Royal College of Anaesthetists

Chapter 5

Guidelines for the Provision of Anaesthesia Services (GPAS)

Guidelines for the Provision of Emergency Anaesthesia 2024

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Chapter 5
Guidelines for the Provision of Emergency Anaesthesia Services 2024

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Declarations of interest

All chapter development group (CDG) members, stakeholders and external peer reviewers were asked to declare any pecuniary or non-pecuniary conflict of interest, in line with the guidelines for

the provision of anaesthetic services (GPAS) conflict of interest policy as described in the GPAS chapter development process document.

The nature of the involvement in all declarations made 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, remove themselves from the discussion of that particular piece of evidence and any recommendation pertaining to it.

Medicolegal 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 based on 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.

Promoting equality and addressing health inequalities

The Royal College of Anaesthetists (RCoA) 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 defined in 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 GPAS documents should be viewed as 'living documents'. The GPAS guidelines 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. Guidelines on the general provision of anaesthetic services are detailed in the following chapters:

- Chapter 1: Guidelines for the Provision of Anaesthesia Services: The Good Department
- Chapter 2: Guidelines for the Provision of Anaesthesia Services for the Perioperative Care of Elective and Urgent Care Patients.

These guidelines apply to all patients who require anaesthesia or sedation, and are under the care of an anaesthetist. For urgent or immediate emergency interventions, this guidance may need to be modified as described in Chapter 5: Guidelines for the Provision of Emergency Anaesthesia.

The rest of the chapters of GPAS apply only to the population groups and settings outlined in the 'Scope' section of these chapters. They outline guidance that is additional, different or particularly important to those population groups and settings included in the 'Scope'. Unless otherwise stated within the chapter, the recommendations outlined in chapters 1–5 still apply.

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.

Aims and objectives

The objective of this chapter is to promote current best practice for service provision in emergency anaesthesia. The guidance is intended for use by anaesthetists with responsibilities for service delivery and healthcare managers.

This guideline does not comprehensively describe clinical best practice in emergency anaesthesia, but is primarily concerned with the requirements for the provision of a safe, effective, well led service, which may be delivered by many different acceptable models. The guidance on provision of emergency anaesthesia applies to all settings where this is undertaken, regardless of funding. All age groups are included within the guidance unless otherwise stated, reflecting the broad nature of this service.

A wide range of evidence has been rigorously reviewed during the production of this chapter, including recommendations from peer reviewed publications and national guidance where available. However, both the authors and the CDG agreed that there is a paucity of Level 1 evidence relating to service provision in head and neck anaesthesia. In some cases, it has been necessary to include recommendations of good practice based on the clinical experience of the CDG. We hope that this document will act as a stimulus to future research.

The recommendations in this chapter will support the RCoA's Anaesthesia Clinical Services Accreditation (ACSA) process.

Introduction

'Emergency' within this chapter applies to anaesthesia that is given in immediate (within minutes of a decision to operate) or urgent (within hours of a decision to operate) procedures as classified by the National Confidential Enquiry into Patient Outcome and Death (NCEPOD).

The provision of emergency anaesthesia differs from elective anaesthesia in that it is required 24/7. The demands on the service are projected to increase because of the demographic changes of an increasingly elderly population, which pose unprecedented challenges in the provision of emergency services. The demands vary in an unpredictable manner because of the severity of illness, urgency of treatment and number of cases. The unpredictable nature of emergency anaesthesia creates greater challenges to providing a service that meets recommended standards of care. This unpredictable nature means that hospitals need to have sufficient capacity and flexible systems in place that can respond to variations in demand and severity of patients' illnesses.

Patients undergoing emergency anaesthesia are a heterogeneous group. They range from relatively well patients to the complex and very ill. Most patients, however, requiring emergency anaesthesia survive without serious complications and continue to have a similar quality of life to the one they had before their acute illness.

There is, however, a significant variation in outcomes of emergency patients, in both place and time.[1,2] The resources, pathways and compliance with accepted treatment also vary significantly between hospitals,[3,4] and compliance with accepted standards of care varies from day to day and at different times during the day.

The recommendations in this chapter describe the features of a high quality emergency anaesthesia service, but the provision of a good quality service is much more than this.[5,6] It is about creating a culture of improvement and providing the facilities to enable this culture to flourish. This may not happen by accident. This type of improvement is much more about sociological, cultural and behavioural change rather than just 'medical technology' or 'yet another protocol'.[7,8,9,10,11] Integral to this change is for staff to feel involved and valued.[7,12,13] 'Top down' management approaches are severely limited in creating lasting improvements.[6,14,15]

An individual simply 'doing their best' is no longer enough. Evidence-based pathways and quality improvement programmes need to be implemented. Within these programmes, individuals can still strive for excellence, but as part of a whole team.[4,16,17,18] To enable patients to receive high-quality emergency anaesthesia, local and national supporting services and facilities are required. Of particular importance is timely access to operating theatres, radiology, critical care and other multidisciplinary teams. [2,5,10,19]

The National Emergency Laparotomy Audit (NELA) has shown how improvements of care and outcomes can be achieved through improved care pathways, increased compliance with these pathways, and greater attention to detail. The audit has also highlighted the importance of risk assessment and appropriate care and treatment throughout the hospital journey of the patient. The Royal College of Anaesthetists has been developing the concept of the anaesthetist as the perioperative physician. Improved care pathways and role of anaesthetist as a perioperative physician will have a significant impact on provision of emergency anaesthesia services.[20]

Reduction of unnecessary deaths is one of the top NHS priorities; services for emergency patients is one of the areas highlighted for improvement.[6] As well as reducing mortality and complications, the provision of a high-quality emergency anaesthesia service should be responsive to patients' needs and should be aimed at improving patient experience. Adequate resources and funding will be crucial to the delivery of a high-quality emergency anaesthesia service.[21,22,23]

Despite the challenges, the quality of the anaesthesia services provided for emergency patients should match that provided for elective patients, including the seniority of the anaesthetist treating the patient.[2] The implementation of these recommendations will enable consistency in the standards of care provided at all times and in all places. It is recognised that the implementation of the recommendations will depend on the type, volume and complexity of the emergency workload, and is likely to vary from organisation to organisation.[2]

Recommendations

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

1 Organisation and administration

Quality should be at the heart of every aspect of the delivery of emergency anaesthetic and surgical care.[5,9,14,24]

1.1 The provision of a high quality emergency service should be an explicit aim of the hospital executive and senior staff team. This should be reflected in hospital published plans and by the provision of a management structure to support this aim.[19] The required standards set

out in this document apply to all organisations, but the methods used to achieve them may vary.[2,23]

1.2 Organisations should explicitly recognise the 24/7 nature of emergency work, and this requires a specific organisational approach for standards to be achieved throughout the whole of the week.

1.3 The hospital business plan should address the predicted growth in surgical emergencies, ageing population and any changes as a result of regional specialisation.[16] Future planning should be based on accurate and timely data. Mathematical modelling for matching theatre demand and capacity could be beneficial.[25]

1.4 Each department of anaesthesia should have an annual plan in place for the emergency anaesthetic workload to be delivered effectively and safely.[26]

1.5 Organisations should have a service improvement team that coordinates national and local projects and encourages a multidisciplinary approach to emergency surgical care, using data to provide high quality information to drive change and support service development.[2,27] Quality improvement tools, together with good data entry and organisational support, should be considered, as they can create feedback strategies which drive improvement.[28]

1.6 Emergency and elective work should be separated (whenever practically feasible) to improve clinical care for patients.[4,29]

1.7 Rapid and effective communication is crucial in emergency situations. Communication strategies should consider the use of technologies such as smart phones, and standardised methodology such as situation, background, assessment, recommendation.[30]

1.8 There should be adequate provision of postoperative beds for emergency surgical patients, including high-level care to allow timely discharge of patients from theatre recovery areas.

Medical leadership structure

1.9 Every department of anaesthesia undertaking emergency surgery should appoint a senior clinical lead (see Glossary) with adequate provision within their job plan and support to develop and lead emergency anaesthesia within the organisation.[19] This role could include liaison with other departments.

1.10 The anaesthetic clinical lead for emergency anaesthesia should be part of a multidisciplinary team with access within the governance structure to trust board level, with explicit pathways of communication.

Day-to-day management of emergency workload

Access to theatres should be based on the principle that no patient should deteriorate while waiting for surgery. Unnecessary delays to accessing theatre should be actively avoided.[2]

1.11 There should be clarity of leadership and roles to supervise the day-to-day running of emergency theatres and the emergency anaesthesia service. Those undertaking these roles should be clearly identifiable to all working that day and easily accessible at all times.

1.12 The emergency operating list should be easily accessible to all medical and operating department staff so that there is shared awareness of the emergency load and resource requirements, within the principles of patient confidentiality.[31,32] The operating list displayed in theatre should be the most current version.

1.13 The language in all communications relating to the scheduling and listing of procedures must be unambiguous and avoid the use of abbreviations. Laterality must always be written in full (i.e. left or right).[13]

1.14 Adequate emergency theatre time should be provided throughout the day to minimise delays and avoid emergency surgery being unnecessarily undertaken out of hours when the hospital may have reduced staffing to care for complex postoperative patients. Consideration should be given to staffing of additional evening (twilight) emergency sessions with autonomously practising anaesthetists.

1.15 Dedicated emergency lists for some individual surgical services (e.g. paediatrics) should be considered as they may be an effective use of resources and improve patient flow and care.[29]

1.16 Efficient management of emergency list is essential to ensure timely access to emergency theatre. Golden patient concept to identifying and getting the first patient on the list ready has been effective in prompt starting of emergency lists. Dedicated holding bays have shown to reduce turnaround times. Such and other innovative systems should be considered to improve efficiency of emergency lists.[33,34]

Emergency/NCEPOD booking system

1.17 Documentation and communication of information on preoperative 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.[35]

1.18 Departments should consider a web-based live system that can be remotely accessed by all relevant personnel including senior staff who are on-call off site. A dynamic system can be set to order the list according to clinical priority, NCEPOD classification and time of booking. Real time updates should avoid delays and improve workflow.

Prioritisation of non-elective/emergency surgery

Emergency surgical patients are at risk of deterioration if treatment is delayed. Determining patient priority and enabling timely access is crucial to reducing harm. Local arrangements to prioritise patients based on clinical urgency should be established.[36]

1.19 Local systems should be in place to triage patients with surgical emergencies. NELA reports a proportion of patients for laparotomy arriving in theatre within three separate time frames (< 2 hours; 2–6 hours; 6–18 hours).[2] The World Society of Emergency Surgery study group proposed a classification to triage patients for surgical emergencies. These timeframes could be used as a guide and adapted to design local triage systems.[36]

1.20 Prioritisation of cases based on their clinical urgency is not the sole domain of any single specialty. It requires a team approach involving discussion between different surgical groups, anaesthetists and, in some cases, critical care.[4]

1.21 There should be a locally agreed policy that explains prioritisation of non-elective cases according to clinical urgency.

1.22 Priority of access should be given to emergency patients over elective patients.[5,19,37,38] There should be a clear policy for cancelling elective surgery to enable additional emergency theatre provision.[13]

1.23 The theatre booking system should enable the identification and prioritisation of high-risk cases.

1.24 The urgency of emergency cases should be clearly and unambiguously coded.[4]

1.25 There should be regular review of delays to facilitate improved theatre access and to promote accurate urgency coding at booking.

1.26 Certain urgent procedures cannot be performed out of hours owing to patient, specialist staff or equipment factors. Hospitals should consider collecting data on these procedures and creating alternative pathways.

1.27 There should be local arrangements in place to facilitate scheduling of procedures that do not meet the description of either emergency or elective surgery.

Preoperative anaesthetic assessment

Guidelines for preoperative assessment and preparation are comprehensively described in *GPAS Chapter 2: Guidelines for the Provision of Anaesthesia Services for the Perioperative Care of Elective and Urgent Care Patients*.

1.28 Some aspects of preoperative anaesthetic assessment and preparation of the emergency patient differ from those of the elective patient. These include severity of illness, fluctuating condition of the patient and the 24/7 nature of emergency work. Staffing levels and seniority of anaesthetists should be adequate to enable preoperative anaesthetic planning and assessment that is appropriate to the patient's risks associated with surgery. This should be informed by a formal assessment of risk of mortality and morbidity.[2,4,39]

Preoperative

1.29 There should be a formalised integrated pathway for non-elective adult general surgical care, which should be patient centred and include:[2, 5,19,29,40]

- a clear diagnostic and management plan made on admission[41]
- early identification of comorbidities (including diabetes, dementia, cardiac pacemakers and internal defibrillators) and their management according to hospital guidelines
- medicine reconciliation to assess the risk of existing medications (including anticoagulation) and the risk associated with stopping long term medication[38]
- preoperative investigations and testing as appropriate[42,43]
- consider 'Think Drink' or similar at time of handover meeting or booking[44]
- communication of mortality risk to members of the multidisciplinary team; this allows early senior input, including senior members of the anaesthetic team, and allocation of resources proportion to the patient's risk of death following surgery[2,4]
- informed consent for surgery including identification of decision making proxies i.e. a lasting power of attorney[2,5]
- a plan for postoperative care.[2,5]

1.30 All hospitals should have guidelines in place for the recognition and management of patients with sepsis; compliance with these guidelines should be regularly audited.[10,45,46]

1.31 An anaesthetist, anaesthesia associate or advanced nurse practitioner should preoperatively assess all patients undergoing emergency surgery who require anaesthesia.

Adequate time should be available for this assessment to occur as clinical urgency allows.[43,47]

1.32 A full anaesthetic management plan should be recorded in the patient's records or anaesthetic chart and should be initiated preoperatively.[48]

1.33 The experience and expertise of the anaesthetist assessing the patient preoperatively should be appropriate for the complexity and level of risk of the patient.[46] The decision to operate on high-risk patients should be made at a senior level, involving surgeons and those who will provide intra and postoperative care. [4,5,19]

1.34 Preoperative assessment of patients, especially those at very high risk, can benefit from a multidisciplinary team approach involving cross specialty advice.[49] Early consultation with appropriate medical specialties should occur for appropriate conditions, such as delirium, acute kidney injury, diabetes mellitus and ischaemic heart disease.[4]

1.35 All decisions concerning the consent process (see Section 9) and treatment plans, including decisions about whether or not to operate and do not attempt cardiopulmonary resuscitation (DNACPR), should be documented clearly, noting what risks, benefits and alternatives were explained to the patient within the time constraints of emergency care.[47,50]

1.36 There should be a system in place for alerting medical staff to any change in the clinical condition of the emergency surgical patient while awaiting surgery.[41,51]

1.37 There should be provision for preoperative admission of the critically ill patient to level 2 and/or level 3 care facilities for stabilisation and optimisation if required.[3,10]

1.38 Guidelines for fasting before anaesthesia for emergency surgery should comply with national guidelines.[52]

1.39 Guidelines for postoperative planning should include plans for nutrition, including facilitation of enteral access or vascular access for parenteral support.[53,54,55]

Preoperative risk assessment

General recommendations pertaining to preoperative risk assessment are described in *GPAS Chapter 2: Guidelines for the Provision of Anaesthesia Services for the Perioperative Care of Elective and Urgent Care Patients*.

1.40 There should be a formalised integrated pathway for non-elective adult general surgical care which should be patient centred and should include risk assessment and identification of the high-risk patient. [2,4,5,40]

1.41 There should be locally agreed guidelines for risk assessment and documentation. A number of risk prediction tools such as the Physiological and Operative Severity Score for the enumeration of Mortality and morbidity (POSSUM), Surgical Outcome Risk Tool (SORT), American College of Surgeons- National Surgical Quality Improvement Program (ACS-NSQIP), National Emergency Laparotomy Audit (NELA) are commonly used. Mortality risk should be assessed preoperatively and documented on the consent form.[56,57]

1.42 All patients should undergo venous thromboembolism risk assessment and receive appropriate thromboprophylaxis.[5,58] This should include guidance on the novel oral anticoagulants and the management of patients requiring emergency surgery who are receiving them.[59]

1.43 Preoperative risk stratification should inform the decision making process for critical care admission.[2,24]

1.44 All areas, including emergency departments, admitting acutely ill patients should have early warning pathways to ensure prompt recognition of a deteriorating patient to trigger an appropriate response.[60] This should include policies for early medical review and early escalation to the responsible consultant surgeon or equivalent.[10,49,61,62,63,64]

Transportation of the emergency patient

1.45 Transport of patients within the hospital and between hospitals should be undertaken in a timely manner, without unnecessary delays and in accordance with established guidelines and standards.[10,65,66,67,68]

1.46 Staffing should be provided at a level such that emergency theatre activity and critical patient care are not compromised when intra and inter hospital transfers are undertaken.[65]

1.47 All necessary equipment to facilitate safe transport of the patient should be available at all times. [10,65,67] Standardisation of transfer bags should be considered.[65]

1.48 Departments should have local guidelines for intrahospital transfers.

1.49 Where transfers between hospitals are foreseeable (e.g. transfers to major trauma, neurosurgical or paediatric centres) local arrangements should be in place to ensure safe and timely transfer, which may involve a retrieval service.[65]

1.50 Transfers should be carried out by appropriately trained and competent staff. Arrangements should be in place for insurance (personal and medical indemnity), crash test compliant equipment, ambulance booking procedures, procedures for receiving patients, communication between medical teams and families, documentation, and procedures for repatriation of staff and equipment.[10,65,67]

1.51 Hospitals should collect data on inter and intrahospital transfers, including the effects on the emergency theatre and critical patient care. The transfer arrangements should not result in the interruption of a busy emergency list.

Handover

The handover of the care of a patient occurs at multiple points. Effective handover is a critical component of a patient safety culture.[69] At handover, there is potential to introduce additional risk because of a loss of information and a lack of clarity. This is of particular relevance to emergency patients. There is evidence that implementing a structured handover programme is associated with reducing medical errors and preventable adverse events.[60,70]

1.52 Handovers for patients requiring an emergency procedure should be structured to ensure continuity of care.[71]

1.53 Handover protocols for patients requiring an emergency procedure should include clear documentation of care delivered and the future treatment plan for the patient.[13,72]

1.54 Organisations must create standardised documentation for patients undergoing invasive emergency procedures that promotes the sharing of patient information between individuals and teams at points of handover, and forms a documented record for future reference.[13]

1.55 There should be appropriate overlap between shift changes, to ensure adequate time for handover. Time for handover should be included in job plans and rotas and accounted for in work shift planning.[48,73]

Policies and guidelines

General policies pertaining to the perioperative pathway are comprehensively described *in* *GPAS Chapter 2: Guidelines for the Provision of Anaesthesia Services for the Perioperative Care of Elective and Urgent Care Patients*.

1.56 The following policies (see Glossary) and guidelines should be immediately and reliably available at sites where emergency anaesthesia and sedation are provided:

- management and running of the emergency theatre, including an escalation plan for emergency theatre capacity and staffing[5]
- management of anaesthetic emergencies, including subspecialty emergencies
- difficult airway management, including the 'can't ventilate, can't oxygenate' scenario, fasting times, preanaesthetic assessment of the airway, availability and maintenance of the equipment and training of staff[74,75,76]
- major haemorrhage protocol, including clinical, laboratory and logistic responses[77,78]
- blood transfusion policy, including transfusion for inter- and intrahospital transfers[79]
- safe extubation of patients following emergency anaesthesia guideline
- management of the deteriorating patient guideline[80,81]
- whom to call and what facilities can be used if two or more emergencies occur simultaneously
- a policy for the management of organ donation and retrieval[10,82,83]
- a policy for managing delirium in the perioperative period
- a policy for the management of airborne and bloodborne infections

1.57 Appropriate clinical policies and standard operating procedures for operating theatres should be in place and available at all times, including a resuscitation policy and major incident plans.[84]

1.58 All staff, including anaesthesia assistants, locum, agency and trust grade staff must have undergone an appropriate induction that includes the contents of relevant policies and standard operating procedures.[13]

1.59 An escalation policy should be in place for all medical, healthcare professional and managerial staff. An emergency protocol should be in place and understood by all relevant staff. This should include the names and method of contact, which should be prominently displayed in appropriate areas. Internal hospital telephone switchboards should have ready access to rotas and methods of contacts.

1.60 A clear method of communication between and within theatre teams, including related areas (e.g. obstetric or paediatric wards) should be in place concerning the urgency category of an emergency, escalation and who to contact.[85]

1.61 The National Safety Standards for Invasive Procedures eight sequential step standards (which includes five steps to safer surgery) should be used for all invasive procedures. A

modified checklist with fewer items may be more appropriate in some emergencies.[5,19,86,87,88,89]

1.62 Local standard operating procedures should be developed for postoperative monitoring and management of patients who need a higher level of care after emergency surgery including how to provide critical care standards in non-critical care areas if critical care beds are not available.[90]

1.63 There should be a clear process in place for the referral of emergency patients requiring critical care, including paediatric patients, to an appropriate facility.[9,49,62]

1.64 Use of blood products should be minimised whenever possible by the employment of restrictive transfusion thresholds together with methods to minimise blood loss and allogenic transfusion.[77]

1.65 Hospitals must have audited policies and procedures for the administration of blood and blood components that comply with standards set out by the National Blood Transfusion Committee.[79] Hospitals should have systems in place to ensure that blood can be crossmatched, issued and supplied in a timely manner.

2 Staffing requirements

Patients receiving emergency anaesthesia are among the sickest in the hospital and are often treated by multiple teams. It is imperative for good patient care that staffing should be sufficient in quantity, quality, seniority and skill mix for the expected work load (patient caseload, case mix and severity of illness, together with the out-of-theatre workload).[10,29,91] The systems and environment within which people work and treat patients should be supportive of staff, enabling them to provide the best treatment possible, and are outlined in further detail in *GPAS Chapter 1: The Good Department*.[7,92]

Anaesthesia and theatre teams

2.1 Hospitals admitting emergency surgical patients should provide, at all times, a dedicated fully staffed operating theatre appropriate to the clinical workload. There should be provision to increase necessary resources to manage fluctuating workload and provide an acceptable standard of care.[13,27,38]

2.2 The level of staffing should be sufficient to provide a continuous emergency anaesthesia service in the theatre complex without interruption. Other service requirements (e.g. remote sites, trauma calls and advice) should be anticipated and managed through local arrangements.[13] Such service requirements should not result in interruption of busy emergency lists.[93]

2.3 Staff working in emergency theatres have to deal with multiple surgical teams, a wide range of procedures, unpredictable situations at short notice and changes to planned activity. Staffing levels in the emergency theatres should reflect appropriate skill mix and seniority to deal with the demands of the service.[14]

2.4 Staff working in emergency theatres should have a wide range of competencies to manage a range of specialties and complexities.[69]

2.5 The role of an 'emergency theatre coordinator' (see Glossary) should be considered for departments with a large emergency workload so that patient flow and prioritisation of cases can be actively managed.

2.6 Non-clinical aspects of managing an emergency list should be adequately supported for efficient running of the list.[48]

2.7 At all times there should be sufficient breadth in training and competence of the anaesthetic staffing 24/7 to undertake all likely emergency procedures.

2.8 The emergency team should be led by an autonomously practising anaesthetist (see Glossary) and include other healthcare professionals involved in the delivery of anaesthesia for emergency surgery, including other departments such as radiology, medicine and emergency departments.[3] Hospitals should consider developing teams of anaesthetists, surgeons and perioperative physicians with particular interest and expertise in high-risk emergency surgery.[90]

2.9 Anaesthetists assigned to provide cover for emergency lists should not also be assigned to undertake other activities such as elective work or supporting professional activities or independent practice.[94]

2.10 Anaesthesia for emergency surgery should be delivered by a competent individual with appropriate supervision; the level of supervision should reflect the severity of the case and the seniority of the individual in accordance with the RCoA's Guidance on Supervision arrangements for anaesthetists.[95]

2.11 Anaesthetists in training should be given the appropriate level of responsibility, according to their competence and level of training, to gain the experience of emergency anaesthesia to enable them to function as a consultant later in their career. Anaesthetists in training must be appropriately supervised at all times; rotas and staffing arrangements should be in place to facilitate this training.[96]

2.12 Anaesthesia associates should work under the supervision of a consultant anaesthetist at all times as outlined by the RCoA.[97,98] In some emergency situations, a ratio of one to one and direct supervision may be more appropriate in view of the high incidence of comorbidities, complications and mortality.

2.13 Patients receiving emergency anaesthesia care in a non-theatre location should be cared for by anaesthetists with the same level of competency and assistance as those receiving emergency care in the theatre environment. Certain circumstances may require additional assistance; local arrangements should allow sufficient personnel and resources to support this assistance.[85,99]

2.14 There should be dedicated administrative staff to support all aspects of the emergency anaesthesia service and to support and coordinate non-clinical activity.[13,94]

2.15 Whenever emergency surgery is undertaken, the recovery unit should be open continuously and adequately staffed.[85] Until patients can maintain their own airway, breathing and circulation, they should be cared for on a one-to-one basis, with an additional member of staff available at all times.[72]

2.16 Recovery staff should have immediate access to the appropriate clinician in the perioperative period.

Staff wellbeing

General recommendations for staff wellbeing can be found in *GPAS Chapter 1: The Good Department.*

2.17 Working to deliver emergency surgery is often a stressful, challenging environment. Stress, 'burnout' and mental ill health are major causes of sickness absence. NHS organisations should ensure that those in leadership positions work to promote and protect the health and wellbeing of staff.[100]

2.18 There should be adequate staffing levels to ensure that rest breaks can be taken without interrupting the flow of the emergency theatre(s).[101] Appropriate facilities for these rest breaks should be provided.[100,102]

2.19 When members of the emergency team are involved in a critical incident, it may not be possible to find an immediate replacement. The situation and clinical commitment of individuals involved should be immediately reviewed by an appropriate senior person and if necessary alternative arrangements to cover the emergency service should be made.[103]

3 Equipment, services and facilities

Equipment

3.1 Appropriate equipment to meet minimum standards of monitoring and for safe management of crisis situations should be readily available in all areas where patients are cared for in a theatre complex.[112]

3.2 Patients receiving emergency anaesthesia care in a non-theatre location should have access to anaesthetic equipment, monitoring, drugs and personnel as in the theatre environment.

3.3 Specialist equipment such as oxford pillow, cell saver, hoists etc. should be readily available whenever required.

3.4 Emergency theatres should be equipped with an appropriate ventilation system. Details of ventilation and air change times should be known and factored into list management in all areas where an aerosol generating procedure may be performed during emergency anaesthesia.[104,105]

3.5 The geographical arrangement of theatres, emergency departments, critical care units, cardiac care, interventional radiology and imaging facilities should allow for the rapid transfer of critically ill patients.

3.6 Appropriate blood storage facilities should be in close proximity to the emergency operating theatre and should be clearly identifiable. Satellite storage facilities or a clear process for preservation of the cold chain should be in place to enable resuscitation to be effectively performed in appropriate non-theatre locations such as interventional radiology suites.

3.7 Hospitals should ensure that staff are trained and competent to use the equipment provided.

3.8 Equipment should be properly maintained and replaced in a timely and planned fashion.[106,107]

3.9 Theatre operating tables should be available to permit all types of emergency surgery to be undertaken. Appropriate operating tables with imaging access (carbon fibre), adjuncts for proper positioning and warming devices should be available.

3.10 There must be appropriate equipment available for transfer of the patient within the theatre, together with the appropriate staff trained to use it safely.[106,108,109]

3.11 There must be full provision of personal protective equipment and shielding from blood spray, radiation and hazardous substances for all staff working in the operating theatre. Guidance should be provided on its use.[108,110,111]

3.12 Near-patient testing for haemoglobin, blood gases, lactate, blood sugar and ketones should be readily available (see Glossary) for emergency theatres.[112]

3.13 Point of care testing (POC) for coagulopathy should be available in areas where major blood loss is likely. Laboratory testing for coagulopathy should be readily available in other situations.[77,113]

3.14 A fully equipped resuscitation trolley should be available in all areas in which emergency anaesthesia is undertaken. These trolleys should be colour coded and should maintain uniformity within the trust, to improve safety.[77,114]

3.15 High-flow nasal oxygen should be available in the emergency theatres.[76,115,116]

3.16 A rapid infuser allowing the infusion of warmed intravenous fluids and blood products should be available in the emergency theatre.[78,117,118] Staff should undergo regular training in its use and they should be able to troubleshoot common problems.

3.17 A cell salvage service should be available for cases where massive blood loss is anticipated. Staff who operate this equipment should receive training in how to operate it, and should use it with sufficient frequency to maintain their skills.[78,119]

3.18 Equipment necessary to provide a range of patient analgesia should be available. There should be adequate facilities for postoperative monitoring of patient analgesia.[8,120]

3.19 Ultrasound equipment should be available in areas where emergency anaesthesia is provided and should facilitate I.V. access, procedures for analgesia and diagnostics.

Monitoring

3.20 The standards of monitoring provided in all locations where emergency procedures are performed, including non-theatre locations, should be the same as those provided in theatres.[112] This includes temperature and end tidal CO_2 in recovery.

3.21 Appropriate equipment for invasive blood pressure, central venous pressure and cardiac output monitoring should be readily available.

3.22 Equipment for monitoring the depth of anaesthesia should be available for patients receiving emergency anaesthesia (e.g. processed EEG) particularly if total intravenous anaesthesia and/ or neuromuscular blocking agent is used for emergency surgery.[121,122]

Medication

3.23 All areas in which emergency anaesthesia is undertaken should be adequately stocked at all times with the range of medications required for immediate use in all types of urgent cases appropriate to the case mix accepted by the hospital. Prefilled syringes supplied by the pharmacy should be considered, especially in busy units.

3.24 Anaesthesia teams should consider carrying prelabelled and/or prefilled drug boxes.[123]

3.25 Specialist medications that are not commonly used or that are not time critical should be readily available (see Glossary) (e.g. dantrolene, esmolol, N acetylcysteine, octreotide, methylene blue).

Facilities

General

3.26 Facilities to enable immediate life, limb or organ saving surgery should be available at hospitals accepting emergency surgical patients. Sites that accept patients for emergency surgery should ensure access to all core specialties, including postoperative care facilities, a full range of laboratory and radiological services and sufficient critical care capacity appropriate to the case load and case mix.[2,60,124,125]

3.27 Explicit arrangements should be made for the provision of care from specialties that are not available on site (e.g. neurosurgery, cardiothoracic, vascular, ear, nose and throat, maxillofacial, hepatobiliary, burns and plastic surgery, geriatric medicine, palliative care medicine).

Critical care

This guideline relates only to the provision of critical care for patients receiving emergency anaesthesia. General provision of critical care is outside of the scope of this document. Further information can be found in the Faculty of Intensive Care Medicine and Intensive Care Society 2019 *Guidelines for the Provision of Intensive Care Services*.[126]

Adequate critical care facilities are integral to the care of 'high risk' patients receiving emergency anaesthesia.[3,10,127] It is known that patients identified as requiring critical care and admitted directly from theatre have significantly improved outcomes than those admitted following a period of postoperative deterioration (e.g. from a ward).[128,129]

3.28 There should be provision for a high level of care for emergency patients where necessary.[4]

3.29 Critical care should be considered for all high-risk patients requiring emergency surgery. As a minimum, patients with an estimated risk of mortality of 5% or higher should be considered for critical care and should be reviewed by a consultant surgeon, consultant anaesthetist and consultant intensivist before surgery. [5,130].

3.30 There should be locally agreed protocols for postoperative critical care admission that comply with national standards, and compliance with these protocols should be audited.

3.31 Hospital level audit data should be examined to determine whether national standards for postoperative critical care admission are being adhered to. Where compliance is poor, a change of local policies and reconfiguration of services should be considered, to enable all high risk emergency patients to be cared for on a critical care unit after surgery.[2]

4 Training and education

Teamwork is fundamental to the safe delivery of patient care in emergency surgery. Staff working in emergency theatres have to deal with multiple surgical teams with repeated changes to the composition of the team.

4.1 The core theatre team (see Glossary) should remain consistent where possible.[13]

4.2 Anaesthetists should be given support and time to familiarise themselves with non-theatre locations and local working arrangements, (e.g. during induction sessions prior to undertaking on-call responsibilities).[13,131]

4.3 Multidisciplinary teams working together in emergency theatres should undergo training together, with a focus on teamwork, communication, human factors and handover.[13,71,132,133,134]

4.4 Teams should train for and practice their standard operating procedures for serious, complex and rare emergencies, as well as for major incidents. There should be regular multidisciplinary training for emergency situations, and simulation training should be considered.[84,132,135]

4.5 All staff should have access to adequate time, facilities (including simulation) and funding to undertake training.

4.6 Anaesthetists with a job plan that includes emergency anaesthesia should demonstrate continuing education in emergency anaesthesia and continuing professional development as required for this aspect of their work. Departments have a responsibility to enable this development with local teaching where appropriate and by facilitating access to other education and training.[19]

4.7 Regular daytime emergency lists should be used as a teaching resource and staffed appropriately to facilitate this.[136]

4.8 All efforts should be made to ensure that anaesthetists in training receive adequate experience in emergency anaesthesia, and completion of workplace-based assessments should be supported.[1]Departments should monitor the frequency and the nature of non-theatre calls to establish whether the anaesthetists in training receive appropriate support and training and the patients receive adequate care. Departments should use this data to review resource allocation.

4.9 When new members join teams, particular care should be taken to introduce them to the members of the team and to ensure that their training is harmonised with that of other team members and teams.[13]

4.10 Departments should consider developing diagnostic ultrasound skills as appropriate to emergency anaesthesia. Adequate capacity for appropriate investigations depending on case mix and surgical procedures should be readily available. Basic investigations such as ECG should be considered a core skill of the emergency team. Training emergency anaesthetists in special investigations such as focused ultrasound in intensive care should be considered.[137]

4.11 Clinicians undertaking emergency anaesthesia must be familiar with managing patients with complex airways e.g. a tracheostomy, double lumen tube, small nasal tubes in swollen airways, supraglottic airway in salvage where cannot intubate and cannot ventilate.[75,76]

5 Patient Information

The basic principles of information and consent that apply to elective patients also apply to emergency patients. For emergency patients there are additional considerations that may make this process more complex and difficult to deliver. These include patient factors (fear, pain, analgesic medications, pre-existing comorbidities and frailty), disease (uncertainty of diagnosis and prognosis) and situational factors (speed of decision making, multiple medical inputs and uncertainty of critical care requirements). These additional issues should be understood and taken

into account when an emergency patient is given information or consent is sought. This is particularly true in vulnerable patients (i.e. patients with learning disabilities, dementia and communication difficulties).

Evidence of the efficacy and feasibility of delivery of these principles for emergency anaesthesia is limited.

The Royal College of Anaesthetists has developed a range of Trusted Information Creator Kitemark accredited patient information resources that can be accessed from our website. Our main leaflets are now translated into more than 20 languages, including Welsh.

5.1 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.[138]

5.2 Consideration should be given to assessing a patient's understanding of information given. At the end of an explanation, patients should be asked if they have any questions. Any such questions should be addressed fully and details recorded. If urgency allows, this is better undertaken in the presence of patient's relative(s) and/or carer(s).[47,139] When this is not feasible in an emergency situation communicating the decisions to the next of kin should be considered. If there is no next of kin, independent medical advice, a second opinion or an independent mental capacity advocate should be sought.

5.3 Paper and/ or electronic based patient information leaflets in addition to a verbal explanation should be provided to emergency patients to improve retention of information.[140]

Consent

5.4 All practitioners must follow the practices outlined in the GMC decision making and consent guidance.[43,141] Documentation of the risks discussed or the dialogue leading to a decision is required in accordance with paragraphs 50–55.

5.5 Informed consent should take into account the benefits and risks of the procedure, alternative options available and the option of doing nothing. Consent should be sought at the earliest possible opportunity in view of limited time available for the patients having emergency surgery to consider the information.[4,15,142,143] All discussions should be clearly documented. With the exception of life or limb threatening emergencies, a patient's primary consent should never be taken in the anaesthetic room.[89]

5.6 As part of a quality improvement programme, hospitals should develop a local understanding of the adequacy of their consent process and information supplied to patients undergoing emergency surgery, by proactively seeking patient feedback and allocating appropriate resources to this process.[144]

5.7 Assessment of capacity must be time and decision specific; an individual's capacity to make particular decisions may fluctuate or be temporarily affected by factors such as pain, fear, confusion, the effects of medication, intoxication by alcohol or other drugs or psychiatric illness which if suspected would require independent psychiatric assessment.[60,145]

Breaking bad news, clinical benefit and end-of-life decisions

5.8 Interventions that are unlikely to alter outcomes and may add to patient distress should be recognised and communicated with the patient and their relatives or supporters at the earliest opportunity.[146]

5.9 A team approach should be considered for breaking bad news and discussions around clinical benefit and end-of-life decisions with patients and relatives.

5.10 Discussion and reasons behind decisions taken, as well as the information given to the patient and relatives, should be clearly recorded.[147,148]

5.11 Mortality discussions (see Glossary) should be documented for patients undergoing an emergency laparotomy.[149]

5.12 Hospitals should have pathways to alleviate pain and suffering, which should be individualised to the needs of the patient and discussed with their relatives or supporters.[150]

5.13 Hospitals should have local policies (see Glossary) for when a patient dies in theatre or soon after in recovery. This should include arrangements to maintain dignity for the patient and to give relatives the best support possible. It should also include arrangements to minimise the impact on other patients being treated in the theatre complex.

5.14 Hospitals should offer the same level of access for discussion and explanation to relatives of patients who die in the theatre complex or not having undergone surgery as they do for those who die in critical care.

5.15 Where end-of-life care is instituted, it should be in accordance with national and local guidance and audited for quality in the same way that surgical care is audited.[151]

5.16 Hospitals should have a treatment escalation plan and/or DNACPR guidance and documentation that complies with national requirements.[152]

5.17 Patients who may require surgical procedures with DNACPR decisions in place should have senior members of the anaesthesia and surgical team review the condition of the patient and the DNACPR status. Where feasible, a discussion should take place with the patient and their next of kin. It may be appropriate to suspend components of a DNACPR decision (e.g., tracheal intubation) to allow surgery to proceed safely.[80]

6 Areas of special requirement

Older patients

There is an increasingly older population presenting to hospitals for emergency surgery, reflecting the changing population demographics. Patients who are older have a decreased physiological reserve and higher incidence of comorbidities, polypharmacy, frailty and cognitive decline, making decision making more complex in this patient group.[153] Poor cognition, hearing and eyesight may make communication difficult. Some 50% of patients undergoing emergency laparotomy are over 70 years of age and 55% of these patients are ASA3 or above.[43]

When patients who are older are admitted following trauma, assessment by a geriatrician is associated with reduced mortality.[154,155] In patients who are older having a laparotomy, postoperative geriatric medicine review is associated with substantial lower mortality.[130,156]

The outcomes following emergency surgery for patients who are older (particularly those who require support for daily living) are worse than for younger patients. For emergency laparotomy, the mortality of a patient aged over 70 years is six times higher than that of a patient younger than 50 years.[2] Functional outcomes are unpredictable, but one-third of octogenarian survivors will not recover to their preoperative function.[157,158]

General recommendations for patients who are older are described in *GPAS Chapter 2: Guidelines for the Provision of Anaesthesia Services for the perioperative Care of Elective and Urgent Care Patients.*

6.1 Older patients who are admitted following trauma should have a geriatric assessment.[154]

6.2 All older patients who require emergency surgery should be routinely assessed for multimorbidity, frailty, cognition and polypharmacy.[3,7,8,58]

6.3 Planning of care and decisions to operate should reflect the outcomes for older patients who are having emergency surgery, and should include discussion of issues around risks and benefits, clinical benefit and realistic longer-term outcomes (e.g., a requirement for nursing home care). This discussion should involve the multidisciplinary team as well as the patient, families and carers where possible.[8]

6.4 Previous DNACPR orders are not necessarily a contraindication to surgery and should be reviewed on a case by case basis by the multidisciplinary team, in discussion with the patient and their next of kin, prior to anaesthesia if at all possible.[159,160]

6.5 Postoperative pain protocols should be individualised to suit each patient and should take account of any possible cognitive impairment.[161] Specific algorithms for the assessment of pain and postoperative analgesia protocols are recommended in older patients. Specific pain assessment tools such as PAINAD and Doloplus 2 are recommended in older patients should be considered.[162]

6.6 The risk of postoperative functional decline following emergency surgery should be considered. Policies (see Glossary) should be developed for the prevention, recognition and management of common postoperative geriatric complications and/or syndromes, including delirium, falls, functional decline and pressure area care.[8,10,163]

6.7 Patients with a frailty score of 5 and above should receive a comprehensive geriatric assessment. There should be a focus on multidisciplinary working and integrated pathways to reduce complications. This includes shared decision making based on best treatment options and informed patient preferences.

6.8 Patients over 65 years of age should be reviewed and co-managed with a physician with expertise in the care of older surgical patients.[164]

6.9 All patients over the age of 65 undergoing emergency laparotomy should have a formal assessment of frailty. Surgeons, anaesthetists and intensivists should ensure frailty has been taken into account when assessing the mortality risk as the NELA risk score does not take frailty into account.[130]

6.10 There should be planning at local and regional level for the increase in resources that will be required for increasing numbers of older patients needing emergency surgery.[8]

Paediatric emergencies

Most paediatric emergency anaesthesia is for minor surgery in previously fit and healthy children. A large proportion of this work is undertaken in non-specialist hospitals, where arrangements should be in place for treating simple emergencies in children with no complex comorbidities.

Emergency anaesthesia may also be required for non-surgical procedures such as magnetic resonance imaging (MRI) or computed tomography (CT). 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.

Detailed recommendations for paediatric patients are comprehensively described in *GPAS Chapter 10: Guidelines for the Provision of Paediatric Anaesthesia Services*.

6.11 The location for undertaking emergency paediatric procedures is often a pragmatic compromise but should, as far as is possible, replicate the location and conditions of paediatric care delivered in the elective setting. Anaesthesia for children should be undertaken or supervised by anaesthetists who have undergone appropriate training and have maintained their competence.[136,165]

6.12 Hospitals should define the extent of emergency surgical provision provided for children and the thresholds for transfer.

6.13 Emergency paediatric surgical care should be provided within a network of secondary and tertiary care providers. Networks should agree standards of care and formulate care pathways for emergency surgery.

6.14 Departments should participate in regular network audits of emergency paediatric surgical work.[166,167,168,169]

6.15 Children with severe comorbidities who require emergency anaesthesia should be treated in a specialist paediatric centre. However, if transfer is not feasible, the most appropriately experienced senior anaesthetist should provide anaesthesia and support resuscitation and stabilisation.[170,171,172]

6.16 Transfer of children to specialist centres is usually undertaken by regional paediatric emergency transfer services. Time critical transfers such as neurosurgical emergencies may need to be transferred by the referring hospital. Local policies (see Glossary) should be in place for the management of such transfers and the most experienced anaesthetist with appropriate skills; an anaesthetic practitioner should accompany the child.[173]

Patients with obesity

Obesity is an increasingly significant health issue in the UK.[173] The health survey for England 2019 estimates that 28% of adults in England have obesity and a further 36% are overweight. Patients with obesity are at an increased risk of heart disease, diabetes, cancer and stroke. Obesity can make surgery particularly challenging.[174]

6.17 An operating table in the emergency area, hoists, beds, positioning aids and transfer equipment appropriate for patients with obesity should be available and staff should be trained in its use and their limitations.[97,173]

6.18 Specialist positioning equipment for the induction of anaesthesia and intubation in the patient with obesity should be available in the emergency area.[173]

6.19 Patients with morbid obesity who require emergency surgery should have experienced anaesthetists and surgeons available (typically, but not exclusively, at consultant level) to minimise operative time.[173] A surgical team familiar with emergency surgery in patients with morbid obesity and the complications associated with laparoscopic surgery should be available.

6.20 Patients with morbid obesity should be considered for level 2 or 3 critical care postoperatively, including the provision of continuous positive airway pressure therapy and other respiratory support measures.[173]

6.21 As there are additional risks for patients with obesity, consider undertaking these procedures within daylight hours.

High-risk patients, including emergency laparotomy

High-risk patients are defined as having a predicted risk of death greater than or equal to 5%.[2,5] Some lower-risk patients are still at significant risk following emergency surgery (e.g. 2% mortality risk is higher than almost all elective surgery). Those patients undergoing emergency laparotomy constitute a defined group, of whom half are in the high-risk category.[130] The NELA has demonstrated an approach to auditing provision of care against national standards to drive improvements in care and, ultimately, patient outcomes. These principles can be applied to high-risk patients undergoing emergency anaesthesia. [2,5,19,27,40]

6.22 Hospitals should have care bundles for the anaesthetic management of common and high-risk surgical emergency patients to improve outcomes.[2,43,175]

6.23 A coordinator to link multidisciplinary care, promote enhanced recovery and collect perioperative data should be considered in hospitals with significant high-risk emergency surgery activity.[90]

6.24 Systems should be in place to ensure timely surgical review (typically at a consultant level) of high-risk patients, access to diagnostic imaging and urgent reporting. An assessment of mortality risk should be made explicit to the patient and recorded clearly on the consent form and in the patient's records.[130]

6.25 There should be a documented evaluation of mortality and relevant morbidity risk prior to surgery using a standardised perioperative risk tool.[149,176,177] This will inform both clinicians and the patient about decision making and consent.[2] Guidance to reduce non-beneficial surgery and improve end-of-life care should be considered.[90]

6.26 High-risk patients should have timely access to appropriate care including resuscitation, antibiotics, interventional radiology or surgery.[176]

6.27 Hospitals should have policies for the assessment and management of suspected sepsis. 'The Sepsis Six' is a pragmatic approach to this.[176] Early consideration of surgery and antibiotic prophylaxis should be considered in patients who are at high risk of sepsis.

6.28 High-risk patients (5% or above mortality risk) or lower-risk patients undergoing high-risk surgery should receive direct consultant anaesthetist and consultant surgeon delivered care in the operating theatre.[2,178]

6.29 Older high-risk patients undergoing an emergency laparotomy should have a postoperative geriatric medicine review.[156]

6.30 High-risk patients (5% or above mortality risk) or lower-risk patients undergoing interventions that require higher postoperative care due to the nature of the procedure, should receive postoperative care in the critical care unit.[2]

6.31 Hospitals should consider postoperative critical care if more than four units of blood have been transfused, as this increases risk of pulmonary and infectious complications and mortality.[2,179]

6.32 Postoperative facilities should be provided to support the best choice of analgesia for patients undergoing an emergency laparotomy.[180]

6.33 Multidisciplinary clinical involvement including critical care, geriatric, paediatric, diabetic teams and other specialists should be considered throughout the perioperative pathway of the patient as appropriate.

6.34 Hospitals should have clinical and managerial strategies to reduce complications that have been shown to have a major impact on both short and long term outcomes.[6,91]

Diabetes management

An increasing number of patients presenting for emergency surgery have diabetes. These patients have a higher incidence of comorbidities and polypharmacy, which adds to the complexity of diagnosis, and decision making and their medical management. Clinical outcomes following emergency surgery for patients with diabetes are worse than for patients without diabetes.[181,182]

6.35 Patients who have poorly controlled diabetes who are at risk of serious complications and may require meticulous management of fluid, electrolyte and insulin therapy. All locations including remote sites where emergency surgery is performed should be able to manage patients with poorly controlled diabetes 24/7.[181]

6.36 Hospitals should consider appointing a lead anaesthetist for diabetes. Organisations should ensure that staff involved with caring for patients with diabetes have access to and complete regular training.[183]

6.37 Hospitals should have mechanisms to promote early identification of the emergency surgical patient with diabetes. Patients with diabetes should be identified on the administrative electronic system.[183]

6.38 Hospitals should involve patients in their own diabetes management.[181]

6.39 Patients with diabetes needing emergency surgery should be assessed for multimorbidity and polypharmacy and should have an individualised explicit plan for managing their diabetes during the periods of starvation and surgical stress. Hospitals should consider a multidisciplinary review of these patients, including the involvement of senior anaesthetic staff and specialist diabetic medical and nursing staff.[183]

6.40 Hospitals should have explicit policies (see Glossary) for managing diabetic patients having emergency procedures including policy on the safe use of variable rate intravenous insulin infusions. The use of a variable rate intravenous insulin infusion adds extra complexity to the fluid and electrolyte management of the surgical patient and this will require additional medical and nursing resources, which sometimes may be better provided in a critical care environment rather than a surgical ward.

6.41 To reduce the harm associated with variable rate intravenous insulin infusions, periods of starvation should be kept to a minimum. This may involve prioritisation of patients with diabetes for investigations and for theatre.

6.42 The patient with diabetes who needs emergency surgery is at additional risk of pressure ulcers, nerve damage, acute coronary syndrome and acute kidney injury, and hospitals should have policies to prevent these.

Non-obstetric emergency surgery in pregnant patients

Pregnant women may present for non-obstetric surgical emergencies. Although the primary duty of care is to the mother, fetal and maternal wellbeing are closely linked.

Elective anaesthetic services for the peripartum period are covered in *GPAS Chapter 9: Guidelines for the Provision of Anaesthesia Services for an Obstetric Population*.

6.43 There should be a multidisciplinary team approach to care for pregnant women requiring non-obstetric emergency surgery involving anaesthetists, obstetricians, surgeons, paediatricians and midwives.[184,185,186]

6.44 Surgery should be undertaken where neonatal and paediatric services are readily available whenever possible.[184]

6.45 Fetal heart rate monitoring should be available. Local policies should outline its use, taking into account fetal viability, the physical ability to perform it and the availability of a healthcare provider able to intervene for fetal indications.[184,185,187]

6.46 Informed consent for the surgical procedure should include consideration of fetal wellbeing, the possibility of caesarean delivery and any risks related to anaesthesia for mother and child.[186]

6.47 Equipment for maternal positioning and uterine displacement should be available.[185]

6.48 Local guidance, including provision for training and audit, should be available for:

- aspiration prophylaxis[185]
- difficult airways and failed intubation[76,186,188,189]
- cardiopulmonary resuscitation in the pregnant woman and perimortem caesarean delivery[187,188,190]
- anti-D immunoglobulin administration[191]
- major haemorrhage, venous thromboembolism prophylaxis and sepsis[122, 184,187,192]
- anaesthesia and surgery in breastfeeding mothers[193,194]
- safe medication administration, including avoidance of codeine in breastfeeding mothers.[195]

6.49 Maternal deaths should be reported to the local HM Coroner and to encourage learning and reflection should be reported to MBRRACE-UK. As a post-mortem examination is commonly performed, careful consideration should be given before removing medical devices which may be relevant to the cause of death.[190]

Special considerations

Vulnerable adults

Many patients receiving emergency anaesthesia may be regarded in some ways as vulnerable. Some particular groups should be regarded as especially vulnerable, including patients with learning difficulties, mental illness, communication difficulties, drug and alcohol dependency, dementia, confusion, patients who are older and patients with cognitive impairment, including dementia and delirium.

6.50 Hospitals must have local policies in place for the identification, support and safeguarding of vulnerable adults.[6,142]

6.51 Staff should have regular training in the application of the legislation determining mental capacity in the part of the UK in which they are working and should have defined access to patient advocates.[196] This is a rapidly changing area and clinicians should have access to expert advice or a second opinion from an experienced clinician.

Diverse cultures and languages

6.52 Hospitals should have policies to support patients and staff of diverse religious beliefs and cultural backgrounds.[142]

6.53 Hospitals should have arrangements in place to provide language support, including interpretation and translation services (including sign language and Braille). This information should comply with the NHS England Accessible Information Standard.[197]

7 Financial considerations

Part of the methodology used in the chapter in making recommendations is a consideration of the financial impact for each of the recommendations.

Very few of the literature sources from which these recommendations have been drawn have included financial analysis.

The vast majority of the recommendations are not new recommendations but are a synthesis of already existing recommendations. The current compliance rates with many of the recommendations are unknown and so it is not possible to calculate the financial impact of the recommendations in this chapter being widely accepted into future practice. It is impossible to make an overall assessment of the financial impact of these recommendations with the current available information.

At present, there is no tariff for the majority of emergency surgical care; funding for emergencies is less than the cost of providing the service. It is estimated that in 2012 there was a national funding reimbursement shortfall of £300 million for care for patients needing emergency laparotomy.[81]

It is recognised that the funding streams for emergencies must be reviewed. Financial sustainability is a key component of the NHS's *Five Year Forward View*.[6] For sustainability to be achieved, a 'whole-system transformation' programme is being undertaken. This is the development of business models and economic impact assessments to support development of new care models and major service change proposals. A follow-up document, *Next Steps for the NHS Five Year Forward View*,[198] recognises this need and places urgent and emergency care as one of the NHS priority areas for 2017–2018 and 2018–2019. Without adequate dedicated funding for emergency anaesthesia, driving up the quality of care will be difficult and variable. [6,21,142]

The principle of having defined care pathways for emergencies with a strong emphasis on quality improvement programmes laid out in this chapter fit well with the NHS financial and commissioning principles. [142] However, with an ageing population with more extensive comorbidities, emergency anaesthesia and surgery are likely to increase and associated costs are likely to rise.

8 Audit, quality improvement and research

It is important that audit services closely identify areas of best practice and areas where improvements can be made. Regular systematic audit has been shown to improve outcomes.[19,199]

Detailed recommendations for clinical governance are comprehensively described in *GPAS Chapter 1: The Good Department*.

8.1 Robust data collection underpins much of the success in documenting and learning from experiences.[2,19,27] All institutions providing anaesthesia care to patients needing emergency surgery should collect the required data to be able to produce a report. This report should be reviewed regularly and used for organisational learning.[88]

8.2 Local level audit of service provision and adherence to the national clinical standards for delivery of anaesthesia for emergency surgery should be a continuing and important part of departmental audit activity.[200]

8.3 Continuing audits of mortality and morbidity outcomes, patient experience, demand on services, emergency theatre capacity, efficiency and productivity should be performed. Reports of relevant data should be made readily available to staff.[14,143]

8.4 National level audit of emergency surgical activity and outcome is essential; all hospitals delivering emergency surgical care must contribute to the recognised national or other major audits of safe practice and critical incident reporting systems.[2,135,200,201,202,203,204]

8.5 Outcomes for types of emergency surgery not covered by national audits should be audited via hospital episode statistics for benchmarking purposes.

8.6 Anaesthetists should be involved in audit cycles, preferably using a rapid-cycle quality improvement approach. These cycles benchmark standards of care and may be effective change drivers. This approach is an excellent way of providing evidence of good practice as defined by the GMC and mapping the contribution that individuals make to any service within their hospitals.[27,199]

8.7 Quality improvement teams should be considered to drive change. It is important that audit services closely identify areas of best practice and areas where improvements can be made. Regular, systematic audit has been shown to improve outcomes. [27,198]

8.8 Anaesthesia departments should participate in research activities of national bodies including the National Institute of Academic Anaesthesia, Health Services Research Centre, UK Perioperative Medicine Clinical Trials Network and Research and Audit Federation of Trainees.

9 Implementation support

The Anaesthesia Clinical Services Accreditation (ACSA) scheme, run by the RCoA, provides a set of standards based on the recommendations contained in the GPAS chapters. As part of the scheme, departments of anaesthesia self-assess against the standards and undertake quality improvement projects to close the gap. Support is provided by the RCoA in the form of the good practice library, which shares documents and ideas from other departments on how to meet the standards. Further advice can be obtained from the ACSA team and department's assigned College guide.

The ACSA standards are regularly reviewed on at least a three yearly basis to ensure that they reflect current GPAS recommendations and good practice. This feedback process works both ways and the ACSA scheme regularly provides CDGs with comments on the GPAS recommendations, based on departments' experience of implementing the recommendations.

Further information about the ACSA scheme can be found here: https://www.rcoa.ac.uk/safety-standards-quality/anaesthesia-clinical-services-accreditation

Areas for future development

Recommendations for further research

Following a systematic review of the literature, the following areas for future research are suggested. Although these recommendations apply to all emergency patients, they are particularly pertinent to the older patient:[7, 205]

- research including longer-term follow-up to assess post-discharge complications and readmission rates; where morbidity and mortality are measured, this should be over at least six months
- research that includes patient-centred outcomes, particularly addressing longer-term issues such as admission to a residential care facility, residual cardiovascular morbidity, difficulties with stoma and tracheostomy care and the impact of postoperative complications
- research on the impact of rehabilitation on medium and longer-term mortality, morbidity and patient-centred outcomes
- calibration and validation of risk assessment tools, including predictive values for case sensitivity and specificity, with the outcomes being patient centred
- research on the impact of changes in population demographics (e.g., the ageing population) on the future resources required
- further research on the use of care bundles, particularly looking at outcomes from care bundles compared with single interventions
- research considering consent and shared decision making in the emergency context
- training methodology and the place of simulation
- the costing of emergency surgery, including critical care services, cancellation or delay of elective work and care post-hospital discharge
- development of mathematical models to determine the optimal size of emergency teams on call[206]
- network collaboration to establish standards for the top 20 emergency procedures.

Recommendations for local audit

- Scheduled reports (e.g., NCEPOD, NELA).
- Participation in local and national audit of risk-adjusted mortality and morbidity.
- Variation in work patterns, resource allocation, efficiency, systems of care.

Glossary

Autonomously practising anaesthetist – a consultant, or an associate specialist, specialist doctor and speciality doctor (SAS) doctor who can function autonomously to a level of defined competencies, as agreed within local clinical governance frameworks.

Clinical lead – staff grade, associate specialist and specialty doctors undertaking lead roles should be autonomously practising doctors who have competence, experience and communication skills in the specialist area equivalent to consultant colleagues. They should usually have experience in teaching and education relevant to the role and they should participate in quality improvement and continuing professional development activities. Individuals should be fully supported by their

clinical director and should be provided with adequate time and resources to allow them to effectively undertake the lead role.

Core theatre team – the emergency theatre team consists of surgical, anaesthesia and nursing staff. It may not be possible for the staff working in emergencies to form a core team that is regularly present in the department every day of the week. At the very least, one member of the surgical, anaesthesia and nursing team should be someone who works in the emergency theatre on a regular basis.

Drugs – the word 'drug' is used to include all medicinal products including medications, inhalational agents, fluids, certain dressings and external medicines.

Emergency anaesthesia – emergency anaesthesia within this chapter applies to anaesthesia that is given in immediate (within minutes of a decision to operate) or urgent (within hours of a decision to operate) procedures as classified by the National Confidential Enquiry into Patient Outcome and Death.[1]

Emergency theatre coordinator – an individual who supports the autonomously practising anaesthetist with non-clinical aspects of the emergency list on the day. The non-clinical aspects include but are not limited to coordinating meetings with multidisciplinary teams, updating the electronic booking system if applicable, patient preparation on the wards, including liaising with bed management to improve postoperative flow, availability of surgeons, any special equipment requirement, night handover and order of cases. The emergency theatre coordinator may also assist with incident reporting and activating escalation pathways. The objective is to facilitate the management of cases in an efficient manner and free the clinician to focus on clinical aspects of the patient care.

Mortality discussions – all high-risk patients should be given a clear idea of risk of death. These discussions should be based on an objective risk assessment and involve appropriate members of the multidisciplinary team. The objective is to make clinician recommendations, a shared decision process. These discussions need documenting in medical records, particularly in high-risk patients.

Policies – the term 'policies' is used as an umbrella term to refer to a form of locally agreed process that is maintained, kept up to date (reviewed at least every three years), can be used as a reference and is used during induction. This could be in the form of a policy document, practice document or even a piece of software that fulfils the function of the standard. The important criteria are that everyone knows the reference point exists and where to find it, and that the reference point is kept up to date in accordance with the trust/board policies. Policy documents should be standardised in format, have clear review dates and should have been ratified in accordance with trust/board policies.

Readily available – unrestricted access to a facility or a device in a timely manner so that the necessary care and treatment of the patient is not delayed.

Recovery unit – may also be referred to as post-anaesthetic recovery unit, theatre recovery, recovery or recovery unit. It is an area, normally attached to theatres, designed to provide care for patients recovering from general, regional or local anaesthesia. In this document, the term post-anaesthesia care unit is only used to refer to a unit that can offer level 1+ or enhanced care as defined by the Faculty of Intensive Care Medicine.

Abbreviations

ACSA	Anaesthesia Clinical Services Accreditation
CCT	Certificate of Completion of Training

CDG	Chapter Development Group
CT	Computed tomography
DAS	Difficult Airway Society
DNACPR	No not attempt cardio pulmonary resuscitation
ENT	Ear, nose and throat
GMC	General Medical Council
GPAS	Guidelines for the Provision of Anaesthetic Services
MBRRACE-UK	Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK
MRI	Magnetic resonance imaging
NCEPOD	National Confidential Enquiry into Patient Outcome and Death
NELA	National Emergency Laparotomy Audit
NICE	National Institute for Health and Care Excellence
RCoA	Royal College of Anaesthetists

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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	GPP	Strong
1.3	C	Strong
1.4	C	Strong
1.5	C	Strong
1.6	C	Strong
1.7	C	Strong
1.8	GPP	Strong
1.9	C	Strong
1.10	GPP	Strong
1.11	GPP	Strong
1.12	C	Strong
1.13	M	Mandatory
1.14	GPP	Strong
1.15	GPP	Moderate
1.16	C	Moderate
1.17	C	Moderate
1.18	GPP	Moderate
1.19	C	Strong
1.20	C	Moderate
1.21	GPP	Strong
1.22	C	Strong
1.23	GPP	Strong
1.24	C	Strong
1.25	GPP	Strong
1.26	GPP	Strong
1.27	C	Strong
1.28	C	Strong
1.29	GPP	Strong
1.30	C	Strong
1.31	C	Strong
1.32	C	Strong

Recommendation Number	Level of Evidence	Strength of Recommendation
1.33	B	Strong
1.34	C	Strong
1.35	C	Strong
1.36	C	Strong
1.37	C	Strong
1.38	C	Strong
1.39	C	Moderate
1.40	C	Moderate
1.41	C	Strong
1.42	C	Strong
1.43	C	Strong
1.44	B	Strong
1.45	B	Strong
1.46	C	Moderate
1.47	B	Strong
1.48	GPP	Moderate
1.49	C	Moderate
1.50	B	Strong
1.51	GPP	Moderate
1.52	C	Moderate
1.53	C	Strong
1.54	M	Mandatory
1.55	C	Strong
1.56	B	Mandatory
1.57	C	Strong
1.58	M	Mandatory
1.59	GPP	Strong
1.60	C	Strong
1.61	M	Mandatory
1.62	C	Strong
1.63	GPP	Strong
1.64	C	Strong
1.65	GPP	Mandatory
2.1	C	Strong
2.2	C	Strong
2.3	GPP	Strong

Recommendation Number	Level of Evidence	Strength of Recommendation
2.4	GPP	Strong
2.5	GPP	Moderate
2.6	GPP	Strong
2.7	GPP	Strong
2.8	C	Strong
2.9	C	Strong
2.10	C	Strong
2.11	M	Strong
2.12	C	Mandatory
2.13	C	Strong
2.14	C	Strong
2.15	C	Strong
2.16	GPP	Strong
2.17	C	Strong
2.18	C	Strong
2.19	C	Strong
3.1	C	Strong
3.2	GPP	Strong
3.3	GPP	Strong
3.4	C	Strong
3.5	GPP	Strong
3.6	GPP	Strong
3.7	GPP	Strong
3.8	C	Strong
3.9	GPP	Strong
3.10	M	Mandatory
3.11	M	Mandatory
3.12	C	Strong
3.13	C	Moderate
3.14	C	Strong
3.15	C	Strong
3.16	C	Strong
3.17	C	Strong
3.18	C	Strong
3.19	GPP	Strong
3.20	C	Strong

Recommendation Number	Level of Evidence	Strength of Recommendation
3.21	GPP	Strong
3.22	C	Strong
3.23	GPP	Strong
3.24	GPP	Moderate
3.25	GPP	Strong
3.26	C	Strong
3.27	GPP	Strong
3.28	C	Strong
3.29	C	Moderate
3.30	GPP	Strong
3.31	C	Strong
4.1	C	Strong
4.2	C	Strong
4.3	C	Strong
4.4	C	Strong
4.5	GPP	Strong
4.6	GPP	Strong
4.7	C	Strong
4.8	C	Moderate
4.9	C	Moderate
4.10	C	Moderate
4.11	M	Mandatory
5.1	C	Strong
5.2	C	Moderate
5.3	GPP	Strong
5.4	M	Mandatory
5.5	C	Strong
5.6	C	Strong
5.7	M	Mandatory
5.8	C	Strong
5.9	GPP	Moderate
5.10	M	Mandatory
5.11	C	Strong
5.12	C	Strong
5.13	GPP	Strong
5.14	GPP	Strong

Recommendation Number	Level of Evidence	Strength of Recommendation
5.15	C	Strong
5.16	C	Mandatory
5.17	C	Strong
6.1	B	Strong
6.2	C	Strong
6.3	C	Strong
6.4	C	Strong
6.5	C	Strong
6.6	C	Strong
6.7	GPP	Strong
6.8	C	Strong
6.9	C	Strong
6.10	C	Strong
6.11	C	Strong
6.12	GPP	Strong
6.13	GPP	Strong
6.14	C	Strong
6.15	C	Strong
6.16	C	Strong
6.17	C	Strong
6.18	C	Strong
6.19	C	Strong
6.20	C	Strong
6.21	GPP	Strong
6.22	C	Strong
6.23	C	Strong
6.24	C	Strong
6.25	C	Strong
6.26	C	Strong
6.27	C	Strong
6.28	C	Strong
6.29	C	Strong
6.30	C	Strong
6.31	C	Strong
6.32	C	Strong
6.33	GPP	Moderate

Recommendation Number	Level of Evidence	Strength of Recommendation
6.34	B	Strong
6.35	C	Strong
6.36	C	Strong
6.37	GPP	Strong
6.38	C	Strong
6.39	GPP	Moderate
6.40	GPP	Strong
6.41	GPP	Strong
6.42	GPP	Strong
6.43	C	Strong
6.44	C	Strong
6.45	C	Strong
6.46	C	Strong
6.47	C	Strong
6.48	C	Strong
6.49	M	Mandatory
6.50	M	Mandatory
6.51	C	Strong
6.52	C	Strong
6.53	C	Strong
8.1	C	Strong
8.2	C	Strong
8.3	C	Strong
8.4	M	Mandatory
8.5	GPP	Strong
8.6	C	Strong
8.7	C	Strong
8.8	GPP	Strong

Chapter 5
Guidelines for the Provision of Emergency Anaesthesia Services 2024

About these guidelines

Methodology

The process by which this chapter has been developed has been documented within the GPAS Chapter Development Process Document, which is available on request.

The evidence included in this chapter is based on a systematic search of the literature. 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 perioperative services for patients who have undergone surgery and/or interventions which involve anaesthesia.

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, criteria for inclusion and exclusion of evidence (for the full perioperative care chapter search protocol please contact the RCoA). 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 March 2021.

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 CDG for suitability. The final list of publications used can be found in the references.

Inclusion criteria

The literature review considered studies that included the following patient population with all of the inclusion criteria listed below:

- all patients undergoing elective or emergency anaesthesia
- all staff groups working within perioperative care, under the responsibility of an anaesthetic clinical director, including (but not restricted to) consultant anaesthetists, SAS anaesthetists, trainee anaesthetists, nurses, operating department practitioners, surgeons, pharmacists, general practitioners, radiologists and radiographers.

Exclusion criteria

The literature review used the following exclusion criteria:

- provision of perioperative care of elective and urgent care patients service provided by a speciality other than anaesthesia.

Data extraction and analysis

Data were extracted by the authors using a proforma. 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
- reviewer's comments.

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

The results of the literature review can be seen below:

The evidence that is included in this chapter has been graded according to a grading system adapted from NICE and outlined below:

Level	Type of evidence	Grade	Evidence
Ia	Evidence obtained from a single large/multicentre randomised controlled trial, a meta-analysis of randomised controlled trials or a systematic review with a low risk of bias	**A**	At least one randomised controlled trial 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	**B**	Well-conducted clinical studies but no high-quality randomised clinical trials on the topic of recommendation (evidence levels Ib, II or III); or extrapolated from level Ia evidence
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. CQC, GMC)
		GPP	Recommended good practice based on the clinical experience of the CDG.
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. *Department of Health*, London 1996.			

Strengths and limitations of body of evidence

Most of the published evidence on perioperative care anaesthesia services is descriptive. There are publications describing aspects of this process based on expert opinion.

The limitations of the evidence are:

- the 'unmeasurables' (attitudes, behaviour, motivation, leadership, teamwork)
- few randomised controlled trials (RCTs); studies frequently use mixed populations of emergency and elective patients, or all emergency patients grouped together despite different underlying diagnoses
- papers often examine a single intervention within complex system or bundle
- papers are often examining small numbers and/or patients from a single centre
- poor use of outcome measures, frequently concentrating on easily measured short-term outcomes which are not patient centred
- generally, a paucity of long-term follow up
- there is no standard definition used of 'high risk'
- use of different risk-scoring systems
- decrease in outcome over time and geography when 'good papers' are used in quality improvement programmes
- application of international studies in systems with either more or less resources than the UK into NHS practice
- older studies may no longer be applicable within the NHS
- very few studies included any analysis of financial implications
- evidence was mainly based on literature graded III and IV.

Methods used to arrive at recommendations

Recommendations were initially drafted based on the evidence by the authors for the chapter. These were discussed with the CDG, and comments were received both on 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.

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. 'must'
Strong	Confidence that for the vast majority of people, the action will do more good than harm (or more harm than good)	Wording should be clearly directive 'should' or 'should not'
Weak	The action will do more good than harm for most patients, but may include caveats on the quality or size of evidence base or patient preferences	Wording should include 'should be considered'
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 'could'
Equipoise	There is no current evidence on this recommendation's effect on patient care	Wording should include 'there is no evidence of this recommendation's effect on patient care'

Consultation

The chapter has undergone several rounds of consultation. The multidisciplinary 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 GPAS Chapter Development Process Document (available on request) 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 Clinical Quality and Research Board (CQRB). 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 CQRB and PatientsVoices@RCoA 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 17 November 2021 to 15 December 2021. 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 wholly funded by the Royal College of Anaesthetists. However, only the GPAS technical team and the GPAS researcher are paid directly by the College for their work on GPAS: the GPAS Editors' employing organisation receives 2 programmed activities (PA) backfill funding. All funding decisions by the College are made by the chief executive officer, 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 CDG, 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 (available on request). 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 the GPAS Editorial Board and CQRB

The overall development of the entire GPAS document is overseen by the CQRB of the Royal College of Anaesthetists, which includes representatives from all grades of anaesthetist and from clinical directors, and which also has PatientsVoices@RCoA representation.

Responsibility for managing the scope of the document and providing clinical oversight to the project technical team is delegated by the CQRB 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 GPAS Editor holding the deciding vote.

Both of these groups, along with the PatientsVoices@RCoA committee, review each chapter and provide comment prior to public consultation and are responsible for signoff before final publication. In the event of disagreement, consensus is reached using the majority rules consensus method, with the chair of CQRB holding the deciding vote.

Updating these guidelines

This chapter will be updated for republication in January 2025.

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 decide whether or not to involve the remainder of the CDG 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 2027.

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

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