

# Surgery to Aid Weight Reduction in the North-East and Yorkshire and Humber Regions

## Background

Morbid obesity is defined<sup>1</sup> as a body mass index (BMI) greater than 40kg/m<sup>2</sup>. In 1998, the estimated prevalence of morbid obesity in England was 0.6% of men and 1.9% of women. This equates to around 2,500 people in an average primary care trust. In July 2002 the National Institute for Clinical Excellence (NICE) published guidance on the use of surgery to aid weight reduction for people with morbid obesity<sup>2</sup>. In addition to those with a BMI of over 40kg/m<sup>2</sup>, the NICE guidance applied to those with a BMI of between 35kg/m<sup>2</sup> and 40kg/m<sup>2</sup> in the presence of significant co-morbid conditions that could be improved by weight loss. The report summarised the criteria for surgery for morbid obesity. These criteria are shown below:

- Patients aged 18 or older with morbid obesity (BMI >40 or between 35 and 40 with major weight related co morbidities);
  - Patients who have already had intensive management in specialised obesity clinics;
  - Patients who have failed to maintain weight loss after trying appropriate non-surgical measures;
  - Patients with no psychological or clinical contraindications to anaesthesia or surgery;
  - Patients who understand and are committed to long term follow up.
- The guidance also suggested that surgery for obesity is under utilised and the NHS in England was given more than the usual three months period to implement this guidance, recognising the relative under provision of services in existence.
- In January 2003, the Cochrane Library updated the previous systematic review which it had published, but again this review concluded that this type of surgery is effective in carefully selected patients<sup>3</sup>.

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### Summary

The availability and uptake of surgery for morbid obesity in the regions was hugely variable. The overall utilisation of the procedures examined was 5.6 per million per annum, but ranged by Primary Care Trust from 0.0 (in the case of eight out of the 50 PCTs in the two regions) to 24.0 operations per million per year. The rates of access to this surgery differed over six fold between the two regions (annual rates per million population of 1.4 in the North East and 7.8 in Yorkshire and the Humber). The PCTs with the highest rates of surgery were those closest to the large providers of service.

Access to this intervention is highly variable. Primary Care Trusts and service providers need to ensure that there is appropriate access to this effective procedure in carefully selected cases. The surgical expertise required for these operations could be concentrated in fewer centres.

## Surgery for Morbid Obesity

There are two main types of procedure which are carried out – malabsorptive and restrictive. Malabsorptive surgery aims to reduce the body's capacity to absorb nutrients by bypassing parts of the gastro-intestinal system. There are a number of procedures in this category including jejunoileal bypass, gastric bypass and biliopancreatic diversion. Restrictive procedures include operations which reduce the size of the stomach e.g., gastroplasty or gastric banding. The average estimated costs of each procedure and care is in the order of £4,500 - £5,300.

The NICE guidance<sup>2</sup> concluded that surgery for people with morbid obesity results in significant weight reduction lasting for at least 8 years. The NICE guidance<sup>2</sup> did not reach a conclusion on the respective merits, risks and costs of the different procedures.

The NICE guidance<sup>2</sup> recommended a set of standards for hospitals providing surgery for morbid obesity, recommending that the care should be centred around multidisciplinary teams. In practice this means that this type of surgery can be expected to be concentrated in a small number of specialist centres.

Surgical interventions are inevitably only going to have a limited role to play in population strategies to deal with obesity. Nonetheless, there is a strong evidence base to this intervention in carefully selected patients.

This study was undertaken to provide a baseline for planning services for those with serious obesity in two northern regions in England.

## Methods

Data were reviewed from the HES (hospital episode statistics) database held by each Public Health Observatory in England. In England, data from all hospital inpatients are collected and collated. All hospital trusts return data on hospital episodes (inpatients and day cases, but not outpatients) to the NHS clearing service. Work is then undertaken to 'clean' the data under rigid quality control procedures. Data are then made available to Public Health Observatories in two forms: an extract of data, and an on-line version. This study was undertaken using the extract, which contains a smaller number of data fields than can be obtained on-line, but has the advantage of more speedy analysis. Data were examined for the whole of the North East and the Yorkshire and Humber Regions of England - a total population of 7.6 million. This database contains 28.5 million records for the years 1992-2002. Data were extracted for all patients discharged with procedure code shown in Box 1.

For the purpose of this study, the financial years 1996/7 – 2001/2 were examined, as it was decided that the data before that date were less reliable and, indeed, the clinical practice had developed considerably since that time.

### Box 1: Surgical Procedures for morbid obesity examined in this study

G30.00	Plastic operations on stomach
G30.02	Partitioning of stomach
G32.10	Gastrojejunostomy
G61.00	Bypass of jejunum

A file of anonymised data was extracted from the North East Public Health Observatory HES database, using SQL and analysed with Microsoft Excel.

Deprivation was examined in relation to the Index of Multiple Deprivation (IMD) rank. All records were coded for their IMD ranking of the ward of the residential address. IMD quintiles were attached to each record.

## Results

2,528 patients were admitted to hospital with a diagnostic code which included obesity (E66.8, E 66.9) over the study period. 865 of these were male and 1660 were female (three were not coded) - a split of 34.2% and 65.6% respectively. 309 patients had surgery with the above codes in the two regions between April 1996 and March 2002. However, 36 cases were removed as the diagnostic coding indicated that the surgery was not related to obesity. The mean age of patients undergoing surgery was 39.9 years (SD 8.61). 217 of these patients were women (84.1%) and had an average age of 39.6 years, with a range of 19–72 years (SD 8.41). The remaining 41 men (15.9%) had an age range of 27–65 years with an average age of 41.8 years (SD 9.47). The male to female ratio differed significantly when compared to the prevalence of obesity by sex as published by the Health Survey for England ( $p < 0.05$ ). Partitioning of the stomach was carried out most frequently (247 operations) as opposed to gastroenterostomy which was only carried out on 11 occasions.

Within the two regions over the study period, thirteen provider trusts were identified as undertaking surgery for morbid obesity. Three patients were treated outside the regions. One trust in the Yorkshire and Humber region undertook 55.4% of all operations in the two regions over the six years of the study period.

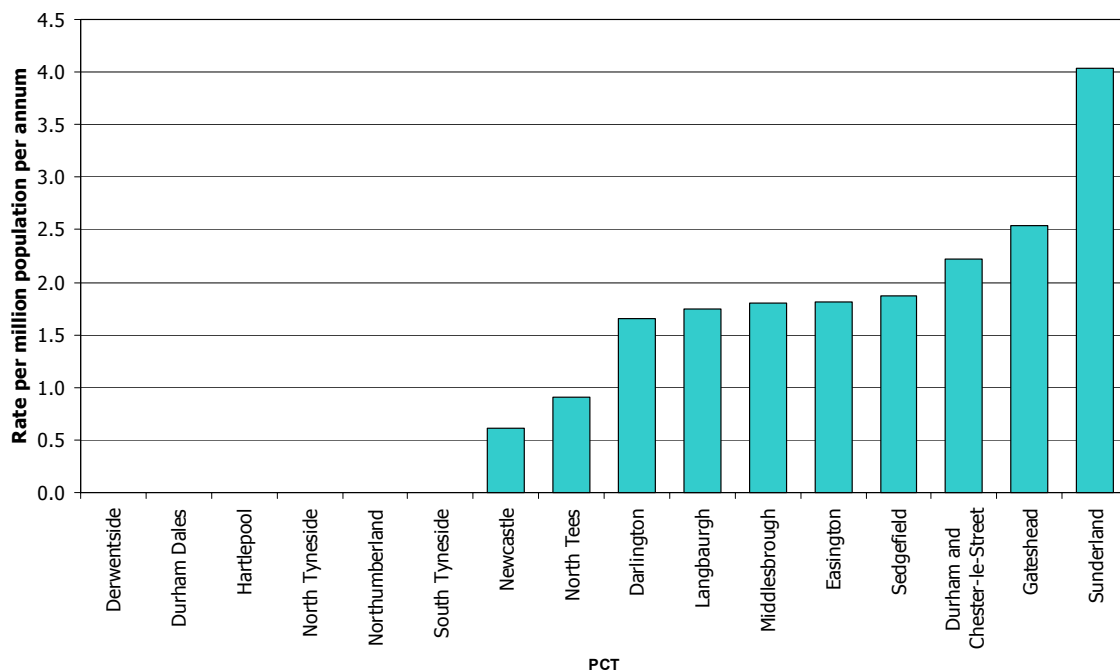
The average annual rates of access to this surgery differed six fold between the two regions (1.4 to 7.8 operations per million population). The range within PCTs ranged from 0.0 (the case in eight of the 50 PCTs in the two regions to 24.0 operations per million population per year). The PCTs with the highest rates of surgery were those closest to the large providers of service – particularly around Leeds and Sheffield.

### Access to surgery by PCTs in the region

#### North East PCTs

Six of the North East PCTs had apparently had no patients in whom this surgery had been conducted in the study period.

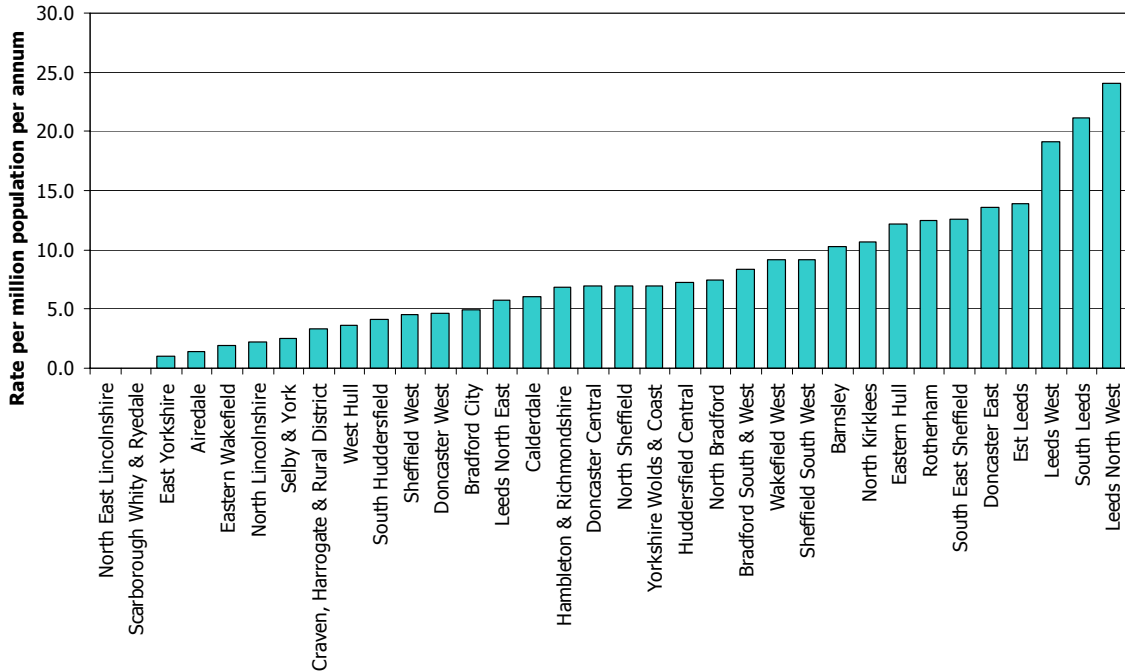
Figure 1: Average annual rates of surgery for obesity per million population for the North East Region, 1996/97-2001/02



## Yorkshire and Humber PCTs

Only two out of the 34 PCTs in the Yorkshire and Humber region appeared to have carried out no surgery for morbid obesity in the study period.

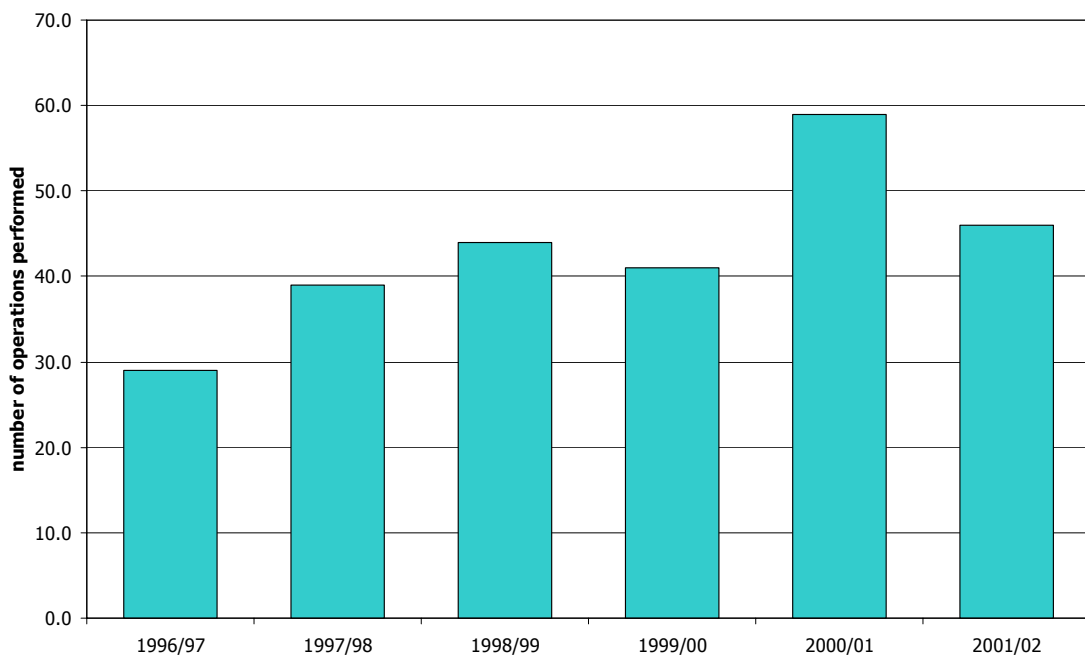
Figure 2: Average annual rates of surgery for obesity per million population for the Yorkshire and Humber Region, 1996/97-2001/02



## Growth of operations

The number of operations of this nature has grown slowly over the six year study period from 29 in 1996/7 to 46 in 2001/2.

Figure 3: Annual numbers of operations performed for morbid obesity in the North East and Yorkshire and the Humber Regions, 1996/97-2001/02



## Complications

Other data fields were examined. A number of other conditions were recorded and included in any one of the seven data fields. As the diagnostic codes were not repeated in any one record, these figures relate to single patients. The commonest were: cholelithiasis 25 (9.7%), primary hypertension 20 (7.7%), arthritis 13 (5.0%) and asthma 12 (4.7%).

## Relationship to deprivation

There is a clear association of admission for surgery for morbid obesity with the lower quintiles of deprivation. More patients in the lower IMD quintiles were found to be undergoing surgery for morbid obesity, but it needs to be remembered that the distribution of quintiles in the two regions is not equal and that these are skewed to the lower end of the range. More work is needed to understand this relationship, but could be related to work carried out in the private sector. Box 2 below shows the number of patients in each quintile.

Box 2: Number of patients in each IMD quintile

Patients	Quintile
126	1
45	2
46	3
30	4
11	5

NOTE: 1=most deprived; 5=least deprived.

This distribution was compared with the distribution of wards in each quintile in the two regions, and the difference was found to be statistically significant (chi square = 17.0, 4 d.f.,  $p < 0.01$ )

## Discussion

Surgery for morbid obesity is only one of a range of approaches to the management of this problem. The commonest are behavioural e.g., diet, physical exercise. In some cases pharmacological interventions have been used. Only a small number of surgical operations were carried out in the two regions of the North East and Yorkshire and the Humber over the period of the study. The number of operations doubled over the study period, but the overall numbers remain low, although the publication of specific guidance from NICE<sup>2</sup> only occurred after the end of the study period in July 2002.

More women than men have surgery for obesity; the excess is greater than would be expected from the proportion of women in the population who are known to be obese. There is a clear preference for one type of surgery (partitioning of stomach). There is an apparent strong association between access to surgery and deprivation, with an excess of patients from the more deprived wards in the two regions. It may be that obesity is more prevalent in deprived areas, or that obesity is managed differently in these areas. However, this apparent relationship could be an artefact produced by those in least deprived areas making greater use of the private sector which is not included in our data.

Within the two regions there was a large number of providers undertaking this type of surgery (twelve), with some centres undertaking very small numbers. The NICE guidance suggests that in the order of 40 centres are required nationally. On a population basis, this would lead to around 6 in the two regions in this study.

Population access is also very variable. This may be due to either the availability of the service, the willingness of the PCTs to fund or both.

## Conclusions

This study would confirm that the availability of surgery for obesity varies between the regions. Furthermore, the access to the surgery by PCTs is also variable. It would seem that those who could benefit from this type of intervention may not be obtaining it.

There are centres undertaking very small numbers of procedures and the inference from the NICE guidance<sup>2</sup> is that this should cease.

## Authors

John Wilkinson, Neil Macknight, Carolyn Summerbell, Kathryn Bailey, David Chappel

## References

1. NOËL PH AND PUGH JA. *Management of Overweight and Obese Adults*. British Medical Journal. 2002;325:757-761.
2. NATIONAL INSTITUTE FOR CLINICAL EXCELLENCE. *Guidance on the Use of Surgery to Aid Weight Reduction for People with Morbid Obesity*. Technology Appraisal Guidance No 46. London: NICE. 2002.
3. COLQUITT J, CLEGG A, SIDHU M, AND ROYLE P. *Surgery for Morbid Obesity (Cochrane Review)*. In The Cochrane Library, Issue 1, 2004. Chichester, UK: John Wiley & Sons, Ltd.

## Useful websites

Specialised Services National Definitions Set- Morbid Obesity

[www.doh.gov.uk/specialisedservicesdefinitions/35obesity.pdf](http://www.doh.gov.uk/specialisedservicesdefinitions/35obesity.pdf)

Wessex Institute – Surgical Interventions for morbid obesity

[www.wihrd.soton.ac.uk/projx/signpost/steers/SPEER\\_2001\(18\)\\_APPX.pdf](http://www.wihrd.soton.ac.uk/projx/signpost/steers/SPEER_2001(18)_APPX.pdf)

Cochrane collaboration

[www.cochrane.org/cochrane/revabstr/AB003641.htm](http://www.cochrane.org/cochrane/revabstr/AB003641.htm)

National Institute for Clinical Excellence

[www.nice.org.uk](http://www.nice.org.uk)

Health Technology Board for Scotland

[www.htbs.co.uk/docs/pdf/HTBS%20ADVICE-MORBID%20OBESITY.pdf](http://www.htbs.co.uk/docs/pdf/HTBS%20ADVICE-MORBID%20OBESITY.pdf)

The North East Public Health Observatory has a small analytic capability to undertake work on Hospital Episode Statistics. The current work programme includes the topics of cataracts, hip and knee surgery. If you would like to suggest areas for further investigation that might be incorporated into our work programme, then email [neil.macknight@nepho.org.uk](mailto:neil.macknight@nepho.org.uk).

This report includes data for Yorkshire and the Humber as at the time the investigation was initiated the PHO covered the Northern and Yorkshire Region. Since April 2003, PHOs have been aligned to Government Office boundaries. There is now a separate PHO for Yorkshire and the Humber. Further details can be found at [www.yhpho.org.uk](http://www.yhpho.org.uk)

**North East Public Health Observatory**  
**Wolfson Research Institute**  
**University of Durham Queen's Campus**  
**University Boulevard**  
**Stockton on Tees**  
**TS17 6BH**  
**ENGLAND**

**Telephone: +44(0)191 3340400**  
**Fax: +44(0)191 3340391**

**Website: <http://www.nepho.org.uk>**  
**Enquiries: [info@nepho.org.uk](mailto:info@nepho.org.uk)**

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