

Review Article

Specialist pre-operative assessment clinics

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Summary

While specialist pre-operative assessment is not new, its focus has evolved in response to more operations and changes in the surgical population. Patients are older and have more long-term medical comorbidities. At the same time, there has been a move from paternalistic medical decision-making to shared decision-making, based on an individual patient's choice or preference. Specialist pre-operative consultations have had to adapt to these changes by broadening their scope. Pre-operative clinics have a central role in shared decision-making, coordinating and planning care before, during and after surgery, including rehabilitation and discharge planning. Multiple specialties need to work together to deliver quality patient-centred care.

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History

The ideas of specialist anaesthetic pre-operative assessment clinics and anaesthetic involvement in peri-operative medicine are well-established. The first two editions of *Anaesthesia* contained reviews by John Beard on the role of the anaesthetist in peri-operative care [1, 2]. There are further descriptions of specialist anaesthetic outpatient clinics from the 1940s and 1950s [3, 4]. While some aspects of patient care have changed over the years, much of that described 75 years ago remains the same today.

Until the 1980s, most surgical patients in the UK were admitted a day or more before surgery. They were clerked by a surgical House Officer who also took blood samples and organised and collated what were considered appropriate investigations. They were then seen and assessed by an anaesthetist before surgery as an inpatient. In the 1980s, stand-alone day units were set up where much of the pre-operative work was

undertaken by appropriately trained nurses rather than doctors. By the 2000s, a number of drivers, including a reduction in trainee doctors' hours and service improvement programmes, such as enhanced recovery pathways, resulted in nurse-led clinics and admission on the day of surgery for most elective surgical patients.

The surgical population has changed. Increasing numbers of patients are having surgery; between 1980 and 2012, the annual number of surgical procedures performed in the English NHS increased from 12 to 18 million. At the same time, the proportion of elective surgical procedures that took place as a day-case increased from 12% to 78% [5]. Patients are older, and many have two or more long-term disorders, including geriatric syndromes such as frailty. For instance, 65% of patients aged 65–84 years and 85% of patients more than 85 years old have more than one comorbidity [6]. Despite this higher risk profile, postoperative morbidity

and mortality have reduced. However, such clinician-reported outcomes do not adequately summarise the outcomes that the patient might want to achieve with surgery, including symptom control, maintenance of independence and quality of life. Factors that are likely to affect decision-making by patients and by healthcare professionals include the presence of pre-existing comorbidity, poor functional status and cognitive impairment. Consultations more detailed than standard surgical or nurse-based pre-operative assessment are required for such patients. In response to this need, a number of units have adapted their models of care for elective surgical patients; two examples are the Torbay service and the Guys and St Thomas 'proactive care of older patients undergoing surgery', or 'POPS' service.

The surgical risk assessment and shared decision-making clinic at Torbay

In Torbay Hospital, Devon, UK, about 10 000 elective surgical patients a year pass through a nurse-led generic multidisciplinary pre-operative clinic, supported by a broad range of specialist medical and surgical nurses, physiotherapists, occupational therapists and dieticians. Approximately 300 patients subsequently have an additional medical consultation with an anaesthetist, primarily to assess medical and anaesthetic issues. In addition, a further 900 higher-risk surgical patients attend a high-risk assessment and shared decision-making clinic.

The stimulus for developing a high-risk assessment clinic arose from unplanned admissions to the intensive care unit after elective surgery. These patients had poor outcomes, either dying or having a prolonged recovery, with some never returning to their pre-operative levels of fitness or well-being. There was also concern that some patients were not adequately informed about the chances of harm or benefit from surgery or other treatment options.

The primary purpose of the clinic is to give patients a more in-depth consultation about their chances of benefit and harm both with and without surgery. The second purpose is to determine whether the patient should receive postoperative high dependency care. Patients are invited to attend the clinic if their estimated 30-day postoperative mortality is at least 1 in 100. Some patients attend irrespective of risk, including those

scheduled for abdominal aortic aneurysm repair, colorectal resection or nephrectomy. Patients with uncertainty over the benefit from surgery, because of age, frailty or complex medical co-morbidities, are also seen in this clinic. Any staff member, including general practitioners, who are concerned about a surgical patient, can refer them to the clinic for a consultation.

In the high-risk clinic, an hour is set aside for both a cardiopulmonary exercise test and a consultation. Those who are unable to pedal usually need more time for the consultation, so an hour remains an appropriate average consultation time. During the consultation, a numeric 30-day postoperative mortality is estimated based on age, sex, aerobic fitness, co-morbidities and the proposed surgery. This information is shared in a manner determined by the patient. It is also used as a starting point for determining the need for postoperative high dependency care. Recently, the long-term survival prediction calculator that is used in the clinic has been validated for survival after scheduled aortic aneurysm surgery [7]. Attendance at the clinic is associated with an increase in long-term survival after scheduled surgery for colorectal adenocarcinoma, related to decisions on planned postoperative high dependency care [8].

The proactive care of older people undergoing surgery (POPS) service at Guy's and St Thomas'

In 2004, the POPS service was established in response to operations being cancelled for medical reasons, high rates of postoperative medical complications occurring on surgical wards, and suboptimal rehabilitation and discharge planning in older surgical patients. These issues frequently prompted a geriatrician review, but often a number of weeks after surgery, by which time the patient had developed multiple problems, such as acute kidney injury, pulmonary oedema and delirium, accompanied by functional decline, a protracted hospital stay and incomplete recovery.

This service used the Medical Research Council framework for complex interventions to design, embed and evaluate a comprehensive geriatric assessment service for older elective surgical patients [9, 10]. Geriatricians lead the team that works closely with the anaesthetic and surgical teams and includes medical

and nursing staff, therapists and social workers. Frail patients, those with poor pathophysiological function, cognitive impairment or multiple co-morbidities are referred to the POPS team, as are those in whom there is uncertainty about the balance of harm and benefit of surgery. Patients are referred by surgical teams, pre-operative assessment nurses and general practitioners. The POPS service sees 1000 elective surgical patients per year, and also runs a concomitant service for emergency surgical patients.

The primary purpose of the pre-operative component of the POPS service is to assess and optimise the patient. This is completed at a one-stop clinic using a process termed 'comprehensive geriatric assessment' that is established in the medical and community settings and is developing an evidence base in peri-operative medicine [11]. Pre-operative geriatric assessment is used to systematically identify and estimate the impact of previously recognised and newly diagnosed conditions on peri-operative outcome. Evidence-based guidelines are used to optimise the patient across medical, functional, social and psychological domains. Although optimisation of complex health problems takes time, it can be completed rapidly when necessary, for instance before cancer surgery. The pre-operative assessment culminates in the formulation of an individualised peri-operative care and support plan. Peri-operative risks are discussed with the patient and all healthcare professionals involved in the surgical pathway. This discussion may include the potential benefit and harm of surgery, the prognosis with and without surgery, comparison with other treatment options and advance care planning. Further discussion with the anaesthetic and surgical team aims to ensure individualised intra-operative care and appropriate postoperative placement on a general ward, high dependency or intensive care unit. The postoperative component of the service includes routine geriatrician reviews, joint surgical and geriatrician consultations and surgical ward-based multidisciplinary team meetings. Many patients require rehabilitation after hospital discharge, with the engagement of community health and social services. The POPS team liaises closely with community services to aid safe and effective discharge planning and to facilitate appropriate follow up.

Features common to both these specialist pre-operative care services include thorough assessment and the clear communication of the chances of harm and benefit, followed by shared decision-making and the development of a care plan, whether or not surgery is undertaken.

Communication of benefit and harm and shared decision-making

A standard medical consultation is structured around history, examination and interpretation of investigations to make a diagnosis: it was not designed for pre-operative assessment. The doctor uses 'closed questioning' to obtain information from the patient and follows a medically determined diagnostic pathway. After making a diagnosis, the treatment options are then discussed, based on published medical evidence, often concentrating on the minutiae of one surgical technique versus another. The surgical literature is incompletely suited to informing patients who are considering whether or not to have an operation, as most studies omit patients who decline surgical treatment, older patients and patients with medical comorbidity.

An integral part of informed consent is the provision of understandable information to patients about the benefits and harms of surgery and other treatments. This may encompass discussion on the probabilities of death, postoperative morbidities, functional impairment and quality of life. Discussion can be aided by data from population-based studies. However, the patient will often want to know how this translates for him or her as an individual. For this, recent work has described the use of actuarial data that incorporate patient-related factors and the surgical procedure to calculate survival both with and without surgery [7]. Death, at 30 days or in the long term, should not be the primary outcome for most patients making decisions about surgery. Information on postoperative function and quality of life may be more important. Unfortunately, for many types of surgery, there are limited data on such outcomes. Similarly, there are limited data on outcomes for patients who do not have surgery.

In traditional medical consultations, the doctor controls the process and the patient plays a passive

role. This may be all that is needed for some surgical decision-making, for example, when removing a colorectal adenocarcinoma in a fit patient. However, for other patients, a shared decision-making consultation maybe more appropriate, combining the expertise of both the doctor, in terms of the effectiveness, probable benefits and potential harms of the treatment, and the patient, in terms of their perceived health, their social circumstances, attitudes to illness, risks, values and personal preferences. A recent judgement by the UK Supreme Court added further legal weight to the concept of providing information that 'a reasonable patient' would want to know, rather than the information that a 'reasonable doctor' would want to give [12]. Shared decision-making within a consultation involves three stages: introduction, options and decision.

Initially, patients are informed that choices exist, and that the aim of the consultation is to determine what the best choice is from their perspective. The available options, together with the chances of benefit or harm for each of these, are presented. Further discussion is guided by the patient and a decision invited only when the patient is happy that their concerns have been adequately addressed. The decision may be to have or not have surgery, but could involve deferral to a future date, at which time further or repeated information may be requested by the patient, before a shared care plan can be developed [13, 14].

In practice, consultations are dynamic and every consultation is different. Consultations benefit from clinicians ceding control to patients, allowing the conversation to digress in a fairly unstructured way. The important characteristics required of clinicians who conduct these consultations are different to those required for successful diagnostic consultations, the most important of these being the enablement of trust, such that patients feel confident in revealing their personal preferences and what matters most in their lives.

The vocabulary used by the doctor and how they present numbers in discussions of risk are important. Scientists interpret the term 'risk' as a statistical probability, but most patients assume 'risk' implies a bad outcome or harm. The word 'chance' is a more neutral term and may be better than using the word risk. Numbers should be presented as frequencies, "1 in

100" rather than "1%". Patients who are pessimistic tend to catastrophise information, while those who are optimistic tend to dismiss chances of harm. Describing how an outcome changes with or without surgery may be a more useful way to communicate. Chance can also be framed in different ways: if the chance of a bad event happening is 1 in 100, the chance of this event not happening is 99 in 100 [15]. Some patients may find pictures, tables or graphs helpful to understand outcome predictions [16, 17]. When there is uncertainty about what information a patient wants or how they would like it presented, an 'ask-tell-ask' approach can be used. For example: 'what do you think the chance of this event happening is', followed by giving your best estimate of the event happening and then asking the patient their thoughts on this information.

Developing shared care plans

In models of care such as those at Torbay and in POPS, thorough pre-operative assessment, optimisation and shared decision-making inform the development of a care plan. If the patient elects to proceed with surgery, then the clear description of the chances of peri-operative outcomes can be used to tailor both the intra-operative care and postoperative management. For example, a patient who is at risk of respiratory decompensation may require regional anaesthesia rather than general anaesthesia, and a patient who is at high risk of postoperative delirium should have proactive ward-based interventions to prevent and reduce the severity of the delirium [18]. Furthermore, it is intuitive that the higher the chance of postoperative mortality or complications, the greater the benefit from postoperative high dependency care. However, evidence for the benefit of admission to high dependency care is limited. Guidance on admission criteria to critical care is open to interpretation, which results in variation in practice.

In patients who have a high risk of postoperative morbidity and mortality, advance care planning should be considered in the pre-operative clinic [19]. This should include a discussion with the patient regarding 'ceilings of care', for example whether the patient should be managed in a ward setting only, whether multi-organ support in an intensive care unit would be

appropriate, or whether they should be resuscitated in the event of a cardiorespiratory arrest. Similarly, patients who decline elective surgery may be at risk of a catastrophic event. For example, a patient with an abdominal aortic aneurysm is at risk of rupture in the community. The management of just such a possibility should be clearly discussed and documented. In such cases, the risks of undertaking an emergency procedure are even higher than for an elective procedure and in most situations the patient chooses palliation. This decision will need to be communicated with the primary care team and the family or carers to facilitate community-based palliative treatment.

Conclusion

The purpose of pre-operative assessment clinics is to assess probabilities of harm and benefit for different treatment options, to optimise fitness, to engage in shared decision-making and to plan peri-operative care. For the majority of patients, this can be delivered safely and effectively using protocolised approaches. However, with advances in surgical and anaesthetic techniques and demographic changes, such that higher risk surgery is being conducted in higher risk populations, a more individualised approach is becoming increasingly necessary. While in some areas clinical services are responding to these changes, new models of care have not become widespread. A number of resources exist to support the development of such services including national guidelines, initiatives from the Royal Colleges, national audits and developments in postgraduate education (see additional reading). These resources can be used to facilitate a patient-centred approach to peri-operative care.

Healthcare systems need to move beyond the process of diagnosis, treatment and cure for single organ disease and develop better ways of managing disease or multiple diseases for individual patients. A good description of the issues pertinent to the redesign of decision-making for high-risk patients was published recently as a personal perspective [20]. Although there is active research in this field, with a focus on issues raised by and outcomes determined by patients, most of this literature is published in journals not traditionally read by anaesthetists. This only further illustrates the need to move away from specialty-focused services

to patient-centred services bringing together disciplines and specialties to deliver quality peri-operative care.

Competing interests

No external funding and no competing interests declared.

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Additional reading

Guidelines on the care of older people

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2. <http://www.bgs.org.uk/index.php/topresources/publicationfind/goodpractice/2402-bpg-pops> (accessed 11/09/2015).
3. <http://patientsafety.health.org.uk/area-of-care/frail-older-people/safer-surgery-and-anaesthesia-older-people> (accessed 11/09/2015).
4. <http://www.ncepod.org.uk/2010eese.htm> (accessed 11/09/2015).

Shared decision-making resources

1. <https://www.rcplondon.ac.uk/projects/shared-decision-making> (accessed 11/09/2015).

2. <http://www.kingsfund.org.uk/publications/people-control-their-own-health-and-care> (accessed 11/09/2015).
3. <http://personcentredcare.health.org.uk/person-centred-care/shared-decision-making> (accessed 11/09/2015).

Developments in postgraduate education in peri-operative medicine

1. <http://www.bsms.ac.uk/postgraduate/taught-degrees/course-list/anaesthesia-and-perioperative-medicine/> (accessed 11/09/2015).
2. <http://www.ucl.ac.uk/surgery/courses/msc-perioperative-medicine> (accessed 11/09/2015).
3. <http://www.ssai.info/education/perioperative-medicine-and-management-pomm/> (accessed 11/09/2015).

Developments by Royal College of Anaesthetists, Royal College of Physicians London and American Society of Anesthesiologists

1. <https://www.rcoa.ac.uk/perioperativemedicine> (accessed 11/09/2015).
2. <https://www.rcplondon.ac.uk/projects/future-hospital-programme> (accessed 11/09/2015).
3. <https://asahq.org/resources/perioperative-surgical-home> (accessed 11/09/2015).