

Chapter 2

Guidelines for the Provision of Anaesthesia Services (GPAS)

Guidance on the Provision of Anaesthesia Services for Pre-operative Assessment and Preparation 2016



NICE has accredited the process used by the Royal College of Anaesthetists to produce its Guidance on the Provision of Anaesthesia Services for Pre-operative Assessment and Preparation 2016. Accreditation is valid for five years from 2016. More information on accreditation can be viewed at www.nice.org.uk/accreditation.

Chapter Development Group Members

Dr William Key
Consultant Anaesthetist
Torbay Hospital
South Devon Healthcare NHS Foundation Trust
Co-Lead Author

Dr Karen Bartholomew
Consultant Anaesthetist
Association of Paediatric Anaesthetists
Halifax, UK
Chapter Development Group Member

Mr Phillip Cawkwell
Physician's Assistant (Anaesthesia)
Association of Physician's Assistant (Anaesthesia)
Chapter Development Group Member

Dr Leanne Darwin
Trainee Anaesthetist
Manchester, UK
Chapter Development Group Member

Dr Jugdeep Dhesi
Consultant Physician
Age Anaesthesia Association and British Geriatrics Society
Guy's and St Thomas' NHS Foundation Trust, London, UK
Chapter Development Group Member

Dr Rob Hill
Consultant Anaesthetist
The Preoperative Association
West Sussex, UK
Chapter Development Group Member

Ms Jane Jackson
Consultant Nurse
JJ Consulting Solutions
Aylesbury, UK
Chapter Development Group Member

Dr Jane Montgomery
Consultant Anaesthetist
British Association of Day Surgery
Torbay Hospital
South Devon Healthcare NHS Foundation Trust
Chapter Development Group Member

Dr Michael Swart
Consultant Anaesthetist
Torbay Hospital
South Devon Healthcare NHS Foundation Trust
Co-Lead Author

Dr Tajammal Bhatti
Clinical Director
Burton Hospitals NHS Foundation Trust
Chapter Development Group Member

Ms Irene Dalton
Lay representative
Royal College of Anaesthetists Lay Committee
Sheffield, UK
Chapter Development Group Member

Dr Andrew Davies
Trainee Anaesthetist
Manchester, UK
Chapter Development Group Member

Ms Carol Green
Lay representative
Royal College of Anaesthetists Lay Committee
Oxfordshire, UK
Chapter Development Group Member

Mr David Humphreys
Lay representative
Royal College of Anaesthetists Lay Committee
Belfast, UK
Chapter Development Group Member

Dr Nicholas Kennedy
Consultant Anaesthetist
Society for Obesity and Bariatric Anaesthesia
Taunton, UK
Chapter Development Group Member

Professor Burra Murthy
Consultant Anaesthetist
Royal Liverpool University Hospital
Chapter Development Group Member

Dr Lisa Penny
Clinical Director
Clinical Directors Network
Hereford, UK
Chapter Development Group Member

Dr Mark Rockett
Consultant Anaesthetist
Faculty of Pain Medicine representative
Derriford Hospital, Plymouth, UK
Chapter Development Group Member

Dr Rae E Webster
Consultant in Intensive Care and Anaesthesia
Northampton General Hospital
Chapter Development Group Member

The Chapter Development Group was convened according to the recruitment process outlined in the [GPAS Chapter Development Process Document](#).

Acknowledgements

Professor Gerard Danjoux
Consultant Anaesthetist
Perioperative Medicine Programme
Middlesbrough, UK

GPAS Editorial Board

Professor Ravi Mahajan (Chair and Lead Editor)
Dr Simon Fletcher
Dr Andrew Hutchinson (co-opted member)
Professor Michael (Monty) Mythen
Dr Jaideep Pandit
Dr David Selwyn
Dr Peter Venn

Peer Reviewers

Dr Arnab Banerjee
Consultant Anaesthetist
Royal Liverpool and Broadgreen University Hospital
NHS Trust

Dr Milind Bhagwat
Consultant Anaesthetist
Epsom Hospital

Professor Andrew Smith
Consultant Anaesthetist
Royal Lancaster Infirmary

Dr Tasneem Katawala
Consultant Anaesthetist
Epsom Hospital

Chapter Development Technical Team

Dr Rachel Evley
Research Fellow
University of Nottingham

Ms Polly Kwok
Project Co-ordinator (Aug 2014-Jul 2015)
Royal College of Anaesthetists

Ms Carly Melbourne
Royal College of Anaesthetists

Ms Ruth Nichols
Project Co-ordinator (Sep 2015-)
Royal College of Anaesthetists

Ms Emily Young
Royal College of Anaesthetists

Promoting equality and addressing health inequalities

The Royal College of Anaesthetists is committed to promoting equality and addressing health inequalities. Throughout the development of these guidelines we have:

- given due regard to the need to eliminate discrimination, harassment and victimisation, to advance equality of opportunity, and to foster good relations between people who share a relevant protected characteristic (as cited under the Equality Act 2010) and those who do not share it.
- given regard to the need to reduce inequalities between patients in access to, and outcomes from healthcare services and to ensure services are provided in an integrated way where this might reduce health inequalities.

GPAS guidelines in context

The Guidelines for the Provision of Anaesthetic Services (GPAS) documents should be viewed as 'living documents'. The GPAS guideline development, implementation and review should be seen not as a linear process, but as a cycle of interdependent activities. These in turn are part of a range of activities to translate evidence into practice, set standards and promote clinical excellence in patient care.

Each of the GPAS chapters should be seen as independent but interlinked documents.

Each chapter will undergo yearly review, and will be continuously updated in the light of new evidence.

Guidelines alone will not result in better treatment and care for patients. Local and national implementation is crucial for changes in practice necessary for improvements in treatment and patient care.

The Royal College of Anaesthetists received accreditation from NICE in 2016 for the process that was used to develop this chapter. NICE accreditation helps health and social care professionals identify the most robustly produced guidance available.

Medico-legal implications of GPAS guidelines

GPAS guidelines are not intended to be construed or to serve as a standard of clinical care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is advised, however, that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient's case notes at the time the relevant decision is taken.

Declaration of Interest

All chapter development group members, stakeholders and external peer reviewers were asked to declare any pecuniary or non-pecuniary conflict of interest, in line with the GPAS conflict of interest policy as described in the [GPAS Chapter Development Process Document](#).

Declarations were made as follows:

- both co-authors were authors of the GPAS Pre-operative Assessment and Preparation Chapter 2014
- one of the lay members of the chapter development group held a position as member of the Royal College of Anaesthetists Council
- three members of the chapter development group held positions as board members of the Pre-operative Association
- four members of the chapter development group were involved in producing one of the items of evidence.

The nature of the involvement in all declarations made above was not determined as being a risk to the transparency or impartiality of the chapter development. Where a member was conflicted in relation to a particular piece of evidence, they were asked to declare this and then, if necessary, removed themselves from the discussion of that particular piece of evidence and any recommendation pertaining to it.

Aims and Objectives

The objective for this chapter is to describe current best practice in pre-operative assessment and preparation for anaesthesia and surgery. This will be supported by evidence and national recommendations where available.

A comprehensive pre-operative assessment and preparation service is fundamental to high-quality, safe practice. The service is part of the responsibility of the anaesthetist as a perioperative physician. The goal of pre-assessment is to ensure an excellent patient- and family-centred experience with shared decision-making embedded throughout the process. Appropriate education and professional development for staff should be available. Training in pre-operative assessment and assessment of competence is essential in this specialist area. This service is an integral part of the anaesthetic pathway and should be fully funded.

There are two main components to pre-operative assessment and preparation. The first is based on the provision of a safe and appropriate anaesthesia. This is primarily a safety check and patient communication process most often carried out on the day of surgery by the anaesthetist involved in the case. The second is the concept of the anaesthetist as the perioperative physician and it is in this capacity that the second component is undertaken. It is now broadly accepted that there is a need to assess the chance of harm and benefit afforded by any surgical or anaesthetic intervention and this information should be communicated to the patient. This should facilitate the shared decision-making process, which will lead to the selection of appropriate intra-operative and post-operative care that takes into account the patient's personal preferences and values.

The aim is to ensure the patient is fully informed and ready for surgery. This will involve a health check and possibly optimisation of their health and current therapies. It involves planning with the patient their admission to hospital and discharge after surgery. This will help prevent cancellations on the day of surgery and lead to a better patient experience.

These guidelines apply to the care of all patients who require anaesthesia or sedation. For urgent or immediate emergency surgery, these guidelines may need to be modified, this should be documented in the patient's record. Further information on pre-assessment for emergency surgery is contained in [GPAS Chapter 5: Guidance on the Provision of Emergency Anaesthesia Services 2016](#). For expedited emergency surgery, these guidelines should not need to be modified.¹

Scope

Pre-operative care is the responsibility of a multi-professional team that should include: general practitioners, physicians, pre-operative nurses, anaesthetists, physicians' assistants in anaesthesia (PA(A)s), surgeons, geriatricians, occupational therapists, dieticians, physiotherapists and pharmacists.

There are two main components of assessment and preparation:

- assessment should be standardised and consist of establishing a rapport with the patient, followed by the gathering of information to establish the patient's medical, nursing and social needs in the perioperative period
- preparation includes optimisation, medicines rationalisation, giving essential information, shared decision-making and patient choice

Clinical question

The key question covered by this guideline is:

- What are the key components of a quality pre-operative assessment and preparation service?

Areas included are:

- Levels of provision of service, including (but not restricted to) staffing, equipment, support services and facilities
- Areas of special requirement such as paediatrics, obstetrics, elderly care, obesity, and additional needs
- Training and education
- Research and audit
- Organisation and administration
- Patient information
- Quality improvement

Target population

This chapter covers patients of all ages undergoing elective or emergency anaesthesia and all staff groups working within the pre-operative phase of anaesthetic practice including (but not restricted to) consultant anaesthetists, trainee anaesthetists and nurses. Provision of pre-operative services provided by a specialty other than anaesthesia is not covered in this chapter.

Target audience

The target audience for this chapter is anaesthetists with responsibilities for service delivery and healthcare managers.

The complete definition of the scope of this chapter is available in the [Scoping Document](#).

Introduction

Pre-operative assessment and preparation is a process. It involves primary care, anaesthesia and other specialties. The general practitioner has a major role to play by ensuring that patients are 'fit for referral' and by initiating the shared decision-making process. Development of strong links with primary care can facilitate this.

Part of the process is an assessment to check it is safe to proceed with anaesthesia and surgery. It is also about both optimising and preparing the patient for anaesthesia and surgery. The anaesthetist plays a key role in co-ordinating this process with other medical specialties and health-care professionals.

Shared decision-making should run throughout the patient journey; it is now viewed as an ethical imperative by the professional regulatory bodies, which expect clinicians to work in partnership with patients. Patients want to be more involved than they are currently in making decisions about their own health and healthcare, and there is compelling evidence that patients who are active participants in managing their health and healthcare have better outcomes than patients who are passive recipients of care. If the patient decides to proceed, he or she should be as fit as possible for surgery and anaesthesia. Pre-operative assessment and preparation allow risks to be clearly identified and mitigated, or managed in a planned and consistent way.

The pre-operative clinic and anaesthetist have important roles to play in ensuring that shared decision-making becomes a reality. This is defined as a process in which clinicians and patients work together to select tests, treatments, management or support packages, based on clinical evidence and the patient's informed preferences. It involves the provision of evidence-based information about options, outcomes and uncertainties, together with decision support counselling and a system for recording and implementing patients' informed preferences. The individual values of patients and their perspective on how healthcare interacts with their life are key to this.²

Following a recent legal decision regarding consent, discussions around the risks of a procedure and possible alternatives should be determined by the patient.^{3,4}

The chapter will cover sections on:

- staffing requirements
- equipment, services and facilities
- areas of special requirement
- training and education
- organisation and administration
- financial considerations
- research, audit and quality improvement
- implementation support
- patient information

Recommendations

The grade of evidence and the overall strength of each recommendation are tabulated in Appendix 1.

1 Staffing requirements

An appropriate level of staffing is essential to deliver a good quality service. Non-anaesthetist health professionals, for example, pharmacists, physiotherapists, occupational therapists, specialist nurses, stoma therapists, and physicians' assistants in anaesthesia can add considerable value to the service.^{5,6}

- 1.1 All patients should be assessed before anaesthesia or sedation for surgery by an appropriately trained doctor, nurse or physicians' assistant.^{6,7}
- 1.2 Anaesthetists need time to cover the following essential points in the more immediate pre-operative phase. The anaesthetic room is not usually an appropriate place for this except in an emergency.

Assessment

- Correct identification of the patient⁸
- Interview and medical case notes review to establish current diagnoses, current medicines and past medical and anaesthetic history^{9,10}
- Examination, including airway assessment
- Review of results of relevant investigations
- The presence of any risk factors, including methicillin-resistant *Staphylococcus aureus* (MRSA) screening and risk of venous thromboembolism
- The need for further tests to give the patient more information about their individual risk. This information also needs to be disseminated to the anaesthetist involved in the case as well as the extended perioperative team

Preparation

- The patient's understanding of and consent to the procedure and a share in the decision- making process
- An explanation of, and agreement to the anaesthetic technique proposed
- Pre-operative fasting, the proposed pain relief method, expected sequelae, and possible major risks (where appropriate)
- The prescription and ordering of any pre-operative medication including carbohydrate drinks
- A plan for the perioperative management of anticoagulant drugs, diabetic drugs and other current medications
- A process of medicines reconciliation by a pharmacist or pharmacy technician should be in place pre-operatively
- The documentation of details of any discussion in the anaesthetic record
- Information that may be reinforced by attendance at communal sessions such as 'joint school' for hip and knee surgery at which there may be input from an anaesthetist, orthopaedic surgeon, occupational therapist, physiotherapist, acute pain specialists, pharmacists and ward nurse

1.3 The following time allocation (per week) is a guide to the minimum staffing that should be provided per 1,000 in-patients passing through a pre-operative preparation clinic:

- reviews and consultations 1 session (1.25 programmed activities)
- high risk clinics 1 session (1.25 programmed activities)
- clinical leadership for the service 1 session per 5,000 in-patients (1.25 programmed activities)

Clinical leadership is for audit, research, teaching, protocol development, IT development, primary care liaison. Backfill to cover staff who are on leave and secretarial support should also be provided.¹¹

1.4 Local protocols should determine the grade, experience and competency-based training of the nurse undertaking pre- operative assessments and accompanying the patient to the operating department. For 1,000 patients, the following minimum staffing is required:¹¹

- 0.6 registered nurses
- 0.3 healthcare assistants

This staffing to patient ratio is based on 80% of patients as day cases and 20% as in-patients assuming day case patients have a 30-minute nurse consultation and in-patients have 45 minutes. This is only a guide, as complex patients may be scheduled for minor surgery and fit patients may be scheduled for major surgery.

1.5 Perioperative time should be allocated for the work the anaesthetist undertakes on the day of surgery for both pre-operative and post-operative care. The times allocated might vary per patient but for most theatre lists it approximate to 1 hour per 4 hours spent in the operating theatre suite or 2 hours per 8 hours in the operating theatre suite.

1.6 A chaperone must be available. Whenever you examine a patient you should be sensitive to what they may think of as intimate. This is likely to include examinations of the breasts, genitalia and rectum, but could also include any examination where it is necessary to touch or even be close to the patient. There must be the ability to provide the patient with the appropriate chaperone.¹²

2 Equipment, services and facilities

2.1 There should be a reception desk and receptionist to meet and greet patients as they arrive in a pre-operative preparation clinic. They can ensure the patient's attendance is registered and that the patient is directed to the appropriate member of staff or to a waiting area.

2.2 The patients' waiting area should provide adequate seating for the number of patients attending a pre-operative preparation clinic. This may be an appropriate place to display patient information leaflets.

- 2.3 Consulting rooms need adequate furniture, such as a desk, chairs, examination couch and equipment such as computers, scales for measuring height and weight, blood pressure, pulse oximeter and electrocardiography machines.
- 2.4 There should be equipment and facilities for blood tests and urine analysis.
- 2.5 There should be facilities for the storage of patients' paper notes in a secure environment to enable access to previous anaesthetic records and medical alerts.
- 2.6 Information from the patient's pre-operative assessment should be readily available, ideally as part of an electronic patient record so that information is easy to transfer between locations and to enable data collection for later analysis.¹³

3 Areas of special requirement

Children

Most paediatric anaesthesia is for minor surgery in previously fit and healthy children. A large proportion of this work is carried out in non-specialist hospitals. All anaesthetists with a CCT or equivalent should be competent to provide perioperative care for common surgical conditions in children aged 3 years and above. Anaesthesia may also be required for non-surgical procedures such as magnetic resonance imaging (MRI) or computed tomography (CT) scans. In an emergency situation, anaesthetists will often be part of the multidisciplinary team responsible for the initial resuscitation and stabilisation of the critically ill or injured child prior to transfer to a specialist centre.

Recommendations for children's services, including the pre-operative phase of anaesthesia, are comprehensively described in [GPAS Chapter 10: Guidance on the Provision of Paediatric Anaesthesia Services 2016](#).¹⁴

- 3.1 The particular needs of children should be considered at all stages of perioperative care. They should ideally attend a pre-operative clinic staffed by nurses experienced in pre-assessing children. Children may benefit from a visit to the locality to which they will be admitted and familiarisation with the environment and personnel.¹⁵ There should be access to play specialists.
- 3.2 The child should be helped to understand events that are happening or will happen, with the use of age-specific and developmentally appropriate explanation and materials.^{16,17} There are specific issues around consent for children that need to be understood, including the particular requirements for children who are not under the care of their parents.¹⁸
- 3.3 A parent or legal guardian should ideally be with the child up to the point of moving into the operating theatre.
- 3.4 Parents and carers should be enabled to remain as close to their child as possible during the process of anaesthesia and recovery. There should be a space available within close proximity to theatres, where they can wait and be contacted.
- 3.5 Where sedative premedication is considered, this should be discussed with parents and carers.
- 3.6 Most children are fit and healthy, and straightforward surgery can be planned on a day-case basis. Routine blood testing is rarely necessary. There are exceptions to this such as sickle cell status.^{19,20}
- 3.7 Anaesthesia for children should be undertaken or supervised by consultants who have undergone appropriate training. In the UK, all anaesthetists with a CCT or equivalent will have obtained higher paediatric anaesthetic training. There will be consultants who have acquired more advanced competencies, thus allowing provision of a more extensive anaesthetic service, and those competencies should be maintained. Unless there is no requirement to anaesthetise children, it is expected that competence and confidence to anaesthetise children will need to be sustained through direct care, continuing professional development and/or refresher courses, and should be considered within annual appraisal and revalidation.²¹
- 3.8 Each hospital should have a written definition of age thresholds and the types of procedure for elective and emergency work, including imaging, which can be provided locally. Complex children, ASA 3 with significant co-morbidity should be discussed with the carers and referred to a tertiary centre, if the local infrastructure cannot meet their needs.^{22,23}

- 3.9 Children should be separated, ideally visually and audibly from adults and should be managed and treated in child-friendly areas, including waiting rooms, pre-assessment clinic rooms, and theatre areas, including anaesthetic and recovery areas, as far as possible.¹⁹
- 3.10 Children undergoing surgery should be grouped into paediatric lists, or together at the start of mixed lists.²³
- 3.11 Pre-operative fasting should be minimised as much as possible, especially for infants and younger children.²⁴
- 3.12 All clinical staff working with children should have up to date certification in Safeguarding Level 2.
- 3.13 There should be a policy in place for pregnancy testing in the under 16s. This should adhere to Royal College of Paediatrics and Child Health guidance.²⁵
- 3.14 Information on the risks and the common side effects of anaesthesia in children should be discussed and offered in writing to parents and guardians.¹⁷
- 3.15 Information on the long-term effects of anaesthesia, particularly for infants and young children should be made readily available to parents and guardians.^{26,17}

Obstetric patients

Recommendations for obstetric services, including the pre-operative phase of anaesthesia, are comprehensively described in [GPAS Chapter 9: Guidance on the Provision of Obstetric Anaesthesia Services 2015](#).

Older people

- 3.16 Pre-operative assessment, optimisation and shared decision-making in older patients with multiple co-morbidities, frailty or cognitive impairment require a cross-specialty approach involving anaesthetists, surgeons, geriatricians, pharmacists and allied health professionals. Liaison with a clinical pharmacist to support older patients with polypharmacy in the peri-operative period will enable optimisation of medicines and improved management of the patients non-surgical co-morbidities during this time. The development of such teams requires time and resources. These should be recognised and provided.^{27,28,29,30}
- 3.17 Patients with frailty are at increased risk of adverse postoperative outcome. Older patients undergoing intermediate and high-risk surgery should be assessed for frailty using an established tool or scoring system. Pathways of care providing proactive pre-operative interventions for frailty, involving therapy services, social services and geriatricians, should be developed.^{31,32,33,34} Older patients should have access to consultant geriatrician. Opportunities for joint geriatric and surgical clinical governance.³³
- 3.18 The risk of post-operative functional decline and complex discharge related issues should be considered.
- 3.19 There is a high prevalence of recognised and unrecognised cognitive impairment amongst older surgical patients. This has implications for shared decision-making, the consent process and perioperative management. Older patients should have pre-operative cognitive assessment using established screening or diagnostic tools.
- 3.20 Older patients should be assessed for risk of post-operative delirium and pre-operative interventions undertaken to reduce the incidence, severity and duration of post-operative delirium. Hospitals should ensure guidelines are available for the prevention and management of post-operative delirium and circulated pre-operatively to the relevant admitting teams.³¹
- 3.21 There should be established liaison with social services for patients who need such support, to prevent delay in discharge.

Morbidly obese patients

- 3.22 Every hospital should nominate an anaesthetic lead for obesity.³⁵
- 3.23 Operating lists should include the patients' weight and body mass index (BMI), and the World Health Organization (WHO) *Surgical safety checklist*³⁶ should include obesity related issues such as correct equipment and manual handling.³⁵

- 3.24 Experienced anaesthetic and surgical staff should manage obese patients. Ideally morbidly obese patients should be pre-assessed by a senior anaesthetist.³⁵
- 3.25 Additional specialised equipment is necessary and should be available for every morbidly obese patient at all stages of the pathway. Advance warning of these elective patients should be given to the appropriate department in the hospital by the pre-operative assessment team.³⁵
- 3.26 Patient dignity should be maintained by ensuring appropriate equipment and clothing is available and by staff attitudes to obesity.

Diabetic patients

- 3.27 Pre-operative assessment, optimisation, manipulation of patient's normal drugs and shared decision-making in patients with diabetes requires a cross-specialty approach involving anaesthetists, surgeons, diabetologists and diabetes inpatient specialist nurses. The development of such teams requires time and resources. This should be recognised and provided.³⁷
- 3.28 Patients with diabetes are at increased risk of adverse postoperative outcomes. Pathways of care providing proactive pre-operative interventions to promote day of surgery admission and day surgery should be developed.³⁷
- 3.29 Patients with diabetes are at increased risk of con-current morbidity. These conditions should be identified and optimised where and when possible.³⁷
- 3.30 Patients with diabetes are at increased risk of drug errors and drug interactions. Pathways should ensure drug reconciliation, which is vital to these at risk patients.³⁷

Additional needs

- 3.31 In patients with learning disabilities or special needs, there should be close co-operation with other specialists. A learning disability liaison nurse could be available to support patients and carers while attending the hospital for either out-patients, day surgery or as in-patients. If patients lack capacity and are un-befriended then the involvement of an Independent Mental Capacity Advocate (IMCA) should be sought.³⁸
- 3.32 Some patients who are housebound and have difficulty in accessing primary or secondary care may benefit from a home visit for their pre-operative assessment and preparation. The same may apply to prisoners detained in HM Prison Service.
- 3.33 Translators or interpreters should be available for patients who do not speak or understand English and those who use sign language. Written information also needs to be available in different languages.

4 Training and education

The RCoA has established essential knowledge, skills, attitudes and workplace objectives needed in the area of pre-operative assessment in training to attain a Certificate of Completion Training (CCT) in anaesthesia. Pre-operative assessment is a core component of MSc, Postgraduate Certificate and Postgraduate Diploma courses in perioperative medicine. The Preoperative Association has produced competency standards on nursing skills for pre-operative assessment.

- 4.1 Training of anaesthetists includes attaining the competency to perform medical assessment of patients before anaesthesia for surgery or other procedures.³⁹
- 4.2 The pre-operative assessment service should enable multidisciplinary training for medical students, nurses, specialist doctors in training and allied health professionals. Educational materials are available to facilitate this.⁴⁰ Training schools should give consideration to establishing specific modules in pre-operative assessment for senior trainees.
- 4.3 Pre-operative educational resources should be made available to general practitioners and primary care staff who are instrumental in 'first contact' patient consultations prior to secondary care referral. This facilitates robust cross-boundary working relationships and agreed 'fitness for referral' protocols, whilst minimising delays in the patient journey.

- 4.4 The anaesthetist should have the skills to hold a competent interview, assess and communicate the chance of benefit and harm, and facilitate shared decision-making.

5 Organisation and administration

Pre-operative assessment is an essential component of the surgical pathway and should be afforded suitable time and resource.

Optimum organisation is described in the Preoperative Preparation module of the NHS Institute for Innovation and Improvement's 'Productive Operating Theatre' tool. This toolkit has been designed to help theatre teams to work together more effectively to improve the quality of patient experience, the safety and outcomes of surgical services, the effective use of theatre time and staff experience.⁴¹

Organisation of pre-operative preparation is essential for enhancing the quality of care in a number of ways.

- If a patient is fully informed, they will be less stressed and may recover more quickly
- A health check ensures good medical health before anaesthesia and surgery
- Planning admission and discharge individually ensures that patient and carers know what to expect, facilitating earlier post-operative care at home
- Cancellations due to patient ill health or non-attendance are reduced
- Admission on the day of surgery and early discharge are more likely
- The waiting list is validated⁴²

Timing of pre-operative assessment

- 5.1 Most patients undergoing elective surgery should attend a pre-operative preparation clinic.^{6,7} Healthy patients having minor day-case surgery can in certain circumstances have telephone or electronic-based assessments.
- 5.2 In the case of emergency and urgent surgery, assessment should take place as early as possible.⁴⁰
- 5.3 Where possible, it is preferable for one-stop arrangements to be implemented so that patients can attend pre-operative assessment during the same hospital visit as their surgical outpatient assessment. Ideally the frequency of high risk clinics should allow for one-stop patient visits when appropriate.
- 5.4 If the patient has not been seen in a pre-operative clinic, for example those admitted for emergency surgery, they should undergo an equivalent assessment and preparation process with the findings documented, before their final anaesthetic assessment. Most expedited emergency surgery patients should be able to have the same assessment and preparation as elective surgery patients.
- 5.5 Sufficient consultant anaesthetic sessions should be provided to allow a review of the medical notes or consultations where required between senior anaesthetists and patients at increased risk of mortality and morbidity (>1 in 200 risk of dying within 30 days of surgery). There should also be resources for patients at greatest risk (>1 in 100 risk of dying within 30 days of surgery) to undergo more extensive testing and discussion that will help inform the consent process.
- 5.6 There should be sufficient time before an operation for the anaesthetist to conduct a satisfactory pre-operative assessment. If this does not happen, it is possible that surgery may be delayed or postponed. The provision of a good pre-operative assessment and preparation process should minimise this.
- 5.7 Following admission and prior to undergoing a procedure that requires general or regional anaesthesia, all patients should have a pre-operative visit by an anaesthetist or suitably trained assistant, ideally a person directly involved with the administration of the anaesthetic.⁶ This should be done to confirm earlier findings or, in the case of the emergency admission, initiate pre-operative anaesthetic assessment and care.⁸
- 5.8 The WHO's Surgical Safety Checklist should be used and is fully endorsed by the RCoA as the instrument for promoting team working and patient safety.^{11, 36}

Liaison with internal and external colleagues

- 5.9 The secondary care pre-operative service should liaise closely with primary care and commissioners to promote a 'fitness for referral' process.⁴³
- 5.10 Anaesthetic departments and their pre-operative assessment services should engage with local primary care providers to ensure (prior to surgical referral) that the patient has:
- engaged in shared decision-making from the outset
 - gone through a 'fitness for referral' process, to identify and optimise conditions amenable to treatment, for example:
 - diabetes and patients at risk from undiagnosed diabetes
 - respiratory disease e.g. asthma, chronic obstructive pulmonary disease, sleep disordered breathing
 - atrial fibrillation
 - heart disease
 - hypertension
 - anaemia, haemoglobin <120g/L, particularly for surgery where significant blood loss is predictable
 - acute or chronic pain
 - been given appropriate lifestyle advice and support regarding smoking, alcohol, obesity, malnutrition, recreational drugs or inactivity^{44,45}
 - been assessed for possible frailty and cognitive impairment with information included at the time of referral – both of these conditions are increasingly recognised as being associated with adverse outcomes following surgery

General practitioners are well placed to initiate such processes and this has potential benefits in terms of reducing delays and avoidable cancellations as well as longer-term health benefits for patients.

- 5.11 Agreed internal referral pathways to other specialties should be in place for the minority of cases where this may be required to expedite further investigation and patient optimisation. This should be done in close collaboration between the pre-operative assessment lead and nominated representatives from appropriate specialties, e.g. cardiology, diabetes, renal, respiratory and geriatric medicine.
- 5.12 High-risk patients should be discussed in regular specialty multidisciplinary team (MDT) meetings with anaesthetic representation. Such an arrangement facilitates robust team decision-making with regard to patient care while minimising delays in the surgical pathway. Clinical time should be agreed in consultant job plans to reflect this commitment. There should be an anaesthetic MDT led by anaesthetists including cardiologists, respiratory physicians, surgeons, haematologists to discuss high-risk surgical patients, do quick in-house referrals and make plans for pre-surgery optimisation and post-operative management.
- 5.13 The output from consultations with patients at increased risk of mortality or morbidity should be documented in the patient's medical notes. In addition, mechanisms for clear communication of these consultations to patients, anaesthetists, surgeons, general practitioners and other healthcare workers should be in place.²⁷

Leadership

- 5.14 The secondary care clinic should be led by suitably trained nurses predominantly or other extended role practitioners, using agreed protocols and with support from an anaesthetist.
- 5.15 There should be a nominated medical and nursing lead for pre-operative assessment.
- 5.16 An anaesthetic pre-operative assessment service should involve consultant anaesthetists.^{6,7} Dedicated anaesthetic presence in the pre-operative assessment and preparation clinic is required for:
- the review of results and concerns identified by nursing staff
 - consultations with patients identified by a triage process to allow optimal delivery of pre-operative assessment resources

- cardiopulmonary exercise testing or other functional assessment of fitness on high risk patients and a subsequent consultation on the chance of harm or benefit
- the training and support of nursing and other staff
- the maintenance of close two-way links with primary care clinicians facilitating agreed evidence-based 'fitness for surgery' protocols between primary and secondary care. This arrangement also encourages general practitioners to develop a broader knowledge of remediable perioperative risk factors which can be optimised pre-operatively
- developing links with clinical commissioning groups
- the establishment of internal protocols, for example, patients with diabetes, obese patients or those on anticoagulant therapy

5.17 Each trust should have agreed written policies, protocols or guidelines, following national guidelines where these are available, covering:

- the time allocated for the anaesthetist to undertake pre-operative care in both out-patient clinic and ward settings. Job plans should recognise an adequate number of programmed activities^{6,7}
- pre-operative tests and investigations^{46, 47}
- pre-operative blood ordering for potential transfusion⁴⁸
- management of anaemia including parenteral iron therapy to reduce the risk of allogenic blood transfusion⁴⁹
- management of diabetes and anticoagulant therapy, including newer anticoagulant drugs^{50, 51}
- pre-operative fasting schedules and the administration of pre-operative carbohydrate drinks^{6,7,52}
- antacid prophylaxis
- latex and chlorhexidine allergies
- escalation of care in the event of perioperative complications to the intensive care unit
- continuation of regular medication
- locally agreed protocol for the administration of thromboprophylactic agents to patients undergoing surgery, including venous thromboembolism risk assessment, for identification of patients at low, moderate and high risk, and a recommended prophylactic method for each group (including timing of administration to patients undergoing regional anaesthesia)^{50, 51}
- referral of patients from a nurse-led clinic to medical staff for further review
- pregnancy testing before surgery
- use of the WHO Surgical Safety Checklist^{11,36}
- management of acute pain in complex patients (e.g. opioid-tolerant patients)
- peri-operative management of pacemakers including implantable cardioverter defibrillators

5.18 Business planning by organisations and anaesthetic departments should ensure that the necessary resources, including enough time, are targeted towards pre-operative assessment. This should include administrative support at an appropriate level.

Risk assessment

5.19 There should be a process in place to identify patients with specific problems such as dementia (with risk of post-operative delirium) and poor nutritional status (with increased risk of morbidity).

5.20 Objective assessment of risk should be routine. Identification of higher risk should trigger advance planning specific to that case. Each trust should have a system in place to identify high-risk surgical patients who require additional assessment. This should be based on:²⁷

- age
- co-morbidity:
 - heart failure
 - ischaemic heart disease (myocardial infarction or angina)
 - stroke (cerebral vascular event or transient ischaemic attack)
 - peripheral arterial disease
 - renal impairment
 - dementia
 - frailty
- type of surgery
- aerobic fitness

5.21 Risk assessment should include assessing the risk of severe acute post-surgical pain or chronic post-surgical pain. These adverse outcomes are common and screening tools appropriate to an individual hospital case mix can be developed.^{53,54}

5.22 The information should include the intended pathway (day surgery or enhanced recovery) and methods of pain relief.^{44,55}

5.23 High risk surgical patients should have their expected risk of death estimated and documented prior to intervention, with due adjustments made in planning the urgency of care, seniority of staff involved and post-operative care.^{56,57,58,59,60,61,62,63}

5.24 High-risk surgical patients should have their predicted 30-day mortality recorded pre-operatively. The National Confidential Enquiry into Patient Outcome and Death report on high-risk surgery recommended the assessment and recording of 30-day predicted mortality for high-risk surgery (defined as a greater than 5% risk).⁵⁷ The national emergency laparotomy audit and the national hip fracture database both recommend the recording of predicted 30-day mortality.^{58,59} There are validated prediction scores for 30-day mortality after hip fracture, elective abdominal aortic aneurysm surgery and all types of surgery.^{55,56,57} There are also validated prediction scores for longer-term mortality after surgery for hip fracture and elective surgery for abdominal aortic aneurysm.^{55,56}

5.25 Predicted 30-day mortality, recorded pre-operatively and determined in a high-risk surgery pre-assessment clinic, could be used to plan post-operative high-dependency care for elective high-risk surgery.⁶⁴

Coordination and communication

5.26 Documentation and communication of information on pre-operative preparation are essential. Electronic systems should be considered to enable the capture and sharing of information, support risk identification and allow data to be collected and available for audit and research purposes.^{11,13}

5.27 Pre-operative care requires careful co-ordination and communication with individual surgeons, general practitioners, medical records, out-patient clinics and specialist services such as diabetes. The anaesthetic lead for the pre-operative preparation clinic should ensure adequate systems are in place, and be responsible for overseeing the adequacy of these processes.⁷

5.28 Pre-operative assessment should take place as early as possible in the patient's care pathway so that all essential resources and obstacles can be anticipated before the day of the operation, including discharge arrangements.⁷

5.29 As a result of the assessment, the appropriate level of post-operative care can be determined and booked in a day-surgery facility, ward, high-dependency unit (level 2 care), or critical care unit (level 3 care), enabling both optimum care and efficient planning.

- 5.30 Patients should be admitted to a ward or alternative facility with sufficient time before the operating list on which they are scheduled. If an adequate pre-operative assessment has been performed, admission can be on the day of surgery but it remains essential that the anaesthetist who will be administering the anaesthetic is able to confirm the findings of the assessment and agree final details with the patient.
- 5.31 Discharge planning should be started as soon as the patient opts for surgery so that all essential resources and obstacles to discharge can be identified and dealt with, including liaison with social services. This will minimise late cancellation of operations and reduce the length of stay in hospital.⁶⁵
- 5.32 A pre-operative blood-ordering schedule should be agreed with the local transfusion service for each procedure and appropriate system in place to facilitate timely provision of blood products.⁴⁸
- 5.33 Anticipated difficulty with anaesthesia should be brought to the attention of the anaesthetist as early as possible before surgery. This includes planned admission to a critical care unit, the need for special skills, such as those of fibre optic intubation, obesity, complex pain problems or a known history of anaesthetic complications.
- 5.34 Operating lists should be made available to the anaesthetist before the list starts.
- 5.35 Operating lists should include details of the patient's operation, date of birth, hospital identification number, any alerts and the ward in which they are located.
- 5.36 The whole operating team should agree to any change to a published operating list. This list should be rewritten or reprinted, including a date and time of the update.
- 5.37 Written guidelines should cover the policy for the collection of patients from the ward or admissions unit, as well as the handover by ward staff to a designated member of the operating department staff.
- 5.38 Eighty per cent of patients undergoing elective surgery can expect to follow a day-surgery pathway. If in-patient care is necessary, an enhanced recovery pathway is now considered to provide optimum care and the pre-operative service should ensure that patients are clear about their own responsibilities and expected length of stay.⁴⁰
- 5.39 There should be provision for carbohydrate drinks to take pre-operatively where appropriate.⁴³
- 5.40 A designated pharmacist should be available to provide advice and input into anaesthetic and pre-operative assessment. This level of input may range from ad-hoc advice through to designated pre-operative assessment pharmacists, preferably with prescribing rights, who can undertake medicines reconciliation, produce peri-operative medication plans and provide specialist advice.

6 Financial considerations

- 6.1 Business planning by trusts and anaesthetic departments should ensure that the necessary time and resources are directly targeted towards pre-operative preparation.⁵²
- 6.2 A well-designed pre-operative service should minimise patient delays through the journey to surgery, while allowing appropriate time for initiation of interventions likely to improve patient outcome. By optimising planning of patient care, with the right staff and resources available, cancellations can be reduced and the efficiency of operating lists improved.⁶⁶

7 Research, audit and quality improvement

- 7.1 The NHS Modernisation Agency outlined measurable key performance indicators in theatre management and pre-operative assessment. These are still applicable.
- 7.2 Regular audits of the following aspects of pre-operative care may include:
- the effectiveness of pre-operative information provided to patients
 - pre-operative documentation of consultation by anaesthetists
 - consent to anaesthesia
 - the effectiveness of pre-operative assessment services

- pre-operative visiting (patient waiting time, proportion of one stop visits)
- pre-operative airway assessment
- pre-operative fasting in adults and children
- appropriate pre-operative medication
- thromboprophylaxis
- choice of technique: general, local or regional anaesthesia
- cancellation on day of surgery due to a failure in the pre-operative assessment process

8 Implementation support

The Anaesthesia Clinical Services Accreditation (ACSA) scheme, run by the College, aims to provide support for departments of anaesthesia to implement the recommendations contained in the GPAS chapters. The scheme provides a set of standards, and asks departments of anaesthesia to benchmark themselves against these, using a self-assessment form available on the College website www.rcoa.ac.uk/acsa. Every standard in ACSA is based on recommendation(s) contained in the GPAS. The ACSA standards are reviewed annually and republished approximately four months following GPAS review and republication, to ensure that they reflect current GPAS recommendations. ACSA standards include links to the relevant GPAS recommendations, for departments to refer to while working through their gap analyses.

Departments of anaesthesia are given the opportunity to engage with the ACSA process for a fee. Once engaged, departments are provided with a 'College Guide', a member of the Quality Management of Service Group (QMSG – the College working group that oversees the process), or an experienced reviewer to assist them with identifying the actions required to meet the standards outlined in the document.

Departments must demonstrate adherence to all 'priority one' standards listed in the document to receive accreditation from the College. This is confirmed during a visit to the department by a core group of four ACSA reviewers (two clinical reviewers, a lay reviewer and an administrator), who submit a report back to the QMSG.

The QMSG has committed to building a 'good practice library', which will be used to collect and share documentation such as policies and checklists, as well as case studies of how departments have overcome barriers to implementation of the standards, or have implemented the standards in innovative ways.

One of the outcomes of the ACSA process is to test the standards, and by extension the GPAS recommendations, to ensure that they are able to be implemented by departments of anaesthesia and consider any difficulties that may result from implementation. The QMSG has committed to measuring and reporting feedback of this type from departments engaging in the scheme back to the Chapter Development Groups updating the guidance via the GPAS technical team.

9 Patient information

All patients (and relatives where relevant) should be fully informed about the planned procedure and be encouraged to be active participants in decisions about their care (shared decision-making).¹

Information

- 9.1 Patients should be fully informed about the planned procedure and participate in a shared decision-making process. Consultation skills for shared-decision making should be used to prepare patients for anaesthesia and surgery. The patient should determine the information provided to obtain their consent for treatment. Patients should be informed of the increasing number of decision aids available at NHS Direct to help them with their choices.^{3,4,6,7}
- 9.2 Information should be provided with enough time for the patient to consider and reflect on before anaesthesia and surgery take place.

- 9.3 Information can be provided in a range of formats, including through written leaflets and on the internet. Details of websites that provide reliable, impartial and evidence-based information should be made available to patients where appropriate. Where possible formats should include large print, Braille and audio. Information should conform to the 'Accessible Information' standard set by the Department of Health for those with disabilities.⁶⁸
- 9.4 All patients undergoing elective procedures should be provided with easily understood information materials covering their operation, anaesthesia and post-operative pain relief, before admission to hospital. Provision of this information should be documented in the patient's notes.⁶⁹
- 9.5 The anaesthetist should explain what the patient will experience before and after anaesthesia, and include any choices of anaesthetic technique and details of post-operative management.
- 9.6 The anaesthetist should invite and answer questions from the patient or, if appropriate, the patient's relatives.
- 9.7 The anaesthetist should document in the patient's case notes that all of the above have been properly performed.

Consent

- 9.8 The competent patient has a fundamental right, under common law, to give, or to withhold, consent to examination, investigation and treatment.⁷⁰
- 9.9 No other person can consent to treatment on behalf of any adult. There should be a local process and policy in place for patients who lack capacity that conforms to national guidance and the Mental Capacity Act.⁷⁰
- 9.10 The scope of the authority that has been given by a patient should not be exceeded except in an emergency. In an emergency clinical situation, where it is not possible to find out a patient's wishes, a patient must be treated without their consent, provided the treatment is immediately necessary to save their life or to prevent a serious deterioration of their condition. The treatment provided should be the least restrictive of the patient's future choices.⁷⁰
- 9.11 In the case of children under the age of 16 years, consent should be given by the parent or guardian. In England and Wales, a child who is deemed 'Gillick-competent' under the age of 16 years may give, but not withhold, consent.⁷⁰
- 9.12 A recent judgement of the UK Supreme Court in the case of *Montgomery v Lanarkshire Health Board* clarifies some aspects of consent to medical treatment. Consent is a process and it should be viewed as an opportunity for a dialogue and not a one-way flow of information. The doctor must find out which risks are relevant to each 'particular patient' and tailor the consent process accordingly. The doctor must not, by fear of no-disclosure, 'bombard the patient' with technical information. This is more likely to promote confusion. The GMC states: *'The test of materiality is whether a reasonable person in the patient's position would be likely to attach significance to the risk, or the doctor should reasonably be aware that the particular patient would be likely to attach significance to it.'*^{3,4,71}
- 9.13 The patient must be made aware of alternative treatment options, or the option for no treatment at all. It is acceptable to recommend one of the alternatives but, as the GMC states: *'The doctor may recommend a particular option which they believe to be best for the patient, but may not put any pressure onto the patient to accept their advice.'*⁷¹
- 9.14 Where risks of adverse patient outcome with surgery are identified as being high, the pre-operative assessment consultation facilitates shared patient discussion, which may result in a well-informed individual opting for non-surgical management. Under such circumstances the decision-making process should be endorsed through close collaborative discussion with surgical colleagues (ideally a pre-operative MDT meeting).

Patients consenting to be subjects of research

- 9.15 A patient's consent to participate in research projects should be obtained by those conducting the study and not by the anaesthetist providing care for the operation. Consent should be obtained on a separate signed document and approval should be sought from the anaesthetist who will be delivering the anaesthetic to the patient.^{70,72}

Areas for future developments

Following the systematic review of the literature, the following areas for future research are suggested:

- proactive care of older people and high-risk surgery clinics either separate or combined
- cardio pulmonary exercise testing – its use and evidence

Bibliography

- Anaesthesia: care before, during and after anaesthesia – standards. *NHS QIS*, Edinburgh 2003 (<http://bit.ly/M5TS66>).
- Patient experience in adult NHS services: improving the experience of care for people using adult NHS services. *NICE*, London 2012 (<http://bit.ly/1PDRPG5>).

Glossary

Immediate Emergency Surgery – immediate life, limb or organ-saving intervention; resuscitation simultaneous with intervention. Normally within minutes of decision to operate; (A) Life-saving (B) Other e.g. limb or organ saving.¹

Urgent Emergency Surgery – intervention for acute onset or clinical deterioration of potentially life-threatening conditions, for those conditions that may threaten the survival of a limb or organ, for fixation of many fractures and for relief of pain or other distressing symptoms. Normally within hours of decision to operate.¹

Expedited Emergency Surgery – patient requiring early treatment where the condition is not an immediate threat to life, limb or organ survival. Normally within days of decision to operate.¹

Elective surgery – intervention planned or booked in advance of routine admission to hospital. Timing to suit patient, hospital and staff.¹

References

- 1 The NCEPOD classification of intervention. *NCEPOD*, London 2004 (<http://bit.ly/IPd31YH>).
- 2 Coulter A, Collins A. Making shared decision-making a reality: no decision about me, without me. *The King's Fund*, London 2011 (<http://bit.ly/1Qx7cQa>).
- 3 Montgomery v Lanarkshire Health Board. UK Supreme Court, 2015 (<http://bit.ly/1DEA9DC>).
- 4 McCombe K, Bogod DG. Paternalism and consent: has the law finally caught up with the profession? *Anaesthesia* 2015;70:1016–1019 (doi:10.1111/anae.13210).
- 5 The enhanced recovery partnership: my role and my responsibilities in helping to improve my recovery: steps to a successful recovery start before my operation. *DH*, London 2012 (<http://bit.ly/1oGqWlh>).
- 6 Pre-operative assessment and patient preparation – the role of the Anaesthetist 2. AAGBI Safety Guideline. AAGBI, London 2010 (<http://bit.ly/1hpooXa>).
- 7 The anaesthesia team 3. AAGBI, London 2010 (<http://bit.ly/1mo43nw>).
- 8 Haynes AB et al. A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population (for the Safe Surgery Saves Lives Study Group). *N Engl J Med* 2009;360:491–499.
- 9 Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes (NG5). *NICE*, London 2015 (<http://bit.ly/1PHDIBH>).
- 10 NICE NPSA medicines reconciliation adults hospital. *NHSE*, London 2007 (<http://bit.ly/1Rbjbx>).
- 11 Swart M, Houghton K. Pre-operative preparation: essential elements for delivering enhanced recovery pathways. *Curr Anaesth Crit Care* 2010;21:142–147.
- 12 Intimate examinations and chaperones. *GMC*, London 2013 (<http://bit.ly/1Qx7PsZ>).
- 13 Murthy B, Lake S, Fisher A. Evaluation of a decision support system to predict preoperative investigations. *Br J Anaesth* 2008;100:315–321.
- 14 Guidance on the Provision of Paediatric Anaesthesia Services. RCoA, London 2016 (www.rcoa.ac.uk/node/21668).
- 15 Getting the Right Start: National Service Framework for Children. *DH*, London 2003 (<http://bit.ly/1Qx81ll>).
- 16 Children and Young People. APAGBI, London 2015 (<http://bit.ly/1PaJlUu>).
- 17 Your Child's General Anaesthetic. RCoA, London, 2014 (<http://bit.ly/1RWlXeY>).
- 18 Conroy Harris A, Bracewell M. Consent and Legal Provision: Promoting the health of children in public care- the essential guide for health and social work professionals and commissioners. BAAF, London, 2015.
- 19 Fernández AM et al. Pediatric blood ordering: when is a type and screen or crossmatch really needed? *Paediatr Anaesth* 2014;24(2):146–50.
- 20 Almesbah et al. Routine preop blood testing in pediatric neurosurgery. *J Neurosurg Pediatr* 2013;12(6):615–621.
- 21 CCT curriculum: paediatric competencies. RCoA, London, 2010 (<http://bit.ly/1IymiMd>).
- 22 Commissioning Guide: Provision of general children's surgery. BAPS and RCS Eng, London 2014 (<http://bit.ly/1k6i8Gc>).
- 23 Standards for Children's Surgery. CSF RCS Eng, London 2013 (<http://bit.ly/1ZfDdxT>).
- 24 Peri-operative Fasting in Adults and Children. RCN, London 2005 (<http://bit.ly/1k6iqNe>).
- 25 Pre-procedure pregnancy checking for under-16s – Guidance for clinicians. RCPC, London 2012 (<http://bit.ly/1lWqPLS>).
- 26 APA position statement on anaesthesia in young children. APAGBI, London 2015 (<http://bit.ly/1ZfDz7x>).
- 27 The higher risk general surgical patient: towards improved care for a forgotten group. Report on the peri-operative care of the higher risk general surgical patient. RCS Eng and DH, London 2011 (<http://bit.ly/Msb1Yv>).
- 28 Anaesthesia and peri-operative care of the elderly. AAGBI, London 2014 (<http://bit.ly/22dNm0u>).
- 29 Elective and emergency surgery in the elderly: an age old problem. NCEPOD, London 2010 (<http://bit.ly/22defSf>).
- 30 Polypharmacy and medicines optimisation: Making it safe and sound. *The King's Fund*, London 2013 (<http://bit.ly/1BD2xUV>).
- 31 Extremes of age. NCEPOD, London 1999 (<http://bit.ly/1MkXNU8>).
- 32 Griffiths R et al. Peri-operative care of the elderly 2014. *Anaesth* 2014;69(Suppl):81–88.
- 33 Peri-operative Care for Patients Undergoing Surgery. BGS, London 2013 (<http://bit.ly/1ld0uwf>).
- 34 Safer surgery and anaesthesia in older people. Patient Safety Resource Centre. *Health Foundation*, London 2015 (<http://bit.ly/1JgoUjh>).
- 35 Peri-operative management of the obese surgical patient. SOBA and AAGBI, London 2015 (<http://bit.ly/1Pd78nt>).
- 36 Implementation manual WHO surgical safety checklist. Safe Surgery Saves Lives. WHO, London 2009 (<http://bit.ly/1oGfqWg>).
- 37 Management of adults with diabetes undergoing surgery and elective procedures: Improving standards. JBDS, 2015 (<http://bit.ly/1VBKrtC>).
- 38 Mental capacity act: making decisions. *Office of the Public Guardian*, 2014 (<http://bit.ly/1A2z9le>).
- 39 CCT in Anaesthetics – Basic Level Training (Annex B). RCoA, London 2010 (www.rcoa.ac.uk/node/1411).
- 40 Consensus statement from Royal Colleges on enhanced recovery after surgery. *The Pre-operative Association* 2012 (<http://bit.ly/1ld1qR6>).
- 41 The productive operating theatre: building teams for safer care – patient preparation. *NHS Institute for Innovation and Improvement*, London 2010 (<http://bit.ly/1m8N7Mp>).
- 42 Quality and Service Improvement tools. *NHS Institute for Innovation and Improvement*, 2010 (<http://bit.ly/1k6k3up>).
- 43 Delivering enhanced recovery: helping patients to get better sooner after surgery. NHS Enhanced Recovery Partnership Programme. *DH*, London 2010 (<http://bit.ly/1oGqWlh>).
- 44 Napier S, White L. Stop before the Op. Patient Information Leaflet. RCoA, London 2012 (www.rcoa.ac.uk/node/2975).

- 45 The enhanced recovery partnership: my role and my responsibilities in helping to improve my recovery: steps to a successful recovery start before my operation. *DH*, London 2012 (<http://bit.ly/1RTyNKD>).
- 46 Pre-operative tests: the use of routine pre-operative tests for elective surgery (CG3). *NICE*, London 2003 (<http://bit.ly/1QwQnF8>).
- 47 Chee YL et al. BJH Guideline on the assessment of bleeding risk prior to surgery or invasive procedures. British Committee for Standards in Haematology. *Br J Haematol* 2008;**140**:496–504.
- 48 Blood transfusion and the anaesthetist – red cell transfusion 2. *AAGBI*, London 2008 (<http://bit.ly/1f5X924>).
- 49 García-Erce JA, Cuenca J, Muñoz M. Role of intravenous iron in elective and non-elective orthopedic surgery. *Seminars in hematology*, Vol43, Suppl 6, October 2006:S32–S35.
- 50 Prevention and management of venous thromboembolism: a national clinical guideline (Guideline 122). *SIGN*, Edinburgh 2010 (www.sign.ac.uk/pdf/sign122.pdf).
- 51 Gogarten W et al. Regional anaesthesia and antithrombotic agents: recommendations of the European Society of Anaesthesiology. *Euro J Anaesth* 2010;**27**:999–1015.
- 52 Working arrangements for consultant anaesthetists in the United Kingdom. *AAGBI*, London 2011 (<http://bit.ly/NYgHBj>).
- 53 Janssen KJ et al. The risk of severe postoperative pain: modification and validation of a clinical prediction rule. *Anesth Analg* 2008;**107**(4):1330–1339.
- 54 Johansen AA, Romundstad LL, Nielsen CSC, et al. Persistent postsurgical pain in a general population: prevalence and predictors in the Tromsø study. *Pain* 2012:1390–1396.
- 55 Fulfilling the potential: a better journey for patients and a better deal for the NHS. NHS Enhanced Recovery Partnership. *DH*, London 2012 (<http://bit.ly/1Mlc57i>).
- 56 Carlisle JB et al. Factors associated with survival after resection of colorectal adenocarcinoma in 314 patients. *Br J Anaesth* 2012;**108**:430–435.
- 57 Peri-operative care: knowing the risk. *NCEPOD*, London 2011 (<http://bit.ly/1mrFN5G>).
- 58 The First Patient Report of the National Emergency Laparotomy Audit (NELA). *NELA*, London 2014 (www.nela.org.uk).
- 59 National Hip Fracture Database. *NHFD*, London 2015 (www.nhfd.co.uk).
- 60 Moppett IK et al. Nottingham hip fracture score: longitudinal and multi-centre assessment. *Br J Anaesth* 2012;**109**:546–550.
- 61 Carlisle JB et al. Validation of long-term survival prediction for scheduled abdominal aortic aneurysm repair with an independent calculator using only pre-operative variables. *Anaesth* 2015;**70**:654–665.
- 62 Protopapa KL et al. Development and validation of the surgical outcome risk tool (SORT). *Br J Surg* 2014;**101**:1774–1783.
- 63 Wiles MD et al. Nottingham hip fracture score as a predictor of one year mortality in patients undergoing surgical repair of fractured neck of femur. *Br J Anaesth* 2011;**106**:501–504.
- 64 Carlisle JB et al. Factors associated with survival after resection of colorectal adenocarcinoma in 314 patients. *Br J Anaesth* 2012;**108**:430–435.
- 65 Simpson JC et al. Enhanced recovery from surgery in the UK: an audit of the enhanced recovery partnership programme 2009–2012. *Br J Anaesth* 2015;**115**:560–568.
- 66 Pre-operative Assessment and Planning. *NHS Institute for Innovation and Improvement*, London 2008 (<http://bit.ly/1hp6rrP>).
- 67 Decision aids. *NHSE*, London (<http://bit.ly/1UJ3a6g>).
- 68 Accessible Information Standard. *NHSE*, London 2015 (<http://bit.ly/1fVRvW>).
- 69 You and your anaesthetic. *RCoA and AAGBI*, London 2008 (www.rcoa.ac.uk/node/1847).
- 70 Consent for anaesthesia 2. *AAGBI*, London 2006 (<http://bit.ly/1cQfxq4>).
- 71 Consent: patients and doctors making decisions together. *GMC*, London 2008 (<http://bit.ly/1vhqnlp>).
- 72 Good clinical practice for clinical trials. *MHRA*, London 2014 (<http://bit.ly/1lWwvyT>).

Appendix 1: Recommendations grading

The grading system is outlined in the methodology section of this chapter. The grades for each of the recommendations in this chapter are detailed in the table below:

Recommendation number	Level of evidence	Strength of recommendation
1.1	C	Strong
1.2	B, M	Mandatory
1.3	C	Strong
1.4	C	Strong
1.5	GPP	Strong
1.6	M	Mandatory
2.1	GPP	Strong
2.2	GPP	Strong
2.3	GPP	Strong
2.4	GPP	Strong
2.5	GPP	Strong
2.6	B	Strong
3.1	C	Strong
3.2	C	Strong
3.3	GPP	Strong
3.4	GPP	Strong
3.5	GPP	Strong
3.6	B	Strong
3.7	C	Strong
3.8	C	Strong
3.9	C	Strong
3.10	C	Strong
3.11	C	Strong
3.12	GPP	Strong
3.13	C	Strong
3.14	C	Strong
3.15	C	Strong
3.16	C	Strong
3.17	C	Strong
3.18	GPP	Strong
3.19	GPP	Strong
3.20	C	Strong
3.21	GPP	Strong
3.22	C	Strong
3.23	C	Strong

Recommendation number	Level of evidence	Strength of recommendation
3.24	C	Strong
3.25	C	Strong
3.26	GPP	Strong
3.27	C	Strong
3.28	C	Strong
3.29	C	Strong
3.30	C	Strong
3.31	M	Mandatory
3.32	GPP	Strong
3.33	GPP	Strong
4.1	C	Strong
4.2	C	Strong
4.3	GPP	Strong
4.4	GPP	Strong
5.1	C	Strong
5.2	C	Strong
5.3	GPP	Strong
5.4	GPP	Strong
5.5	GPP	Strong
5.6	GPP	Strong
5.7	C	Strong
5.8	B, M	Mandatory
5.9	C	Strong
5.10	C	Strong
5.11	GPP	Strong
5.12	GPP	Strong
5.13	C	Strong
5.14	GPP	Strong
5.15	GPP	Strong
5.16	C	Strong
5.17	B	Strong
5.18	GPP	Strong
5.19	GPP	Strong
5.20	C	Strong
5.21	B	Strong
5.22	C	Strong
5.23	B	Strong

Recommendation number	Level of evidence	Strength of recommendation
5.24	B	Strong
5.25	B	Strong
5.26	B	Strong
5.27	C	Strong
5.28	C	Strong
5.29	GPP	Strong
5.30	GPP	Strong
5.31	B	Strong
5.32	C	Strong
5.33	GPP	Strong
5.34	GPP	Strong
5.35	GPP	Strong
5.36	GPP	Strong
5.37	GPP	Strong
5.38	C	Strong
5.39	C	Strong
6.1	C	Strong
6.2	C	Strong
7.1	GPP	Strong
7.2	GPP	Strong
9.1	C, M	Strong
9.2	GPP	Strong
9.3	GPP	Strong
9.4	C	Strong
9.5	GPP	Strong
9.6	GPP	Strong
9.7	GPP	Strong
9.8	C	Strong
9.9	C	Strong
9.10	C	Strong
9.11	C	Strong
9.12	M	Strong
9.13	M	Strong
9.14	GPP	Strong
9.15	C	Strong

The completed recommendation grading forms are available on request.

About these guidelines

Methodology

The process by which this chapter has been developed has been documented within the [GPAS Chapter Development Process Document](#).

The evidence included in this chapter is based on a systematic search of the literature (Embase, Ovid MEDLINE, CINAHL, Cochrane Library). Abstracts were independently screened by two investigators and reviewed against inclusion and exclusion criteria. Data were extracted by one investigator, in accordance with predefined criteria. The review objective was to determine the key components needed to ensure provision of high-quality anaesthetic services for the patient requiring surgery.

Pre-operative anaesthesia provision is defined as the care that is given from the time of considering a surgical treatment to the arrival in the anaesthetic room or operating theatre.

Search strategy

Searches were performed on Embase (1980 to 2015), Ovid MEDLINE (1946 to present), CINAHL and Cochrane Library; for the literature search strategy, outcomes, databases and criteria for inclusion and exclusion of evidence; please see [GPAS Supporting Documents for the Pre-operative Anaesthesia Chapter Search Protocol](#). A hand search of the literature was also conducted by the authors using the reference lists of relevant original articles and review articles.

The literature search was performed in January 2015.

The authors and researcher independently reviewed the abstracts and titles of the studies found in the initial search. After agreement on the primary selection of papers, full-text versions were accessed and reviewed against the following predefined inclusion and exclusion criteria. The full-text papers were also reviewed by the Chapter Development Group for suitability; the final list of publications used can be found in the reference list.

Inclusion criteria

This review considered studies that included the following criteria:

- all ages of patient undergoing elective or emergency anaesthesia
- all staff groups working within the pre-operative phase of anaesthesia, including (but not restricted to) anaesthetists, nurses, physician's assistant in anaesthesia, operating department practitioners, surgeons, pharmacists, general practitioners, physiotherapists, occupational therapists and dieticians

Exclusion criteria

- Studies that investigated the provision of a pre-operative anaesthesia service provided by a speciality other than anaesthesia were excluded.
- Publications that duplicated data that had been reported in an earlier publication were also excluded.

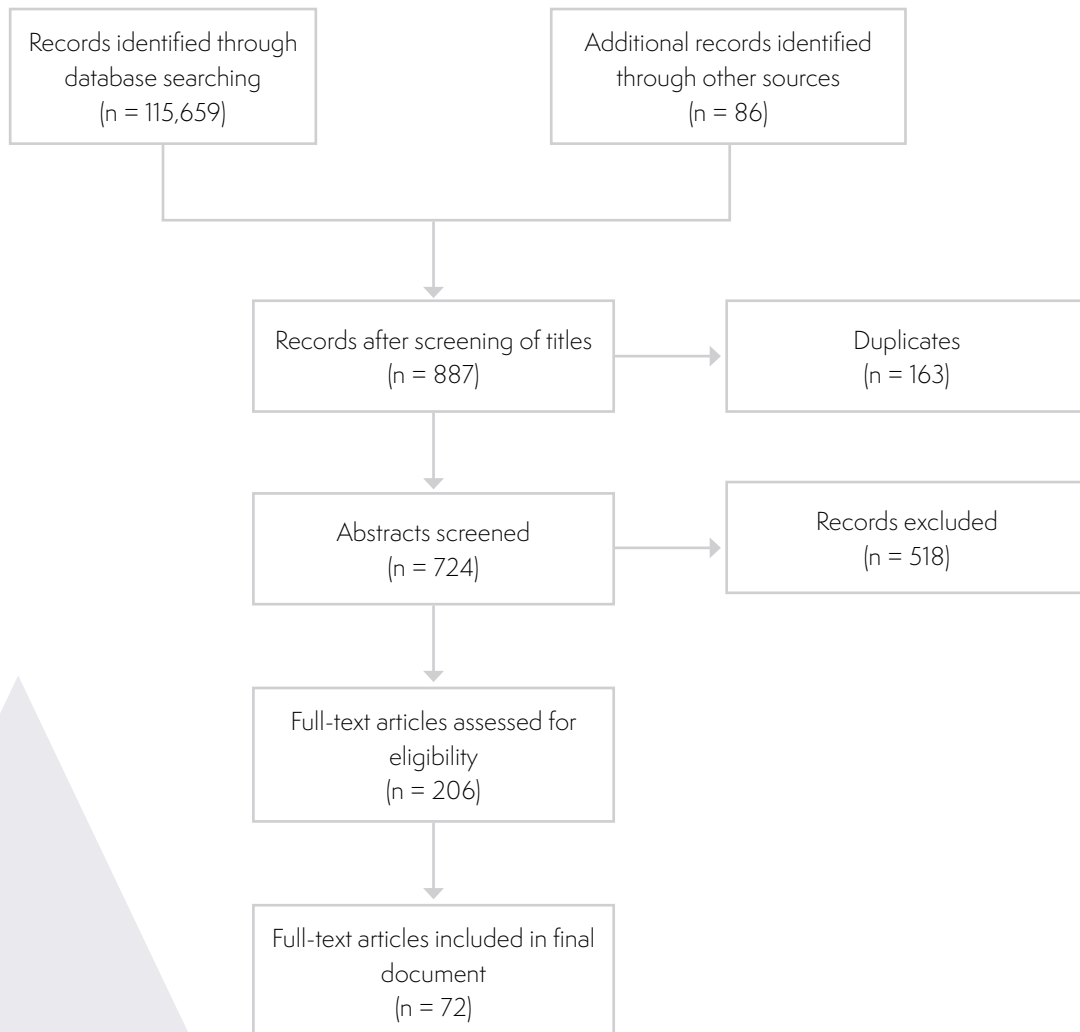
Data extraction and analysis

Data were extracted by the authors using a pro-forma. The study characteristics data included: the journal and country of publication, the number of patients recruited into the study, the study design, patient characteristics, outcome data, the logic of the argument, author's conclusions and reviewer's comments.

The patient characteristics data extracted were; age, sex and type of surgery. The analysis considered studies that included any clinical outcome, including (but not restricted to) survival, length of stay in critical care or hospital, morbidity, adverse effects and complications.

The results of the literature review can be seen below:

Preferred Reporting Systems for Systematic Review and Meta-analysis (PRISMA) flow chart



The evidence that is included in this chapter has been graded according to an adapted version of the National Institute for Health and Care Excellence (NICE)'s 'Hierarchy of evidence and recommendations grading scheme', outlined below:

Level	Type of evidence	Grade	Evidence
Ia	Evidence obtained from a single large/multicentre randomised controlled trial (RCT), a meta-analysis of RCTs or a systematic review	A	At least one RCT as part of a body of literature of overall good quality and consistency addressing the specific recommendation (evidence level I) without extrapolation
Ib	Evidence obtained from meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias		
IIa	Evidence obtained from at least one well-designed controlled study without randomisation		
IIb	Evidence obtained from at least one well-designed quasi-experimental study		
IIc	Evidence obtained from case control or cohort studies with a high risk of confounding bias		
III	Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies		
IV	Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities	C	Expert committee reports or opinions and/or clinical experiences of respected authorities (evidence level IV) or extrapolated from level I or II evidence. This grading indicates that directly applicable clinical studies of good quality are absent or not readily available.
UG	Legislative or statutory requirements	M	This grading indicates that implementation of this recommendation is a statutory requirement, or is required by a regulatory body (e.g. Care Quality Commission [CQC], General medical Council [GMC])
		GPP	Recommended good practice based on the clinical experience of the Chapter Development Group.

Adapted from

Eccles M, Mason J. How to develop cost-conscious guidelines. *Health Technology Assessment* 2001;**5**:16 and

Mann T. Clinical Guidelines: Using Clinical Guidelines to Improve Patient Care Within the NHS. *DH*, London 1996.

Strengths and limitations of the body of evidence

Most of the published evidence on the pre-operative process is descriptive. There are publications describing aspects of this process based on expert opinion. The predominance of descriptive or qualitative studies is appropriate for assessing a process of care. The reported evidence on outcome is patient focused and the papers based on expert opinion demonstrate a consensus of opinion.

The limitations of the evidence are:

- there are few prospective RCTs
- most studies have a small number of patients
- most studies take place in a single centre
- there is no standardised definition of a high-risk patient
- older studies and studies from outside the UK may not reflect current practice

Methods used to arrive at recommendations

Recommendations were initially drafted based on the evidence by the lead authors for the chapter. These were discussed with the chapter development group, and comments were received on both the content and the practicality of the recommendations. The level of evidence that was the basis for each recommendation was graded according to a grading system, and the recommendation was then graded taking into account the strength of the evidence and the clinical importance using a recommendations criteria form (see [GPAS Chapter Development Process Document](#)). Recommendations were worded using the following system of categorisation:

Strength	Type of evidence	Wording
Mandatory	The evidence supporting the recommendation includes at least one with an 'M' grading	Wording should reflect the mandatory nature of the recommendation i.e. ' <i>must</i> '
Strong	Confidence that for the vast majority of people, the action is more likely to benefit the patient than cause harm	Wording should be clearly directive ' <i>should</i> ' or ' <i>should not</i> '
Weak	The action is more likely to benefit the patient than cause harm for most patients, but may include caveats on the quality or size of evidence base or patient preferences	Wording should include ' <i>should be considered</i> '
Aspirational	While there is some evidence that implementation of the recommendation could improve patient care, either the evidence or the improvement is not proven or substantial	Wording should include ' <i>could</i> '
Equipoise	There is no current evidence on this recommendation's effect on patient care	Wording should include ' <i>there is no evidence of this recommendation's effect on patient care</i> '

Limitations and any potential bias of the guideline

- There is a wide variety of National Health Service (NHS) hospitals (size, population).
- The sustainability and acceptability of applying new findings has not been tested.

Consultation

The chapter has undergone several rounds of consultation. The multidisciplinary chapter development group (CDG) formed the first part of the consultation process. The authors and GPAS Editorial Board identified key stakeholder groups. Where stakeholders are represented by an association or other medical college, they were asked to nominate delegates to join the CDG. The Chapter Process Document explains the recruitment process for those CDG members who were not directly nominated. The CDG members were involved in drafting the recommendations, and were provided with an opportunity to comment on all subsequent drafts of the chapter.

The chapter underwent peer review. Peer reviewers were identified by the GPAS Editorial Board or Professional Standards Committee. Nominees were either anaesthetists of consultant grade or were nominated by a key stakeholder group. Nominees had not had any involvement in the development of GPAS to date and were asked to comment upon a late draft of the chapter.

Following peer review, the chapter was reviewed by the College's Professional Standards Committee and the College's Lay Committee. Comments from all groups were considered and incorporated into a consultation draft.

The consultation draft of this chapter was circulated for public consultation from 23rd November to 21st December 2015. As well as being made available on the College's website and promoted via Twitter and the President's newsletter to members, the draft was also circulated to all key stakeholder groups identified by the authors and the College. A list of organisations contacted by the College is available from the GPAS team at the College: GPAS@rcoa.ac.uk.

The Editorial Independence of GPAS

The development of GPAS is solely funded by the Royal College of Anaesthetists. However, only the GPAS technical team and the GPAS researcher are paid by the College for their work on GPAS. All funding decisions by the College are made by the CEO, in collaboration with the senior management team and College Council.

The authors of the chapters are all fellows of the Royal College of Anaesthetists. Members of College Council cannot act as chair of any chapter development group, as this individual has the deciding vote under the consensus method of decision making used in the chapters. Where College Council members have been involved in chapter development, this has been declared and recorded.

All persons involved in the development of GPAS are required to declare any pecuniary or non-pecuniary conflict of interest, in line with the GPAS conflict of interest policy as described in the [GPAS Chapter Development Process Document](#). Any conflicts of interest are managed on a case-by-case basis to maintain the transparency and impartiality of the GPAS document. The conflicts, and the way they were managed, are outlined at the beginning of the chapter.

The role of PSC and the GPAS Editorial Board

The overall development of the entire GPAS document is overseen by the Professional Standards Committee (PSC) of the Royal College of Anaesthetists, which includes representatives from all grades of anaesthetist, clinical directors and stakeholder organisations including the Association of Anaesthetists of Great Britain and Ireland.

Responsibility for managing the scope of the document, and providing clinical oversight to the project technical team is delegated by the PSC to the GPAS Editorial Board, which includes individuals responsible for the various internal stakeholders (see above for membership). On the inclusion/exclusion of specific recommendations within each chapter, the Editorial Board can only provide advice to the authors. In the event of disagreement between the authors, the majority rules consensus method is used, with the lead author holding the deciding vote.

Both of these groups, along with the College's Lay Committee review each chapter and provide comment prior to public consultation. The College Council is responsible for sign-off before final publication.

Updating these guidelines

This chapter will be updated for re-publication in January 2017.

Guidelines will be updated on an annual basis. The researcher will conduct the literature search again using the same search strategy, to uncover any new evidence and members of the public will be able to submit new evidence to the GPAS project team. Where new evidence is uncovered, the lead author will decide whether the recommendations that were originally made are still valid in light of this new evidence.

If new evidence contradicts or strengthens existing recommendations, the authors will decide whether or not to involve the remainder of the Chapter Development Group in revising the recommendations accordingly.

If new evidence agrees with existing recommendations, then a reference may be added but no further action is required.

If there is no new evidence then no action is required.

This chapter is due to be fully reviewed for publication in January 2021.

Every five years guidance will be submitted to a full review involving reconvening the Chapter Development Group (or appointment of a new, appropriately qualified Chapter Development Group), and the process described in the methodology section of this chapter begins again.



Royal College of Anaesthetists

Churchill House, 35 Red Lion Square, London WC1R 4SG
020 7092 1500 | www.rcoa.ac.uk/gpas2016 | gpas@rcoa.ac.uk

© The Royal College of Anaesthetists (RCoA)