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# A simple tool to prioritise access to bariatric surgery for people living with obesity during the COVID-19 pandemic

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A simple tool to prioritise access to bariatric surgery for people living with obesity during the COVID-19 pandemic


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Abstract

Background
The COVID-19 pandemic has created unprecedented pressures on healthcare systems worldwide, necessitating a reorganisation of elective services. Within all specialties, including bariatric surgery, this required a re-evaluation of patient prioritisation to limit harm due to delays in treatment while ensuring those who will benefit most from urgent intervention are identified.

Method
Four tertiary centres in the UK and Ireland participated and patients approved by the MDT for surgery included. Clinical notes were reviewed and assessed by two members of the bariatric MDT according to the Edmonton Obesity Scoring System (EOSS) and Federation of Surgical Specialty Association (FSSA) system to determine priority.

Results
847 patients were included. Focusing on urgent patients, according to EOSS, 7.5% were classed as having established end-organ failure, corresponding with 7.4% assigned to the FSSA level recommending surgery within three months. Comparison of the numbers in each FSSA group and EOSS category showed a strong overlap between the scoring systems regarding the urgency for surgical intervention.

Conclusions
Adopting scoring systems to stratify patients according to disease severity may be the most equitable and reproducible manner of prioritisation for bariatric surgery. The concordance between EOSS and FSSA categorisation demonstrates the efficacy of EOSS in identifying the subset of patients requiring urgent surgery. A multidisciplinary approach has been advocated by the FSSA to prioritise patients of equal urgency across specialties. Within this model, EOSS could be used to triage patients requiring bariatric surgery with the same urgency as cases including elective AAA repair or colitis refractory to medical treatment.
Introduction

Since the emergence of the COVID-19 pandemic, there have been rapid and widespread changes within healthcare which have not been previously seen in the lifetime of most practicing clinicians. The implications are far reaching and are likely to have an impact on the provision of both surgical and medical care for the foreseeable future although the exact course this will follow is difficult to predict. During the initial stages of the pandemic, most elective surgery was halted because of concerns about the risk of viral transmission as well as due to the necessary rationing of hospital resources. Although elective surgery has since resumed in many hospitals, we are now facing the challenge of treating a growing number of patients who require elective operations. Additionally, there are reasonable concerns of future outbreaks and how this will affect the provision of elective surgery.

The Federation of Surgical Specialty Associations (FSSA) is a multidisciplinary group comprised of ten different surgical specialties including the Royal College of Surgeons. Their primary mandate is to produce a coordinated overview of surgical policies for all major surgical societies in the UK and Ireland and as such, they have published guidelines on surgical prioritisation during the COVID-19 pandemic. Given the unprecedented challenges faced within hospitals, requiring major reorganisation of services at a time of resource limitation, the aim of these guidelines was to facilitate multidisciplinary team (MDT) review across all surgical specialties of current waiting lists in order to prioritise patients based on indication for surgery, potential consequences of delayed treatment and presence of complications [1]. Initially, obesity surgery was not included in these guidelines, but eventually added.

Although the need to prioritise patients for access to surgery across several specialties according to urgency is a relatively new development, the use of scoring systems to stratify patients according to disease severity within a specialty is well established with those awaiting surgery for cancer often given priority. This model was continued during the first wave of the pandemic with NHS England and the American College of Surgeons providing a framework to classify the urgency of cancer operations with the overall aim of preventing the progression of disease [2, 3]. In both models, patients were assessed primarily according to the severity of disease and implications of non-operative management or delays in treatment.

Similarly, this approach could also apply in the context of obesity, a disease recognised to cause severe morbidity and high mortality. The ongoing rationing of healthcare resources has prompted the recognition that the prioritisation of patients with obesity, identifying those most severely affected as well as those most likely to benefit from surgery is the most pragmatic and equitable means of treating an ever growing patient population requiring treatment [4]. This opens up the question as to what metrics should be used to conduct this stratification in a practical, fair and reproducible manner.

Using traditional anthropometric models such as BMI is widely recognised as being inadequate with regards to determining the severity of disease and therefore largely unhelpful in the clinical decision making process [5]. In contrast, the Edmonton Obesity Scoring System (EOSS) is a well-established stratification system which has been shown to be strongly predictive of mortality, irrespective of BMI, illustrating its usefulness to assess risk.
associated with obesity and prognosis [6]. One of the main advantages of using EOSS is that it provides a more complete assessment of the burden of disease in individual patients with staging based on the presence of functional, physical and mental health complications of obesity [7].

Our aim was to investigate whether the EOSS can be used by multidisciplinary teams as a practical tool to stratify patients with obesity according to their clinical need for surgery.

Methods

Four tertiary care centres in the UK and Ireland participated in this project. All patients had already been discussed at MDT and approved for surgery.

Patient notes were reviewed, assessing according to criteria for the EOSS (Table 1) and FSSA prioritisation system (Table 2) by two members of the obesity MDT. The reviewers, most commonly an obesity physician and an obesity surgeon, had to reach a consensus before a score was assigned. Comparison was drawn between relevant EOSS and FSSA priority categories whereby those with an EOSS 0 or 1 were considered to be equivalent to FSSA P4, EOSS 2 to P3, EOSS 3 to P2. Patients in FSSA category 1 were not included in the analysis as the aim was to evaluate the use of prioritisation for elective patients.

Results

A total of 847 patients were assessed. Just over half of patients assessed were assigned to EOSS 2, representing those with established obesity related comorbidities and 32.9% EOSS 1 with risk factors for obesity related comorbidity while 7.5% were EOSS 3 with evidence of end organ failure (Table 3). With regards to FSSA categorisation, just over half of patients were classified as P3 requiring surgery within 3 months, 38.3% P4 and only 7.4% P2 (Table 4). Figure 1 shows the comparison of percentage of patients within the cohort across equivalent levels of disease severity as determined by EOSS and surgical urgency according to FSSA categorisation.

Discussion

In this study, we demonstrated that the EOSS is a practical tool which can be used by multidisciplinary teams to rapidly assess patients, determining the urgency for surgery according to the FSSA categorisation. EOSS is an objective evaluation system, based on the presence of obesity-related complications rather than BMI. Within a multidisciplinary team, its use ensures that patients can be fairly and reproducibly prioritised for obesity surgery. Although there may be concerns that clinicians treating patients with obesity may be biased, upstaging their disease, this was not supported by the results as only 7% were allocated to an urgent category, requiring surgery within 1 month and the remainder were classified as FSSA category 3 or 4.
Patients with obesity are being disproportionately affected by the current coronavirus pandemic. Although there is uncertainty regarding the underlying pathophysiology, a clear relationship between obesity and disease severity has emerged. Patients with obesity are more likely to require hospitalisation, admission to ITU and carry a near 50% increased risk of mortality [8]. In addition to obesity being an independent risk factor for mortality, the pandemic has had a clear impact on access to treatment, particularly obesity surgery. Even prior to the emergence of COVID-19, obesity surgery was characterised as an elective procedure despite the evidence demonstrating its effect on reducing mortality and morbidity [9]. This characterisation is likely considerably influenced by widespread social stigma, a factor likely to continue to affect resource allocation in the current climate of increased healthcare rationing [10].

Evidence would suggest there is variability amongst patients with regards to the benefit of undergoing bariatric surgery which is influenced primarily by the presence of comorbidity such as type 2 diabetes mellitus rather than BMI [11]. As such, there is mounting support from clinicians and surgeons regarding the need to advance the current model of care. Broadly speaking, patients should be prioritised according to indication, placing the focus on the presence of comorbidity to identify those who will achieve the greatest health benefit, particularly considering the high likelihood of a long-term reduction in surgical resources following the COVID-19 pandemic [12].

In recognition of this comes the need to reassess the current approach to the prioritisation of patients not only within obesity surgery units but from a multidisciplinary perspective between surgical specialities as a whole. Effectively applying this principle requires a two-stage approach, initially within weight management services to identify the patients most in need of surgery and then between surgical specialities within a hospital to ensure fair prioritisation of cases amongst other non-bariatric procedures. We argue that patients with significant end-organ damage as a result of obesity should be classified as category FSSA category 3. Patients in this category would be prioritised to undergo surgery in less than three months, making these procedures of the same urgency as elective AAA repair, colectomy for colitis refractory to medical treatment, breast surgery for high grade DCIS and surgery for non-invasive bladder cancer.

This report demonstrated the utility of the EOSS as a practical tool which can be used by multidisciplinary teams in the UK and abroad to prioritise patients for obesity surgery based on objective clinical characteristics. We believe this approach could continue to be used after the pandemic to maximise the efficiency of public healthcare systems.
Acknowledgments

Patients included in the analysis from King’s College Hospital were from the waiting lists of Prof Ameet Patel and Mr Spryros Panagiotopoulos.
References


Table 1. Edmonton Obesity Scoring System criteria

<table>
<thead>
<tr>
<th>EOSS</th>
<th>Category description</th>
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<tbody>
<tr>
<td>0</td>
<td>No apparent risk factors eg. blood pressure, serum lipid and fasting glucose levels within normal range), physical symptoms, psychopathology, functional limitations and/or impairment of well-being related to obesity</td>
</tr>
<tr>
<td>1</td>
<td>Presence of obesity-related subclinical risk factors eg. borderline hypertension, impaired fasting glucose levels, elevated liver enzymes), mild physical symptoms eg. dyspnoea on moderate exertion, occasional aches and pains, fatigue, mild psychopathology, mild functional limitation and/or mild impairment of well-being</td>
</tr>
<tr>
<td>2</td>
<td>Presence of established obesity-related chronic disease eg. hypertension, type 2 diabetes, sleep apnoea, osteoarthritis, moderate limitations in activities of daily living and/or well-being</td>
</tr>
<tr>
<td>3</td>
<td>Established end-organ damage such as myocardial infarction, heart failure, stroke, significant psychopathology, significant functional limitation and/or impairment of well-being</td>
</tr>
<tr>
<td>4</td>
<td>Severe (potentially end-stage) disabilities from obesity-related chronic diseases, severe disabling psychopathology, severe functional limitations and/or severe impairment of well-being</td>
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Table 2. FSSA clinical guide to surgical prioritisation during the coronavirus pandemic for bariatric surgery

<table>
<thead>
<tr>
<th>Priority level</th>
<th>Procedures</th>
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</table>
| 1a- Emergency procedure to be performed <24h | • Emergency laparotomy- peritonitis, perforation, ischaemia, bleeding, bowel obstruction with features concerning for incipient perforation/ischaemia  
• Drainage of localised sepsis not responding to conservative Rx or suitable for IR drainage  
• Benign perforated stomach |
| 1b- Procedures to be performed in <72h | • Urgent nutritional compromise requiring revisional bariatric surgery  
• Acute gastric band slippage or erosion  
• Acutely symptomatic internal hernia |
| 2- Procedures to be performed in <1 month | • MDT directed bariatric surgery as part of cancer treatment or transplant |
| 3- Procedures to be performed in <3 months | MDT directed bariatric surgery:  
I. Significant/multiple end organ failure  
II. To facilitate MSK surgery/hernia surgery  
III. Overdue balloon removal  
IV. Revision to stop excess weight loss/comorbidities |
| 4- Procedures to be performed in >3 months | • MDT directed bariatric surgery for lesser degrees of end organ failure |
Table 3. Percentage of patients according to EOSS

<table>
<thead>
<tr>
<th>Edmonton stage</th>
<th>% of patients (n)</th>
</tr>
</thead>
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<tr>
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<td>5.3 (45)</td>
</tr>
<tr>
<td>1</td>
<td>32.9 (279)</td>
</tr>
<tr>
<td>2</td>
<td>53.8 (456)</td>
</tr>
<tr>
<td>3</td>
<td>7.5 (63)</td>
</tr>
<tr>
<td>4</td>
<td>0.01 (4)</td>
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Table 4. Percentage of patients in each FSSA category

<table>
<thead>
<tr>
<th>FSSA category</th>
<th>% of patients (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>7.4% (62)</td>
</tr>
<tr>
<td>3</td>
<td>54.3 (460)</td>
</tr>
<tr>
<td>4</td>
<td>38.3 (325)</td>
</tr>
</tbody>
</table>

Figure 1: Percentage of patients in comparable FSSA priority category vs EOSS