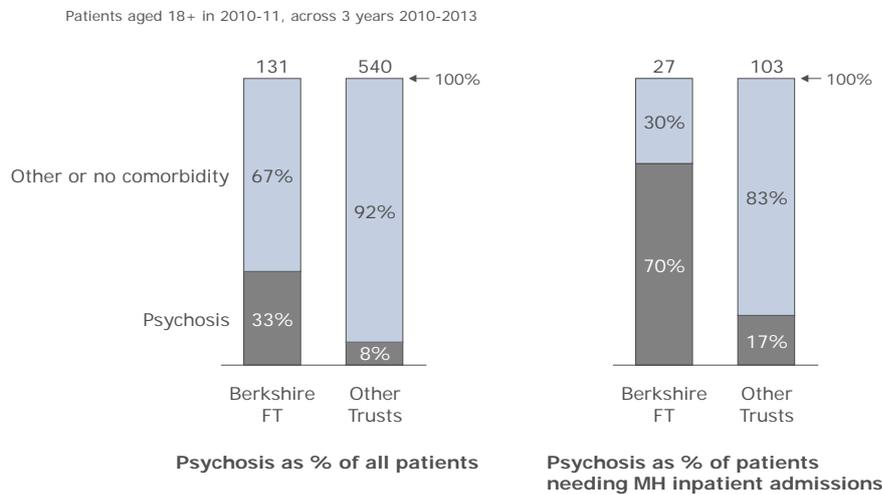


Figure 15 Complexity profile comparison (comorbid psychosis) across Trusts

Preliminary economic analysis

We can do some preliminary economic analyses based on average resource utilisation patterns described above.

Cost figures used here are from the Unit Cost Database (v.1.2) compiled by New Economy for the Greater Manchester region in Feb 2014, which is derived from the National Schedule of Reference Costs 2011-12.

Activity	Cost
A&E attendance (all scenarios)	£113 per attendance
Hospital inpatients (non-mental health)	£250 per bed day
Mental health inpatients, specialist services, hospital attendance - average cost per bed day for adult patients	£445 per bed day
Mental health outpatients, hospital attendance - average cost per attendance	£145 per attendance

Two different views are possible based on whether we consider Trust-based cohorts or CCG-based cohorts.

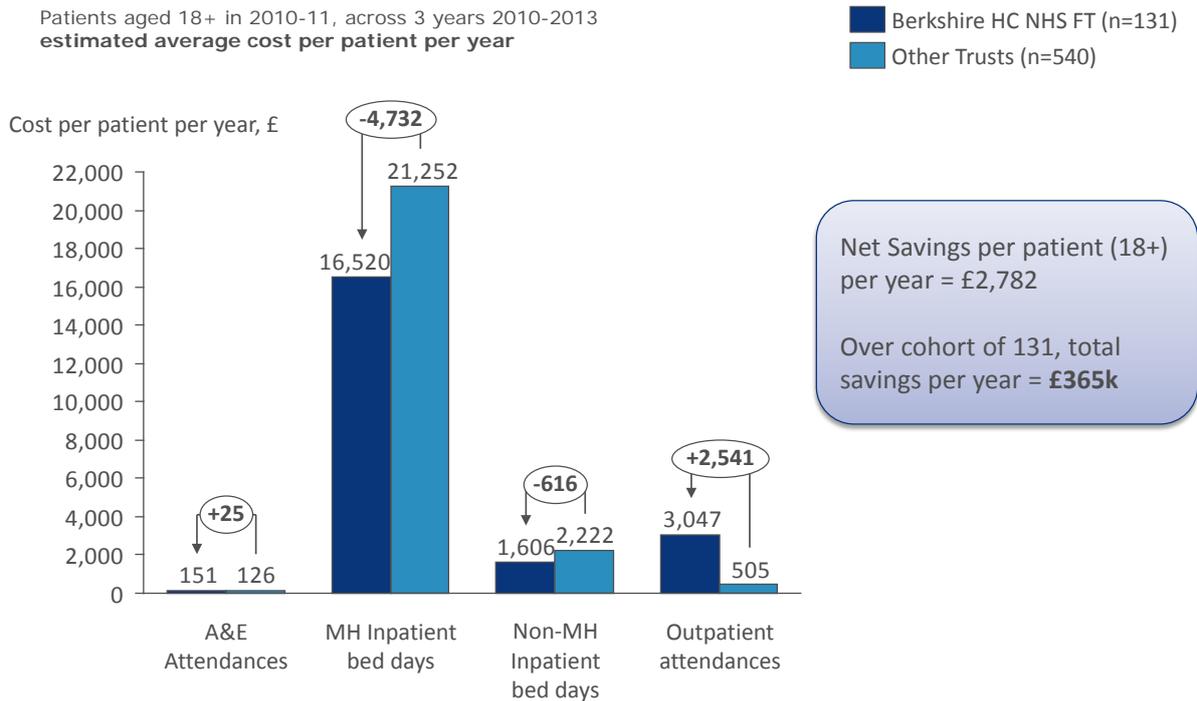


Figure 16 Potential savings calculation using Trust-based cohorts

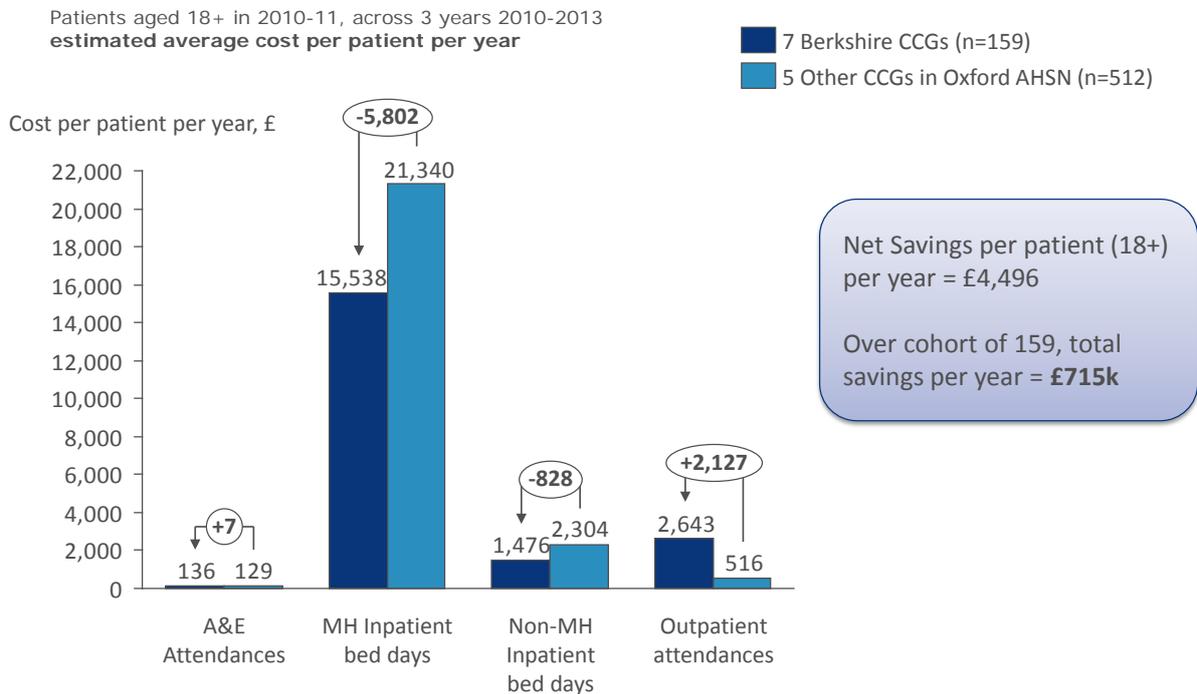


Figure 17 Potential savings calculation using CCG-based cohorts

The estimated savings is almost double when we limit the cohort to patients without psychosis. (This also implies, of course, that Berkshire HC NHS FT is losing money on patients with psychosis.)

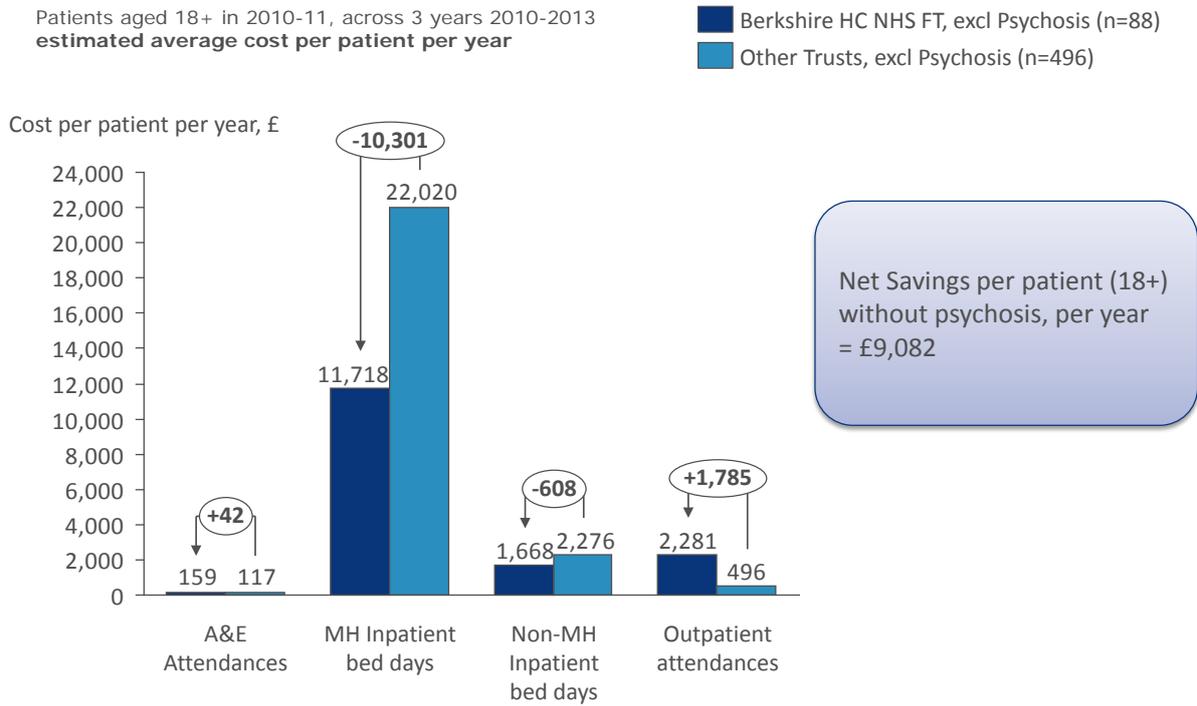


Figure 18 Potential savings calculation using Trust-based cohorts, for patients without psychosis only

Explaining the range

As mentioned above, the total number of patients who have eating disorders and are aged 18+ totaled 671 within the Oxford AHSN Region over a 3 year period (Apr 2010 - Mar 2013). The “Trust Analysis” shows the number of patients treated at BHFT versus other trusts whilst the “CCG Analysis” numbers shows the patients who are identified as being linked to Berkshire CCGs versus other CCGs.

Patients do move around and do get care from multiple Trusts. For the purposes of this analysis, patients who received any type of care at BHFT at any time in the 3-year period 2010-2013 are marked as belonging to the “BHFT cohort”. In the same way, patients who were resident in one of the Berkshire CCGs at any time in the 3-year period 2010-2013 are marked as belonging to the “Berkshire CCGs cohort”.

The numbers differ (i.e. Trust treated-131, CCG registered-159). A probable explanation of this would be that:

- (1) The savings are driven by the cost of inpatient activity which includes data on length of stay (LOS) for the 671 patients listed by Trust (Fig 16) and by CCG (Fig 17).

- (2) There is a difference in numbers of patients treated at BHFT versus those registered within Berkshire CCGs. 28 patients may have been treated at other Trusts within the region but are registered within the Berkshire CCG catchment area.
- (3) BHFT patients are more expensive for the Trust to manage because of the unusually high level of patients with psychosis (Fig 15). This particularly impacts inpatient activity, increasing the length of stay. However, even with the higher level of psychosis, BHFT is still more cost efficient than others.
- (4) Over the region, the potential savings for CCGs totals £715k. This has been calculated in the same way as was done for the Trust data using inpatient data (including LOS), outpatient and Mental and non-mental health inpatient data and A&E attendances.

A note on the calculation of averages: Average resource utilization figures are calculated as total resource use divided by the number of unique patients who needed that resource. For example, assume a cohort has 100 users in one year of whom 20 need MH inpatient admissions and who in total account for 200 bed days. Average bed day use per patient per year = $200/20 = 10$ days

Remember that these are indicative figures only, and true cost savings need to be compared to the cost of running the SHaRON service. Moreover, these figures only show correlation and not causation; this needs to be explored further.

In conclusion

There appears to be clear evidence that Berkshire Healthcare NHS Foundation Trust's SHaRON service is providing benefits to patients. While the exact amount of quantitative benefits may be arguable, it is clear that there is a benefit. This aligns well with qualitative feedback from patients and staff collected over the years. It is further credible when we consider that the SHaRON service was not implemented in isolation – the entire service delivery program was modified to allow more frequent interactions with patients and enable more varied means of reaching out to patients.

As a next step, it is strongly recommended to use the Trust's own data to evaluate outcomes pre- and post- the introduction of SHaRON and review the true patient journeys of those added to the SHaRON programme. This will enable a better understanding of the selection criteria and perhaps comprehensively rule out any selection bias that could be skewing the observed results.