

Emergency Surgery

Standards for unscheduled surgical care

Guidance for providers,
commissioners and
service planners

February 2011





ADVANCING SURGICAL STANDARDS

Produced by the Publications Department, The Royal College of Surgeons of England
Printed by Hobbs the Printers, Southampton, UK.

Professional Standards and Regulation Directorate
The Royal College of Surgeons of England
35–43 Lincoln's Inn Fields
London
WC2A 3PE

The Royal College of Surgeons of England © 2011
Registered charity number 212808

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of The Royal College of Surgeons of England.

While every effort has been made to ensure the accuracy of the information contained in this publication, no guarantee can be given that all errors and omissions have been excluded. No responsibility for loss occasioned to any person acting or refraining from action as a result of the material in this publication can be accepted by The Royal College of Surgeons of England and the contributors.

Contents

Contributors	ii
Foreword	1
Executive summary	2
About this document.....	4
Purpose.....	4
Context.....	4
Structure and content	6
Section 1: Background.....	7
1.1 What is emergency surgery?.....	7
1.2 How common is emergency surgical intervention?.....	7
1.3 How can outcomes and productivity be improved?	7
1.4 What are the common issues?	8
1.5 The case for change.....	12
1.6 Models of care	13
1.7 Planning and commissioning	16
Section 2: Standards for unscheduled surgical care (generic).....	18
2.1 Provision of the emergency surgical service.....	18
2.2 Leadership and governance	23
2.3 Patients and supporters	25
2.4 Education and training.....	27
2.5 Network cooperation	28
Section 3: Supporting unscheduled surgical care (specialty-specific standards)	29
3.1 Ambulance services	29
3.2 Emergency department	30
3.3 Acute medicine	32
3.4 Radiology	35
3.5 Pathology	37
3.6 Anaesthesia	42
3.7 Intensive Care.....	46
3.8 Discharge, ongoing care and rehabilitation	48
Section 4: Delivering unscheduled surgical care (surgical specialty standards	49
4.1 General surgery	49
4.2 Emergency surgery in children	53
4.3 Specialist paediatric surgery	56
4.4 Trauma and orthopaedic surgery.....	57
4.5 Plastic surgery	61
4.6 Urology.....	64
4.7 Neurosurgery.....	65
4.8 Oral and maxillofacial surgery	66
4.9 ENT	67
4.10 Cardiothoracic surgery.....	70
Glossary.....	71
Further reading.....	73
References.....	76

Contributors

Mr Richard Collins, Vice President, Royal College of Surgeons, Chair

Dr Shuba Allard, Royal College of Pathologists

Mr Iain Anderson, Association of Surgeons of Great Britain and Ireland

Dr Stephen Barasi, Patient Liaison Group, Royal College of Surgeons

Miss Su-Anna Boddy, British Association of Paediatric Surgeons and Royal College of Surgeons' Council Lead for Children's Services

Ms Sarah Cheslyn-Curtis, Association of Surgeons of Great Britain and Ireland/British Association of Paediatric Surgeons

Dr Carol Cobb, Royal College of Physicians

Mr Graham Cooper, Society for Cardiothoracic Surgery

Mrs Jo Cripps, Royal College of Surgeons

Mrs Jane Curley, British Association of Otorhinolaryngologists, Head and Neck Surgeons

Mr Daren Forward, British Orthopaedic Association

Mr Philip van Hille, Society for British Neurological Surgeons

Mr Hamish Laing, British Association Plastic, Reconstructive and Aesthetic Surgeons

Professor Chris Moran, British Orthopaedic Association

Mr Don MacKechnie, College of Emergency Medicine

Mr David Macpherson, British Association of Oral and Maxillofacial Surgeons

Dr Tony Nicholson, Royal College of Radiologists

Dr Carol Peden, Intensive Care Society

Dr Marilyn Plant, Royal College of General Practitioners

Dr Ossie Rawstorne, Great Western Ambulance Service NHS Trust

Lt Col Zaheer Shah, British Association of Urological Surgeons

Dr Nick Sherwood, Royal College of Anaesthetists

Ms Karen Wilson, Care Quality Commission

Mr Mike Zeiderman, Royal College of Surgeons

Foreword

Those requiring emergency surgical assessment or operation are among the sickest patients in the NHS. Often elderly, frail and with significant co-morbidity, the risk of death or serious complication is unacceptably high. We, the professionals involved in delivering this care, believe that emergency surgical care can be delivered in a far safer and more efficient manner, bringing benefits to our patients and their families while also providing excellent training and an efficient use of resources.

I have had the pleasure of chairing a working group over recent months that comprised medical royal colleges and specialty associations, regulatory organisations and, importantly, patient representatives. We have sought to develop standards and guidance for commissioners and service planners so that they can ensure the provision of high quality surgical services for emergency patients across the UK. The specialty standards contained within this document are generic in nature – more detailed guidance is available from the relevant college or specialty association as indicated throughout.

In England, I hope that this document will be used to full effect as significant changes to the commissioning structure are introduced. While the details are as yet unclear, we can foresee that the commissioning of emergency surgical service provision may need to occur at a regional level via sufficiently sized consortia of commissioners to ensure adequate coverage, consistency and accountability. We wish to facilitate constructive working between service managers and clinicians in order to achieve the best possible outcomes for patients. We look forward to working with the Department of Health to ensure its proposals can be implemented in a safe and efficient manner.

I would like to thank the working group for bringing this work to fruition. I hope you will find this document useful. I certainly commend it to you as a vital tool to support the delivery of a high quality and efficient service that focuses entirely on the patient who, at the time of requiring emergency surgical management, will be at their most vulnerable.

Richard Collins

Vice President, Royal College of Surgeons
Chair, Emergency Surgery Standards Working Group

Executive summary

- › The delivery of emergency surgical care is currently sub-optimal. There has been a lack of investment in, and understanding of, the risks of this type of surgery and the associated workload.
- › Mortality varies two-fold between units for surgical emergencies. In general surgery alone emergency cases account for 14,000 admissions to intensive care in England and Wales annually, carrying a mortality rate of over 25% and intensive care costs of at least £88 million.¹
- › Commissioners, planners, providers and clinicians need to understand the specific requirements of patients receiving unscheduled surgical care and to ensure pre-, peri- and post-operative assessment arrangements are improved in order to secure better outcomes.
- › This report is the result of a working group comprising experts from all surgical and related specialties.
- › This report is aimed at commissioners, planners and service providers.
- › It provides standards for the care of unscheduled adult and paediatric surgical patients. The standards describe how a safe, responsive and high quality surgical service can be provided by prioritising the care of this group of patients.
- › The key elements of a high quality emergency surgical service are:
 - ›› Dedicated clinical and managerial leadership and effective multidisciplinary team working.
 - ›› The prioritisation of acutely ill patients over elective activity.
 - ›› A defined governance structure with a focus on outcomes, audit and regular review of practice.
 - ›› A consultant-led service across all specialties.
 - ›› Acknowledgement that care of acutely ill patients should be prioritised in the training of surgeons and other clinicians involved in unscheduled care.
 - ›› The availability of sufficient, suitably trained and competent staff throughout the patient's pathway.
 - ›› The presence of agreed protocols to assess and manage risk, matching the seniority of the attending clinician with the clinical needs of the patient.

- » Timely input of senior decision makers (Certificate of Completion of Training holders (CCT holders)) according to the needs of the patient.
- » Appropriate and adequate facilities, laid out in such a way as to provide safe and expeditious patient care in the acute setting.
- » Careful planning and provision of adequate resources to enable sufficient and timely access to emergency theatres.
- » Appropriate pre- and post-operative care arrangements, including the early involvement of anaesthetists and critical care specialists and resources where required.
- » A focus on patient-centred care, which involves consultant-led communication with patients and their supporters.

About this document

Purpose

This document aims to provide information and standards on emergency surgical service provision for both adult and paediatric patients. It is aimed at commissioners, planners, providers and others involved in the provision of emergency surgical care and seeks to ensure that:

- › Patients receive safe and high quality care and have the best care experience possible.
- › Services are delivered in a timely manner, with acutely ill patients prioritised over elective surgical care.
- › Services achieve the best possible clinical outcomes and follow established principles.
- › Services provide information and support to patients and their supporters at all stages of the pathway.
- › Services are provided by appropriately trained and competent healthcare professionals.
- › Services are structured to deliver training in an efficient manner and ensure that the competing demands of training and service provision are adequately balanced.
- › Services contribute towards the collection and collation of data to support evidence-based care.
- › Facilities and resources are adequate and easily accessible.
- › Services are efficient, effective and offer value for money.

Context

Patients requiring emergency surgical management are among the sickest patients treated in the NHS. Efficient and effective delivery of emergency surgical care is dependent upon the availability of experienced clinicians working together in teams to provide the best outcomes for patients and with adequate resources to do their work.

In the UK, outcome analysis has been focused on cardiac surgery, where specialist units carry out a range of predominantly elective procedures with intensive care support available routinely. Audit shows good results for this group of patients which continue to improve year on year, supported by high quality data. By contrast, emergency surgery in other specialties is carried out in almost all acute hospitals, encompassing a wide range of conditions and conducted with variable levels of intensive care support; there is a paucity of data to benchmark improvement in this group of patients.

Advanced age and significant co-morbidity are common in those requiring emergency surgery, yet these readily identifiable risk factors are not always given due consideration in the planning and delivery of this type of care. The pressure to meet targets for waiting times in the emergency department (ED) and for elective surgery often resulted in emergency surgical patients being de-prioritised.

Studies have shown that there is a distinct and measureable volume of admissions for emergency surgery, including both common/high volume and less common cases. It is possible therefore to predict, with reasonable accuracy, the demand for resources and to plan for it. This will allow the workload to be managed more efficiently.

Increasing sub-specialisation has led to difficulties in staffing emergency rotas and in defining protocols for transferring patients who do not require emergency intervention to the appropriate sub-specialty team working the next day.

The implementation of working time regulations has led to the fragmentation of on-call systems, an increased number of handovers and an over-reliance on junior doctors to support a wide range of acute services during the out-of-hours period. Increased shift working has led to a marked reduction in continuity of care, with patients reporting that they do not see the same doctor twice – ongoing observation and assessment of patients by different members of the team can, and does, result in miscommunication and missed opportunities to deliver safe patient care.

The reduction in training time has also resulted in changes to the competences and skills of doctors. There is a lack of balance between service provision and the requirement to ensure trainees can develop their emergency experience to achieve the required competences in emergency surgery defined by the Intercollegiate Surgical Curriculum Programme (ISCP). Trainees' working time must be arranged to maximise training opportunities rather than simply provide cover for service needs.

In the current financial environment, it is more important than ever to achieve an efficient service that offers value for money. Elective pathways are well defined and, as a result, offer less scope for further efficiencies. By contrast, the delivery of emergency surgical care can be vastly improved, providing better outcomes for patients and reducing costs by preventing or minimising complications and shortening the patient's length of stay. The changing structure of the NHS brings an opportunity for the colleges and professional organisations to reiterate standards of care.

There is a need to:

- › improve the priority given to patients requiring unscheduled surgical care
- › improve the timeliness of surgery
- › understand best practice in peri-operative care in order to reduce morbidity and mortality and achieve an efficient service

- › agree optimal pathways for patients requiring unscheduled surgical care
- › reallocate resources (in particular theatre availability and resource)
- › ensure training of the future generation of clinicians is appropriate, well resourced and delivered effectively
- › reorganise staffing to offer the best assessment, treatment and ongoing care to patients
- › develop quality indicators and performance measures through structured clinical audit
- › measure unit/region workload to plan for an appropriate emergency surgical service model.

Structure and content

These standards have been developed by an emergency surgery standards working group (see *Contributors*). The standards (covering paediatric as well as adult emergency surgical care) have brought together the wealth of expertise and knowledge from the key professional organisations involved in delivering acute care. Wherever possible, the standards are based on evidence. Where the evidence does not exist to support a standard, we have stated the consensus opinion of professionals experienced in delivering patient care. If implemented, these standards will lead to improved outcomes for patients and the more efficient use of scarce resources. The specialty standards are generic in nature; more detailed guidance can be obtained from the relevant medical royal college or specialty association.

The document has been written to highlight the essential standards required for a safe service and also to encourage excellence. *Sections 2–4* provide information on core and best-practice standards along with criteria for measuring performance against the standards.

This document is intended for use by providers (engaging in self-assessment), service planners and commissioners (to support planning and commissioning decisions against standards set by the professional organisations). As such, it is hoped this document will provide a tool for the assessment and benchmarking of the emergency surgical service provided across the NHS and will facilitate constructive working between service managers and clinicians in order to achieve the best possible outcomes for patients.

The professional organisations are well placed to set standards for the delivery of surgical and related care against which services can be assessed and benchmarked. This document is not prescriptive about how the standards should be met – that will be a decision for providers and commissioners at local level.

Section 1: Background

1.1 What is emergency surgery?

There is a tendency to consider the emergency surgical service as one that simply operates on patients in the out-of-hours period. In reality, the term 'emergency surgery' encompasses six main elements, outlined in *Box 1*.

This description is a simplification that masks the complex interdependency between staff, equipment and resources that must exist in order for all elements of the service to be delivered.

Box 1: Elements of emergency surgical provision

- › Undertaking emergency operations at any time, day or night.
- › The provision of ongoing clinical care to post-operative patients and other inpatients being managed non-operatively, including emergency patients and elective patients who develop complications.
- › Undertaking further operations for patients who have recently undergone surgery (ie either planned procedures or unplanned 'returns to theatre').
- › The provision of assessment and advice for patients referred from other areas of the hospital (including the emergency department) and from general practitioners. For regional services this may include supporting other hospitals in the network.
- › Early, effective and continuous acute pain management.
- › Communication with patients and their supporters.

1.2 How common is emergency surgical intervention?

Available data on emergency surgical care are incomplete and fail to demonstrate the variation between the specialties in terms of the complexity of surgery, the nature of teamworking, the time, resources and critical interdependencies required to deliver the service. Further work is required to ensure these data can be collected and analysed effectively.

Taking into account the six elements outlined in *Box 1*, it is estimated that the provision of emergency surgical care comprises 40–50% of the workload of most surgical specialties. In neurosurgery, for example, over half of admissions are non-elective and the resultant workload is substantially higher (70–80%) due to the complexity of unplanned admissions compared to elective cases.

1.3 How can outcomes and productivity be improved?

Poorly delivered emergency surgical services increase costs to the NHS (in terms of complications, returns to theatre and increased length of stay), to society more generally (in terms of rehabilitation costs and welfare support), and most importantly the personal costs to patients and their supporters (poor quality of life, morbidity and mortality).

Delays in treating emergency surgical patients result in additional complications and higher mortality.¹⁻³ As an example, in England and Wales, over 14,000 admissions per year to intensive care units are made from general surgical emergency admissions. Mortality rates are near 25% and the cost of intensive care provision alone is at least £88 million.¹ There is often a reluctance to provide adequate resources for emergency surgery (theatres and staffing), largely because of concerns that they will not be fully utilised. This leads to long delays in managing patients who languish in hospital instead of being treated quickly and discharged. It needs to be recognised that fast access to imaging and, where required, access to a fully staffed and resourced theatre for patients requiring immediate intervention will be cost effective in the longer term. Assessing, prioritising and rapidly treating patients requiring emergency surgery will result in reduced mortality, fewer complications, shorter lengths of stay and provide a more positive experience for patients.

1.4 What are the common issues?

1.4.1 Priority and timeliness of surgery

Emergency surgery is performed on patients who have an acute condition that threatens life, limb or the integrity of a body structure. Some emergency operations are time critical and need to be performed immediately (day or night). The majority of emergency procedures should be performed during the daytime but very often theatre space is unavailable or insufficient, meaning that surgeons are faced with the choice of delaying an emergency surgical patient's treatment or disrupting an elective list. Delaying emergency surgery until the end of the day creates difficulties in the pre- and post-operative care of patients.

There is evidence that delaying surgery for sick patients is detrimental both in terms of the patient's outcome and the immediate and longer term costs to the NHS and society in general.¹ It is therefore recommended that emergency surgical patients are prioritised according to their clinical need and this will usually mean prioritisation above elective patients. How this is managed is an issue of organisational efficiency for providers who will wish to maintain both services. The key deficiency is theatre access and this leads to multiple knock-on costs from increased length of stay, increased complications and interruption of elective throughput. There must be adequate access to emergency theatres across the specialties with additional, dedicated theatres for orthopaedic surgery and other specialties where necessary. Accurate auditing of workload across the specialties is required to define the number and type of theatres required.

There is a paucity of data to enable audit of the timeliness of surgical intervention. The time of decision to operate and the time of operation must be recorded in the patient's notes to enable effective audit.

1.4.2 Understanding quality and outcome issues

The outcomes of emergency surgical care are variable and poorly measured at present. They require greater ongoing scrutiny via clinical audit and the development of meaningful quality indicators and outcome measures, including those reported by patients. This will be essential to understanding the unit's workload and facilitating the planning of a safe and effective emergency surgical service model.

1.4.3 Teamworking

From assessment of the acutely ill patient through surgery and into rehabilitation, the provision of emergency surgical care is undoubtedly a team activity.

The initial assessment of patients with suspected surgical pathology should be completed by a senior clinician with the appropriate skills and competences to recognise when surgery may be required. This initial assessment may not only be undertaken by surgeons but also by senior doctors in emergency medicine, acute physicians or (for children's emergencies) paediatricians who may then refer to a surgeon for more in-depth assessment.

Surgery should be managed by a surgical team with the requisite skills and competences. In all cases, emergency surgery should be consultant-led to provide optimum care for the patient and maximise training opportunities.

All patients must have a clear diagnostic and monitoring plan on admission and the trust or health board must formalise pathways for unscheduled surgical care – this should include a risk grading strategy as envisaged in the National Institute for Health and Clinical Excellence (NICE) CG50 document.⁴ It is recognised that risk scoring mechanisms can be imprecise, however, an assessment of the patient must be made to ensure the competence of the surgeon/doctor is matched to the needs of the patient. The working group consider that:

- › Patients requiring emergency surgical opinion/intervention must be seen at an early stage by a surgeon with the required skills and competences. In most cases, this will be a specialty trainee (specialty trainee level 3 (ST3) or above) or a trust doctor with equivalent ability, ie Member of the Royal College of Surgeons (MRCS) with Advanced Trauma Life Support® (ATLS®) provider status. This doctor must be able to assess the patient and make an initial decision about the seriousness and urgency of their condition.
- › Emergency surgical cases may be managed appropriately by senior trainees or specialty doctors. This must be an active and audited consultant decision. All patients admitted as emergencies must be discussed with the responsible consultant if immediate surgery is being considered.
- › Those considered at high risk (eg patients with a predicted mortality of $\geq 10\%$ using the appropriate specialty risk scoring mechanism) must be discussed with the consultant and be reviewed by a consultant surgeon within four hours **if the management plan remains undefined and/or the patient is not responding as expected**. All patients in this group must have their operation carried out in a timely manner under the direct supervision of a consultant surgeon and consultant anaesthetist; early referral for anaesthetic assessment is also essential to optimise peri-operative care.
- › In cases with predicted mortality of $>5\%$, a consultant surgeon and consultant anaesthetist must be present for the operation except in specific circumstances where adequate experience and the appropriate workforce is otherwise assured.

- › As an **absolute minimum**, for patients not considered at high risk, all emergency surgical admissions must be discussed with the responsible consultant within 12 hours of admission. Active and continued monitoring of the patient must be carried out and the consultant should be notified immediately if a patient's condition deteriorates.
- › If a patient is admitted but not taken to theatre (ie they are admitted for observation and conservative treatment) he or she must be seen by a consultant surgeon within a maximum of 24 hours from admission. As above, active and continuous monitoring of the patient must take place and the consultant must be notified immediately if the patient's condition deteriorates.
- › In the recovery and rehabilitation phase of care there must be allied health practitioners and nurses working as part of the surgical team to plan and deliver the ongoing care of the patient at an appropriate location according to need and geography.

1.4.4 Organisation of staff

The six essential elements of emergency surgical care described previously in *Box 1* can all be required at the same time; some elements require many hours of high pressure work. It is essential that there is a surgical team available with the required range of competences to deal simultaneously with these demands and that sufficient support from colleagues in nursing and allied health professions is available to maintain continuity of care for patients.

Appreciating the scale of the change that has occurred in recent years is essential to developing safe emergency services. The reduction in working hours for trainees has led to a decrease in their level of experience and this now impacts critically on consultant workload and service provision. It is vital that providers, planners and commissioners recognise that these changes require more senior (consultant) input early in the patient pathway in order to maximise patient outcomes. In circumstances where resident doctors do not possess the required competences, consultants must be available to take responsibility and see that patients are treated according to their clinical needs.

Additional and complementary roles have been introduced to support continued service delivery. It is important that these roles are properly constituted and evaluated according to the standards set by the relevant professional organisations to ensure patient safety and efficiency.

1.4.5 Organisation of facilities

Hospitals receiving emergency surgical patients will need to consider the most appropriate facilities and layout. In many hospitals this is known as the 'emergency floor'. The area should be designed to ensure appropriate streaming of patients to the correct part of the service, avoiding duplication of assessment and of documentation. The ideal configuration would be a series of interlinked facilities where the skills of the emergency physicians, acute physicians, surgeons, anaesthetists (including the acute pain team), radiologists and critical care specialists work closely together to manage the early phases of acute illness.

Surgical units need ready access to acute medical services for patients with medical co-morbidities and for those who develop acute medical complications. Integrated acute medical

and surgical units may provide an ideal solution by increasing access to prompt cross-specialty opinion. Such units (when co-located with critical care facilities) play an important part in the assessment, stabilisation and optimisation of patients for surgery. High risk surgical patients may require input from multiple specialty teams with regard to resuscitation and optimisation. This should be conducted in an appropriate place and have early input from senior anaesthetists and critical care doctors.

Arrangements in many hospitals mean that sick surgical patients are often admitted to any available bed, with the potential for patients to be located in areas with limited surgical expertise available. The outlying of surgical patients on non-surgical wards leads to inefficient care and increases risk. Such occasions should be monitored and recorded. Emergency surgical patients should be co-located to ensure maximum surgical input to their care. An exception to this is in paediatric surgery, where it may be reasonable to admit emergency surgical patients to a general paediatric ward if no specific paediatric surgical beds are available.

The importance of recovery and rehabilitation are often ignored in discussions about emergency surgery. Both areas are of vital importance. It is essential that patients are assessed and have a coordinated, ongoing care plan implemented early in their admission. There must be adequate capacity to deliver the aspects of care planned in the service in order to maximise resources and optimise outcomes.

1.4.6 Clinical interdependencies

The working party agree that hospitals accepting undifferentiated patients via the ED must have access to 24-hour on-site surgical opinion (at ST3 level or above) or a trust doctor with equivalent ability (ie MRCS with ATLS® provider status), with a supporting team both senior and junior to this surgeon.

Where emergency general and orthopaedic services are provided, the following services are interdependent:

- > anaesthetics, critical care (intensive therapy unit/high dependency unit) and acute pain
- > acute medicine
- > interventional and diagnostic radiology
- > pathology
- > gastroenterology
- > cardiology
- > bronchoscopy
- > endoscopy

› elderly care and rehabilitation medicine.

If children are admitted as emergencies, inpatient paediatrics and specialist children's facilities are required. Arrangements for other surgical specialties will be required as appropriate.

Where teams provide services across a wider geographical region in a network, adequate provision must be made for this in planning the service and modern communications methods (such as rapid image transfer and video conferencing) made available. Networks must liaise closely with ambulance services to develop agreed protocols for ambulance bypass and the transfer and repatriation of emergency surgical patients. Transfer of acutely ill patients has the potential to expose both transferring and receiving hospitals to inadequate resident personnel due to their required involvement in the transfer. This must be factored in to workforce and service plans.

1.4.7 Communication with patients and supporters

Communication with patients and supporters is a crucial activity which is both demanding and time consuming. It is an often overlooked element in the delivery of emergency surgical care and must be consultant-led. Adequate time for discussion with patients must be factored in to the schedule of work for the emergency team. This should include communication with patients undergoing major elective surgery who may return to the ward environment during the evening.

Effective communication is particularly important in relation to consent in an emergency situation^{5,6} and in making decisions about ongoing care. Poor communication is the prevalent cause of complaints.

The Patient Liaison Group of the Royal College of Surgeons is keen to improve effective communication both before and after emergency surgery and their specific recommendations have been included in the standards in *Section 2*.

1.5 The case for change

The focus on access targets for elective surgical care has been to the detriment of emergency surgery. There has been inadequate investment in staff and facilities, leading to poor access to diagnosis and treatment for acutely ill patients. Insufficient resources to facilitate access to theatres and an appropriately supported bed for non-elective patients, coupled with poor recognition within consultant job plans of emergency commitments, has led to a lack of understanding of the costs and how to achieve the best outcome for these patients.

In addition, training has suffered due to the enforced reduction in hours under working time regulations, coupled with the focus on service demands and throughput. There must be a balance within service provision to ensure surgical trainees can develop their emergency experience to achieve the required competences in emergency surgery as defined in the ISCP. This must be embedded within the system to ensure future service provision is safe and of high quality.

Providers, commissioners, planners, healthcare professionals and patients tell us that they would like to have defined standards for the delivery of the emergency surgical service in order that the service is better understood and prioritised.

There are many drivers for change:

- › Patients requiring emergency surgery are among the sickest treated in the NHS.⁷⁻¹⁰
- › Outcome measurement in emergency surgery is currently poor and needs to be developed further.
- › Current data show significant cause for concern – morbidity and mortality rates for England and Wales compare unfavourably with international results.
- › It is estimated that around 80% of surgical mortality arises from unplanned/emergency surgical intervention.⁸⁻¹⁰
- › The NHS has to reduce its costs significantly over the coming years – savings can only be delivered sustainably through the provision of high quality and efficient services. The higher complication rate and poorly defined care pathways in emergency surgery (when compared to elective surgery) offer much greater scope for improvement in care and associated cost savings.
- › The reduction in working hours for doctors and the focus on elective surgical care has changed the level of experience and expertise of trainees when dealing with acutely ill surgical patients.
- › Patients expect consultants to be involved in their care throughout the patient pathway.
- › Evidence from a survey of general surgeons indicated that only 55% felt that they were able to care well for their emergency patients.¹¹
- › At least 40% of consultant general surgeons report poor access to theatre for emergency cases.¹¹

1.6 Models of care

As described above, the critical interdependencies for emergency surgical service provision need to be observed. Within these interdependencies, a variety of models of care exist – some of which are listed below for information. This document does not seek to be prescriptive about the model of care to be adopted. Rather, it sets the criteria and standards for a high quality, responsive and efficient service. It will be for organisations and commissioners to decide how the standards will be achieved.

1.6.1 Consultant-based care

Studies have shown that the intervention of senior decision makers early in the patient's pathway improve outcomes for patients and make more efficient use of resources.^{12,13}

Careful consideration of the level of cover required both during daytime hours and in the out-of-hours period is vital. A consultant-delivered service is the optimum delivery method, although in some circumstances a consultant-led service may be all that can be achieved within current resources. The level of middle-grade and junior cover requires close attention – sufficient and competent doctors need to be available to provide advice, opinion and, if necessary, surgical intervention. It is inappropriate for a busy surgical unit to have only a single tier of resident cover.

It is important that patients are monitored actively during their admission so that the appropriate level of clinical support can be made available to them according to their clinical need. Each specialty has specified the level of consultant input required to support the service (*Sections 2–4*).

1.6.2 Separating elective and emergency care

The Royal College of Surgeons recommends a separation of emergency and elective surgical services (preferably on the same site due to imaging and equipment needs, particularly for highly specialised procedures) to improve the quality of care delivered to patients.¹⁴ In some specialties (eg general surgery, trauma and orthopaedics and neurosurgery) separating elective care from emergency pressures through the use of dedicated beds, theatres and staff can, if well planned and resourced, reduce cancellations and delays, achieve a more predictable workflow, and provide excellent, supervised training opportunities in both aspects of care. One of the key benefits of this approach is the ability to co-locate emergency patients, making dedicated patient care safer and more efficient. It should be noted, however, that the drive to provide single-sex accommodation within hospitals, while welcome, may limit the ability of the NHS to achieve this model of care.

1.6.3 Surgical assessment units

Dedicated surgical assessment units can provide a centralised area where acutely ill surgical patients can be assessed and monitored prior to being admitted and/or receiving treatment. Well-resourced and designed units can provide speedy access to assessment, diagnosis and treatment and avoid unnecessary delays and admissions. In this model, patients admitted at night can generally be managed on the unit under the care of the admitting consultant until the following morning when a referral to an appropriate sub-specialty team can be arranged (unless the patient's condition dictates that this should occur earlier). Assessment units facilitate the co-location of patients and can provide excellent training opportunities for surgeons and physicians when supervised by consultants.

It should be noted, however, that not all patients will be on dedicated surgical assessment units and that this model does not suit all specialties.

1.6.4 Clinical networks

Increasingly, services will need to be provided on a networked basis, that is via an interconnected system of service providers. This allows collaborative working (assisted by contractual agreements

where required), the development of common standards of care, flexible movement for clinical staff and robust patient transfer arrangements, according to clinical need. Expertise and resources will be drawn from the entire network, enabling patients to be treated at the most appropriate hospital depending on the complexity of the case, the resources available and the competence of staff at the receiving hospital. The network will also include the provision for appropriate continuing professional development and mentoring. Early and continued involvement of the ambulance service will be required when considering network arrangements to ensure the development and review of arrangements for ambulance bypass protocols, transfer and repatriation of patients.

To be effective, networking arrangements must have senior clinical and managerial endorsement and be supported by contractual arrangements, agreed, coordinated protocols of care and network-wide audit of both processes and outcomes.

Robust handover and transfer arrangements must be agreed within the network and audited for compliance. Standards for the transfer of critically ill patients must be adhered to. Adequate resources must be available to support this.

Bed availability across the network will require careful coordination and planning. High quality data transfer arrangements are also required to transport information from radiology, pathology etc to support the patient's care.

At a macro-level, networks need to be supported financially to ensure service sustainability.

1.6.5 Extending the working day

In some specialties, extending the traditional 'core hours' of service provides additional capacity, ensures more balanced staffing levels throughout busy periods and ensures senior clinician input during the service. While access to dedicated emergency theatres must be maintained across the working day, extending the staff, facilities and resources available across a longer period (for example, from 08.00–22.00, including weekend cover) offers the ability to complete more planned elective lists as well as many of the urgent cases which otherwise would compete for a slot on the next day theatre list and clog up true emergency theatre provision. This model allows patients to be treated expeditiously, avoids extended hospital stays, provides an efficient use of resources and can reduce pressure on the staff working in the hospital at night.

Providing adequate staffing and resources at the weekend will also ensure that patients receive good, safe care over this period. Currently, this is often not the case.¹⁵

For this model of care to work, all supporting services (eg radiology, pathology etc) and staff in the wider surgical team (eg anaesthetists, theatre nurses, recovery and ward staff) need to work in a similar pattern.¹⁶

1.6.6 Outcomes and quality indicators

The measurement of outcomes from unscheduled emergency surgical care is poorly carried out at present. It is essential to audit services closely to identify areas of best practice and areas where improvements can be made. Regular, systematic audit has been shown to improve outcomes.¹⁷

The standards in *Sections 2–4* have been written to focus on the structure and process of care which, if followed, will improve outcomes. We have sought to outline expected and best practice standards and to identify how providers and commissioners can assess progress against the standards.

Wherever possible we would suggest the use of existing data sources (for example, national clinical audit and routinely collected data, eg hospital episode statistics) to measure outcomes. This should enable organisations to benchmark themselves against others in the region and country. We would also expect that the revalidation standards for surgeons,¹⁸ which will require a focus on outcome measurement, are incorporated.

Participation in prescribed national clinical audits will be mandatory for surgical revalidation and organisations will need to consider how this will be managed and resourced. The government expects participation in audit to become a ‘professional norm’¹⁹ and this is to be welcomed.

Patient reported outcomes and patient experience measures are vital and individual organisations should ensure they have mechanisms in place to capture and monitor these and take action where reports suggest improvements could be made.

Underpinning the measurement of outcome is a clearly defined clinical governance framework that must exist within all provider units and networks. This will include regular morbidity and mortality review meetings, multidisciplinary working where indicated, the agreement and adoption of clinical guidelines and protocols, and regular detailed audit. Audits of practice, outcomes and untoward incidents must be discussed at trust board level and via the clinical quality review processes required by commissioners. There is a perception that the audit cycle is often not completed. Where problems arise, solutions must be identified, implemented and re-audited. This is a clinical governance issue that ultimately affects patient safety.

Outcomes should be published at organisation, hospital and unit-level in a way that is easily understood by patients but in a format that also contains the appropriate level of detail required to enable clinicians, providers and commissioners to identify concerns and seek improvements where necessary.

1.7 Planning and commissioning

The new arrangements for commissioning in England and for planning in Wales will embed over the next few years. We would recommend that for acute and essential services, such as emergency surgery, commissioning in England takes place across GP consortia to enable a sufficient catchment population size to ensure sustainability and best use of resources. Neighbouring commissioning consortia will need to collaborate in order to ensure high quality, safe emergency surgical services can be provided at scale. In Wales, local health boards should consider their population as a whole and should collaborate with others to support networks of care. It is hoped that these standards will assist in planning and purchasing high quality and efficient services.

1.7.1 Standards for unscheduled surgical care

The following three sections describe the standards that underpin the delivery of a high quality surgical service. They have been written by the relevant medical royal college or specialty association and should facilitate collaborative dialogue and assist service planners and commissioners to work together to ensure emergency surgical services are of the required standard. These standards apply to both paediatric and adult patients.

Section 2: Standards for unscheduled surgical care (generic)

It has been our intention to develop generic standards of care; more detailed standards will be available from the relevant college or specialty association.

2.1 Provision of the emergency surgical service

Rationale: The service is provided in the safest and most efficient manner possible. Patients are prioritised according to clinical need and provided with access to senior decision makers at each stage of the pathway to ensure best outcomes and best use of resources.

STANDARD	MEASUREMENT CRITERIA
Critically ill patients have priority over elective patients. This includes the delay of elective surgery to accommodate emergency surgical patients if necessary.	Regular departmental audit, reported to clinical governance committee.
The unit has the required resources and equipment to stabilise and resuscitate the patient at all times. This includes provision of 24-hour radiology, critical care, operating theatres including senior anaesthetic availability, full emergency theatre staffing and appropriate ward bed access. If the receiving unit is unable to provide these services, agreed protocols are in place for ambulance by-pass or transfer to a designated appropriate receiving unit. Best practice: Immediate availability of trained personnel, fully staffed and equipped resuscitation room.	Description of facilities and resources available. Audit
Assessment of patients is carried out regularly during their admission by competent personnel. Agreed escalation protocols are in place to deal with the deteriorating patient. Guidance contained within NICE CG50 ⁴ is adhered to. Best practice: Modified early warning score (MEWS)/paediatric early warning score (PEWS) are used. Acute response team is available 24/7.	Regular departmental audit, reported to clinical governance committee. Incorporated into morbidity and mortality meetings/clinical audit.
All patients undergo VTE assessment on admission and regularly thereafter. Appropriate steps are taken to manage risks. See <i>Further reading 3.8.1</i> and <i>3.8.2</i> .	Regular audit.
All services are consultant-led. Best practice: Services are consultant-delivered.	Description of department staffing, examination of rota

STANDARD	MEASUREMENT CRITERIA
<p>As a minimum, a specialty trainee (ST3 or above) or a trust doctor with equivalent ability (ie MRCS with ATLS® provider status), is available to see/treat acutely unwell patients at all times within 30 minutes and is able to escalate concerns to a consultant.</p> <p>There is a surgical team available with the required range of competences in order to deal simultaneously with the six essential elements of an emergency surgical service at the same time (see <i>Box 1</i>, p7).</p> <p>Sufficient support is provided by colleagues in nursing and allied health professions in order to maintain continuity of care for patients.</p>	<p>Description of department staffing arrangements, examination of rota, departmental escalation guidelines.</p>
<p>In circumstances where a resident surgeon does not have the required competences to assess/treat the patient, consultants are available to take responsibility.</p>	<p>Examination of rota, written departmental escalation guidelines.</p>
<p>A consultant is available at all times for telephone advice.</p>	<p>Written policy/examination of rota.</p>
<p>The designated consultant is able to attend his/her base site within 30 minutes at all times.</p>	<p>Contractual arrangements/departmental policy.</p>
<p>There are agreed specialty risk scoring mechanisms in place and these are applied to all patients admitted as an emergency.</p>	<p>Written guidelines, adherence to NICE CG50.⁴</p>
<p>Those considered at high risk (eg patients with a predicted mortality of $\geq 10\%$ using the appropriate specialty risk scoring mechanism) are discussed with the consultant and reviewed by a consultant surgeon within four hours if the management plan remains undefined and the patient is not responding as expected.</p>	<p>Departmental audit/review of practice.</p>
<p>All patients considered as 'high risk' have their operation carried out under the direct supervision of a consultant surgeon and consultant anaesthetist; early referral for anaesthetic assessment is made to optimise peri-operative care.</p>	<p>Audit of outcomes. M&M review.</p>
<p>In cases with predicted mortality of $>5\%$, a consultant surgeon and consultant anaesthetist are present for the operation except in specific circumstances where adequate experience and the appropriate workforce is otherwise assured.</p>	<p>Audit of outcomes. M&M review.</p>
<p>As an absolute minimum, for patients not considered high risk, all emergency surgical admissions are discussed with the responsible consultant within 12 hours of admission.</p> <p>Active and continued monitoring of the patient is carried out and the consultant is notified immediately if the patient's condition deteriorates.</p>	<p>Audit of outcomes. M&M review.</p>

STANDARD	MEASUREMENT CRITERIA
<p>If the patient is admitted but not taken to theatre (ie they are admitted for observation and conservative treatment), as a minimum they are seen by a consultant surgeon within a maximum of 24 hours of admission. Active and continued monitoring of the patient takes place.</p>	<p>Audit of notes/outcomes. M&M review.</p>
<p>Consultants take an active decision in delegating responsibility for emergency surgical cases to appropriately trained junior or speciality surgeons. This decision is recorded in the notes and available for audit.</p> <p>All patients admitted as emergencies are discussed with the responsible consultant if immediate surgery is being considered.</p>	<p>Audit of notes/outcomes. M&M review.</p>
<p>In specialties with a high emergency workload, the surgical team is free of elective commitments when covering emergencies.</p>	<p>Description of rota arrangements.</p>
<p>In specialties with a high emergency workload, consultants do not cover (ie are expected to be available on-site) more than one site.</p> <p>In specialties provided over a defined regional network and with less onerous emergency workloads, consultants are on-call to provide cover at their base hospital, but also may be required to provide telephone advice to a number of units across the network.</p>	<p>Description of cover arrangements. Description of network arrangements.</p>
<p>Surgeons with private practice commitments make arrangements for their private patients to be cared for by another surgeon/team when they are on-call for emergency admissions.</p>	<p>Contractual agreements.</p>
<p>Wherever possible, emergency and elective surgical pathways are separated. Both services are managed effectively to minimise the adverse impact of one upon the other.</p>	<p>Description of service and audit arrangements.</p>
<p>The time from decision to operate to actual time of operation is recorded in patient notes and audited locally.</p>	<p>Local audit, at least annually.</p>
<p>Adequate emergency theatre time is provided throughout the day to minimise delays and avoid emergency surgery being undertaken out of hours when the hospital may have reduced staffing to care for complex post-operative patients.</p>	<p>Audit of theatre availability.</p>

STANDARD	MEASUREMENT CRITERIA
<p>Emergency theatres are staffed appropriately at all times.</p> <p>Accurate profiling of workload across the surgical specialties takes place to define the number and type of theatres required. In busy units with a heavy workload more than one emergency theatre is identified and available.</p> <p>There is a separate, dedicated theatre for orthopaedic surgery and, where necessary, for other specialties as defined by audit of the requirements of each specialty.</p> <p>In highly specialised areas, better outcomes are achieved if the emergency theatre team is familiar with the type of surgery to be undertaken.</p> <p>Best practice: A dedicated, separate team is established for the emergency theatre(s) 24/7.</p>	<p>Description of theatre availability and audit against unit workload.</p> <p>Avoidable delays in care are audited.</p>
<p>Patients admitted for unscheduled surgical care are nursed and managed in a surgical ward or critical care environment.</p> <p>Best practice: Bed occupancy rates are measured on ward-by-ward basis. Average occupancy rates should not exceed 82% and outlying should be exceptional and addressed as soon as possible by relocating the patient to the next available specialty bed.</p>	<p>The number of bed days that surgical patients are cared for in non-surgical environments is audited monthly and considered by service/ governance committees as potentially adverse events.</p>
<p>The provider unit has an appropriate procedure in place to enable it to 'scale up' provision, ensuring adequate resources and facilities to manage both 'business as usual' activity and increased emergency workload. This is separate from the provider's emergency preparedness/civil contingency procedure.</p> <p>Best practice: Agreed protocols to defer elective activity in order to give adequate priority to unscheduled admissions.</p> <p>Agreement within departments that an additional consultant might be called in by the on call consultant to assist (on an ad hoc but infrequent basis).</p>	<p>Agreed protocols in place.</p>
<p>Hospitals accepting undifferentiated medical patients have access to 24-hour, on-site surgical opinion (ie of ST3 or above or a trust doctor with equivalent ability (ie MRCS with ATLS® provider status).</p> <p>If on-site surgical opinion is not available, the unit does not accept undifferentiated patients.</p> <p>Where the first attender does not have the required skills and competences to assess the patient effectively, there are agreed protocols in place to enable contact with the responsible consultant without delay.</p>	<p>Description of services offered.</p> <p>Written policies and protocols.</p>
<p>All children are admitted and operated on in an environment and with facilities and staff that meet the standards for children's surgery.</p>	<p>The organisation has met the appropriate standards for children and young people's surgery.²⁰</p>

STANDARD	MEASUREMENT CRITERIA
All admitted patients have an estimated discharge date as part of their management plan as soon as possible and no later than 48 hours post-admission.	Agreed protocols.
The maternity team is notified when a pregnant woman is admitted with a non-obstetric problem.	Agreed protocols.
Protocols are in place to manage end-of-life care and palliative support	Agreed protocols.
Suitable administrative support is available at all times for the emergency surgical team.	Description of service.
There is commitment to participate in appropriate clinical research. Best practice: Opportunities to engage in research are prioritised by the unit/network.	Research strategy for the unit/network.
All research programmes are subject to appropriate ethical approval.	Ethics committee approval for trials and research projects in place.

2.2 Leadership and governance

Rationale: The service is supported at board level and operates within a defined clinical governance framework. The service is recognised and prioritised appropriately in terms of workforce resources, equipment, facilities etc.

STANDARD	MEASUREMENT CRITERIA
<p>The emergency surgical service has an identified medical and nurse lead (ideally separate to the leads for elective provision).</p> <p>Clinical leads have provision within their job plan to lead and develop emergency surgical service provision within the organisation.</p>	<p>Role identified in job plan and reviewed at appraisal.</p>
<p>There is commitment from the executive team and senior staff to the provision of a high quality emergency surgical service.</p>	<p>Demonstrated in the organisation's published plans, reports and the presence of a management structure to support the service.</p>
<p>There is a defined governance structure to assure the quality of the service and allow for continuous improvement.</p>	<p>Presence of governance structure and regular discussion at board level.</p>
<p>The service submits data to prescribed national audits.</p>	<p>Participation monitored via quality accounts.</p> <p>Outcomes monitored through governance systems.</p>
<p>There is a regular, multidisciplinary review of patient outcomes involving all relevant specialties at least monthly.</p> <p>Regular M&M/MDT reviews of individual cases take place to identify areas of good practice and areas for improvement.</p> <p>Processes for identifying critical incidents and monitoring action plans are in place, for example, engagement with clinical quality review processes of commissioners.</p> <p>Best practice:</p> <p>There is regular and systematic capture of patient-reported outcomes, including those admitted for unscheduled care.</p> <p>Risk and clinical governance groups review the outcomes of emergency surgery. Summary hospital-level mortality indicator (SHMI) data are reviewed within organisations for unscheduled surgical care at specialty level.</p>	<p>Regular M&M/MDT meetings.</p> <p>Board scrutiny of serious untoward incidents, SHMIs and other outcome-based information.</p> <p>Trust engages with quality review processes of commissioning organisations.</p>
<p>The WHO <i>Surgical Safety Checklist</i> (or a local variant thereof) is used for all surgical procedures in theatre.</p>	<p>Local arrangements and audit.</p>

STANDARD	MEASUREMENT CRITERIA
<p>Structured arrangements are in place for the handover of patients at each change of responsible consultant/medical team.</p> <p>Time for handover is built into job plans and occurs within working hours.</p> <p>Best practice: Electronic transfer of care documents to assist with handover arrangements</p>	<p>Handover processes and documentation.</p>

2.3 Patients and supporters

Rationale: Patients and their supporters receive appropriate information about their treatment and are involved in decisions about their care and the delivery of the service. The following standards have been developed in collaboration with the RCS Patient Liaison Group.

STANDARD	MEASUREMENT CRITERIA
<p>Arrangements are in place to ensure that guidance on consent for treatment and sharing information with supporters is followed.</p> <p>Patients and supporters are able to access, at all times, a dedicated member of staff on the ward with whom they can discuss (or arrange discussion with the relevant clinician) treatment options, diagnostic findings, expected recovery timescales, complications etc.</p> <p>Best practice: 'Customer service standards' for this role are in place.</p>	<p>Written policy in place.</p> <p>Role description/rota for this post.</p> <p>Customer service standards in place and audited.</p>
<p>Information is provided to patients and supporters at each stage of the care pathway. Communication with patients and supporters is consultant-led.</p>	<p>Presence of written information where applicable.</p> <p>Feedback from patients and supporters.</p>
<p>Before surgery, except in the case of acute, life-threatening situations, there are clear mechanisms in place, in the absence of patient records, to elicit information from supporters, particularly for unconscious/elderly/confused patients.</p>	<p>Written policy in place.</p>
<p>Immediately post-surgery a member of the medical/nursing team updates the patient's supporter(s) of the outcome of surgery.</p>	<p>Feedback from patients/supporters.</p>
<p>If the patient's supporter cannot visit, a member of the wider surgical team should make contact with the supporter within a set time period following the operation (ideally within 12 hours).</p>	<p>Feedback from patients/supporters.</p>
<p>Information about the patient and their condition is imparted in a sensitive manner and communicated in such a way as to preserve dignity and confidentiality. Adequate private space must be made available for this.</p>	<p>Provision of private facilities for discussion.</p> <p>Feedback from patients/supporters.</p>
<p>There is a system of communicating the name of the responsible consultant to patients and supporters, occurring on admission and at every change of consultant responsibility.</p>	<p>Monitored on a ward-by-ward basis.</p>

STANDARD	MEASUREMENT CRITERIA
<p>Patients and supporters are given clear information on discharge from the service and are able to make contact with a healthcare professional for advice and support following discharge.</p> <p>Primary care colleagues receive timely and accurate discharge information in order to support the patient in primary care.</p> <p>Best practice: The service offers a telephone follow-up service for patients and has defined links with general practice.</p>	<p>Standard written information is available.</p> <p>Evidence of telephone advice offered.</p> <p>Feedback from patients/supporters.</p> <p>Description of telephone follow-up service and GP links.</p>
<p>The service has mechanisms to receive feedback from patients and supporters.</p> <p>Best practice: The service has a rolling programme of capturing and auditing a sample of patient's experiences of the service and acts upon the results.</p> <p>The service has arrangements to provide support services such as translation, social care, interfaith relations and advocacy advice and support.</p>	<p>Feedback audited regularly.</p>
<p>The service has arrangements to provide support services such as translation, social care, interfaith relations and advocacy advice and support.</p>	<p>Description of services offered.</p>
<p>Printed patient information leaflets on common emergency surgical conditions are available.</p>	<p>Presence of information literature.</p>
<p>Mechanisms are in place to involve patients and supporters in decisions about the organisation of the service. This should include patient groups who are part of a network of regional or sub-regional services.</p>	<p>Evidence of patient involvement in decisions about service development.</p>

2.4 Education and training

Rationale: The service supports the training and development of all staff involved in service delivery. This includes postgraduate medical training, nursing and allied health professionals. Resources and opportunities for CPD are also in place.

STANDARD	MEASUREMENT CRITERIA
<p>There is a balance within service provision to ensure surgical trainees can develop their emergency experience to achieve the required competences in emergency surgery defined in the ISCP.</p> <p>Trainees' working time is arranged to maximise training opportunities rather than simply providing cover for the service rota.</p>	<p>Compliance with specialty guidance on training and education.</p>
<p>There is commitment to the provision of multi-professional training relevant to the provision of service (eg ALTS®, APLS, EPLS, EMSB, CCrISP®).</p>	<p>Training records.</p>
<p>Resources are available to support CPD (both in terms of contractual time for study leave and finance)</p> <p>Best practice: Opportunities for staff to rotate through different areas/organisations to gain breadth of experience and maintain skills.</p>	<p>Discussed at job planning and reviewed at appraisal.</p>
<p>All healthcare professionals have competences appropriate to their role in safeguarding and treating children and young people, vulnerable adults and vulnerable groups.</p>	<p>Training records.</p>
<p>The skills and competences expected of each role within the emergency surgical team are identified and there is a plan (a) to ensure these competences are available at all times and (b) to enable staff to achieve and maintain their competence.</p>	<p>Written plan in place. Training records and rotas.</p>

2.5 Network cooperation

Rationale: Where units operate together in a network, there are good links with supporting services both within and outside the organisation.

STANDARD	MEASUREMENT CRITERIA
There is an identified network lead/director	Job plan and discussion at appraisal.
<p>Agreed guidelines and protocols for managing the service are in place covering the full patient pathway.</p> <p>Best practice: There is a forum for sharing best practice and development of the service including all contributors.</p> <p>Methods of communicating with all those delivering emergency surgical services within the unit/network are established.</p>	Protocols and guidelines in place.
<p>Emergency surgical services delivered via a network have arrangements in place for image transfer and telemedicine and agreed protocols for ambulance bypass/transfer.</p> <p>Careful planning ensures adequate beds are available across the network to reduce delays for patients being transferred.</p>	<p>Arrangements agreed.</p> <p>Written policy on transfer/bypass, audited regularly.</p>
Standards for the transfer of critically ill patients are adhered to and regularly audited (standards from ICS, RCS, SBNS and the AAGBI)	Regular (not less than annual) audit by critical care networks with involvement of relevant surgical teams.
There is regular network review of patient outcomes and experience.	Evidence of review.
Processes are in place to identify and monitor network risks and critical incidents.	Evidence of written processes.
Training takes place across the network and opportunities for learning and CPD are maximised.	Training and CPD policies.

Section 3: Supporting unscheduled surgical care (specialty-specific standards)

This section contains standards for those specialties supporting the delivery of unscheduled surgical care.

3.1 Ambulance services

The following provide generic ambulance service standards. For more specific guidance and support, please refer to the Chair of the National Ambulance Medical Directors Group.

STANDARD	MEASUREMENT CRITERIA
Agreed, regularly reviewed and audited protocols are in place covering ambulance by-pass, inter-hospital transfer and the repatriation of patients undergoing emergency surgery.	Protocols in place. Regular (not less than annual) review. Annual audit and feedback to providers/ commissioners.

3.2 Emergency department

The following provide generic emergency department standards. For more specific guidance and support, please refer to the College of Emergency Medicine (www.collemergencymed.ac.uk).

3.2.1 Request for an emergency surgical consultation made by an emergency medicine (EM) clinician

STANDARD	MEASUREMENT CRITERIA
<p>In all hospitals receiving undifferentiated patients to their EDs, a patient for whom an emergency surgical assessment is required will receive the same within 30 minutes of referral being made in the case of a life- or limb-threatening emergency, and within 60 minutes for a routine emergency referral.</p> <p>The member of the on-call surgical team responding to the request is at ST3 level or above, or a trust doctor with equivalent ability (ie MRCS with ATLS® provider status).</p> <p>Should the designated first on-call surgeon be unable to attend due to other emergency duties (eg emergency theatre or dealing with a separate life-threatening emergency elsewhere in the hospital), protocols are in place for another member of the surgical team, of similar or a greater level of competence, to be available to attend the ED, within the above time scale.</p> <p>Best practice: All requests for an emergency surgical opinion to the ED are met with a prompt and appropriate response by a surgeon with the required level of competence.</p> <p>Where the required surgical specialty provision is 'off-site', strictly audited clinical pathways must be in place to ensure the necessary prompt response for life and limb threatening conditions is achieved 24/7.</p>	<p>Operational policy, including:</p> <ul style="list-style-type: none"> › roles and responsibilities › facilities, staffing and establishment › competencies and training › rotas, job plans and cover arrangements › specialty liaison › meetings › guidelines, protocols and pathways.

3.2.2 Emergency theatre

STANDARD	MEASUREMENT CRITERIA
<p>All hospitals receiving undifferentiated patients to their EDs have 24/7 emergency operating facilities available, on site, capable of being accessed and staffed to allow the timely management of a range of life- or limb-threatening surgical emergencies.</p> <p>Under certain agreed and published clinical circumstances, it may be necessary to undertake, in the ED resuscitation room or another clinical area, an emergency life- or limb-preserving procedure that would normally only be performed in a sterile operating theatre, eg emergency thoracotomy.</p> <p>Appropriate surgical instrumentation packs are immediately available to permit such a procedure to be undertaken by a practitioner of a suitable and agreed level of competence.</p> <p>Best practice: Hospitals accepting undifferentiated patients requiring immediate life- and/or limb-preserving surgery are equipped and staffed 24/7 to manage the likely range of surgical emergencies.</p> <p>Clinical audit of all emergency surgical procedures, whether undertaken in an operating theatre or in another area (eg ED resuscitation room), is regularly undertaken.</p> <p>Where such a procedure is undertaken outside an operating theatre, the specific circumstances and clinical outcome are formally reviewed as soon as practical after the event and findings acted upon as appropriate.</p>	<p>Operational policy, including:</p> <ul style="list-style-type: none"> › roles and responsibilities › facilities, staffing and establishment › competencies and training › rotas, job plans and cover arrangements › specialty liaison › meetings › guidelines, protocols and pathways. <p>Clinical audit.</p>

3.3 Acute medicine

The following provide relevant generic acute medicine standards. For more specific guidance and support, please refer to the Royal College of Physicians (www.rcplondon.ac.uk).

3.3.1 Community/primary care

STANDARD	MEASUREMENT CRITERIA
<p>The hospital admissions process for acute medical care is streamlined to allow the most direct and efficient patient access to an AMU. Patients recognised by a referring agency in the community to have an acute medical illness requiring hospital-based treatment have direct access to an AMU or alternative forms of urgent assessment when required.</p>	<p>Operational policy for unit, including:</p> <ul style="list-style-type: none"> › staffing levels and rotas › competencies › clinical governance structure › multi-agency liaison › guidelines, protocols and pathways › audit programme.

3.3.2 Acute and local hospitals

STANDARD	MEASUREMENT CRITERIA
<p>Local networks develop major acute centres to care for those with life-threatening illness, either presenting as undifferentiated acute illness or requiring access via specific pathways, for acute medical care.</p> <p>The ‘front door’ of major acute hospitals consists of an ‘emergency floor’ with properly equipped facilities staffed by a team of clinicians who are competent in managing patients suffering from illnesses requiring immediate resuscitation including acute medical, acute surgical, major trauma and minor injury problems.</p>	<p>Operational policy for unit, including:</p> <ul style="list-style-type: none"> › staffing levels and rotas › competencies › clinical governance structure › multi-agency liaison › guidelines, protocols and pathways › audit programme.

3.3.3 Acute general surgery

STANDARD	MEASUREMENT CRITERIA
<p>Access routes for emergency surgery are on the same site and co-located with the major AMUs within a network, where possible. Surgical units need ready access to acute medical services for patients with medical co-morbidities and for those who develop acute medical complications.</p>	<p>Operational policy for unit, including:</p> <ul style="list-style-type: none"> › staffing levels and rotas › competencies › clinical governance structure › multi-agency liaison › guidelines, protocols and pathways › audit programme.

STANDARD	MEASUREMENT CRITERIA
<p>Acute medicine has prompt access to senior surgical review of acutely ill patients and vice versa. Clear protocols and lines of responsibility are identified within the network.</p>	<p>Operational policy for unit, including:</p> <ul style="list-style-type: none"> › staffing levels and rotas › competencies › clinical governance structure › multi-agency liaison › guidelines, protocols and pathways › audit programme.
<p>Acute medical units (AMUs) have an augmented care area (up to level 2 care) and staff with competences to deliver this level of care. Safe transfer arrangements must be in place to ensure appropriate admission to this area and to level 3 care when required.</p> <p>Best practice: Surgical patients have similar access to level 2 beds whether shared with acute medicine in a combined unit or in critical care services.</p> <p>Clearly defined contact pathways for named senior clinical opinion (speciality trainee or consultant) are on a rota for all specialties likely to require regular interaction with the AMU. These include: geriatric medicine, gastroenterology, diabetes and endocrinology, dermatology, rheumatology, neurology, cardiology, respiratory medicine, infectious diseases, critical care and mental health teams.</p>	<p>Operational policy for unit, including:</p> <ul style="list-style-type: none"> › staffing levels and rotas › competencies › clinical governance structure › multi-agency liaison › guidelines, protocols and pathways › audit programme.
<p>The clinical team on the AMU is consultant led. Senior review of patients is available at all times and results in the early formulation of a clinical management plan.</p> <p>There is a twice-daily consultant-led ward round/review of all patients in the AMU, seven days a week, to support ongoing decision making and to review the management plans and results. These rounds include members of the nursing team to ensure proactive management and transfer of information.</p>	<p>Operational policy for unit, including:</p> <ul style="list-style-type: none"> › staffing levels and rotas › competencies › clinical governance structure › multi-agency liaison › guidelines, protocols and pathways › audit programme.
<p>The AMU has scheduled seven-day access to diagnostic and treatment procedures such as diagnostic GI endoscopy, bronchoscopy, echocardiography, diagnostic ultrasound, CT and MRI.</p> <p>Specialist opinion for patients on the AMU is provided promptly.</p>	<p>Operational policy for unit, including:</p> <ul style="list-style-type: none"> › staffing levels and rotas › competencies › clinical governance structure › multi-agency liaison › guidelines, protocols and pathways › audit programme.

STANDARD	MEASUREMENT CRITERIA
<p>Specialty teams develop rotas of clearly identified, adequately experienced staff who can provide advice or attend and review patients expeditiously on the AMU within a maximum of four hours of a request and ideally sooner.</p>	<p>Operational policy for unit, including:</p> <ul style="list-style-type: none"> › staffing levels and rotas › competencies › clinical governance structure › multi-agency liaison › guidelines, protocols and pathways › audit programme.
<p>There is 24/7 urgent access to 'life saving' interventions such as GI endoscopy, bronchoscopy, interventional radiology within the emergency care network, ideally located on the same site as the AMU.</p>	<p>Operational policy for unit, including:</p> <ul style="list-style-type: none"> › staffing levels and rotas › competencies › clinical governance structure › multi-agency liaison › guidelines, protocols and pathways › audit programme.

3.4 Radiology

The following provide generic radiology standards. For more specific guidance and support, please refer to the Royal College of Radiologists (www.rcr.ac.uk).

3.4.1 Diagnostic radiology

STANDARD	MEASUREMENT CRITERIA
<p>All imaging departments in hospitals that admit emergency surgical patients have access to appropriately staffed 24/7 plain films, ultrasound, CT and MRI. Where MRI is not available, clear patient pathways are in place to obtain the necessary imaging from a different provider.</p> <p>Best practice: Where imaging will affect immediate outcome, emergency surgical patients have access to CT, plain films and US within 30 minutes of request. When MRI is required and not available patients are transferred to the appropriate centre. Advice on appropriate imaging is available immediately.</p> <p>There is a system in place for ensuring that reports are received, understood and acted upon.</p>	<p>Delivery of emergency imaging should be audited at a minimum of twice per year.</p>
<p>When immediate outcome is dependent on imaging studies (ie the patient is to go directly to theatre after imaging) a provisional report is available within 30 minutes and a definitive report within 1 hour.</p> <p>Where the patient is to be placed on a NCEPOD list or is to be observed, imaging reporting may be delayed until the following morning.</p> <p>Best practice: A provisional report is issued by an appropriately trained radiologist and the definitive report by a consultant radiologist.</p>	<p>Delivery of emergency imaging should be audited at a minimum of twice per year.</p>
<p>Imaging departments ensure that imaging facilities are sited appropriately to minimise the transfer of acutely ill patients and are equipped to a standard that is safe for emergency patients.</p> <p>Best practice: Plain films, CT and US is available in, or close to, emergency departments and are designed to allow monitoring throughout imaging as well as the provision of gases and life-saving drugs and support.</p>	<p>Imaging rooms should be designed with input from radiologists, radiographers, surgeons, theatre staff, anaesthetists, emergency doctors and intensivists.</p>
<p>Teleradiology adheres to the existing standards, allowing rapid transfer of images of a suitable quality to allow management decisions to be made.</p> <p>Home monitors are one megapixel minimum with the facility to magnify to three megapixels.</p> <p>Best practice: Teleradiology complies with the standards set out by the Royal College of Radiologists.²¹</p>	<p>Any failures in the system should be reported to a named site and regular analysis of the reported failures should take place to ensure a robust network.</p>

3.4.2 Interventional radiology

STANDARD	MEASUREMENT CRITERIA
<p>Hospitals providing emergency surgical services have access to 24/7 interventional radiology. Interventional radiology services are staffed by fully trained interventional radiologists, interventional nurses and interventional radiographers.</p> <p>Best practice: Interventional radiology services are ideally on the same site as the emergency services. Where they are not, or where high end intervention is necessary, there are clear and unambiguous patient pathways to deliver those services through a network solution (see transfer of patients above).</p>	<p>Departmental and individual data on outcomes should be available for all interventional procedures.</p> <p>M&M meetings should be in the job plan of all interventional radiologists at a minimum monthly interval.</p>
<p>Vascular and interventional facilities are situated close to emergency room facilities. They are safe for emergency patients.</p> <p>Best practice: Vascular and interventional facilities are of theatre standard and accessible to emergency patients and the staff attending.</p>	<p>See design teams above.</p>
<p>Interventional radiology services have an identified consultant radiologist available 24/7.</p> <p>Best practice: Interventional radiology services for emergency patients are available within one hour of request.</p>	<p>Through M&M and audit as above.</p>

3.5 Pathology

The following provide generic pathology standards. For more specific guidance and support, please refer to the Royal College of Pathologists (www.rcpath.org).

3.5.1 Pathology – generic standards for all disciplines

STANDARD	MEASUREMENT CRITERIA
<p>There is a consultant-led, 24-hour laboratory service.</p> <p>Best practice: Repertoire of tests includes availability of core tests 24/7 based on types of sub-speciality emergency surgery within hospital. Guidance for appropriate use is jointly agreed between clinical and laboratory teams, supported by advice on interpretation of results.</p>	<p>Repertoire of laboratory tests.</p> <p>Audit of appropriate use of tests.</p> <p>Audit of turnaround times.</p>
<p>The laboratory service is accredited with Clinical Pathology Accreditation (UK) Ltd.</p> <p>Best practice: All laboratory services are compliant (see <i>Further reading 3.1</i>).</p>	<p>Accreditation certificates.</p>
<p>Point-of-care testing (POCT) facilities are developed jointly with laboratory services and compliant with POCT standards.</p> <p>Best practice: Service development includes SOPs, training, quality control monitoring. Compliance with CPA (UK), POCT standards and MHRA guidance (see <i>Further reading 3.2</i>).</p>	<p>Documentation including protocols, training logs and audit of use.</p>
<p>There is audit of provision of laboratory services for emergency surgery to key areas such as ED, theatres and ICUs.</p> <p>Best practice: Ongoing audit in collaboration between clinical and laboratory teams reviewing access, use and provision of laboratory services, eg turnaround times, sample labelling.</p>	<p>Evidence of audit and feedback of results.</p>
<p>Paediatric knowledge within relevant pathology laboratories is provided where children are treated.</p> <p>Best practice: Availability of appropriate laboratory facilities and relevant advice on result interpretation and liaison with clinical teams.</p> <p>Input of key laboratory disciplines in hospital.</p>	<p>Documentation, evidence of audit and feedback.</p>
<p>Major incident planning.</p> <p>Best practice: Major Incident planning with policy stating defined procedures and roles.</p>	<p>Documentation, evidence of involvement of laboratory disciplines in 'mock' major incident exercises.</p>

STANDARD	MEASUREMENT CRITERIA
<p>Input from laboratory staff on service developments within hospitals which impact on laboratory workload to inform appropriate planning.</p> <p>Best practice: Early involvement of clinical and business leads from laboratory disciplines when new services are planned.</p>	

3.5.2 Pathology – discipline specific standards – haematology and blood transfusion

STANDARD	MEASUREMENT CRITERIA
<p>24-hour test availability including FBC, sickle cell screen, coagulation screen, group and save, and availability of blood components.</p> <p>Best practice: Repertoire of tests, and guidance for appropriate use, to be jointly agreed between clinical and laboratory teams. Availability of paediatrics tests, where required, with relevant reference ranges and ability to interpret results.</p>	<p>Repertoire of laboratory tests.</p> <p>Audit of appropriate use of tests.</p> <p>Audit of turnaround times.</p>
<p>Clinical telephone haematology advice available 24/7.</p> <p>Best practice: Advice available to discuss abnormal results, further investigation and patient management where needed.</p>	
<p>POCT facilities developed and managed jointly with laboratory services.</p> <p>Best practice: Any POCT facilities, eg for haemostasis or FBC testing, to be compliant with relevant standards and guidelines (see <i>Further reading 3.1, 3.2 and 3.3</i>).</p>	<p>Documentation including protocols, training logs, quality control.</p>
<p>Prompt availability of blood components and massive haemorrhage protocol available in all key areas.</p> <p>Best practice: Protocols jointly developed between clinical and laboratory teams available in ED, theatres, ITU and relevant wards.</p> <p>Clear, agreed lines of communication to expedite urgent issue blood components (see <i>Further reading 3.4, 3.6.1 and 3.7.1</i>).</p> <p>Surgical representation on the hospital transfusion committee.</p>	<p>Availability protocols.</p> <p>Evidence of joint case review at M&M meetings.</p> <p>Audit of management of cases.</p>
<p>Protocol for reversal of warfarin prior to emergency surgery.</p> <p>Best practice: Protocol developed jointly between clinical and laboratory teams and stating use of PCC and Vit K where needed (see <i>Further reading 3.5</i>).</p>	<p>Availability of protocol.</p> <p>Audit of management of cases.</p>

STANDARD	MEASUREMENT CRITERIA
<p>Risk assessment for VTE.</p> <p>Best practice: Ensure compliance with NICE guidelines and quality standards (see <i>Further reading 3.8.1</i> and <i>3.8.2</i>) on reducing VTE risk in all patients admitted to hospital.</p>	<p>Documentation of patient management, including:</p> <ul style="list-style-type: none"> › VTE risk assessment › provision of information on VTE prevention for patients/carers › implementation of VTE prophylaxis.
<p>Training and competence assessment of relevant staff groups to ensure compliance with regulations and standards in blood transfusion.</p> <p>Best practice: Ensuring training and competence of staff taking blood samples and collecting and administering blood components (see <i>Further reading 3.6.2</i> and <i>3.9</i>).</p>	<p>Documentation of training and competence assessment.</p>
<p>Traceability of all blood components and adverse event reporting.</p> <p>Best practice: System to ensure compliance with Blood Safety and Quality Regulations 2005 (see <i>Further reading 3.9</i>).</p>	<p>Documentation of traceability.</p> <p>Adverse event reporting within hospital and to external haemovigilance schemes with further investigation and management where needed.</p>
<p>Availability of cell salvage.</p> <p>Best practice: Availability on call service for cell salvage where relevant eg aortic aneurysm surgery (see <i>Further reading 3.7.2</i>).</p>	<p>Documentation of use, protocols and training.</p>

3.5.3 Pathology – clinical biochemistry

STANDARD	MEASUREMENT CRITERIA
<p>24-hour availability of tests including urea and electrolytes, liver function, C-reactive protein, glucose, lactate, amylase, calcium, magnesium, blood gases and human chorionic gonadotrophin.</p> <p>Best practice: Repertoire of tests bases on sub-specialty surgery. Appropriate use of tests (including those to be available out of hours) to be jointly agreed between clinical and laboratory teams with stated turnaround times.</p>	<p>Repertoire of tests.</p> <p>Audit of turnaround and appropriate use.</p>
<p>Clinical telephone advice available 24/7.</p>	
<p>POCT for blood gases available in key areas (ED, theatres, critical care).</p> <p>Best practice: Service developed and jointly managed with laboratory team and compliant with CPA (UK) and MHRA standards (see <i>Further reading 3.1</i> and <i>3.2</i>).</p>	<p>Documentation, including:</p> <ul style="list-style-type: none"> › protocols › training › quality control.

STANDARD	MEASUREMENT CRITERIA
<p>Availability of paediatric tests if paediatric surgery service provided.</p> <p>Best practice: Ability to interpret paediatric clinical biochemistry, including knowledge of the different reference ranges for paediatrics.</p>	

3.5.4 Pathology – medical microbiology and infection control

STANDARD	MEASUREMENT CRITERIA
<p>24-hour availability of comprehensive infectious diseases and infection control advice.</p> <p>Best practice: Close liaison is required between the emergency surgeons and the microbiology/infectious diseases service to identify unusual infections and minimise the risk of transmission of infection within the hospital environment. Agreed protocols should be in place to take relevant samples before the administration of antibiotics for diagnostic and public health purposes.</p>	
<p>24-hour availability of emergency samples in cerebral spinal fluid, malaria films, meningococcal PCR, blood culture, smear for tuberculosis and an agreed virology service including, where appropriate, viral haemorrhagic fever.</p> <p>Best practice: Repertoire of tests bases on sub-specialty surgery. Appropriate use of tests (including those to be available out of hours) to be jointly agreed between clinical and laboratory teams with stated turnaround times.</p>	

3.5.5 Pathology – histopathology

STANDARD	MEASUREMENT CRITERIA
<p>Appropriate use of intra-operative frozen sections.</p> <p>Best practice: Very rarely used and only if unexpected/ suspected malignancy which may alter surgical intervention, eg at kidney harvest for renal transplantation. Appropriate preparation and fixation of any resulting surgical specimens (particularly obstructed or ruptured bowel cases). This should be covered by departmental SOPs</p>	
<p>M&M reviews in cases with poor outcome (including performance of coronial autopsy as appropriate).</p> <p>Best practice: The Royal College of Pathologists has extensive documentation on the conduct of autopsies (see <i>Further reading 3.10</i>).</p>	

STANDARD	MEASUREMENT CRITERIA
For paediatric surgery, hospitals must ensure appropriate facilities available to expedite diagnosis of Hirschsprung's disease	

3.6 Anaesthesia

The following provide generic anaesthesia standards. For more specific guidance and support, including guidance for paediatric anaesthesia, please refer to the Royal College of Anaesthetists' *Guidelines for the Provision of Anaesthetic Services* document.²²

3.6.1 Anaesthesia –pre-operative assessment

STANDARD	MEASUREMENT CRITERIA
<p>All patients undergoing emergency surgery requiring anaesthesia should be seen by an anaesthetist for assessment and pre-operative optimisation; the exact timing of this visit will be dependent upon the urgency of surgery.</p> <p>Best practice: This visit is carried out by the anaesthetist who administers the anaesthetic. Alternatively, a formal handover of all patients listed and assessed occurs at the end of each on-call shift.</p>	Local audit.
Wherever general and regional anaesthesia is administered there is access to an appropriate range of laboratory and radiological services.	Local policy.
Pre-operative investigation complies with NICE recommendations.	Local audit.
Patients are optimally resuscitated before emergency surgery.	Local audit.
All patients should be assessed for adequacy of analgesia and appropriate care initiated.	Local audit.
Clear communication between surgeons, anaesthetists and intensivists with the common goal being the welfare and best interests of the patient.	Regular, local multi-disciplinary reviews, eg at M&M meetings.

3.6.2 Anaesthesia –peri-operative care

STANDARD	MEASUREMENT CRITERIA
An appropriately trained and experienced anaesthetist is present throughout the conduct of all general and regional anaesthesia for operative procedures.	Local audit. M&M meetings.
All deaths/serious morbidity should be reviewed formally by a senior member of the anaesthetic department.	Local audit. M&M meetings.
<p>Best practice: Formal presentation of all deaths/serious morbidity to the department.</p>	

STANDARD	MEASUREMENT CRITERIA
<p>The level of anaesthetic service for emergency activities, including surgery, is provided by competent anaesthetists who are either consultants or, if non-consultants, have unimpeded access to consultants and consultant supervision.</p> <p>Best practice: Emergency anaesthesia in ASA3 and above patients should be provided by consultant anaesthetists</p>	Local audit.
Named supervisory consultants are available to all non-consultant anaesthetists and those they are supervising know their identity, location and how to contact them.	Local audit.
In hospitals receiving patients with major injury and trauma, there is a sufficient level of appropriately experienced medical and non-medical staff to provide a 24-hour emergency service.	Local protocols.
Trained anaesthetic assistance is present at all times in all clinical areas where anaesthetics are administered, including the emergency and radiology departments.	Local audit. Association of Anaesthetists of Great Britain and Ireland (AAGBI) guidelines (see <i>Further reading 4.2.3</i>).
All equipment used to provide anaesthesia, including monitoring equipment, complies with the recommendations of the AAGBI.	Local audit.
A high performance, blood warming system with a ready supply of disposables is readily available to allow rapid infusion of blood and fluids.	Local audit.
All consultant anaesthetists and anaesthetic trainees working in emergency surgery and trauma have specific training in the skills required for this area.	National guidance.

3.6.3 Anaesthesia – post-operative care

STANDARD	MEASUREMENT CRITERIA
Until patients can maintain their airway, breathing and circulation, they are cared for on a one-to one basis by competent and appropriately trained recovery staff.	Local policy.
Sufficient numbers of recovery staff are present until a patient is discharged to the ward.	Local policy.
All hospitals provide appropriate services for the relief of pain.	Local audit.

STANDARD	MEASUREMENT CRITERIA
Many patients presenting after emergency surgery require intra-hospital transfer; to the operating theatre, to radiology suites (for further investigation or haemostasis by embolisation) or to the critical care unit. Inter-hospital transfer to other specialist units may also be required (eg neurosurgical or cardiothoracic units for patients with serious head or intra-thoracic great vessel injuries). Trained anaesthetic staff, assistance and equipment are essential in the provision of these services.	Local audit.

3.6.4 Anaesthesia – immediate (within one hour)

STANDARD	MEASUREMENT CRITERIA
In some patients, particularly those with uncontrolled bleeding, surgery is regarded as part of resuscitation; anaesthetists, as part of the multi-disciplinary team, should ensure surgery is not delayed. Such patients require care from a consultant anaesthetist and one other anaesthetist – at least until they are stabilised.	Local audit.
Patient transfer is carried out to standards described by the AAGBI (see <i>Further reading 4.2.3</i>) and ICS.	Local audit.
The peri-operative anaesthetic care of ASA3 and above patients requiring immediate major surgery (and therefore with an expected higher mortality) is directly supervised by a consultant anaesthetist. Many ASA3 and above patients require post-operative care in a critical care area.	Local audit.
In situations where a trainee is remotely supervised, the trainee must contact their supervising consultant immediately who should attend as soon as is possible – no later than 30 minutes after being called.	Local policy/national guidelines.

3.6.5 Anaesthesia – urgent (within 24 hours)

STANDARD	MEASUREMENT CRITERIA
The time of surgery is determined by its urgency based upon the needs of the individual patient. Pre-operative anaesthetic assessment and optimisation is undertaken as soon as the patient has been referred for surgery.	Local audit.
The peri-operative anaesthetic care of all patients is, at all times, led by a consultant anaesthetist.	Local policy.
Clinical care may be delegated to a supervised, clinically competent trainee of sufficient seniority.	Local audit.

STANDARD	MEASUREMENT CRITERIA
All departments develop a risk assessment process to ensure that the postoperative care of patients occurs in an appropriately monitored and staffed area.	Local policy.
Consideration is given to critical care or extended recovery (Level 1) admission.	Local audit.
<p>Critical care outreach services are involved if appropriate.</p> <p>Best practice: All emergency patients are reviewed by critical care outreach service.</p>	Local audit.

3.7 Intensive Care

The following provide generic intensive care standards. For more specific guidance and support, please refer to the Intensive Care Society (www.ics.ac.uk)

STANDARD	MEASUREMENT CRITERIA
The intensive care service is consultant led.	Audit of activity.
There is 24-hour cover of the ICU by a named consultant with appropriate experience and competences.	
A consultant in intensive care medicine reviews all emergency surgical admissions to the ICU within 12 hours.	
Intensive care requirements are considered for all patients needing emergency surgery. There is close liaison and communication between the surgical, anaesthetic and intensive care teams peri-operatively with the common goal of ensuring optimal safe care in the best interests of the patient.	Case note review. Multidisciplinary audit meetings.
Level 2 and level 3 bed provision is sufficient to support the anticipated emergency surgical workload.	Regular audit of activity (not less than annual). Audit by critical care networks with involvement of relevant surgical teams. Continuous audit of patients not admitted, and managed at a lower level of care because of lack of capacity. Number of transfers required for lack of capacity
Units providing level 2 and level 3 support to emergency surgical patients are staffed and equipped to agreed standards. Best practice: Standards defined by the ICS. ²³⁻²⁵	Audit of facilities and staffing (not less than annual).
Critical care facilities are available at all times for emergency surgery. If this is not the case, agreed protocols for transfer are in place.	Local audit of critical care facilities Network agreed protocols in line with national guidelines (ICS and AAGBI) for transfer in place and audited.
Specialist intensive care services are matched to specialist surgical requirements, eg neurosurgery and cardiothoracic surgery. Specialist surgery that is likely to require specialist ICU support is not undertaken without appropriate intensive care support unless the patient's life is endangered by transfer prior to surgery. When specialist critical care services are not available following emergency surgery, or when the patient requires transfer to another facility for emergency surgery, the critical care team supports patient transfer in line with agreed transfer protocols. Where appropriate and available, specialist retrieval services, eg PICU, are used.	Transfer protocols agreed with appropriate specialist centres are in place and audited for compliance and problems.

STANDARD	MEASUREMENT CRITERIA
<p>Critical care input is available either directly or through an outreach team to advise and support the management of emergency surgical patients on the wards. Agreed escalation protocols result in appropriate and timely critical care referral.</p> <p>Best practice: Clear defined parameters for monitoring and detecting deterioration in surgical ward patients are in place, with guidelines and defined responsibilities for escalation of care and involvement of senior staff from critical care and surgery.</p>	<p>Audit of patient deterioration on the ward. Use of early warning scores and appropriate use of escalation pathways.</p>
<p>M&M reviews of surgical patients admitted to intensive care facilities are undertaken with surgical teams with post mortem data available where appropriate. Critical care teams are also involved in review of surgical patients who died on the ward for lack of active management.</p> <p>Best practice: Regular multidisciplinary reviews of patient outcome.</p>	<p>Audit of frequency of meetings, outcomes reviewed, and actions taken.</p>

3.8 Discharge, ongoing care and rehabilitation

STANDARD	MEASUREMENT CRITERIA
All emergency surgery patients are assessed early on in their admission to ensure an appropriate ongoing care, discharge and rehabilitation package is in place.	Audit.
Ongoing care and rehabilitation occurs in an appropriate place, as close to the patient's home as possible (and not necessarily where the admission took place).	Audit.
<p>No patient is discharged without an appropriate care plan.</p> <p>Patients and their GPs are given adequate and timely information upon discharge to ensure ongoing care and rehabilitation can occur.</p>	<p>Audit.</p> <p>Feedback from patients and GPs.</p>

Section 4: Delivering unscheduled surgical care (surgical specialty standards)

This section contains standards for the delivery of unscheduled surgical care from the surgical specialty associations.

4.1 General surgery

The following provide generic general surgery standards. For more specific guidance and support, please refer to the Association of Surgeons of Great Britain and Ireland (www.asgbi.org.uk).

In addition to operating, the emergency general surgical service plays a key hospital role in the assessment of emergency referrals and the management of critical surgical illness. Patients with complications of surgery and emergency surgical admissions who do not require surgery also require complex ongoing unscheduled care.

The emergency general surgical operations most frequently performed are incision and drainage of abscess, appendicectomy and cholecystectomy. Improved management systems (workforce, location of patients, access to investigations and access to theatre) would reduce the current considerable systemic delays and unnecessary bed occupancy thereby improving outcomes and reducing the burden of hospital care from its current level for these cases. Similar considerations apply to patients admitted for non-operative care.

Abdominal infections (including peritonitis) and bowel obstructions (with or without ischaemia) form the sizeable but mixed group which contribute the majority of major operations, deaths and complications. They utilise a disproportionate amount of healthcare resource and are, for example, the largest general user of level 3 critical care (intensive care).

STANDARD	MEASUREMENT CRITERIA
<p>Patients requiring unscheduled inpatient surgical care are under the direct daily supervision of a consultant surgeon (CCT holder).</p> <p>Best practice: Identified consultant in administrative charge of emergency general surgery admissions with specific audit and managerial support</p>	<p>Job plans.</p>
<p>The urgent assessment of patients with emergency surgical illness or complication requires staff adequate in numbers and seniority for that service.</p> <p>For a typical major hospital, the emergency general surgical team will comprise a consultant surgeon (CCT holder), middle grade (MRCS holder), core trainee and foundation doctor. As major procedures often require three surgeons, the effect on other activities during major surgery should be anticipated.</p> <p>Best practice: Clear referral lines including cover arrangements for busy periods.</p>	<p>Examination of rotas, Audit</p> <p>Ensure all middle grade have MRCS or equivalent, ATLS® and if dealing with critically ill patients, CCrISP®.</p> <p>Ensure all CCT applicants in general surgery have ST8 competences as defined in the ISCP.</p>

STANDARD	MEASUREMENT CRITERIA
<p>Delivering an effective emergency general surgical service requires the entire team to be free of all other commitments, except in a few hospitals with low emergency workloads.</p>	<p>Job planning.</p>
<p>The location of emergency patients within a single area greatly facilitates an effective service and enhances patient safety.</p>	<p>Priority in hospital planning and bed management.</p>
<p>A modern, effective emergency general surgery service requires adequate theatre access, senior radiological support (including interventional radiology), senior anaesthetic support and critical care facilities.</p>	<p>Multi disciplinary audit and case review.</p>
<p>Vascular services are commissioned according to guidance from the Vascular Society of Great Britain and Ireland (VSGBI).²⁶</p>	<p>Audit against VSGBI standards.²⁶</p>
<p>In order to minimise avoidable harm, patients require definitive treatment by surgery or similar intervention (most commonly interventional radiology) with an urgency which is graded and escalated according to the degree of illness.</p> <p>Best practice: The timescale of intervention is defined and achieved.</p> <ol style="list-style-type: none"> 1. Patients with ongoing haemorrhage require immediate surgery. 2. Patients with septic shock who require immediate surgery are operated on within three hours of the decision to operate as delay increases mortality significantly. 3. Patients with severe sepsis (with organ dysfunction) who require surgery are operated on within a maximum of six hours to minimise deterioration into septic shock. 4. Patients with sepsis (but no organ dysfunction) who require surgery should have this within a maximum of 18 hours. 5. Patients with no features to indicate systemic sepsis can be managed with less urgency but in the absence of modern and structured systems of care, delay will result in unnecessary hospital stay, discomfort, illness and cost. <p>Specific surgical or medical considerations may demand a greater degree of urgency for given cases.</p>	<p>Audit of process and outcome data.</p>

STANDARD	MEASUREMENT CRITERIA
<p>Achieving timely definitive care of critically ill patients requires that due priority is given to urgency and leadership at each stage of the acute management pathway (assessment, senior input, investigation, anaesthetic review, critical care review, theatre scheduling, operation).</p> <p>Best practice: Hospital has agreed integrated pathway to facilitate the following within a defined timescale:</p> <ul style="list-style-type: none"> › Urgent review by a surgeon with MRCS and ATLS® provider status. › Urgent access to imaging (CT). › Rapid senior (anaesthetic/surgical) review. › Adequate critical support. › Timely definitive treatment (surgery/radiology/medical). 	<p>Audit of key steps as per joint RCS/DH guidelines.¹</p>
<p>Management of critically ill patients requires assessment at MRCS level, critical care support and consultant surgeon (CCT) input within 30 minutes and rapid access to CT.</p>	<p>Examination of rota. Audit.</p>
<p>Resuscitation of patients follows NICE CG50⁴ and the joint RCS/DH guidelines.¹</p> <p>The time taken to carry out definitive treatment is important and consultant (CCT) input is often required to ensure that it is achieved as above.</p> <p>Resuscitation should not delay surgery in patients in class 1 or 2. Resuscitation should be conducted in the anaesthetic room or similar.</p> <p>Adequate access to theatre, radiology and critical care is essential.</p> <p>Best practice: Surgeons with MRCS and ATLS® provider status and CCT holders are free from other duties when on call for emergencies.</p>	<p>Audit of delay to surgery.</p> <p>Audit of deferred urgent theatre cases.</p>
<p>Access to an operating theatre occurs within the timescales indicated above. If necessary, elective cases should be deferred to achieve this. Theatre access is free from predictable obstruction or restriction caused by over-running elective work or workforce shortage.</p>	<p>Audit of theatre availability/ utilisation.</p>
<p>Where patients in class 3 are resuscitated overnight, they must take first priority in theatre in the morning, if necessary ahead of elective surgery.</p> <p>Best practice: Evidence of close and collegiate emergency theatre working.</p>	<p>Audit of time from booking to surgery and of theatre cases continuing beyond midnight.</p>
<p>While patients are awaiting surgery, they are monitored in an environment with appropriate critical care support and appropriate surgical review. If deterioration occurs, intervention may need to be brought forward.</p>	<p>Description of peri-operative care monitoring and audit.</p>

STANDARD	MEASUREMENT CRITERIA
A consultant surgeon (CCT holder) and consultant anaesthetist are present for all cases with predicted mortality $\geq 10\%$ and for cases with predicted mortality $>5\%$ except in specific circumstances where adequate experience and manpower is otherwise assured.	Audit of consultant presence. Examination of rota.
A consultant surgeon (CCT holder) should be present for all unscheduled returns to theatre.	Audit of consultant presence.
A consultant surgeon (CCT holder) should be present for all cases where the experience, practical or organisational skills of the duty trainee are liable to be exceeded or where the assistance available to them will otherwise be insufficient.	Audit of consultant presence.

4.2 Emergency surgery in children

Note: The following standards are applicable to all specialties providing emergency surgical care to children. Specialist paediatric surgery has its own standards at *Section 4.3*.

The following provide generic standards for the emergency surgical treatment of children. For more specific guidance and support, please refer to the British Association of Paediatric Surgeons (www.baps.org.uk).

STANDARD	MEASUREMENT CRITERIA
Development of a managed clinical network of care should be encouraged to underpin the local delivery of safe services, provide CPD and refresher training and to support clinicians if unexpected circumstances require that they act beyond their practised competences.	Managed clinical network established. Annual appraisal of network.
Consultants work within the limits of their professional competence and there are locally agreed guidelines which assist in deciding which cases are managed on site and those which require transfer with regard to age, co-morbidity, complexity of surgery and trauma.	Written guidelines with annual review. Audit of effectiveness of guidelines.
There is a written policy regarding the age range of children anaesthetised within the hospital (and for the out of hours period if the level of paediatric anaesthetic competences is different).	Written policy with annual review. Effectiveness of policy with audit of outcomes including transfers and untoward incidents.
Surgeons taking part in an emergency on-call rota which includes cover for emergencies in children have appropriate training and competence to handle the emergency surgical care of children, including those with life threatening conditions who cannot be transferred or who cannot wait until a designated surgeon or anaesthetist is available.	Evidence of child-specific training and CPD.
The trust/network/health board has a policy to support surgeons and anaesthetists undertaking life-saving interventions in children who cannot be transferred or who cannot wait until a designated surgeon is available.	Written policy in place. Notify such cases to the trust for audit purposes.
All hospitals admitting emergencies have the required resources and equipment to stabilise and resuscitate children, including infants, at all times. Best practice: Lead anaesthetist and board member for children take responsibility.	Adequacy of resources assessed annually.
Emergency surgery is only undertaken in hospitals with comprehensive paediatric facilities, 24/7 paediatric cover, paediatric nursing support and paediatric-competent anaesthetic support. Best practice: There is always at least one member of staff on site trained and competent in APLS/EPLS/pILS.	Description of service. Audit.

STANDARD	MEASUREMENT CRITERIA
<p>Emergency theatres are staffed by a paediatric-competent theatre team.</p> <p>Best practice: All theatre staff have child-specific training.</p>	<p>Evidence in appraisals.</p>
<p>Access to paediatric critical care facilities is available at all times.</p> <p>Agreed protocols for transfer to these facilities are in place.</p> <p>Best practice: Fully staffed HDU beds available 24/7 on site.</p> <p>Formal arrangement with regional PICU for acceptance and transfer of the critically ill child, including retrieval.</p>	<p>Delays in acceptance and transfer of critically ill children audited.</p>
<p>Where children present to an ambulatory/day-case facility, there is a robust procedure in place for assessment and transfer.</p> <p>Best practice: Children are reviewed by a senior paediatrician and/or general surgeon.</p> <p>Written protocol for assessment and transfer of emergency surgical child.</p>	<p>Efficiency of assessment and transfer pathway.</p>
<p>The critically ill child with an immediate life-threatening condition is assessed by a senior clinician and the decision to operate or transfer is made promptly.</p> <p>Best practice: Consultant-led, multidisciplinary team resuscitation, assessment and decision of definitive management.</p>	<p>Audit of outcomes, untoward incidents and transfers.</p>
<p>For emergency surgical conditions not requiring immediate intervention, children do not normally wait longer than 12 hours from decision to operate to undergoing surgery.</p>	<p>Audit of time intervals between admission, decision to operate and operation.</p>
<p>The ongoing care of inpatients/post-operative patients is managed by senior trainees (ST3 or above) or trust doctors with equivalent ability (ie MRCS with ATLS® provider status) and consultants on children's wards that have paediatric-trained nursing staff.</p>	<p>Description of service. Audit.</p>
<p>Written information on common emergency conditions is available for children and their parents/carers.</p>	<p>Printed information leaflets available and updated annually.</p>
<p>Parents/carers are allowed to accompany their child in the anaesthetic and recovery areas unless the child's condition is a contra-indication.</p>	<p>Feedback from patients and supporters.</p>
<p>There is a written policy for pain management in children.</p>	<p>Written policy reviewed annually.</p>
<p>All surgeons and anaesthetists caring for children undertake child-specific training, including paediatric life support, safeguarding and CPD requirements (which can usually be provided in house).</p> <p>Best practice: Provision in job plan.</p>	<p>Recorded in appraisal.</p>

STANDARD	MEASUREMENT CRITERIA
<p>Anaesthetists with no regular paediatric commitment but who have to provide out-of-hours cover for emergency surgery or stabilisation of children prior to transfer should maintain skills in paediatric resuscitation and an appropriate level of CPD in paediatric anaesthesia to meet the requirements of the job.</p> <p>Best practice: Provision in job plan.</p>	<p>Recorded in appraisal.</p>
<p>Training is organised so that the requirements of the general surgical syllabus, which requires all general surgeons to receive training in the management of common childhood surgical emergencies during training, can be achieved.</p>	<p>Recorded in appraisal.</p>
<p>There is trust/network/health board wide audit of emergency surgery in children.</p>	<p>Regular audit, outcomes discussed at board level.</p>
<p>Emergency paediatric surgical practice is audited annually using routinely collected data. For example: time between admission/decision to operate and operation; length of stay; morbidity and mortality. Audit should include paediatric surgical transfers and untoward incidents including unplanned re-admissions and unplanned admissions to a critical care unit.</p>	<p>Evidence of regular audit, outcomes discussed at board level.</p>
<p>Emergency children's surgery is included in inter-network audit of children's surgery.</p> <p>Best practice: There should be common and agreed methods of data collection which are easily comparable between trusts.</p>	<p>Regular audit discussed at board level.</p>

4.3 Specialist paediatric surgery

The following provide generic paediatric surgery standards. For more specific guidance and support, please refer to the British Association of Paediatric Surgeons (www.baps.org.uk).

These standards apply to all settings where specialist paediatric surgical services are available to accept emergencies.

STANDARDS	MEASUREMENT CRITERIA
Neonatal intensive care facilities are available at all times. All transfers and their outcomes should be audited.	Description of facilities. Transfer protocols in place and regularly audited.
Paediatric-trained nurses, recovery and ward staff are available at all times. Emergency theatres are staffed by a paediatric-trained theatre team.	Description of service and available resources.
For the most immediate, life-threatening conditions, the patient is in theatre within two hours from the initial alert/decision to operate. Whenever possible, this is a dedicated children's theatre.	Description of facilities. Regular audit.
The ongoing care of inpatients/post-operative patients is managed by senior trainees (ST3 or above) or trust doctors with equivalent ability (ie MRCS with ATLS® provider status) and consultants, on paediatric surgical wards that have paediatric-trained nursing staff.	Examination of rota.
The outcomes of emergency specialist paediatric surgical practice is audited using routinely collected data. This should include: median length of stay; 30-day mortality; 28-day unplanned readmission and outcomes for patients transferred out.	As directed by the specialty association.
All units submit data to the British Association of Paediatric Surgeons' annual national audits.	Participation in audit recorded in quality accounts.

4.4 Trauma and orthopaedic surgery

The following provide generic standards for trauma and orthopaedic surgery. For more specific guidance and support, please refer to the British Orthopaedic Association (www.boa.ac.uk).

4.4.1 General trauma

STANDARDS	MEASUREMENT CRITERIA
<p>A unit accepting orthopaedic surgical emergencies has daily access (including weekends) to routine trauma lists which are independent of general emergency theatres.</p> <p>Best practice: An additional theatre is immediately available for urgent and complex orthopaedic problems, such as open fractures and those with neurovascular compromise.</p>	<p>Inappropriate surgical delay.</p>
<p>Trauma patients are managed within a regional trauma network. Complex injuries are treated in centres with appropriate volumes within the region – this does not have to be the regional centre.</p> <p>Best practice: Appropriate triage by the ambulance service to minimise secondary transfers.</p>	<p>Secondary transfer rate.</p>
<p>A consultant leads the trauma team in all units receiving seriously injured patients.</p> <p>Best practice: Consultant-led trauma team in place 24/7.</p>	<p>Trust protocols. Audit.</p>
<p>If CT scanning is to be performed in patients with multiple injuries, routine use of ‘top to toe’ scanning is recommended in the adult trauma patient if no indication for immediate intervention exists.</p> <p>Best practice: Within 30 minutes.</p>	<p>Trust protocols. Audit.</p>
<p>There is standardised transfer documentation of the patients’ details, injuries, results of investigations and management with records kept at the dispatching and receiving hospitals. This should include documentation for acute transfer and standardised documents for repatriation to the base hospital for continued therapy and rehabilitation.</p> <p>Best practice: The local receiving unit should be optimised for triage, critical resuscitation and rapid dispatch.</p>	<p>Trust protocols. Audit.</p>

STANDARDS	MEASUREMENT CRITERIA
<p>There is standardised transfer documentation of the patients' details, injuries, results of investigations and management with records kept at the dispatching and receiving hospitals. This should include documentation for acute transfer and standardised documents for repatriation to the base hospital for continued therapy and rehabilitation.</p> <p>Best practice: The local receiving unit should be optimised for triage, critical resuscitation and rapid dispatch.</p>	<p>Audits of transfers and protocols</p>

4.4.2 Paediatric trauma

STANDARDS	MEASUREMENT CRITERIA
<p>Care is in accordance with the British Orthopaedic Association's <i>Children's Orthopaedics and Fracture Care</i>.²⁷</p> <p>The fracture care of children should be led by a consultant trained in children's orthopaedics.</p> <p>Best practice: Arrangements within a network of hospitals to treat complexity of injury appropriately. The majority of injuries should be treated in non-specialist centres.</p>	<p>Lead clinicians to be identified.</p>
<p>There is daily access for children to a dedicated orthopaedic emergency theatre.</p>	
<p>Each receiving unit has up-to-date guidelines for children which recognise the paediatric skills available on site and their limitations and include agreed guidelines for communication and transfer with specialised paediatric services within the local clinical network.</p>	<p>National service framework for children.</p>

4.4.3 Hip fractures

STANDARDS	MEASUREMENT CRITERIA
<p>Care is in accordance with the British Orthopaedic Association Standards for Trauma (BOAST 1)²⁸ aiming to achieve prompt surgery and appropriate involvement of geriatric medicine. Data is submitted to the National Hip Fracture Database</p> <p>Best practice: Compliance with the best practice tariff for fragility hip fracture care:²⁹</p> <ol style="list-style-type: none"> 1. Time to surgery within 36 hours from arrival in an emergency department, or time of diagnosis if an inpatient, to the start of anaesthesia. 2. Admitted under the joint care of a consultant geriatrician and a consultant orthopaedic surgeon. 3. Admitted using an assessment protocol agreed by geriatric medicine, orthopaedic surgery and anaesthesia. 4. Assessed by a geriatrician in the preoperative period: within 72 hours of admission. Postoperative geriatrician-directed multi-professional rehabilitation team. 5. Fracture prevention assessments (falls and bone health). 	<p>Performance in the National Hip Fracture Database.</p>

4.4.4 Cervical spine

STANDARDS	MEASUREMENT CRITERIA
<p>Care should be in accordance with BOAST 2³⁰ aiming to achieve appropriate spinal clearance in the trauma patient.</p>	<p>Compliance rates.</p>

4.4.5 Pelvic and acetabular fracture management

STANDARDS	MEASUREMENT CRITERIA
<p>Care is in accordance with BOAST 3³¹ aiming to achieve specialist care for displaced and unstable fractures.</p> <p>Best practice: Regional protocols for initial emergency management. Established pathways of care within a trauma network for definitive care.</p>	<p>Definitive surgery, where appropriate, within one week.</p>
<p>On identification of patients with a fracture of the pelvis or acetabulum in a non-specialist centre, referral is made within 24 hours.</p> <p>Best practice: Within an established trauma network, patients suspected of having sustained these injuries will be transported direct to the regional centre.</p>	<p>Definitive surgery, where appropriate, within one week.</p>

4.4.6 Severe open lower limb fractures

STANDARDS	MEASUREMENT CRITERIA
<p>Care is in accordance with BOAST 4³² aiming to achieve timely, specialist surgery rather than emergency surgery by less experienced teams.</p> <p>Best practice: Specialist orthoplastic care within a trauma network.</p>	
<p>Centres that cannot provide combined plastic and orthopaedic care for severe open tibial fractures have protocols in place for early transfer to an appropriate specialist centre.</p>	<p>Audit of transfers and protocols.</p>

4.5 Plastic surgery

The following provide generic plastic surgery standards. For more specific guidance and support, please refer to the British Association of Plastic, Aesthetic and Reconstructive Surgeons (www.bapras.org.uk).

STANDARDS	MEASUREMENT CRITERIA
<p>Arrangements are in place to provide senior telephone advice to colleagues in other hospitals within the network within 30 minutes and to transfer a patient to the admitting unit immediately if required, or at the appropriate time as determined by the referring and admitting consultants.</p> <p>Best practice: The admitting unit switchboard has the contact details of the on-call or covering consultant at all times.</p> <p>Priority is given to the emergency or urgent transfer of patients requiring specialist care</p>	<p>The switchboard has the contact details.</p> <p>There is a transfer protocol in place in the admitting hospital for specialist services.</p> <p>Patient transfer delays are regularly audited and reviewed at departmental and organisational level if adverse.</p>
<p>Any unit or centre that admits patients with burns is designated as a burns facility, unit or centre, and complies with the International Burn Care standards including the requirements for data collection through IBID and the audit of activity and outcomes.</p> <p>Best practice: Any patient with burns is cared for within a burns care network in an appropriate designated facility, unit or centre according to the UK burn care standards.</p> <p>All patients admitted are entered into the IBID.</p> <p>Any admitted patient is subject to audit of activity and outcome by the relevant UK burn-care network.</p>	<p>Admitting units are designated by DH through the National Network for Burn Care.</p> <p>Data returns and validation by IBID.</p> <p>Network level audit is in place.</p>
<p>Access to a staffed theatre that is suitable and equipped for microsurgery is available at all times of day and within 30 minutes of notification.</p> <p>Best practice: There is an emergency theatre equipped for microsurgery available within 30 minutes at all times.</p>	<p>A theatre with an binocular operating microscope suitable for plastic surgery.</p> <p>Appropriate instrumentation, equipment and environmental control can be made available within 30 minutes.</p>
<p>Sufficient capacity for unscheduled plastic surgical operating is available to allow patients to receive their operation within clinically appropriate timescales and in an appropriately staffed and equipped environment.</p> <p>Best practice: Unscheduled admissions or referrals already in hospital can be operated on during daylight or twilight hours with theatre staff familiar with plastic surgery and appropriate equipment and instrumentation.</p> <p>Limb- and life-threatening conditions can be operated on without delay at any time of day. This will usually require a dedicated theatre for unscheduled plastic surgery seven days a week.</p>	

STANDARDS	MEASUREMENT CRITERIA
<p>Arrangements are in place for unscheduled referrals with hand and other soft tissue injuries to be managed in an ambulatory setting if appropriate.</p> <p>Best practice: There is a protocol to divert appropriate unscheduled referrals into an ambulatory setting for semi-elective care and sufficient daycase theatre capacity is allocated for these patients.</p>	<p>The daycase rate for selected unscheduled referrals, eg single-digit hand injuries, displaced fractures of the nose, facial soft tissue injuries.</p>
<p>Specialist ortho-plastic centres meet the standards for open fractures of the lower limb including the provision of daytime ortho-plastic operating lists.</p> <p>Best practice: There are designated unscheduled ortho-plastic surgery lists during daylight hours at least twice a week to permit standard compliant care for open fractures, run by orthopaedic and plastic surgery consultants with specialist training in these injuries.</p>	<p>The BAPRAS/BOA standards are met.</p> <p>There are plastic surgery and orthopaedic consultants working in teams and with adequate beds and unscheduled daytime capacity.</p> <p>There are combined multi-disciplinary ward rounds and orthoplastic clinics.</p>
<p>The peri-operative care of patients is managed by senior trainees (ST3 or above) or trust doctors with equivalent ability (ie MRCS with ATLS® provider status) and consultants, assisted by other trainees and clinicians on surgical (or children's) wards that have qualified nursing staff, who have received plastic surgery or burns training.</p> <p>Best practice: All unscheduled patients are seen every day by at least an ST3 or above trainee, or a trust doctor with equivalent ability (ie MRCS with ATLS® provider status). Day-to-day management is directed by a consultant plastic surgeon. An ST3 or equivalent (as above) is available to review any patient at all times.</p> <p>Patients are cared for on dedicated plastic surgery (or burns) wards or on surgical or children's wards where the staff have specific plastic surgery training.</p>	
<p>Allied health professionals (AHPs) with appropriate specialist skills (physiotherapy, hand therapy, occupational therapy, speech therapy and dietetics) as well as psychology are available and resourced to support plastic surgery patient care.</p> <p>Best practice: There are adequate AHP's appropriate to the volume and scope of patients being cared for. This will vary between providers. Inpatients can access psychological support if clinically appropriate.</p> <p>Advice about psychological support in the community and third sector is available and offered to patients.</p>	<p>The value of AHPs in the outcome for patients is recognised and multi-disciplinary care teams are in place within the service.</p> <p>There is a psychologist or mental health liaison practitioner available for all patients that require such input.</p>
<p>The outcome of emergency specialist plastic surgical practice is audited using routinely collected data. Indicator procedures for unscheduled practice are agreed.</p> <p>Best practice: Indicator unscheduled procedures or conditions are agreed and outcome measures collected.</p>	<p>Consultants and trainees can demonstrate the outcome of indicator unscheduled care procedures or conditions in their annual appraisal. They may also be submitted to national audits.</p>

STANDARDS	MEASUREMENT CRITERIA
<p>Units and centres submit data to national audits where the opportunity to do so exists (BAPRAS and others) and partake in national or supra-regional benchmarking of performance and outcome.</p> <p>Best practice: Units are aware of all national audits or other benchmarking processes and submit data to them. This may include regional or supra-regional audit programmes.</p>	<p>A programme of audits is in place and all consultants support peer benchmarking and audit processes.</p>

4.6 Urology

The following provide generic urological surgery standards. For more specific guidance and support, please refer to the British Association of Urological Surgeons (www.baus.org.uk).

STANDARDS	MEASUREMENT CRITERIA
A consultant urologist is available 24/7 for immediate advice and can be available on site within 30 minutes.	Rota and protocols in place.
All emergency cases, especially those where operative intervention is planned, must be discussed with the consultant on call.	Audit of activity.
A modern, effective emergency urology service requires adequate theatre access, senior radiological support (including interventional radiology), senior anaesthetic support and critical care facilities.	Multi disciplinary audit and case review.
There is immediate 24/7 availability of CT scanning and ultrasound scanning with the capacity for intervention in patients with suspected urosepsis.	Audit.
There is immediate 24/7 availability of CT scanning for patients with suspected urinary tract trauma.	Audit of availability/outcomes.
There is immediate 24/7 availability of a senior trainee (ST3 or above) or consultant urologists to manage the obstructed bladder, which cannot be managed by urethral catheterisation alone.	Rota and protocols in place.
There is immediate 24/7 availability of a senior trainee (ST3 or above) or consultant urologist to operatively intervene for suspected torsion.	Rota and protocols in place.
Where an operation is required, a theatre team with adequate experience of urological surgery must be available.	Local audit.
Outcomes of emergency treatment should be regularly audited.	Annually.
Patients with septic shock and evidence of obstructive uropathy require immediate intervention within three hours of the decision to operate as delay increases mortality significantly.	Local audit.
The ongoing care of inpatients/post-operative patients is managed by senior trainees (ST3 or above) or trust doctors with equivalent ability (ie MRCS with ATLS® provider status) and consultants, on appropriate urology wards with specialist-trained nursing care.	National audit.
Daily ward rounds carried out by senior trainees (ST3 or above) or trust doctors with equivalent ability (ie MRCS with ATLS® provider status) and/or consultants, including weekends.	Audit.

4.7 Neurosurgery

The following provide generic neurosurgical standards. For more specific guidance and support, please refer to the British Society of Neurological Surgeons (www.sbns.org.uk).

STANDARDS	MEASUREMENT CRITERIA
A consultant neurosurgeon is available 24/7 for immediate advice and can be available on site within 30 minutes.	Rota and protocols in place.
All emergency cases, especially those where operative intervention is planned, or where transfer to the neurosurgical unit is not appropriate, must be discussed with the consultant on call.	Audit of activity.
The unit has 24/7 theatre availability with an appropriately experienced neurosurgical team available within 30 minutes.	Examination of theatre availability and rotas.
There is immediate 24/7 availability of CT head scanning and MRI scanning for the spine within one hour.	Audit of availability/outcomes.
There are image link facilities between all referring hospitals within the network and to the consultant's home to allow immediate assessment and management decisions at a consultant level.	Facilities in place and monitored.
Neuroanaesthesia, intensivists and neuroradiologists are available at all times and consultant led.	Examination of rota.
Cases of traumatic intracranial haematomas requiring evacuation receive operative treatment without delay and after appropriate resuscitation.	Audit of surgeon activity and outcome.
Outcomes of emergency treatment should be regularly audited.	Annually.
There are agreed transfer protocols established between the neuroscience centre and referring hospitals for cases of trauma, spontaneous intracranial haemorrhage, acute hydrocephalus, spinal cord compression and other acute conditions.	Protocols in place, audited regularly.
Patients with treated hydrocephalus are given current, written details of their condition and relevant scan images, and have direct access to the neurosurgical unit.	Printed patient information. Audit of patient information.
All units submit trauma data to TARN and TARNlet	Participation noted in quality accounts.
All operative paediatric cases are submitted to the national BPNG database.	Participation noted in quality accounts.

4.8 Oral and maxillofacial surgery

The following provide generic oral and maxillofacial surgery standards. For more specific guidance and support, please refer to the British Association of Oral and Maxillofacial Surgeons (www.baoms.org.uk).

STANDARDS	MEASUREMENT CRITERIA
<p>The ongoing care of inpatients/post-operative patients is managed by senior trainees (ST3 or above) or trust doctors with equivalent ability (ie MRCS with ATLS® provider status) and consultants, on appropriate specific head and neck wards or wards with specialist-trained nursing care.</p> <p>Best practice: There is a specific head and neck ward with all staff appropriately trained to manage such patients</p>	National audit.
<p>Daily ward rounds carried out by senior trainees (ST3 or above) or trust doctors with equivalent ability (ie MRCS with ATLS® provider status) and/or consultants, including weekends.</p> <p>Best practice: There are morning and evening ward rounds, daily, with one of these being consultant-led, including weekends.</p>	National audit.
<p>The outcome of emergency OMFS specialist surgical practice is audited using routinely collected data.</p> <p>These should include:</p> <ul style="list-style-type: none"> › delays in patient care pathway › length of stay › 28-day unplanned re-admission › outcomes. <p>Best practice: All of the working practice of an OMFS unit is subjected to regular audit to ensure the best patient care and to highlight appropriate change where necessitated.</p>	Local audit.
All units submit data to the British Association of Oral and Maxillofacial Surgeons' annual national audits.	Audit.

4.9 ENT

The following provide generic ENT standards. For more specific guidance and support, please refer to the British Association of Otorhinolaryngologists, Head and Neck Surgery (www.entuk.org.uk).

STANDARDS	MEASUREMENT CRITERIA
<p>Emergency and post-operative patients are nursed by ENT trained staff of sufficient number and seniority to conduct observations and detect variation from normal progress.</p> <p>Best practice: There is a dedicated ENT unit with immediate transfer to operating theatres.</p>	<p>Outliers to be recorded and incidence monitored.</p>
<p>Emergency admissions are admitted to the ENT unit.</p> <p>Best practice: Emergency beds are available in the ENT unit for acute admission of either sex.</p>	<p>Bed occupancy monitored to national targets.</p>
<p>The ward treatment area is equipped with rigid and flexible endoscopes, suction, headlight, microscope etc.</p> <p>Best practice: Endoscopic cautery, suction and irrigation are available 24/7.</p>	<p>Facilities audit.</p>
<p>Nursing staff are available to assist with emergency treatment.</p> <p>Nurse practitioner skills are utilised.</p> <p>Best practice: Training in emergency ENT incorporated into nurse training modules.</p>	<p>Monitor staffing and skill levels.</p>
<p>Paediatric ward staffing level is sufficient to escort children to adult treatment room if necessary (eg for removal of foreign body, use of microscope, where this cannot be provided on the ward/ED).</p> <p>Best practice: Adequate facilities on paediatric ward or ED.</p>	<p>Monitor against national standards for separation of paediatric and adult care.</p>
<p>Post-tonsillectomy discharge information specifies contact details for the patient's nearest centre.</p> <p>Centre requires skills and equipment to deal with arrest of haemorrhage, including blood transfusion capability, immediate theatre access and age-appropriate anaesthetist out of hours.</p> <p>The ambulance service is fully informed which ENT department is 'on take.'</p> <p>Best practice: Departmental protocols are in place detailing whether patients requiring resuscitation attend the ward or ED, with a clinically competent individual to be awaiting their arrival.</p>	<p>Use adverse incident reporting for any delays to identify communication problems plus root cause analysis to prevent repetition.</p>

STANDARDS	MEASUREMENT CRITERIA
<p>Patients with severe post-tonsillectomy bleed require immediate resuscitation and immediate discussion with a consultant or ST3/equivalent doctor (MRCS with ATLS® provider status). Returns to theatre are made within 30 minutes of decision to operate.</p>	<p>Audit unit transfusion rate and compare nationally.</p>
<p>Reduction of length of stay (LOS) for patients with oesophageal foreign body is achieved by early senior decision making; (ie within 30 minutes of admission).</p> <p>Best practice: There is a local, time- framed protocol detailing procedures from first contact to theatre, with or without flexible endoscopy referral.</p> <p>90% of oesophageal foreign bodies are removed within 24 hours.</p>	<p>Audit adherence to protocol, LOS from HES data and incidence of complications.</p>
<p>Patients with sharp foreign bodies are fast tracked. The consultant is involved in their care within one hour of alert.</p> <p>Best practice: Existing theatre lists are utilised, along with consultant colleague expertise if appropriate.</p> <p>90% of sharp foreign bodies are removed within six hours.</p>	<p>As above.</p>
<p>Admission of patients with epistaxis is supported by 24-hour transfusion and haematology opinion.</p> <p>Best practice: There is a written hospital protocol for initial management of ED or inpatient epistaxis prior to contacting ENT.</p>	<p>Audit use of protocol prior to referral/ transfer.</p>
<p>There is senior early review of patients to ensure epistaxis patients are only admitted when clinically necessary.</p> <p>Daily consultant management decision is recorded.</p>	<p>Quarterly LOS for epistaxis review from HES data.</p> <p>National comparison possible.</p>
<p>Admitted epistaxis patients have early assessment for anaesthesia to avoid crisis management and delays.</p> <p>Best practice: At admission or next morning endoscopic examination is performed by ST3 or above/equivalent doctor (MRCS with ATLS® provider status), patients are treated and discharged if possible.</p> <p>Daily consultant management decision is recorded.</p>	<p>Departmental protocol for epistaxis management. Audited locally and against national targets.</p>
<p>Persistent bleeding may require vessel ligation with or without referral for angiography.</p> <p>Best practice: Department has agreed written pathway for referral for angiography and embolisation including out of hours.</p>	<p>Pathway agreed with local or regional interventional radiology department.</p> <p>Audit.</p>

STANDARDS	MEASUREMENT CRITERIA
<p>Consultant paediatric opinion is available for joint care of ENT related sepsis in children. There is at least daily review by both teams.</p> <p>Cross-speciality referrals are made by ST3 level or above/equivalent (with MRCS and ATLS provider status).</p> <p>Best practice: Written guidelines of shared care between ENT and paediatrics are in place detailing provision of IV access, phlebotomy, daily review etc.</p> <p>There is joint ENT/paediatric post-graduate education.</p>	<p>Shared care guidelines agreed with review date.</p> <p>Paediatric antibiotic protocol on hospital IT system and wards.</p>
<p>Antibiotic treatment starts without delay once decision is made.</p> <p>Best practice: Standard IV regime drugs are available as ward stock.</p>	<p>Audit time from written opinion to treat (recorded, timed and dated as per GMC <i>Good Medical Practice</i>⁵) to administration of first dose.</p>
<p>Patients with orbital cellulitis require urgent ophthalmology opinion and CT scan with or without general anaesthesia available to manage complications.</p> <p>ST3 or above/equivalent doctor (MRCS with ATLS® provider status) to review patients within 30 minutes; there is immediate consultant verbal input to determine if local care appropriate.</p> <p>Immediate surgery is required if vision deteriorates. Twice daily review by ST3 or above/equivalent doctor (MRCS with ATLS® provider status) and at least daily by consultant.</p> <p>Best practice: There is an agreed procedure to ensure consultants are available immediately to review a patient, monitor clinical progress and the need for CT.</p>	<p>As above.</p>
<p>Paediatric anaesthetists are available out of hours for management of airway related sepsis, eg parapharyngeal or retropharyngeal abscess.</p> <p>Best practice: Ability to carry out CT scan under general anaesthetic and transfer to theatre for drainage.</p>	<p>Examination of rota and arrangements with anaesthetics department.</p>
<p>Established links and pathways to local (and more than one) tertiary paediatric ENT centre are in place</p> <p>Best practice: Written guidelines identifying responsibilities, including direct contact numbers where possible, are available on paediatric wards.</p>	<p>Audit time from decision to make tertiary referral to:</p> <ol style="list-style-type: none"> 1. Patient verbally accepted. 2. Patient arrived in tertiary unit. 3. Root cause analysis of delays. <p>Feedback to commissioning team if PICU bed shortages.</p>

4.10 Cardiothoracic surgery

The following provide generic cardiothoracic surgery standards. For more specific guidance and support, please refer to the Society for Cardiothoracic Surgery (www.scts.org).

STANDARDS	MEASUREMENT CRITERIA
<p>Patients are reviewed by an appropriate consultant within 12 hours of admission (or before if their condition dictates).</p> <p>Best practice: Out-of-hours electronic transfer of imaging investigations to consultant's home.</p>	
<p>Where an operation is required, a theatre team with adequate experience of cardiothoracic surgery must be available.</p>	<p>Theatre registries and local audit.</p>
<p>All units submit data to the relevant national database (congenital, adult cardiac and thoracic).</p>	<p>Compliance reported in annual database report.</p>
<p>All deaths are discussed at a multi-disciplinary audit meeting and standard of care graded by NCEPOD criteria.</p>	<p>Evidence of MDT/M&M meetings.</p>

Glossary

AAGBI	Association of Anaesthetists of Great Britain and Ireland
AHP	allied health professional
AMU	acute medical unit
APLS	Advanced Paediatric Life Support
ASA	American Society of Anesthesiologists grading
ASGBI	Association of Surgeons of Great Britain and Ireland
ATLS®	Advanced Trauma Life Support®
BAO-HNS	British Association of Otorhinolaryngologists - Head and Neck Surgery (ENT-UK)
BAOMS	British Association of Oral and Maxillofacial Surgeons
BAPRAS	British Association of Plastic, Aesthetic and Reconstructive Surgeons
BAPS	British Association of Paediatric Surgeons
BAUS	British Association of Urological Surgeons
BOA	British Orthopaedic Association
BOAST	British Orthopaedic Association Standards for Trauma
BPNG	British Paediatric Neurosurgical Group
CCrISP®	Care of the Critically Ill Surgical Patient®
CCT	Certificate of Completion of Training
CPD	continuing professional development
CT	computerised tomography
DH	Department of Health
ED	emergency department
Elective	treatment or surgery that is planned
EMSB	Emergency Management of Severe Burns
ENT	ear, nose and throat
EPLS	European Paediatric Life Support
FBC	full blood count
HDU	high dependency unit
HES	hospital episode statistics
IBID	International Burns Injury Database
ICS	Intensive Care Society
ICU	intensive care unit
ID	infectious disease
ISCP	Intercollegiate Surgical Curriculum Programme
ITU	intensive therapy unit
IV	intravenous
LOS	length of stay
M&M	morbidity and mortality meetings

MDT	multidisciplinary team
MHRA	Medicines and Healthcare Products Regulatory Agency
MRCS	Member of the Royal College of Surgeons
MRI	magnetic resonance imaging
NCEPOD	National Confidential Enquiry into Patient Outcome and Death
NHS	National Health Service
NICE	National Institute for Health and Clinical Excellence
OMFS	oral and maxillofacial surgery
Orthoplastic	combined orthopaedic and plastic surgery management
PCC	prothrombin complex concentrate
PICU	paediatric intensive care unit
pILS	Paediatric Immediate Life Support
POCT	point-of-care testing
SBNS	Society of British Neurological Surgeons
SCTS	Society of Cardiothoracic Surgery
SOPs	standard operating procedures
ST3	specialty trainee level 3
TARN	Trauma Audit and Research Network
TARNlet	See TARN (for children)
US	ultrasound
Vit K	vitamin K
VTE	venous thromboembolism
WHO	World Health Organization

Further reading

1. Plastic surgery, hand surgery and burns

- 1.1 Dias JJ. *Helping the Hand. A report on the provision of surgical care for acute hand disorders in the United Kingdom*. London: British Society for Surgery of the Hand; 1999.
- 1.2 British Society for Surgery of the Hand. *Hand Surgery in the UK: Manpower, resources, standards and training*. London: BSSH; 2007.
- 1.3 Nanchahal J, Nayagam D, Khan U *et al*. *Standards for the Management of Open Fractures of the Lower Limb*. London: RSM Press; 2009.
- 1.4 International Burn Care Standards. National Burn Care Group. www.burnstandards.org (cited 11 February 2011).

2. Radiology

- 2.1 The Royal College of Radiologists.
 - 2.1.1 *BFCR(03) 1. Provision of Vascular Radiology Services*. London: RCR; 2003.
 - 2.1.2 *BFCR(07) 12. The Provision of Emergency Vascular Services 2007*. London: RCR; 2007.
 - 2.1.3 *BFCR(07) 13. Achieving Standards in Vascular Radiology*. London: RCR; 2007.
 - 2.1.4 *BFCR(08) 13. Standards for providing 24-hour interventional radiology service*. London: RCR; 2008.
 - 2.1.5 *BFCR(09) 3. Standards for the provision of 24-hour diagnostic Imaging Service*. London: RCR; 2009.
 - 2.1.6 *BFCR(09) 6. IT guidance: IT guidance: National Strategy for Radiology Image and Report Sharing*. London: RCR; 2009.
 - 2.1.7 *BFCR(10) 5. Standards for results acknowledgment systems*. London: RCR; 2010.
 - 2.1.8 *BFCR (10) 7. Standards for the provision of teleradiology within the United Kingdom*. London: RCR; 2010.
- 2.2 National Confidential Enquiry into Patient Outcome and Death.
 - 2.2.1 *Abdominal Aortic Aneurysm: A service in need of surgery?* London: NCEPOD; 2005.
 - 2.2.2 *Trauma: Who cares?* London: NCEPOD; 2007.

2.2.3 *Deaths in Acute Hospitals: Caring to the End?* London: NCEPOD; 2009.

2.2.4 *Acute Kidney Injury: Adding Insult to Injury*. London: NCEPOD; 2009.

2.3 Medicines and Healthcare products Regulatory Agency. *Joint Working Group to produce guidance on delivering an Endovascular Aneurysm Repair (EVAR) Service*. London: MHRA; 2010.

3. Pathology

3.1 Clinical Pathology Accreditation (UK). www.cpa-uk.co.uk (cited 11 February 2011).

3.2 Medicines and Healthcare Regulatory Agency. *Management and use of IVD point of care test devices – DB2010(02)*. London: MHRA; 2010.

3.3 Briggs C, Guthrie D, Hyde K *et al*. Guidelines for point of care testing: haematology. *Bri J Haematol* 2008; **142**: 904–915.

3.4 British Committee for Standards in Haematology, Stainsby D, MacLenna S *et al*. Guidelines on the management of massive blood loss. *Bri J Haematol* 2006; **135**: 634–641.

3.5 Baglin TP, Keeling DM, Watson HG, British Committee for Standards in Haematology. Guidelines on oral anticoagulation (warfarin): third edition – 2005 update. 2005. *Bri J Haematol* 2006; **132**: 277–285.

3.6 National Patient Safety Agency.

3.6.1 *Rapid Response Report NPSA/2010/017. The transfusion of blood and blood components in an emergency*. London: NPSA; 2010.

3.6.2 *NPSA/2008/SPN14. Right patient, right blood: advice for safer blood transfusions*. London: NPSA; 2006.

3.7 Association of Anaesthetists of Great Britain and Ireland.

3.7.1 *Blood Transfusion and the Anaesthetist: Management of Massive Haemorrhage*. London: AAGBI; 2010.

3.7.2 *Blood Transfusion and the Anaesthetist: Intra-operative Cell Salvage*. London: AAGBI; 2008.

3.8 National Institute for Health and Clinical Excellence.

3.8.1 *Clinical Guideline 92. Reducing the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in patients admitted to hospital*. London: NICE; 2010.

3.8.2 *VTE prevention quality standard*. London: NICE; 2010.

3.9 Department of Health. *Statutory Instruments 2005 No. 50. The Blood Safety and Quality Regulations 2005*. London: Crown Copyright; 2005.

3.10 Guidelines on Autopsy Practice – best practice scenarios. The Royal College of Pathologists. www.rcpath.org/index.asp?PageID=687 (cited 11 February 2011).

4. Anaesthesia

4.1 The Royal College of Anaesthetists.

4.1.1 Key points. In: *Guidelines for the Provision of Anaesthetic Services*. London: RCA; 2009.

4.1.2 Intra-operative care. In: *Guidelines for the Provision of Anaesthetic Services*. London: RCA; 2009.

4.2 Association of Anaesthetists of Great Britain and Ireland.

4.2.1 *Recommendations for standards of monitoring during anaesthesia and recovery*. 4th edn. London: AAGBI; 2007.

4.2.2 *Pre-operative Assessment and Patient Preparation: The Role of the Anaesthetist*. London: AAGBI; 2010.

4.2.3 Guidelines. The Association of Anaesthetists of Great Britain and Ireland. www.aagbi.org/publications/guidelines.htm (cited 11 February 2011).

4.3 National Institute for Clinical Excellence. *Clinical Guideline 3. Pre-operative tests: The use of routine pre-operative tests for elective surgery*. London: NICE; 2003.

5. General surgery

5.1 Association of Surgeons of Great Britain and Ireland. *Emergency General Surgery: The future. A consensus statement*. London: ASGBI; 2007.

References

1. The Royal College of Surgeons of England, Department of Health. *The higher risk surgical patient: towards improved care for a forgotten group*. London: RCS/DH; 2010.
2. National Confidential Enquiry into Patient Outcome and Death. *An Age Old Problem: A review of the care received by elderly patients undergoing surgery*. London: NCEPOD; 2010.
3. Jestin P, Nilsson J, Heurgren M *et al*. Emergency surgery for colonic cancer in a defined patient population. *Br J Surg* 2005; **92**: 94–100.
4. National Institute for Health and Clinical Excellence. *NICE Clinical Guideline 50. Acutely ill patients in hospital: recognition or and response to acute illness in adults in hospital*. London: NICE; 2007.
5. General Medical Council. *Good Medical Practice: Guidance for doctors*. London: GMC; 2009.
6. The Royal College of Surgeons of England. *Good Surgical Practice*. London: RCS; 2008.
7. Clarke A, Murdoch H, Thomas, MJ *et al*. Mortality and postoperative care after emergency laparotomy. *Eur J Anaesthesiol* 2011; **28**: 16–19.
8. Pearse RM., Harrison DA., James P *et al*. Identification and characterisation of the high risk surgical population in the UK. *Crit Care* 2006; **10**: R81.
9. National Confidential Enquiry into Patient Outcome and Death. *Elective and Emergency Surgery in the Elderly: An Age Old Problem*. London: NCEPOD; 2010.
10. Jhanji S, Thomas B, Ely A *et al*. Mortality and utilisation of critical care resources amongst high risk surgical patients in a large NHS trust. *Anaesthesia* 2008; **63**: 695–700.
11. Anderson I, Krysztopik R, Cripps N. *Emergency General Surgery Survey*. London:ASGBI; 2010.
12. McNeill G, Brahmhatt DH, Prevost AT, Trepte NJ. What is the effect of a consultant presence in an acute medical unit? *Clin Med* 2009; **9**: 214–218.
13. Scott, I., Vaughan L, Bell D. Effectiveness of acute medical units in hospitals: a systematic review. *Int J Qual Health Care* 2009; **21**: 397–407.
14. The Royal College of Surgeons of England. *Separating emergency and elective surgical care: Recommendations for practice*. London: RCS; 2007.

15. Aylin P, Yunus A, Bottle A *et al.* Weekend mortality for emergency admissions. A large, multicentre study. *Qual Saf Health Care* 2010; **19**: 213–217.
16. The Royal College of Surgeons of England. *Delivering surgical services: options for maximising resources*. London: RCS; 2007.
17. Hall BL, Hamilton BH, Richards K *et al.* Does surgical quality improve in the American College of Surgeon's National Surgical Quality Improvement Program: an evaluation of all participating hospitals. *Ann Surg* 2009; **250**: 363–376.
18. Guidance. The Royal College of Surgeons of England. www.rcseng.ac.uk/revalidation/guidance (cited on 10 February 2011).
19. The Department of Health. *Liberating the NHS: An Information Revolution*. London: DH; 2010.
20. Children's Surgical Forum. *Surgery for Children: Delivering a First Class Service*. London: RCS; 2007.
21. The Royal College of Radiologists. *Standards for the provision of teleradiology within the United Kingdom*. London: RCR; 2010.
22. The Royal College of Anaesthetists. *Guidelines for the Provision of Anaesthetic Services*. London: RCA; 2009.
23. Standards for Consultant Staffing of Intensive Care Units. The Intensive Care Society. www.ics.ac.uk/intensive_care_professional/standards_and_guidelines/standards_for_consultant_staffing_2002 (cited 11 February 2011).
24. Standards for Nurse Staffing in Critical Care. The Intensive Care Society. www.ics.ac.uk/intensive_care_professional/standards_and_guidelines/nurse_staffing_in_critical_care_2009 (cited 11 February 2011).
25. Standards for Intensive Care Units. The Intensive Care Society. www.ics.ac.uk/intensive_care_professional/standards_and_guidelines/standards_for_intensive_care_2007 (cited 11 February 2011).
26. The Vascular Society of Great Britain and Ireland. *The Provision of Emergency Vascular Services*. London: VSGBI; 2007 (revised 2011).
27. The British Orthopaedic Association. *Children's Orthopaedics and Fracture Care*. London: BOA; 2006.
28. BOAST 1: Hip Fracture in the Older Person. The British Orthopaedic Association. www.boa.ac.uk/en/publications/boast (cited 11 February 2011).

29. Best Practice Tariff for Hip Fracture – Making Ends Meet. British Geriatrics Society. www.bgs.org.uk/index.php?option=com_content&view=article&id=700 (cited 11 February 2011).
30. BOAST 2: Spinal Clearance in the Trauma Patient. The British Orthopaedic Association. www.boa.ac.uk/en/publications/boast (cited 11 February 2011).
31. BOAST 3: Pelvic and Acetabular Fracture Management. The British Orthopaedic Association. www.boa.ac.uk/en/publications/boast (cited 11 February 2011).
32. BOAST 4: Management of Severe Open Lower Limb Fractures. The British Orthopaedic Association. www.boa.ac.uk/en/publications/boast (cited 11 February 2011).

This document aims to provide information and standards on emergency surgical service provision for both adult and paediatric patients. It is aimed at commissioners, planners, providers and others involved in the provision of emergency surgical care and seeks to ensure that:

- › Patients receive safe and high quality care and have the best care experience possible.
- › Services are delivered in a timely manner, with acutely ill patients prioritised over elective surgical care.
- › Services achieve the best possible clinical outcomes and follow established principles.
- › Services provide information and support to patients and their supporters at all stages of the pathway.
- › Services are provided by appropriately trained and competent healthcare professionals.
- › Services are structured to deliver training in an efficient manner and ensure that the competing demands of training and service provision are adequately balanced.
- › Services contribute towards the collection and collation of data to support evidence-based care.
- › Facilities and resources are adequate and easily accessible.
- › Services are efficient, effective and offer value for money.



RCS

ADVANCING SURGICAL STANDARDS

The Royal College of Surgeons of England
35–43 Lincoln's Inn Fields
London WC2A 3PE

www.rcseng.ac.uk | Registered charity no 212808