‘Waiting lists’ or ‘preparation lists’ for elective surgery?

Nicholas Levy[1], David A. Selwyn[2,3], Dileep N. Lobo[4,5]

[1]Department of Anaesthesia and Perioperative Medicine, West Suffolk NHS Foundation Trust, Bury St Edmunds, Suffolk IP33 2QZ, UK
[2]Director, Centre for Perioperative Care (CPOC), Churchill House, 35 Red Lion Square, London WC1R 4SG, UK
[3]Department of Critical Care, Sherwood Forest Hospitals NHS Foundation Trust, Sutton-in-Ashfield NG17 4JL, UK
[4]Gastrointestinal Surgery, Nottingham Digestive Diseases Centre, National Institute for Health Research (NIHR) Nottingham Biomedical Research Centre, Nottingham University Hospitals and University of Nottingham, Queen’s Medical Centre, Nottingham NG7 2UH, UK
[5]MRC Versus Arthritis Centre for Musculoskeletal Ageing Research, School of Life Sciences, University of Nottingham, Queen’s Medical Centre, Nottingham NG7 2UH, UK

Funding: No external funding

Declaration of interests: None of the authors has a direct conflict of interest to declare. DAS is the Director of the Centre for Perioperative Care (CPOC). DNL has received unrestricted research funding for B. Braun and speakers’ honoraria from B. Braun, Fresenius Kabi, Baxter Healthcare and Shire for unrelated work.

Key Words: waiting lists; preparation for surgery; optimisation; prehabilitation; risk assessment; shared decision-making

Author contributions: All authors contributed equally to this article and have approved the final submission.

Corresponding Author:
Professor D. N. Lobo
Nottingham Digestive Diseases Centre
National Institute for Health Research Nottingham Biomedical Research Centre
Nottingham University Hospitals NHS Trust,
Queen’s Medical Centre
Nottingham NG7 2UH
UK
Tel: +44-115-8231149
E-mail: dileep.lobo@nottingham.ac.uk

Running Head: Preparation lists for surgery

Word count (excluding title page, references and figure legend): 1940

No. of figures: 2

No. of references: 28

Introduction

Waiting lists for surgery are an integral part of the UK's National Health Service and are used as a construct to ration surgery and to reduce costs, whilst simultaneously attempting to distribute limited health resources in an equitable manner.[1] They are a feature of health services that have central funding, financed mainly through general taxation, and are present in several other European countries including Italy, Greece and Spain where there is a need to manage the dynamics of capacity and demand. Waiting lists are rarer in countries that rely on private healthcare provision (including insurance) or rely on funding through social security (e.g. US, Austria, Germany and France).[2] Nevertheless, independent of the healthcare system, there is an inevitable period of time, between diagnosis of an illness that may be amenable to surgery and admission for elective surgery. It is now acknowledged that this time can be better spent in preparing patients for surgery in order to:

- improve the patients' experience of healthcare (including quality outcomes and satisfaction),
- improve population/public health, and
- reduce the *per capita* costs of healthcare.

This triad forms the central premise of the US Institute for Healthcare Improvement's widely supported and emulated 'triple aim' healthcare initiative,[3] to which the fourth (quadruple) aim of attaining joy in work may be added,[4] as better care gives an increased sense of accomplishment and meaning for healthcare workers and may also improve overall delivery of healthcare.[5, 6] Although waiting lists are sometimes viewed as a means to create a delay in the delivery of surgical care, if the time is utilised well, the patient can be optimised for surgery and have a better outcome. Hence, we propose that 'preparation lists' may be a

more appropriate name for the time spent between listing and admitting the patient for the surgery.

The need for the new paradigm

Global life expectancy is increasing, and with it, the associated comorbidity. For example, in the US, the population aged over 65 years increased by 34% from 37.8 million in 2007 to 50.9 million in 2017 and is projected to reach 94.7 million in 2060.[7] The population having surgery in England is ageing at a faster rate than the general population.[8] The 2018 US data exemplify the relationship between increasing age and comorbidities, with 38% of people aged 65 years or over having one or no chronic conditions, 47% two to three chronic conditions, and 15% four or more chronic conditions,[7] with the main chronic conditions being hypertension, arthritis, heart disease, diabetes, cancer, and stroke.[7] Multimorbidity matters as it is associated with higher mortality, polypharmacy, higher rates of adverse drug events (including drug-disease interactions and drug-drug interactions) and increased utilisation of healthcare resources.[9] The increasing prevalence and adverse impact of frailty on surgical outcomes are also being appreciated better now.[10]

It is estimated that in excess of 4 million people die each year within 30 days of surgery globally, and that postoperative deaths now account for 7.7% of deaths worldwide, making surgery the third leading cause of death after ischaemic heart disease and stroke.[11] As well as causing immediate mortality, surgical complications are associated with increased healthcare costs,[12] long-term morbidity, reduced quality of life and an increased risk of premature death for several years after the procedure.[13, 14] In addition, these complications may also prevent patients from returning to their usual or previous place of residence, as they require increased levels of care, which adds further to the overall costs. Hence, quality

of recovery, which encompasses the concept of the patient returning to their previous level of function or better is an important outcome.[15, 16]

Thus, it can be seen that the current challenges of surgery now include dealing with complications arising from an ageing population, increasing prevalence of frailty and multimorbidity, issues with polypharmacy and adverse drug events, all within economies in which there is a need to curtail costs. In addition, there are now greater public expectations from healthcare providers, and often these expectations can exceed the ability of healthcare to improve health. The concept of the global 'Choosing Wisely' initiative is to improve the value of conversations between patients and their healthcare provider, and increasingly using a shared decision-making tool, resulting in realistic expectations and minimisation of unnecessary and potentially harmful interventions.[17]

Utilising preparation time and preparation lists effectively

The time spent by patients waiting for an elective operation should be used to prepare them for surgery medically, physically, and psychologically by instituting measures that have been shown to improve postoperative outcomes. The process should commence as soon as the diagnosis is made and the decision to proceed with an operation is contemplated. The whole preparation process is multimodal and may involve several specialties, departments and healthcare professional groups **(Figure 1)**. The process may take several weeks for some of the components, but many can be completed within 2-4 weeks. Even for patients requiring surgery for cancer this would not result in a delay, provided the process is commenced once surgery is contemplated.[18] Nevertheless, the process should not be allowed to delay surgical intervention unnecessarily for conditions that need prompt attention or where an inordinate delay could result in harm.

Individualised risk assessment and shared decision-making lie at the heart of preparing the patient for surgery. The shared decision-making process should begin at the initial surgical consultation with discussions between the surgeon, patient, carers and family. If a patient is clearly not fit for the planned procedure or does not wish to proceed, it is prudent not to put them through the whole process of preparation and the alternatives including doing nothing should be discussed at that point. However, shared decision-making may be easier after appropriate investigations and formal risk assessment, and often involves other healthcare professionals.[18] Formal risk assessment coupled with shared decision-making may help reduce last-minute cancellations and improve the patient experience.

In the US, the focus of the Choosing Wisely Campaign has primarily been to improve the professionalism around the patient-clinician interaction with the aim of reducing unnecessary interventions by publishing lists of diagnostic tests and interventions that have low or no health benefit value. These interventions are frequently driven by monetary gain for healthcare providers and patient demand, often resulting in higher stakes for patients when the procedure results in no improvement or deterioration in the quality of health of the patient.[19] In the UK, the emphasis has been on utilising shared decision-making to minimise the use of health interventions that have either no or limited health benefit for individual patients.[17] Choosing Wisely UK[20] suggest that the patient should ask their doctor or nurse the following four **BRAN** questions which enable the patient and clinician to have a dialogue on the unique circumstances and values that are pertinent to the individual patient and enable discussions around patient-centred outcomes:

- What are the **B**enefits?
- What are the **R**isks?

- What are the **A**lternatives?
- What happens if I do **N**othing?

Furthermore, these questions compliment the use of risk calculators that quantify the probability of death and morbidity of that procedure in a population that is similar to the individual. Patients often find discussing these patient-centred outcomes more meaningful if the risk of not being able to return to the previous level of function or domestic situation is discussed.[15, 16] This information allows the alternative options, including doing nothing, to be discussed and is dependent on the patient's individual values, perspectives and risk factors.

Individualised risk assessment not only identifies the patient's fixed risk factors, but can also identify modifiable risk factors. The impact of these modifiable risk factors can be diminished during the preparation time through the processes of multimodal prehabilitation, and optimisation of lifestyle, concurrent disease or comorbidity, and drug therapy. 'Surgery schools' are an exciting concept that are being used by an increasing number of surgical departments to educate patients about the pathway, to ensure that they are well motivated, and are aware of their responsibilities in promoting their own recovery.[18, 21]

Multimodal prehabilitation is the process of reducing surgical complications through the triad of physical fitness training, optimising nutritional status and improving psychological resilience. A systematic review of 9 studies showed that nutritional prehabilitation alone or combined with an exercise program in patients undergoing colorectal surgery significantly shortened length of hospital stay by 2 days, and also accelerated the return to preoperative functional capacity.[22] Further lifestyle interventions including weight reduction in the patients with obesity and smoking cessation can also help reduce surgical complications and improve outcome. In addition, these interventions (increased physical activity levels,

improved dietary intake, reduced alcohol intake and smoking cessation) are the main modifiable risk factors for non-communicable diseases in the Western world. Long-term compliance with these interventions also improves the general health of the patient and, thus, the preparation time before surgery offers a powerful 'teachable moment' for the patient. This is because the hazard of developing surgical complications and the tangible ability to improve the immediate outcome provides the incentive to implement these lifestyle changes permanently.[18]

The preparation period also allows comorbidities to be optimised.[16] It is now accepted that, amongst other conditions, anaemia, poorly controlled diabetes, opioid use, and fast atrial fibrillation should all be optimised in order to improve the surgical outcome. As well as the need to reduce the burden of comorbidities, there is a need to manipulate or modify the patient's drugs to allow surgery and anaesthesia to proceed safely. Certain drugs such as insulin and anticoagulants will need to be dose-adjusted, stopped or modified to a different formulation to allow anaesthesia and surgery to proceed safely. In addition, preoperative use of opioids, and other dependence-forming medicines, are significant risk factors for chronic post-surgical pain and persistent postoperative opioid use, and there is now the recognised need to wean these drugs preoperatively.[23]

In addition to these well-described benefits of having a period of preparation time to optimise physical health, comorbidity and drugs, there is the increasing realisation that psychological factors including dispositional optimism and propensity to engage in adaptive health behaviours improve certain short-term and long-term surgical outcomes.[21] This is a further rationale behind the development of personalised health coaching apps and 'surgery schools', as they have also been demonstrated to reduce patient anxiety, postoperative

pain, and length of stay with improved patient satisfaction.[21] Patient involvement and engagement are essential components of enhanced recovery after surgery patient partnership programmes.[24] This is because the patient gains a greater understanding of the importance of taking responsibility for increasing physical activity, improving dietary and other lifestyle choices both before and after surgery, and becomes an active partner of the process to improve their health, rather than just a passive recipient of healthcare.[18]

Barriers and Enablers

The conversion of "waiting lists" to "preparation lists" involves a societal change in expectation but also process change in healthcare systems, and as with any other major change faces many barriers, some of which have been identified in previous studies.[25-28] Some of these are more complex than others and include financial and behavioural constraints that lead to an unwillingness or reluctance to change. Nevertheless, surgery remains a powerful and highly effective stimulus to effect change, and with appropriate patient support, these barriers can be overcome and the quadruple aim[4] realised (**Figure 2**).

Conclusions

With the changing demographics and increased expectations of the surgical population, there is a global need to re-engineer the surgical pathway. There is increasing evidence that utilising the time between contemplation of surgery and admitting for surgery to optimise medical, physical, and psychological health through lifestyle and medical preparatory interventions can improve surgical outcomes. This time needs to be embedded into the surgical pathway and 'preparation lists' provide the ideal opportunity to implement the necessary interventions.

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Legend for figures

Figure 1: Processes involved in the preparation of the patient while waiting for elective surgery.

Figure 2: Barriers to and enablers of change.

Figure 1: Processes involved in the preparation of the patient while waiting for elective surgery.

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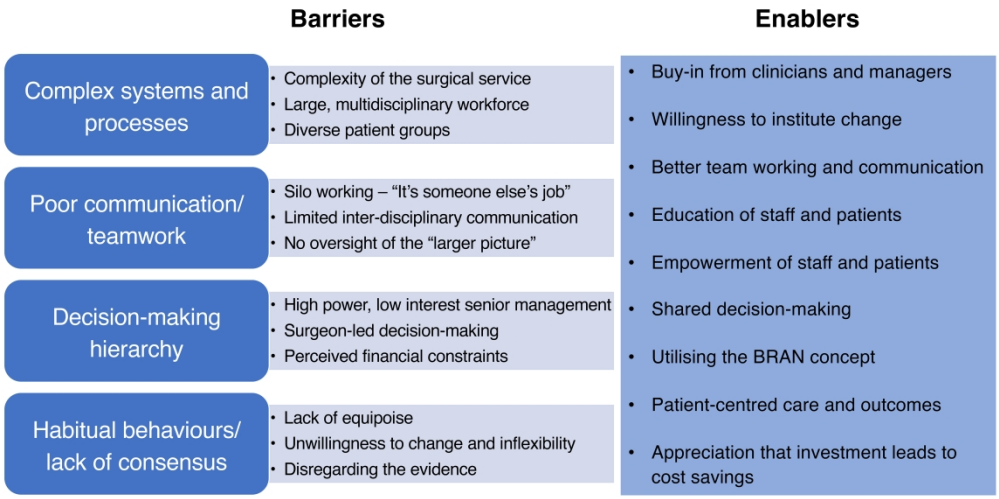

Figure 2: Barriers to and enablers of change.

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