

The acutely or critically sick or injured child in the district general hospital

A team response



Report of a Working Group with representatives from the Association of Paediatric Anaesthetists of Great Britain and Ireland and



The acutely or critically sick or injured child in the district general hospital

A team response

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Foreword

The child who develops a serious illness such as meningitis, or who sustains a serious injury, requires immediate highly skilled treatment. The logistical challenges in providing this care are greater if the child lives at a distance from a large children's unit, particularly in a remote or rural area. The challenges are especially great for those health professionals who are less frequently faced with such emergencies, and for whom maintenance of the skills necessary for resuscitation and stabilisation of the small child may be difficult.

These issues have been considered by a Working Group of experts from the Royal College of Paediatrics and Child Health, the Royal College of Anaesthetists, the Association of Paediatric Anaesthetists of Great Britain and Ireland, the Children's Surgical Forum of the Royal College of Surgeons, the British Association of Paediatric Surgeons, the Royal College of Nursing, the Department of Health and, very importantly, a parent representative. I am grateful to all of these bodies for their hard work.

Two important themes run through the report. First, it is essential to consider the whole pathway, including pre-hospital care, resuscitation, stabilisation and transfer to high-dependency or intensive care units. Communication and joint planning are essential. Second, the report emphasises a whole-team approach. Competencies are much more important than professional labels. Underpinning these themes is the need for training, scenario practice, planning, communication and maintenance of standards.

During the four months of open consultation on the draft report in 2005, many positive and constructive comments were received and there was active consideration of the issues within the various Colleges. I am extremely grateful to all those who contributed so helpfully to this important piece of work. A summary of the comments received is on the website. The Working Group took all of these comments into account before producing this final report.

There is much in this report – both in its overarching principles and in its detailed recommendations – which will be of value to those commissioning and providing children's services.



Sir Liam Donaldson
Chief Medical Officer

Executive summary

1. A Working Group with representation from the Department of Health, the Royal College of Paediatrics and Child Health, the Royal College of Anaesthetists, the Royal College of Nursing, the Children's Surgical Forum of the Royal College of Surgeons, the Association of Paediatric Anaesthetists of Great Britain and Ireland and the British Association of Paediatric Surgeons has considered issues regarding anaesthetic and other services available to children who are critically sick or injured in district general hospitals (DGHs) and produced this report.
2. A significant proportion of surgery in children is carried out in DGHs. The consultants providing anaesthetic services for these children will also have skills relevant to emergency situations. However, fewer anaesthetists in DGHs are now involved in elective paediatric surgery, potentially reducing their ability to manage paediatric emergencies.
3. While addressing anaesthetic issues, the Group considered that planning for the care of the critically sick child should include the whole team and the whole pathway.
4. The Group met three times in 2004 and produced a draft report which was open to consultation from August to December 2005. It met for a final time in February 2006 to consider comments and produce this report, which is structured into the following chapters:
 1. Introduction
 2. Generic skills
 3. Levels of urgency
 4. Pre-hospital care for the critically sick child
 5. Training the competent resuscitation team
 6. Stabilisation
 7. Surgical specialties provided in a district general hospital
 8. Transfer of the critically sick child
 9. Networks
 10. Standards of care
 11. The policy context
 12. The needs of families

Recommendations of the Working Group

1. In planning for the care of the critically sick child, the emphasis should be on:
 - competencies rather than professional labels;
 - team working;
 - networks of care; and
 - the whole pathway, from presentation to paediatric intensive care (PIC).

Skills, training, and maintaining competence

2. Six generic skills are expected of all personnel involved with the care of the critically sick child:
 - to recognise the critically sick or injured child;
 - to initiate appropriate immediate treatment;
 - to work as part of a team;
 - to maintain and enhance skills;
 - to be aware of issues around safeguarding children; and
 - to communicate effectively with children and carers.
3. For ambulance personnel:
 - Ambulance services should obtain the support of local paediatricians in the delivery of training.
 - A key element of this training should be the recognition and management of seriously sick children who may be regarded as 'time-critical' in terms of primary transfer.
 - This should also be a component of training for emergency medical technicians.
 - Pre-hospital paediatric life support training should be offered to paramedics.
 - Current guidelines from the Joint Royal Colleges Ambulance Liaison Committee should be implemented.

4. For general practitioners:
 - Additional training in the early recognition and resuscitation of critically sick children should be available.
 - Because of the relative infrequency of these types of cases, regular refresher training is also needed.
 - There is a need for further dialogue between the Royal College of GPs and the Royal College of Paediatrics and Child Health (RCPCH) to develop training.
5. For emergency care practitioners:
 - The inter-collegiate advisory group on paediatric A&E services should assist in the preparation of training materials.
 - National Workforce Competences for children who are acutely sick (EC11M), developed by Skills for Health, could form the basis for these.
 - Consideration should be given to a clinical placement in either a paediatric emergency assessment unit or a paediatric emergency unit, in addition to clinical placements in other appropriate specialties.
6. For each of these groups of staff, as well as for hospital clinicians, use of the Department of Health DVD *Spotting the Sick Child* is recommended. It is available from www.ocbmedia.com/products.php?pid=42.
7. For anaesthetists:
 - Opportunities should be provided for anaesthetists in DGHs to maintain their paediatric skills, through short attachments to larger centres and participation in elective surgery lists within the trust.
 - There should be participation in in-service training of other staff and in scenario practices.
 - Forward planning of resuscitation and stabilisation teams, and clear networking arrangements, will reduce the chances of an anaesthetist being left in sole charge of a critically sick child.
 - Where an anaesthetist is required to act beyond his or her practised competencies through unexpected circumstances – such as a very sick child inappropriately presenting to a hospital without paediatric expertise – it is his or her duty to make the care of the patient his or her first concern, and it is the employing trust's duty to provide support to the anaesthetist.
 - In some DGHs, intensivists with significant experience of paediatric intensive care may be comfortable with all aspects of resuscitation and stabilisation of the critically sick child. These intensivists could be a valuable resource in assisting paediatricians, emergency department practitioners and anaesthetists.

8. For telephone triage:
 - Established algorithms such as those used by NHS Direct or ambulance services (Advance Medical Priority Despatch Systems or Criteria-Based Despatch) should be used.
 - Specific training in the use of these tools and regular audits for compliance are required.

Ambulance trusts

9. There should be contingency arrangements for those occasions when, because of extreme urgency, transfer must be undertaken by the referring hospitals.
10. Ambulance trusts need to be involved in planning the system of care for critically sick and injured children within each network.
11. The organisation, staffing, training, and audit of the retrieval service should be agreed within the network.
12. A policy should be developed in each clinical community to guide ambulance crews on which hospital to take a critically sick or injured child to. A flexible approach is necessary to allow for local geography, travelling time and the hospital facilities available.

Resuscitation

13. The hospital resuscitation team should always include practitioners who have undertaken paediatric life support or European paediatric life support courses.
14. The team should be led by clinicians with the skills and knowledge to identify the key features of life-threatening illnesses and the ability to institute emergency treatments as taught on the advanced paediatric life support course.
15. Receiving facilities should provide a suitable environment, with paediatric triage, age-appropriate resuscitation facilities and appropriate drugs.

Stabilisation

16. Stabilisation requires a team of competent individuals comprising (as a minimum) a paediatrician or paediatric A&E consultant, an anaesthetist or intensivist, and a nurse working in concert with A&E staff or ward staff: the nurse–patient ratio should be at least 1:1.
17. The team should be led by a clinician of appropriate seniority, who has the competencies and knowledge to manage and oversee the treatment of a critically sick child.
18. Local guidelines should be in place regarding where a critically sick child should be stabilised until the child's condition improves or the retrieval team arrives.

19. Formal checks of drugs and equipment used in stabilisation areas should be performed regularly; the Group recommends that this should happen daily.
20. Common clinical standards for managing and stabilising critically sick children should be developed that are applicable to different settings.

High-dependency care

21. All hospitals providing inpatient care for children should have arrangements for high-dependency care as recommended in the 2002 publication *High dependency care for children – report of an expert advisory group for the Department of Health, 2001* available on the Department of Health website www.dh.gov.uk.

Planning

22. Services for the critically sick or injured child should be planned within a network comprising DGHs and a tertiary centre with a paediatric intensive care unit (PICU).
23. Within the hospital and within the network it is essential that there are clear lines of communication to access appropriate emergency care teams, clinicians and advice.
24. Guidelines should be agreed with the PICU that specify the circumstances under which a child should be admitted to an adult intensive care unit.
25. Where a hospital with no on-site inpatient paediatric facilities offers children unrestricted access via the A&E department, very careful consideration should be given to how a critically sick child should be managed, and also to provision of 24-hour cover.
26. Individual units should work towards classifying paediatric surgical cases by National Confidential Enquiry into Patient Outcome and Death (NCEPOD – formerly National Confidential Enquiry into Perioperative Deaths) category, and medical cases by severity of sickness and the need to move the child to a high-dependency unit or a PICU.

Governance

27. There is an individual obligation on all professionals to keep skills and competencies up to date and practised.
28. There is a team obligation to practise in order to maintain competency.
29. There is an organisational obligation to ensure that the environment and equipment meet the standards required for the effective delivery of resuscitation and stabilisation.
30. The respective responsibilities of professionals to deliver the best possible care, and that of their NHS trust to support them, should be part of clinical governance arrangements. In particular, a doctor faced with a very sick or

injured child has a professional duty to do his or her best for the patient, and his or her employers have a duty to support him or her – whatever the outcome.

31. Data collection, audit and inspection form an essential part of the process of service review and improvement.

Surgery in children

32. Commissioning children's surgical services should promote networking.
33. All surgeons undertaking emergency paediatric surgical care should have had training in the care of children and should regularly update these skills.
34. Emergency surgery in children should only take place in hospitals that have children's inpatient facilities and that provide elective surgical care.
35. Hospitals providing emergency children's surgery need to have suitably trained anaesthetists, paediatricians, children's nurses and paediatric high-dependency care facilities. They should be part of a clinical network providing access to tertiary services and paediatric intensive care (PIC).
36. Every DGH does not need to provide emergency paediatric surgical care for children. A comprehensive emergency surgical service could be provided by concentrating services for a larger population or networking with other local hospitals.
37. Protocols for surgical emergencies should be developed within the network. These should include: airway obstruction; shock; head injury requiring intubation (either for stabilisation or for computerised tomography (CT)); isolated head injury not requiring neurosurgery; isolated head injury requiring neurosurgery; head injury with other serious injuries; suspected ventriculo-peritoneal shunt malfunction; acute scrotum; fractures; and severe burns.
38. It is necessary to ensure that front-line staff receive adequate training in the recognition of neurovascular compromise in children with fractures.

Support for the family

39. Appropriate information, encouragement and support should be available to parents to enable them to participate fully in decisions about, and the delivery of, the care of their child.
40. At all stages of the care pathway the need for information and support for the family should be borne in mind – including, if necessary, through bereavement.
41. All staff should receive training in the specific needs of children and their families.
42. The organisation of transfer and retrieval should include arrangements to minimise difficulties for families.

1. Introduction

- 1.1 Discussions took place between the Royal College of Anaesthetists, the RCPCH, and the Department of Health to consider issues regarding anaesthetic and other services available to children who are critically sick or injured in DGHs. It was decided to form a working group with representation from these three bodies as well as the Royal College of Nursing, the Royal College of Surgeons, the British Association of Paediatric Surgeons and the Association of Paediatric Anaesthetists of Great Britain and Ireland. The membership of the Working Group is shown on page 60. The Group met in March, June and November 2004.
- 1.2 All four administrations were clinically represented in the Working Group, which was enriched by hearing examples of good practice from a number of areas. We recognise that administrative arrangements vary between the four countries of the UK, but aver that the principles set out in this report are relevant to all.

Background

- 1.3 A large proportion of surgery in children is carried out in DGHs and includes general surgery, orthopaedics and ENT. In 2004–05 in England there were 531,683 finished consultant episodes involving an operation on a child aged under 18, of which 325,532 were carried out in DGHs and 206,151 in specialist centres.¹ The consultants who provide an anaesthetic service for elective surgery have skills that are also relevant to emergency situations. These include:
- administering an anaesthetic for emergency surgery;
 - securing the airway and vascular access in a collapsed or severely injured child requiring resuscitation;
 - stabilising a child with rapidly advancing respiratory disease; and
 - together with an ENT surgeon, managing acute upper airway obstruction.
- 1.4 The proportion of all finished consultant episodes for children involving an operation, in which the operations were carried out in DGHs, has decreased from 76% in 1994–95 to 61% in 2003–04. Tomlinson² reviews the changes

1 Hospital Episode Statistics data for England, analysed by Hugh Cochrane, Analyst at the Department of Health

2 Tomlinson A (2003) Anaesthetists and care of the critically ill child, *Anaesthesia* 58, pp 309–11

and discussions which have occurred since the 1989 NCEPOD report.³ In Appendix 1, Boston and Kapila describe the serious situation resulting from the small number of surgical trainees opting to gain experience in paediatric surgery. Reduced participation of anaesthetists in elective paediatric surgical lists reduces their opportunities to maintain airway and vascular access skills in small children. Fear of criticism that they are acting beyond their competency, as well as time pressures arising from the working time directive, may reduce their willingness to provide anaesthesia for the child requiring emergency surgery. This may then result in children needing to be transferred long distances for relatively minor surgical procedures.

- 1.5 Anaesthetists may doubt their competency and confidence in dealing with the acutely sick or injured child requiring resuscitation and stabilisation, and may withdraw from emergency rotas, reducing the availability of staff able to deal with these emergency situations.

Definitions and scope

- 1.6 The definition of terms used in this report is shown in the glossary on page 59.
- 1.7 The Working Group concluded that the scope of its work was to review:

The child's journey

- 1.7.1 The outcome for a sick or injured child brought to a DGH depends not only on the care he or she receives there, but also on pre-hospital care and the arrangements for retrieval to an intensive care unit. Both of these, together with the networking arrangements that support clinicians who are remote from PICU facilities, were therefore within the Group's remit. For the purposes of this document, the journey ends with admission to a PICU.

The work of a consultant anaesthetist involved in children's care

- 1.7.2 Anaesthetic input is required for the following:
- emergency resuscitation of children with trauma or medical conditions such as collapse, septic shock or coma;
 - emergency surgery for children, including trauma (eg fractures), general surgery (eg obstructed hernia, appendicitis, acute scrotum) and plastic surgery (eg dog bites, facial lacerations, abscesses);
 - stabilisation of a child with advancing disease. Securing an airway in a collapsed child differs from emergency resuscitation. In a collapsed child requiring emergency resuscitation, the airway is already compromised and the child will tolerate intubation by an A&E doctor or by a paediatrician with limited anaesthetic skills.

³ Campling EA and Devlin HB (1989) *The Report of the National Enquiry into Perioperative Deaths*, NCEPOD

In contrast, the stabilisation of a deteriorating child with advancing disease may require a rapid sequence induction of anaesthesia. This is required in cases of septic shock, advancing coma, etc, and would take place while awaiting arrival of the PIC retrieval team, who could be several hours away;

- elective surgery for children across a range of specialties; and
- paediatric intensive care.

The Group concluded that resuscitation, stabilisation and emergency surgery were within its remit, but elective surgery and paediatric intensive care were not.

While recognising that children and young people up to the age of 16 are the responsibility of child health services, the emphasis in this report is on the younger child, in whom the technical challenges and potential speed of deterioration are greater.

Intensivists

1.7.3 The Intercollegiate Board for Training in Intensive Care Medicine (IBTICM) commented that a significant amount of stabilisation and transfer work is done by intensivists. Most of these are anaesthetists, but some have an A&E or adult medicine background. To improve the paediatric skills of adult physician intensivists, IBTICM has recommended that an intensivist with an adult medicine background who intends a DGH career should undertake three months' training in a PICU during his or her 12 months' higher specialist training.

Skills and competencies required for the care of the critically sick child

1.7.4 The work of the Group was stimulated by concerns that were raised by anaesthetists over the problems that they increasingly face. However, the Group concluded that it should consider professional attributes rather than professional labels. It felt that front-line doctors, nurses, paramedics and emergency care practitioners should have resuscitation skills. Many of the strategies developed by anaesthetists to develop and maintain paediatric competencies are relevant to other professional groups as well.

1.7.5 The Royal College of Nursing has recently produced a framework⁴ for the development of nursing roles within services for children and young

4 Royal College of Nursing (2004) *Services for children and young people: preparing nurses for future roles – RCN guidance*
www.rcn.org.uk/publications/pdf/services_children_and_young_people.pdf

people. It consists of role descriptors and competencies mapped across a continuum from novice to expert, according to the following:

- the scope of the particular role (ie the level of decision-making autonomy and the range of clinical actions);
- the setting(s) in which the role is practised;
- the level of underpinning knowledge and skills required; and
- the length of experience required to undertake the role.

Team working

1.7.6 While the skills and competencies of individual professionals are vital, an individual will not achieve an optimal outcome unless all members of the team work together efficiently, complementing each other's strengths.

The family's perspective

1.7.7 Having a child who is severely injured or who is suddenly very sick is an enormous stress upon the family. It is vital to have an informed view about the avoidable elements of this stress and how it can be mitigated.

Standards and audit

1.7.8 Audit is an essential component of ensuring that the standards of care are optimum, consistent with national guidelines and consistent between units. The Group considered some examples of successful and effective audits, and also engaged in discussions with the Healthcare Commission about data items which can be used in the inspection process.

Responsibility and risk

1.7.9 While concentrating on the responsibilities of healthcare professionals towards their patients, the Group also considered the corresponding responsibilities of an NHS trust towards its staff, with particular reference to the practitioner who is faced with a very sick child (Table 5).

Severity of illness

1.7.10 We considered the NCEPOD definitions⁵ of levels of urgency which were devised for adult surgical conditions (Table 2). These definitions are helpful for emergency planning. We applied them to surgery in children and considered how applicable they may be for paediatric medical conditions (Table 3).

5 NCEPOD (2003) *Who operates when? (WOW II) The 2003 report of the national confidential enquiry into perioperative deaths*
www.ncepod.org.uk/pdf/2003/03full.pdf

Structure of the report

1.8 All of these considerations led to a structure concentrating upon the skills and competencies needed by the teams who deal with the sick child over the entire patient journey. We consider generic skills first, and have classified the levels of urgency. We considered the following five steps:

- pre-hospital care;
- resuscitation;
- stabilisation;
- emergency surgery;
- retrieval.

We then considered networks, standards and audit, the policy context, and the patient perspective.

Coincident work

1.9 The work of the Group was informed by the principles and standards of the National Service Framework for children, young people and maternity services (see www.dh.gov.uk/childrensnfs), Every Child Matters (see www.everychildmatters.gov.uk), and the Change for Children programme. We also drew heavily on a recent text.⁶ Pieces of detailed work which have a bearing on this report include:

- a children's unscheduled care checklist and practical guidance on providing care for children as developed by the Emergency Services Collaborative (see www.modern.nhs.uk/scripts/default.asp?site_id=35);
- work to improve pain control in pre-hospital care;
- a report from the RCPCH;⁷
- NICE guidelines on major trauma (see www.nice.org.uk);
- QIS Standards in Anaesthesia and Self-Assessment Framework (see www.rcoa.ac.uk); and
- 2004 guidance for the provision of paediatric anaesthetic services from the Royal College of Anaesthetists (see www.rcoa.ac.uk).

6 Morton NS and Peutrell JM, editors (2003) *Paediatric Anaesthesia and Critical Care in the District Hospital*, Butterworth Heinemann

7 Royal College of Paediatrics and Child Health (May 2004) *Commissioning Tertiary and Specialised Services for Children and Young People*
www.rcpch.ac.uk/publications/recent_publications/tert.pdf

- 1.10 The Scottish Executive has recently published a report⁸ on emergency care for acutely sick or injured children and young people, produced by a sub-group of the Child Health Support Group. The report's 24 recommendations appear as Appendix 2.
- 1.11 The Faculty of Paediatrics of the Royal College of Physicians of Ireland and the Irish Standing Committee of the Association of Anaesthetists of Great Britain and Ireland have produced a report entitled *Care of the critically ill child in Irish hospitals*, which appears as Appendix 3.

8 Child Health Support Group of the Scottish Executive (2004) *Emergency care: a consultation on emergency care for acutely ill and injured children and young people in Scotland* www.scotland.gov.uk/library5/health/eccic.pdf

2. Generic skills

2.1 Six generic skills can be expected of all personnel involved with the care of acutely or critically sick or injured children in the DGH (Table 1):

- to recognise the critically sick or injured child;
- to initiate appropriate immediate treatment;
- to work as part of a team;
- to maintain and enhance skills;
- to be aware of issues around safeguarding children; and
- to communicate effectively with children and carers.

Table 1
Front-line staff who can be expected to have the six generic skills

- Ambulance personnel, including ambulance technicians and paramedics.
- A&E clinical staff, including doctors, nurses and emergency care practitioners.
- Paediatric staff, including doctors at all levels of training and nurses.
- Anaesthetic staff, including anaesthetists at all levels of training, ODPs and anaesthetic nurses.
- Surgical staff, including surgeons of all disciplines and levels of training and surgical nurses.
- Intensive care staff, including doctors of all disciplines and levels of training, nurses and technicians.

Generic skills 1 and 2: the ability to recognise the critically sick or injured child and to initiate appropriate immediate treatment

2.2 Although the skills are defined as generic and apply to all staff, the level of competence and the degree of skill vary according to the training, experience and job description of each member of the team. Appendix 4 describes the generic skills 1 and 2 expected of:

- an SHO in paediatrics, A&E or anaesthesia;
- a nurse practitioner in paediatric A&E; and
- a paramedic.

Generic skill 3: the ability to work as part of a team

2.3 Members of the team will:

- have different competencies and skill levels;
- maintain their skills; and
- appreciate the limits of their competence, so that they can call on the expertise of others as required.

2.4 Teams will:

- establish and practise protocols;
- have detailed knowledge of local facilities and local protocols;
- have an agreed leadership structure;
- have guidelines for referral within a unit (eg from A&E to surgery) and within a clinical network (eg to a neighbouring PICU);
- undertake scenario practices;
- undertake audits; and
- vary in skill mix composition with local circumstances.

Generic skill 4: the ability to maintain and enhance skills

2.5 The maintaining and enhancing of skills is considered later in the document.

Generic skill 5: an awareness of issues around safeguarding children

2.6 An awareness of safeguarding issues is essential. Often it is those first involved in the care of a child who observe things which can help to resolve issues of child protection. Staff must record their concerns and share them with appropriate professional colleagues.

2.7 Safeguarding responses and training should comply with *Working Together to Safeguard Children* (see www.everychildmatters.gov.uk).

2.8 Doctors training in paediatrics will take the RCPCH/National Society for the Prevention of Cruelty to Children/Advanced Life Support Group course *Safeguarding Children – Recognition and Response in Child Protection*.

3. Levels of urgency

3.1 NCEPOD classifies operations by level of urgency (Table 2).⁹

Table 2 NCEPOD classification of operations by level of urgency	
Emergency	Immediate life-saving operation, resuscitation, simultaneous with surgical treatment (eg trauma or ruptured aortic aneurysm). Operation usually within one hour.
Urgent	Operation as soon as possible after resuscitation (eg irreducible hernia, intussusception, oesophageal atresia, intestinal obstruction or major fractures). Operation within 24 hours.
Scheduled	An early operation but not immediately life-saving (eg malignancy). Operation usually within three weeks.
Elective	Operation at a time to suit both patient and surgeon (eg cholecystectomy or joint replacement).

3.2 These definitions of urgency apply primarily to adult surgery, but can be easily applied to paediatric surgical cases as well (Table 3). Examples are shown, but a discussion within a unit of a full classified list of surgical conditions, taking into account local factors, will aid planning. Scenario practice is also recommended.

9 NCEPOD (2003) *Who operates when? (WOW II) The 2003 report of the national confidential enquiry into perioperative deaths*
www.ncepod.org.uk/pdf/2003/03full.pdf

Category	Examples	Qualifiers
Emergency	Expanding intracranial haematoma. Severe haemorrhage. Airway obstruction. Supracondylar fracture with neurovascular compromise. Testicular torsion.	Age of child (neonate, <5y or >5y). Setting of presentation. Transfer thresholds and distances. Availability of competent team by setting.
Urgent	Appendicitis. Open fracture or potential neurovascular compromise. Airway foreign body. Closed orthopaedic trauma.	Anticipated pathophysiological changes. Response to initial therapy. Rate of change (improvement or deterioration). Age of child (neonate, <5y or >5y). Setting. Transfer thresholds and distances. Availability of inpatient paediatrics/high-dependency unit/PICU. Daytime versus out-of-hours.
Scheduled	Appendix abscess. Some maxillofacial injuries.	Age of child (neonate, <5y or >5y). Availability of inpatient paediatrics/high-dependency unit/PICU. Daytime versus out-of-hours.
Elective	Not considered.	

The child with appendicitis

The medical director of a DGH initiates a discussion about paediatric surgery, choosing appendicitis in a five-year-old as an example. Among the consultants at the hospital are two general surgeons and three anaesthetists who have maintained paediatric skills. The hospital is part of a clinical network for paediatric surgery, within which the following points have been agreed:

- Perforation with shock requires admission to a PICU.
- Children with abdominal pain will initially be assessed by the paediatricians, because of the difficulty in distinguishing medical causes of abdominal pain (eg urinary infection and basal pneumonia) from surgical (eg appendicitis).
- Early appendicitis may be treated with analgesia, antibiotics and a scheduled operation.
- Appendix abscess (non-obstructed) requires initial conservative treatment and referral to the general paediatric surgical service for a possible elective operation.
- If appendicitis is diagnosed out of hours, a clinical decision will be made as to whether the patient needs an urgent operation, an operation the next day or conservative management.
- A five-year-old with suspected appendicitis may be operated on out of hours if a paediatrically competent surgeon, an anaesthetist, supporting staff and a suitably staffed postoperative bed are all available. If these are not available and an urgent operation is required, the child will be transferred to another centre.

Levels of urgency in paediatric medical cases

- 3.3 Medical cases are more difficult to categorise in the NCEPOD format. The Group reviewed the recommendations of the report on high-dependency care for children produced by an expert advisory group for the Department of Health in 2002.¹⁰ The report provides guidance on the provision of high-dependency care and the conditions under which high-dependency and intensive care are required – guidance which is immediately applicable in a hospital with both high-dependency and PIC facilities. The situation is more complex in a unit without PIC, where the decision that PIC is required means calling the retrieval team. The decision to transfer would be taken on a child-by-child basis, and could be a difficult one. The child's condition could be evolving, and a decision to transfer should be taken on the basis of potential rather than actual critical sickness.
- 3.4 This type of situation requires close communication between the PIC team and the DGH team. To prevent the retrieval team being called too late, there will inevitably be occasions where the child has improved by the time the retrieval team arrives, and transfer is unnecessary.
- 3.5 The Group recommended that the table in the Department of Health's high-dependency care report¹⁰ is reviewed and a list of conditions derived, taking into account local factors. Critical conditions should be broken down into the following categories:
- Child needs transfer by the retrieval team to PICU as soon as possible; for example:
 - arrest at home
 - severe bronchiolitis
 - severe status asthmaticus
 - infective causes of airway obstruction
 - severe diabetic keto-acidosis
 - meningococcal septicaemia with shock
 - airway burns.
- The need for PIC admission depends upon the need for organ support rather than on the diagnostic label.
- Child needs admission to a high-dependency facility and discussion with PIC to consider management and to warn the PIC team that retrieval may become necessary.

10 Department of Health (2002) *High dependency care for children – report of an expert advisory group for Department of Health 2001*
[www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/
PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4010058&chk=GcyIXt](http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4010058&chk=GcyIXt)

- Child needs admission to a high-dependency facility. Decisions on whether a child needs to be transferred should be taken by the appropriate local consultant with a lead centre consultant, and will be based on the severity of sickness, the degree of urgency, and whether a specialised service is needed, eg burns, neurosurgery, etc.

3.6 Individual units should work towards classifying surgical cases into NCEPOD categories and medical cases by the need to transfer to PIC or not.

4. Pre-hospital care for the critically sick child

- 4.1 The care of the critically sick child should begin as soon as the situation has been recognised – this is often before the child reaches hospital.

Presentation

- 4.2 The seriously sick or injured child may be identified via a number of pathways. The parents, other care-giver or non-medically trained person may suspect that the child is seriously sick or injured, and this may lead them to:
- dial 999 to access the emergency services;
 - contact the GP;
 - attend a walk-in centre or minor injuries unit;
 - ring NHS Direct;
 - contact another unscheduled care service; or
 - take the child directly to an A&E department.
- 4.3 It is important that all those to whom a sick or injured child may present, either by telephone or in person, have the skills and competencies to identify that the child may be seriously sick and to take appropriate action (National Service Framework standard 6.4).
- 4.4 The following practitioners are likely to be involved in this situation. It is advisable that they should receive specific training in the recognition and initial management, if appropriate, of the seriously sick child.

Telephone triage staff from:

- 4.4.1
- NHS Direct;
 - other unscheduled care centres;
 - GP surgeries; or
 - the ambulance service.

Telephone triage can be difficult and is dependent on the quality of information given. It is suggested that all services using such an approach for the identification of seriously sick children use established algorithms such as those used by NHS Direct or ambulance services (such as Advance Medical Priority Despatch Systems or Criteria-Based Despatch). Specific training in the use of such tools is required, and regular audit for compliance is advised.

General practitioners

4.4.2 The signs of serious sickness in children are subtle in the early stages because children compensate well physiologically, and the experience and ability of the GP will vary. This has been recognised by the profession and studies have shown that GPs recognise the pitfalls and find this worrying. The current situation regarding resuscitation training is that adult basic life support training is an integral part of GP registrar training and a requirement for sitting MRCP. It is good practice for resuscitation skills to be updated regularly and there is recognition of this in the Quality and Outcomes Framework of the new general medical services contract, but the inclusion of any paediatric element is variable. The acquisition of paediatric resuscitation skills currently depends greatly on the individual GP's interests and on the needs of the population. A paediatric element is included in BASICS PHEC/intermediate care course and may be of great value to geographically isolated practitioners. The paediatric life support course may be felt to be beyond the needs of the GP who has rapid access to hospital paediatric care. The Group recommended:

- further dialogue with the Royal College of General Practitioners concerning what paediatric resuscitation skills a GP can realistically acquire and maintain; and
- additional training for GPs in the recognition and early resuscitation of sick children, as well as regular refresher training because of the relative infrequency of exposure to such events.

Resources available to GPs include:

- a DVD on the recognition of serious sickness in children;¹¹ and
- the Orange Book.¹²

Nurse Practitioners

4.4.3 Initial face-to-face triage may be carried out by nurse practitioners in minor injuries units, walk-in centres or GP surgeries. Although there are some facilities which specifically employ paediatric nurse practitioners, many of them will not come from a children's nursing background. It is strongly recommended that generic skills 1–6 are a core part of the training of nurse practitioners.

11 Davies F (September 2004) *Spotting the Sick Child* (an educational tool for healthcare practitioners, to aid in the recognition of serious sickness in children), Department of Health www.ocbmedia.com/products.php?pid=42

12 Kingston PCT (2005) *The Orange Book: Advice on the management of common medical emergencies in primary care*

Paramedics and emergency medical technicians

4.4.4 Only about 1% of calls to ambulance services will concern a child sufficiently unwell to merit any intervention. Ambulance staff may not be regularly exposed to sick children and may require support. The care of children has been a required subject on the syllabus of the UK paramedic course since April 2000, although the national syllabus including paediatric care has been available since April 1998. There is now a mandatory section on paediatrics in the paramedic course, but it does not require any practical exposure to children. Most ambulance services have trained their existing paramedic staff in paediatrics via annual updates, but there may be a few paramedics who have still had no such training. Ambulance technicians are not taught this syllabus and the depth of training given is up to the individual service. The Group felt that the following measures would improve standards:

- Ambulance services should obtain the support of local paediatricians for the delivery of training.
- A key element of this training should be the recognition and management of seriously sick children who may be regarded as 'time-critical' in terms of primary transfer.
- Emergency medical technician training should include instruction on how to recognise a sick child;
- There should be pre-hospital paediatric life support training for paramedics.

Emergency care practitioners

4.4.5 Emergency care practitioners are an emerging group in the emergency care network and generally come from either a nursing or a paramedic background. They are anticipated to fulfil a number of roles in the new unscheduled care structure. These roles might include:

- telephone triage and advice in an ambulance control centre or unscheduled care facility;
- visiting patients at home following 999 calls triaged as not appropriate for a blue-light response;
- working in a minor injuries unit;
- working in a walk-in centre or other unscheduled care facility, including undertaking home visits on behalf of the GP; and
- working in a GP surgery and responding to unscheduled care requests.

4.4.6 There are a number of courses available to train emergency care practitioners, and the Group recommends that the syllabus of the course chosen by any particular service should cover the requirements

of the role to be undertaken. In the training of emergency care practitioners it is strongly suggested that consideration be given to a clinical placement in either a paediatric emergency assessment unit or a paediatric emergency unit – in addition to clinical placements in other appropriate specialties.

Competencies and skills

- 4.5 Generic skills 1–6 are needed in all front-line staff. Further skills are desirable in general practitioners, nurse practitioners, ambulance personnel and emergency care practitioners (see Appendix 5).
- 4.6 Skills for Health has developed National Workforce Competences for dealing with children who are acutely sick. These can be found within the children and young people's framework on the Skills for Health website at www.skillsforhealth.org.uk, and can be used to support the development of emergency care practitioners. In addition, some of the more specialist National Occupational Standards developed for emergency, urgent and scheduled care for adults are currently being evaluated to check whether they are appropriate for children as well. Any gaps identified, or any need for tailoring of the competencies, will be addressed either within this project – which will be completed in November 2006 – or within a subsequent project.

Guidelines

- 4.7 Version 4 of the Joint Royal Colleges Ambulance Liaison Committee (JRCALC) clinical practice guidelines (2006) contains age-specific guidance.

A real-life example of optimum GP care

A 10-month-old child presented to the GP surgery with a short history of increasing difficulty in breathing. He was cyanosed, floppy, his heart rate was 184 bpm, and he had poor respiratory effort and air entry. The GP asked the receptionist to call an emergency ambulance and administered salbutamol and ipratropium through six litres of oxygen. The child had better respiratory effort and was no longer blue (oxygen saturations 92% in air) by the time the ambulance was ready to leave for hospital 15 minutes later. The child was nursed in the mother's arms on the ambulance stretcher, with the mother holding the nebuliser mask to the child's face. The GP asked the crew to continue salbutamol through a nebuliser driven by oxygen during the 20-minute journey to hospital, and alerted the hospital paediatricians to expect the child. The child was well enough to be discharged three days later.

'Drive-by' policies

- 4.8 An ambulance crew will normally take a patient to the nearest available hospital. But there may be situations where the ambulance should drive not to the nearest hospital but to another that is more able to deal with a critically sick or injured child, for example:
- where there are two almost equidistant DGHs – one with and one without paediatric facilities; or
 - where a hospital with a PICU is only 10–15 minutes further than a hospital without.
- 4.9 On the other hand, the Group recognised the factors which make it necessary and appropriate for ambulance staff to seek the nearest available medical support:
- Paramedics see seriously sick children infrequently.
 - Ambulance technicians do not take a paediatric course as part of their training, and there are a significant number of 'double tech' crews.
 - Technicians cannot provide paramedic treatment. They are taught basic airway management, and most can give salbutamol nebulisers and glucagon, but they cannot obtain vascular access, give IV drugs or intubate.
 - The paramedic or technician is on his or her own in the back of the vehicle once in transit, with no one to assist with procedures or resuscitation.
- 4.10 The Group's conclusions were that there must be a plan for each clinical community, developed within a network for paediatric emergency care. The plan should take into account geography, travel times, competencies available and the skill levels of ambulance staff. It must be clear to each hospital what its role is. Scenario practice should occur, including the situation where a very sick child turns up 'at the wrong place'. There should be clear local information for parents as to where to take a sick child.

5. Training the competent resuscitation team

Skill levels

- 5.1 Generic skills 1–6 are required of all front-line staff within the resuscitation team.
- 5.2 The team should always include practitioners with the following additional skills:
- assessing and opening airways using airway adjuncts;
 - administering high-flow oxygen by various means;
 - accessing the circulation by intravenous or intraosseous routes;
 - administering appropriate fluid safely;
 - recognising and responding to the need for pain relief;
 - identifying key features for emergency treatments to turn around a child's deterioration; and
 - recognising and being able to respond to child protection concerns.
- 5.3 With the exception of child protection and the identification of key features for emergency treatments, these skills are all taught on the paediatric life support and European paediatric life support courses. Child protection skills are taught on the RCPCH/National Society for the Prevention of Cruelty to Children/Advanced Life Support Group course Safeguarding Children – Recognition and Response in Child Protection.
- 5.4 Some resuscitation team clinicians require the skills and knowledge to identify the key features of life-threatening sickness and injury in order to lead the rest of the team and to institute emergency treatments. These life-threatening conditions might include status asthmaticus, status epilepticus, septicaemia, meningitis, severe head injury, multi-system trauma, etc. The necessary skills and competencies can be learned on an advanced paediatric life support course.

Courses

- 5.5 The UK resuscitation and paediatric emergency medicine courses that are widely available, that are required by professional bodies such as the Royal Colleges, and that have a quality control and standards process in place are described in Appendix 6. Courses can never be a substitute for the long periods of supervised training and experience that make up the development of an experienced paediatric anaesthetist or other paediatric specialist, but they are a starting point for skills and knowledge. With ongoing reflection

and revision, competencies can be developed and maintained. Key outcomes from courses are the ability to work in a team and to manage a patient with an unknown life-threatening condition using a structured approach.

Guidelines for resuscitation after cardio-respiratory arrest

- 5.6 The Resuscitation Council (UK) publishes guidelines for:
- paediatric basic life support (see www.resus.org.uk/pages/pbls.pdf);
 - paediatric advanced life support (see www.resus.org.uk/pages/pals.pdf); and
 - newborn life support (see www.resus.org.uk/pages/nls.pdf).
- 5.7 Following publication of the *Consensus on Science with Treatment Recommendations* (CoSTR 2005), the European Resuscitation Council and the Resuscitation Council (UK) will compile and publish new guidelines for basic life support, advanced life support, European paediatric life support and newborn life support. The 2005 European Resuscitation Council guidelines (on which the guidelines of the Resuscitation Council (UK) are based) are published at www.erc.edu/index.php/guidelines_download_2005/en and the guidance recommended for the UK by the Resuscitation Council (UK) is at www.resus.org.uk/pages/guide.htm.

Simulators

- 5.8 Simulation is an educational technique that allows interactive activity by recreating all or part of a clinical experience, but without exposing patients to the associated risks.^{13,14} Simulator technology varies from simple part-task trainers (for example to teach venous cannulation) to sophisticated computer-driven models. In the most detailed full-immersion simulators, the full clinical environment can be simulated and made extremely realistic. This is especially useful for testing team skills, interaction and working. Simulation is not intended to replace learning in the clinical environment, and it should be integrated with clinical practice. Further details are given in Appendix 7.

Maintenance of skills and competencies

- 5.9 There is an individual obligation on all professionals to keep skills and competencies up to date and practised. This can be achieved through attending specialised courses for particular skills and through personal practice; and the use of a logbook to track both the educational aspect of maintaining competence and the individual's actual experience in delivering care using new skills and competencies is to be encouraged.

13 Maran NJ and Glavin RJ (2003) Low to high fidelity simulation – a continuum of medical education? *Medical Education*, 37 (Suppl 1), pp 22–28

14 See the National Association of Medical Simulators website at www.namsonline.com

- 5.10** There is a team obligation to practise in order to maintain competence. Many emergency departments are now instituting weekly or monthly sessions to practise 'scenarios' in teams. A team practice would use a scenario involving (for example) a child who is unconscious after a head injury, an infant who is apnoeic from bronchiolitis or a child who is in shock from meningococcal septicaemia. This practice enables members of teams to work together in their 'real environment' – both to keep skills sharp and also to test out the equipment, infrastructure and communications network.
- 5.11** There are a number of individuals within most hospitals who would be suitable for leading sessions such as these. They would include:
- resuscitation training officers;
 - qualified advanced paediatric life support instructors;
 - designated liaison paediatricians;
 - lead anaesthetists for paediatrics;
 - lead intensivists with responsibility for the care of critically sick children; and
 - A&E consultants with a special interest in paediatrics.
- 5.12** There is an organisational obligation to ensure that the environment and equipment meet the standards required for the effective delivery of resuscitation and stabilisation.^{15,16,17} The efficacy of procedures can be tested by regular 'scenario practice' within the workplace.

15 Department of Health (2002) *High dependency care for children – report of an expert advisory group for Department of Health 2001*

www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4010058&chk=GcylXt

16 Department of Health (1997) *Paediatric intensive care: a framework for the future* (a report from the National Coordinating Group on Paediatric Intensive Care to the Chief Executive of the NHS)

www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4005760&chk=4pN5Ub

17 Department of Health (2004) *National Service Framework for children, young people and maternity services*

www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/ChildrenServices/ChildrenServicesInformation/fs/en

6. Stabilisation

6.1 Stabilisation of a child's condition is required in two situations:

- following resuscitation; and
- when an acutely sick child's condition worsens and urgent management is required to prevent further life-endangering deterioration. Recognition and timely intervention can be facilitated by use of a paediatric early warning tool.¹⁸

Table 4

Stabilisation includes some or all of the following

- Securing the airway, usually by means of a securely fixed endotracheal tube.
- Establishing ventilation.
- Establishing secure venous access.
- Correcting poor perfusion and acidaemia.
- Inserting an arterial line.
- Treating cerebral oedema.
- Obtaining a full history.
- Carrying out a full physical examination.
- Performing baseline investigations, eg a chest X-ray to confirm the position of an ET tube, electrolytes or glucose.
- Performing acute 'aetiological' investigations, eg blood culture before giving antibiotics; serum insulin, cortisol and intermediary metabolites in hypoglycaemia; or urine for a metabolic and toxicological screen.
- Initial treatment of the causative pathology, eg bronchodilators for asthma and antibiotics for sepsis.
- Deciding on the location of continuing care.
- Arranging transfer to a PICU.
- The transfer itself.

18 Haines C, Perrott M and Weir P (2005) Promoting care for acutely ill children – development and evaluation of a paediatric early warning tool, *Intensive Crit Care Nurs*, 31 October

Categories of child requiring stabilisation

6.2 Underlying causes of critical status could be:

- respiratory (including upper airways) obstruction, severe asthma or bronchiolitis;
- metabolic (including diabetic) ketoacidosis or extreme fluid depletion;
- severe sepsis, including meningococcal disease;
- circulatory instability of cardiac or other origin;
- neurological conditions including head injuries; or
- accidents including major trauma, poisoning, burns and drowning.

Children of any age may require stabilisation.

Stabilisation team

6.3 Many cases will initially be managed in an A&E department by consultants and specialist registrars with paediatric resuscitation skills. Whether the A&E consultant remains in charge or involved during stabilisation depends on his or her training, on whether his or her unit receives substantial numbers of sick children, and on the support available.

6.4 Stabilisation requires a team of competent individuals comprising (as a minimum) a paediatrician or paediatric A&E consultant, an anaesthetist or intensivist, and a nurse working in concert with A&E staff or ward staff; the nurse–patient ratio should be at least 1:1. Other staff may be required, for example a general surgeon, an ENT surgeon, and additional support including ODPs, theatre nurses, recovery nurses and radiographers. Access to other medical and support services such as radiology and pathology may also be needed.

6.5 Following the initial stages of resuscitation of a critically sick or collapsed child, stabilisation and further management should not be left solely to the anaesthetist. It is essential that the multidisciplinary acute care/stabilisation team is led by a clinician of appropriate seniority, who has the competencies and knowledge to manage and oversee the treatment of a critically sick child.

6.6 The paragraphs that follow outline the roles of the anaesthetist and the paediatrician in stabilisation. ('Anaesthetist' in this context includes an intensivist with paediatric expertise.)

6.6.1 Whereas immediate resuscitation using a bag and mask should be within the competence of all front-line staff, it is better for a consultant anaesthetist to manage a sick child's airway than for anyone else to attempt to do so. A doctor placed in such a situation has a professional duty to do his or her best for his or her patient, and his or her employers have a duty to support him or her if the outcome is imperfect. The anaesthetist's skills are key to stabilisation, particularly in the scenario

of deterioration of an acutely sick child. The abilities of the on-call anaesthetist will vary depending on his or her stage of training: it will often be necessary to summon senior help.

- 6.6.2 Consultants in paediatrics will be responsible and therefore in charge of children with illnesses. Clearly, if the child is seriously sick, the paediatric consultant must play more than a nominal role. He or she should be actively and proactively involved in the clinical management, not just leaving it to junior staff and the anaesthetist. In addition, it is expected that the paediatric consultant will be involved in the management of critically sick children admitted following severe trauma head injury.
- 6.6.3 In DGH units where the A&E consultants are responsible for children with severe illness or trauma until the arrival of the retrieval team, appropriate paediatric training and continued professional development is essential for them.
- 6.6.4 In some DGHs, critical care consultants/intensivists may have a high profile in the management of critically sick children. In such circumstances, they may have ultimate responsibility for the key management decisions or may share responsibility for these decisions with consultant paediatricians, usually in close consultation with the regional PIC team.

Management and organisational issues

- 6.7 The Group endorsed the Department of Health's recommendations for an organisational lead for high-dependency care (Appendix 8). It considered that, in the context of a DGH networked with a tertiary centre, the multidisciplinary high-dependency users' group has the responsibilities outlined in Appendix 8. The users' group will benefit from the inclusion of management, and its lead clinician will liaise with the trust board member responsible for children's services.¹⁹
- 6.8 The Group expressed concern about hospitals with no on-site inpatient paediatric facilities providing unrestricted access for children via the A&E department. There will usually be no on-site paediatricians in these hospitals, and the other medical staff (including the anaesthetist) will have little, if any, ongoing exposure to children during the normal working day. Very careful consideration should be given to how a critically sick child should be managed, and also to provision of 24-hour cover. 'Skilling up' A&E staff to

¹⁹ Department of Health (2004) *National Service Framework for children, young people and maternity services*
www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/ChildrenServices/ChildrenServicesInformation/fs/en

be competent and confident in their paediatric skills can be achieved through secondments to neighbouring hospitals. Ambulance trusts should be involved in these discussions.

Location and environment

6.9 Stabilisation can take place in a number of different locations:

- the A&E department;
- the general intensive care unit;
- the paediatric high-dependency unit;
- the post-anaesthesia care unit;
- an anaesthetic room; or
- the paediatric ward.

6.10 Local guidelines should be in place regarding where a critically sick child should be looked after until the child's condition improves or the retrieval team arrives. Whatever the location, the area should be:

- appropriately designed and equipped;
- stocked with all the necessary drugs, fluids and consumables; and
- adequately equipped to monitor, resuscitate, treat and nurse critically sick children of all ages; this includes the ability to intubate and ventilate.

6.11 Formal checks of drugs and equipment in stabilisation areas should be performed regularly to ensure preparedness. The use of drug packs and equipment which are easily portable is strongly recommended, as it will facilitate the transfer of the critically sick child within the hospital (eg to the radiology department or for a CT scan). Drug packs and portable equipment will also be essential in 'scoop-and-run' situations.

Protocols

6.12 Common standards for managing and stabilising critically sick children should be developed that are applicable to different settings. Care pathways and agreed protocols should cover resuscitation, stabilisation and the treatment of all major conditions, including head injuries, meningococcal infection, acute upper airway obstruction and asthma, non-traumatic coma, severe neurological illness and status epilepticus.

6.13 In a child or young person with a life-limiting condition, discussion may have occurred about the action to be taken in the event of acute deterioration. Guidance on this situation may be found in *Withholding or Withdrawing Life Sustaining Treatment in Children: A Framework for Practice (Second Edition)*, published by the RCPCH in May 2004.²⁰

Communication and links

- 6.14 Within hospitals and within the network it is essential that there are clear lines of communication to access appropriate emergency care teams, clinicians and advice. Hospital policies that provide clear details of how to obtain speedy or timely and competent advice and support are therefore required. These policies should be disseminated to all personnel and locations in the hospital that provide acute care for children.
- 6.15 Communication within networks is considered in Chapter 9.

High-dependency care

- 6.16 All hospitals providing inpatient care for children should have arrangements for high-dependency care, as recommended in *High-dependency care for children – report of an expert advisory group for the Department of Health* (reproduced in Appendix 8 of this report).

The child in an adult ICU

- 6.17 The majority of critically sick children are managed in tertiary paediatric units or lead centres. Under exceptional circumstances, a child may have to be managed in an adult ICU. For example, it is an acceptable environment for initiating and maintaining intensive care treatment in a child while awaiting the arrival of the retrieval team. It may also be appropriate to admit a child to an adult ICU for a limited period of intermittent positive pressure ventilation, without transferring the child to a tertiary unit. This might happen with a child who has undergone surgery and developed a suxamethonium apnoea or with an epileptic child in whom acute seizures have stopped but ventilation requires a short period of assistance until the acute respiratory depressant effects of the anti-convulsants have worn off. It may also be appropriate for the adolescent with trauma to be cared for in an adult ICU. There should be guidelines agreed with the PICU that specify the circumstances under which a child is admitted to the adult ICU. A children's nurse should be available to support the care of the child, and a local paediatrician will also need to be available for advice. There may also need to be discussion with the PICU.

Maintaining competence in paediatric anaesthesia through refresher weeks

- 6.18 In addition to in-house continuing medical education/continuing professional development and refresher courses run by the Royal College of Anaesthetists and the Association of Paediatric Anaesthetists of Great Britain and Ireland, an anaesthetist in a DGH with limited opportunities to maintain his or her paediatric skills may benefit from a short attachment to a larger centre. One anaesthetist's experience of a week spent in Cardiff is given in the box opposite.

Paediatric anaesthesia refreshment

Dr Chris Heneghan, Consultant Anaesthetist, Nevill Hall Hospital, Abergavenny
 Reproduced with permission from Royal College of Anaesthetists (March 2004)
Bulletin 24, pp 1214–5.

There are many consultants who do little or no paediatric anaesthesia but are on call for general duties. In many small hospitals, these duties include responsibility for critical care in babies and children. Such cases are rare and unpredictable, and might, of course, never happen. Their possibility, however, provides a persistent background concern, which has in me gradually developed into a nervousness about anaesthetising or intubating babies and children.

It has long been said, by those running paediatric anaesthesia services, that there is insufficient workload for more than the primary teaching of anaesthesia trainees. This has effectively ruled out refresher courses for the paediatrically isolated. However, this has recently changed: several paediatric centres have begun to offer such courses, offering placements for DGH consultants in their catchment areas. This struck me as a great idea, and when placements were offered at the paediatric intensive care and anaesthesia services at my local paediatric centre, the University Hospital of Wales at Cardiff, naturally I jumped at it.

Theatre

I had three theatre days, two all day lists, and two half days. I saw central lines and epidurals, laparoscopies and laparotomies. I put down tubes, put in lines, and helped with the anaesthetics. I asked all sorts of dumb questions without fear of losing face in front of my own trainees or other colleagues. I talked through a whole range of topics and scenarios. I heard a spread of views on a spectrum of techniques, and discussed what was the same and what had changed since I was last a trainee in paediatric anaesthesia in 1979. It was very interesting, and enjoyable.

PICU

Once again, everyone was very welcoming, friendly and chatty. They were not too busy to talk, and I was able to ask lots of questions about latest ideas. A two-year-old with meningococcal sepsis featured strongly. Much of the management, weight for weight, was very similar to adult practice, and much of it was different. I saw oscillatory ventilation for the first time, having heard about it for years, and was talked through the thinking behind current methods with speaker cones rather than jets, and the indications and variables involved. There were no retrievals while I was there, a matter of chance. If there is one while you are on an attachment, it sounds well worth going, to see the procedure from the other side of the fence and to follow up the outcome. I was not so fortunate as to go on one; perhaps next time!

Outcome

I went on this attachment expecting a little exposure to paediatric anaesthetics, and hoping it might rebuild confidence even a little. I was surprised to discover how much it improved matters. I do not feel any more able to anaesthetise a sick prem than I did, and retain my admiration for those who can, day after day. However, if called upon to intubate a sick child as part of stabilisation for transfer, or to anaesthetise for straightforward surgery in a baby, I am restored to the knowledge that I can still get the tube in – even with a Cardiff blade, a new one to me – and that much of anaesthesia has not changed in 25 years. OK, the colours are different, yellow not red on the vaporiser, but there was not much that was new and applicable to my practice. I was fascinated to see baby epidurals, and the loss of resistance technique – to a saline infusion! However, I do not see an application to my work, so probably will not go there.

The other major benefit is personal. Getting to know those you might be referring to makes any such referral much less fraught, in either direction. Learning more about the service from seeing it in action, and talking through their rationales, will facilitate decision making next time. And, of course, getting to know someone face to face generates trust immensely more quickly than any number of letters, calls or emails.

As a period of continuing education, the week in paediatrics was probably the most productive I have had, certainly the most useful. If any DGH consultant is in two minds as to whether to volunteer for this, don't be. This is time well spent. Go for it.

- 6.19 A scheme has operated successfully in Yorkhill NHS Trust, Glasgow, in which anaesthetists from remote hospitals spend a structured week in the paediatric anaesthetics department.
- 6.20 Issues to be faced include:
- the frequency of refresher weeks: it is suggested that they take place once every three years, with an advanced paediatric life support refresher halfway between each visit;
 - capacity: the needs of visiting consultants must be balanced with the needs of trainees;
 - governance: arrangements may need to be in place to assist the visiting consultant whose skills are felt to need further improvement.

7. Surgical specialties provided in a district general hospital

7.1 General principles:

- All surgeons undertaking emergency surgical care in children should have had training in the care of children and should regularly update their skills in surgical care of the critically sick child.
- Emergency surgery in children should only take place in hospitals that have inpatient children's facilities and that provide elective surgical care.
- Hospitals providing emergency children's surgery need to have suitably trained anaesthetists, paediatricians, children's nurses and paediatric high-dependency care. They should be part of a clinical network providing access to tertiary services and PIC.
- Every DGH does not need to provide emergency surgical care for children. A comprehensive emergency surgical service could be provided by concentrating services for a larger population or networking with other local hospitals.
- Specialist commissioning of paediatric surgery should be on a network basis.

General paediatric surgery (GPS)

7.2 The Group considered:

- training issues (Appendix 1); a joint statement by the RCPCH, British Association of Paediatric Surgeons (BAPS), and Association of Paediatric Anaesthetists of Great Britain and Ireland is anticipated;
- classification of urgency (see Tables 2 and 3, Chapter 3); and hence
- cases which might be operated upon as an emergency in a DGH;
- categories of children which should not be operated on outwith a tertiary centre, namely:
 - neonatal surgery;
 - oncology;
 - specialist urology;
 - major trauma. Stabilisation should occur in the DGH before transfer to the tertiary centre.

- 7.3 Having excluded these, the Group felt that they could not be prescriptive because many local factors would determine whether it is appropriate to undertake surgery for particular conditions. Prospective planning will facilitate management.
- 7.4 The acute scrotum was felt to be a special case. It is very difficult to distinguish testicular torsion (which requires urgent surgery to prevent loss of the testis) from torsion of an appendix testis (which carries no such risk). Arrangements should be in place for exploratory surgery of the acute scrotum to be carried out without delay.

Examples of GPS care	
Example	Concepts illustrated
A five-month-old with a classical history of intussusception is brought to A&E. The paediatrician is unable to feel an abdominal mass, but abdominal X-ray and ultrasound suggest intussusception. The infant is not shocked and has not passed bloody stools. An IV infusion is started and the child is transferred by ambulance with a nurse escort to the tertiary centre for enema reduction.	<ol style="list-style-type: none"> 1. Cross-skilling: in the absence of a local surgical opinion, it falls to the paediatrician to make the diagnosis. 2. Non-invasive imaging is appropriate, but enema reduction by an experienced radiologist should only be performed in an environment where surgery is available.
A child aged six months is admitted at 7pm with an irreducible inguinal hernia. The GPS consultant surgeon is on annual leave. Arrangements are made to transfer the child to the network paediatric surgical unit or the neighbouring DGH if there is a GPS surgeon and competent anaesthetist available.	This NCEPOD urgent case needs surgery in an appropriate environment within hours.
A one-year-old is seen in the A&E with an abscess in the perianal region, in pain at 8pm. There is a paediatric routine operating list at 8.30am the following day. The child could be admitted and given appropriate analgesia and transferred to the care of the GPS surgeon the following morning.	It is safer for surgery to be delayed until appropriate staff are available, unless pain or deterioration dictate otherwise.

Neurosurgery

- 7.5 Approximately 10% of the neurosurgical workload is in children, and emergencies are common. Paediatric neurosurgery is delivered in tertiary units, but children with head injuries are frequently seen in DGHs. Protocols within the network should be developed for care of the child presenting with:
- an uncomplicated head injury;
 - a head injury followed by clinical deterioration;
 - an expanding extradural haemorrhage;
 - suspected shunt malfunction;
 - raised intracranial pressure.
- 7.6 Electronic transfer of radiological images should make it possible to obtain a rapid expert opinion on a head CT scan taken in any unit.

Ophthalmology

- 7.7 The ophthalmic management of penetrating eye injuries in childhood is similar to that in adults. Providing that facilities for ophthalmic microsurgery exist, it will, therefore, be anaesthetic considerations which will determine the site of surgery. The most common medical emergency is orbital cellulitis, which requires admission to a paediatric ward and consultation from ophthalmology and ENT if there is evidence of underlying sinus disease.
- 7.8 The management of other urgent paediatric ophthalmic conditions, such as ocular and orbital tumours, glaucoma and cataracts can generally be deferred until the next working day and will usually require referral to a specialist centre.

Oral and maxillofacial surgery

- 7.9 Major trauma is best managed by resuscitation, stabilisation and transfer to an appropriate centre.
- 7.10 Facial lacerations, dental trauma, facial and craniofacial trauma, post-operative bleeding, orofacial infections and management of the compromised airway in children account for 20–25% of maxillofacial emergencies.
- 7.11 Management of the vast majority of these (lacerations/dental trauma/dental abscesses) is under local anaesthetic, or if appropriate general anaesthetic, under the care of a named consultant surgeon at an appropriate time (following NCEPOD guidelines). These emergency children should be stabilised and surgically managed on appropriate lists with appropriate consultant surgeon and anaesthetist support.

Orthopaedics and trauma

- 7.12 The Group considered orthopaedic cases under the NCEPOD classification:
- **Emergency.** Major trauma with multiple fractures or other soft-tissue injuries requiring PIC should be stabilised and transferred to the tertiary centre.
 - **Urgent.** The best example in this category is the fracture/dislocation with neurovascular compromise. In the event that appropriate surgical and anaesthetic expertise is not available 24/7 for this scenario, then it is necessary to ensure that:
 - front-line staff receive adequate training in the recognition of neurovascular compromise;
 - networking arrangements are in place for rapid transfer;
 - scenario practice is used to maintain individual and team skills.
 - **Scheduled.** The Group considered the management of common fractures of childhood and minor bone and joint trauma. In the past, the majority of consultant orthopaedic surgeons were involved in all areas of orthopaedics, and many treated children. Paediatric orthopaedics has now developed into a specialty. Many DGHs have sought to appoint consultants with the appropriate training to deal safely with children. Despite the large volume of paediatric trauma presenting to DGHs, it has been increasingly difficult to recruit and retain paediatrically trained orthopaedic surgeons and, as a consequence, many children are requiring secondary transfer to tertiary centres. This often occurs without the appropriate resource reallocation to these units.
 - Solutions for the care of fractures should be explored, such as:
 - immobilisation of a fracture and adequate analgesia, and operation during a daytime operating list by appropriately trained staff the following day;
 - visiting paediatric specialists providing an outreach service for elective and 'scheduled' work;
 - clinical network arrangements, including the transfer of elective work from the tertiary centre to a DGH in a 'franchising' partnership, or partnerships between neighbouring DGHs to concentrate expertise.

Otolaryngology (ENT)

- 7.13** About 30% of elective surgery carried out on children under the age of 14 is made up of routine ENT procedures, making otolaryngology the largest paediatric surgical specialty. Increasingly, DGH services for ENT are evolving into partnership arrangements with the inpatient and out-of-hours emergency service located at the larger centres, where training of junior doctors is also concentrated.
- 7.14** The major concern surrounding ENT services for children is the provision of a paediatric acute airway service. The incidence of such emergencies is low, having fallen significantly with the disappearance of epiglottitis consequent upon Hib immunisation. As there may be between six and nine consultants on an on-call rota, the infrequent exposure of an individual consultant to such emergencies makes maintenance of clinical competence a challenge.
- 7.15** Solutions for the management of airway obstruction should be explored:
- formal network arrangements for the transfer of children with severe, although not yet critical, airway obstruction. This will always require an anaesthetic escort and, therefore, in most circumstances, retrieval by the PIC team. The difficulty of judging whether to call the retrieval team is well recognised, because the situation may deteriorate rapidly or, as a result of treatment, may improve;
 - if there are sufficient anaesthetists and ENT surgeons who have maintained acute airway skills, a paediatric rota may be possible to maintain; and
 - advanced paediatric life support teaching includes the technique of inserting a cricothyroid needle. Every A&E receiving paediatric emergencies will have an advanced paediatric life support-trained person always available, who can perform this in an extreme emergency.

A local solution to ENT emergency arrangements for management of acute upper airway obstruction in children (and adults)

In one area, regional ENT services have been reorganised into a hub-and-spoke model, in response to the Working Time Directive and training requirements. There are two hubs, where full inpatient and out-of-hours services are provided, and three spokes which undertake outpatient work and day-case surgery only. However, all three spokes have fully functional A&E facilities which accept children around the clock.

The duty ENT specialist registrar cannot attend emergencies in any of the outlying hospitals because this would effectively leave the centre without cover. The standard advice is to put the child into an ambulance and transfer to the centre. Clearly, for the child with a severely compromised airway, this is not always possible.

Good practice requires that an anaesthetist intubate such a child in the presence of an ENT surgeon who can carry out an emergency tracheostomy if absolutely necessary. As an interim measure, the local Staff and Associate Specialist ENT surgeons are on call from home for just such a dire emergency. They are called very infrequently, but their availability makes the system much more secure.

The ultimate aim, of course, is to put in place a retrieval service.

Plastic surgery

- 7.16 Children account for approximately 30% of plastic surgery emergencies. The majority are not life threatening (such as finger tip injuries or facial lacerations), so out-of-hours emergencies can be stabilised and booked onto appropriate emergency lists or transferred to a centre for treatment.
- 7.17 Burns units and burns centres will have networking arrangements for stabilisation and transfer.

Gynaecology

- 7.18 The Group heard of difficulties in obtaining an expert opinion on a child with vulval trauma or vaginal bleeding, and has asked advice of the Surgical Forum.

8. Transfer of the critically sick child

8.1 This chapter considers:

- those occasions when, because of extreme urgency, transfer must be undertaken by the referring hospitals;
- retrieval by a dedicated team.

Contingency plan for transfer by the DGH team

8.2 Arrangements should be in place for situations where retrieval is clinically inappropriate or time-critical, for example, severe head injury or intracranial bleeding, where waiting for the retrieval team may introduce unsafe delay. Under these circumstances, the retrieval will be undertaken by the referring hospital (primary transport). Arrangements should include:

- advice from the lead centre;
- a list of conditions that are time-critical for the hospital concerned;
- contact details of relevant specialists where additional advice may be required, for example, neurosurgeons;
- escort team of one doctor and one nurse;
- equipment.

8.3 The child will normally be escorted by a doctor and a nurse with experience and/or training in a) care of the critically sick child and/or b) emergency transfer and/or c) airway management.

8.4 Appropriate drugs and equipment must be available for an emergency transfer. Drugs and equipment should be checked in accordance with local policy.

Operational ambulance considerations

8.5 Most UK ambulance services have few spare operational resources, and triage and resource allocation criteria are strict. On occasion, an emergency response is required to transfer a critically sick child from one unit to another. Not all ambulance despatchers are trained medically, and it is sometimes perceived that any patient in hospital is less likely to die than a patient outside hospital. It is therefore advisable that the scenario is discussed prospectively with the ambulance service to agree the response formally and prevent confusion and delay when the need arises.

8.6 Ambulance trusts need to be involved in the planning of the system of care for critically sick and injured children within each network.

8.7 Compatibility of equipment must be ensured.

Example of organisational planning with ambulance service

An ambulance service director of operations and medical director met the lead consultants in intensive care from the two DGHs in the region who used the service to transfer critically sick patients. A list of conditions that would require a very urgent response (such as uncontrolled intracranial bleeding or intra-abdominal haemorrhage) was drawn up and given to the ambulance control staff. It was agreed by the hospital that a Category A (less than eight-minute response) would be unnecessary (as the hospital might not be ready), but that an under-19-minute response (Category B '999' response to the public) would be provided for such conditions. As a safety net, it was agreed that, if a condition that was not on the list needed such a response, the medical director or director of operations would be contacted and the response optimised. The hospital, in turn, agreed to provide suitably trained staff for such transfers, and the Group has worked together to ensure uniformity and adequacy of equipment and supplies (eg oxygen).

Retrieval

- 8.8** The organisation, staffing, training and audit of the retrieval service will be agreed within the network.
- 8.9** The lead centre retrieval team carries out retrieval of appropriate children, within an agreed catchment population and network of hospitals, that need transfer to the paediatric intensive care facility.
- 8.10** By working to stabilise the child before transfer from the DGH, the retrieval team is functioning as a mobile PIC. Rapid transport of members of the team to a DGH allows this to start as quickly as possible.
- 8.11** In certain circumstances, a retrieval service may be independent, covering a geographical area and servicing several paediatric intensive care units, eg children's acute transport service (CATS).
- 8.12** The lead centre retrieval service will be able to respond to requests for retrieval to an agreed standard.
- 8.13** When the service is not available, a back-up plan is implemented.
- 8.14** Partnership between the lead centre and the local ambulance service on the process of emergency transport will cover contact information, vehicle specification and response times as a minimum.
- 8.15** Equity of access to the retrieval service is required.
- 8.16** Wherever possible, a child should undergo one retrieval journey only.

- 8.17 The retrieval team should be aware of the designated area(s) for retrieval in each of the referring hospitals.
- 8.18 The importance of retrieval training is emphasised with training exercises carried out at least annually.
- 8.19 Continuous audit of the retrieval service includes data collection on all referrals and retrievals. This includes referrals that do not result in transfer, and records should highlight the nature of any medical or nursing advice given by the lead centre.
- 8.20 Primary transports (by referring hospitals) will be necessary for some conditions, such as expanding intracranial haematoma.
- 8.21 Agreement on the standards for primary transport (by referring hospitals) with the lead centre or specialist unit and the circumstances in which they should be used is clearly defined.

Staffing of retrieval service

- 8.22 The retrieval service is staffed as a remote intensive care bed requiring one-to-one nursing care and its own medical staff member.
- 8.23 All transfers are carried out by appropriately trained and equipped staff.
- 8.24 A nominated lead consultant for the retrieval service is responsible for training, protocols and audit.
- 8.25 Twenty-four-hour consultant advice is available to the retrieval service, and this consultant is able to join the retrieval team if necessary.
- 8.26 The lead centre has the requisite number of consultant and trainee staff to ensure 24-hour cover for both the PICU and retrieval service.
- 8.27 The nominated lead consultant for the retrieval service specifies which medical staff are appropriately trained and experienced to carry out retrievals.
- 8.28 The lead nurse for the retrieval service is responsible for training and audit of the process and for sustaining regular links to referring hospitals.
- 8.29 The staffing ratios at the lead centre allow 24-hour availability of nursing staff trained to perform retrieval.
- 8.30 The retrieval team is fully equipped to deal with children of different ages. Drugs and equipment are checked in accordance with local policy.

Information for families (see also Section 12)

- 8.31 Appropriate information, encouragement and support are available to parents to enable them to participate fully both in the care of and in decisions about their child.
- 8.32 Parents should be informed of their child's condition, care plan and retrieval, and this information should be updated regularly.

- 8.33 The provision of adequate information to referring hospitals from the lead centre allows parents of children requiring emergency transfer to receive all possible help regarding transport, hospital location, car parking and location of the unit to which their child is being transferred.
- 8.34 Appropriate information for children is available to enable them to share in decisions about their care.
- 8.35 Information on support services should be available.

9. Networks

- 9.1 Services for the critically sick or injured child should be planned within a network.
- 9.2 Links should be established with a specialist/tertiary paediatric facility in a lead centre so that authoritative advice is available at all times. This should also facilitate transfer to the specialised paediatric facility, following resuscitation and stabilisation in the referring unit. There should also be arrangements for accessing advice and transferring children to those specialised intensive care services which may not be available in the lead centre, including burns and ECMO. Where appropriate, other forms of communication (eg telemedicine) may be used to facilitate communication between clinicians involved in managing a sick child.
- 9.3 Networks are a way of making the best use of specialist expertise, standardising care, improving access and reducing 'distance decay' effects resulting from the concentration of specialist services in large centres.²¹
- 9.4 The National Service Framework supports the development of children's clinical networks to promote a comprehensive, integrated and safe local service for children and young people when they are sick.²² Where possible, specialised care should be provided locally in conjunction with local children's services, through outreach services operating within a clinical network.²³

Types of networks

- 9.5 **Locally managed children's networks** are defined as 'a linked group of health professionals and organisations from primary, secondary and tertiary care, and social care and other services working together in a co-ordinated manner, with clear governance and accountability arrangements' (Department of Health policy collaborative, November 2004).
- 9.6 Networks can facilitate the development of cross-boundary and organisational working, improving access to specialist expertise in a planned and co-ordinated way to meet the needs of the local population, facilitating patient involvement and the pooling of knowledge and resources.

21 Edwards N (2002) Clinical Networks, *BMJ* 324, p 63 (12 January)
<http://bmj.bmjournals.com/cgi/content/full/324/7329/63>

22 Department of Health (2004) *National Service Framework for Children, Young People and Maternity Services*. Standard 6
<http://www.dh.gov.uk/childrensnfs/>

23 RCPC (2004) *Commissioning Tertiary and Specialised Services for Children and Young People*

9.7 Clinical networks enable organisations to optimise services provided to patients and relatives. The co-ordination of multiple providers or services typical of clinical networks can result in improvements to patient access. Local children's clinical networks will focus on the relationships between all the constituent parts of local services to children and young people, with formal links to social services, education and independent sector providers. Developments can include the establishment of:

- service standards, service level agreements and priorities for service development;
- care pathways, including information sharing, referral protocols and arrangements for local service provision;
- shared clinical and non-clinical protocols;
- joint research and education opportunities;
- workforce training and succession planning;
- shared audit and governance arrangements;
- peer review visits.

9.7.1 Informal clinical networks usually 'self-generate' from good working relationships between clinicians within district general and teaching hospitals. They often arise through local geography and traditional referral patterns, medical student rotations and medical training, and through the establishment of retrieval teams moving very sick babies and children to specialised units. The informal networks depend on the goodwill of the network members and often work well because of the drive and energy of local clinicians.

9.7.2 Managed clinical networks have been defined as 'linked groups of health professionals and organisations from primary, secondary and tertiary care working in a co-ordinated manner, unconstrained by existing professional and organisational boundaries to ensure equitable provision of high-quality, clinically effective services'.²⁴ They focus on clinical service delivery which may be grouped by function, client group or disease. These networks work within a formal contract, with agreed audit and governance frameworks. They have funded management support systems, share common clinical and non-clinical protocols, and agree the activity their component units undertake.

24 Scottish Executive Health Department (2002) *Promoting the Development of Managed Clinical Networks in NHS Scotland*, NHS Circular HDL(2002)69
www.sehd.scot.nhs.uk/mels/HDL2002_69.pdf

9.7.3 Specialist networks have developed between specialist centres, usually in a tertiary area of practice, eg paediatric oncology units which use nationally agreed protocols and submit data to a national database. Clinical networks in Northern Ireland, for example, have been developed around a formalised hub-and-spoke model of care in a network of local hospitals relating to designated area hospitals which are also regional specialist centres.²⁵

Role of the tertiary centre

9.8 In a clinical network, the tertiary centre(s) have responsibilities to the DGH units. If there is no bed immediately available, the Group felt they have a responsibility both to offer clinical advice and to help locate a suitable PICU bed. This will prevent a situation where the DGH consultant, who may be one of the few people available to look after the child, spends a long time telephoning a number of PICU units.

Communication

9.9 It is important that the GP is kept informed of transfers so that s/he is able to support families at a very difficult time.

Examples of clinical networks

The Thames Paediatric Anaesthetist Group (Thames PAG) commented that London is well catered for regarding clinical networks. The Children's Acute Transport Service (CATS, North Thames) and the South Thames Retrieval Service offer very good support for clinicians in district hospitals. Most (but not all) of the protocols for the immediate management are available on the CATS website (www.cats.nhs.uk) and PICU support is readily available by telephone. The Thames PAG group (www.gosh.nhs.uk/thamespag), which has been organised by local anaesthetists, disseminates information, promotes good practice and provides an informal network for discussion for paediatric anaesthetists within the region. However, it is not clear who should lead new clinical network arrangements where none presently exist. Many members of the Group thought that a children's committee within trusts could be helpful in this respect, with clinicians and managers both represented. Such committees are still not universal and their importance deserves further emphasis.

25 McFall, J (1998) *Putting It Right: The case for change in Northern Ireland's hospital services*, Belfast, DHSS
www.dhsspsni.gov.uk/show_publications?txtid=14991

10. Standards of care

Responsibility and risk

10.1 While concentrating upon the responsibilities of healthcare professionals towards their patients, the Group also considered the corresponding responsibilities of an NHS trust towards its staff (Table 5). As a marker of good practice, the respective responsibilities – of the professionals to provide the best care they can deliver for their patients, and of the trust to support them if a good outcome is not achieved – should be part of clinical governance arrangements.

Table 5 Responsibilities of professionals and of trusts in care of the critically sick child	
Responsibility of professional²⁶	Responsibility of trust
To obtain necessary training	To facilitate staff training
To maintain competence	To provide time and facilities for maintaining competence
Not to act beyond competence except in unavoidable circumstances	Not to place staff in the position of acting beyond their competence, eg <ul style="list-style-type: none"> • by ensuring adequately trained staff are available at all times when an emergency may present • by having a written policy about the types of case that the trust may accept
If placed in a situation where urgent intervention is required but there is no one more senior or experienced available, to do their best	To support a member of staff who, placed in this situation, has done their best
To value other members of the team	To promote multidisciplinary working and staff development
To participate in audit	To encourage and reward audit
To seek advice	To promote an open culture
To work closely with neighbouring units where transfer of patients is needed	To establish clinical networks
To learn from unusual situations or adverse incidents	To promote education, audit and research
To use supporting facilities appropriately	To provide necessary supporting facilities

²⁶ These duties are consistent with, and implicit in, the General Medical Council's statement on the duties of a doctor. www.gmc-uk.org/guidance/library/index.asp

10.2 Data collection, audit and inspection form an essential part of the process of service review and improvement. The Group considered three successful examples (see Appendix 9).

TARNlet

10.3 The Working Group noted:

- this is the largest audit and research trauma network in Europe;
- it is currently funded by individual hospitals;
- the methodology²⁷ allows comparison between expected and observed outcome, has been validated, and allows individual units to compare their performance against the mean;
- the process is anonymous and voluntary and has secured buy-in from a large percentage of units receiving trauma cases;
- pooling a large amount of data has enabled analyses which would be impossible from individual units;
- a similar methodology might be used to assess the outcome of other critical situations, such as meningococcal sepsis or drowning.

Peer review by the Association of Paediatric Anaesthetists of Great Britain and Ireland²⁸

10.4 The APA programme of visiting anaesthetic departments in children's hospitals has the following perceived benefits:

- Preparation for the visit is an opportunity for the unit to compare itself against nationally agreed standards.
- The visit is seen as a learning experience for both visitors and visited. Examples of good practice are shared.
- The professional visitors are able to empathise with difficulties faced by their local colleagues in a non-judgemental way.
- The lay representative views the unit from the child's and family's perspective, and is able to point out features not obvious to the doctors.
- Local teams, who may have recognised deficiencies in their staffing or facilities, feel supported in their attempts to improve the situation by external review.

10.5 The Working Group:

- recognised the value of this process;

27 TARN (Trauma Audit & Research Network: www.tarn.ac.uk), within which TARNLET was established in 2000 to focus on paediatric trauma care
www.tarn.ac.uk/introduction/tarnlet.htm

28 Crean PM, Stokes MA, Williamson C and Hatch DJ (2003) Quality in paediatric anaesthesia: a pilot study of interdepartmental peer review, *Anaesthesia* 58, p 543

- noted that it depended upon goodwill, the willingness to use study leave, and external funding;
- welcomed the proposed extension of the scheme to university hospitals;
- discussed how the principle may be applied to DGH units and concluded that it would be within the context of a clinical network.

Peer review – West Midlands

10.6 The Working Group received a presentation from Dr Charles S Ralston, Chair of Steering Group, Standards for the Care of Critically Sick and Critically Injured Children in the West Midlands. The Standards are reproduced in Appendix 9. The Group concluded:

- this is an outstanding piece of work which may be commended to other geographical areas;
- its success partly derives from the wide ownership of the process, from trusts, clinicians, managers and SHAs;
- inclusion of the tertiary centre as well as DGHs reduced the risk of its being perceived as 'the hub criticising the spokes';
- it is quite resource intensive, and has received funding from the SHAs;
- trusts have welcomed the visits as a means of identifying rectifiable weaknesses, as well as sharing good practice;
- data from the Standards may inform the Healthcare Commission's process of choosing indicators of quality;
- while there is every expectation that this process will help to improve standards, follow-up and research is necessary to prove this.

Inspection

10.7 These three audits are voluntary and a means of self-improvement. Inspection by the Healthcare Commission is mandatory and a means to achieving a beneficial rating.

10.8 The Working Group welcomed the opportunity to meet representatives of the Healthcare Commission who are developing the Services for Children in Hospital pilot thematic review. The development themes are key areas, based on stakeholder views, which cover the bulk of the National Service Framework Hospital Standard. All of the seven proposed themes are relevant to the Working Group, the first three particularly so.

10.9 The themes are:

- medical and surgical care (access and safety);
- critical and high-dependency care;
- pain management;
- governance;
- communication;
- age-appropriate environment;
- co-ordination (including discharge and transition).

11. The policy context

- 11.1** The suggested interventions for best practice recommended by this Group have been informed by, and must be viewed in the context of, key policy initiatives and reports. The publication of the Bristol Royal Infirmary Inquiry²⁹ and the Victoria Climbié Inquiry³⁰ highlighted areas for improvement in services delivered to children. Many of the recommendations in these reports have been reflected in policy development. The Government has given a clear commitment to improve the quality of care to children.
- 11.2** The publication of the *National Service Framework for Children, Young People and Maternity Services* Hospital Standard in 2003 and the remaining standards in 2004 identified clear standards, markers for good practice, and interventions to improve care of the child, young person and their families. The Hospital Standard and the Ill Child Standard have particular relevance for this Group's work, and it is important that this report is viewed in conjunction with the NSF.
- 11.3** The NSF for Children, Young People and Maternity Services is a 10-year programme of improvement in children's health. It recognises the need for improvement in services for all children and young people, while putting emphasis on those children and young people with particular health needs who require well co-ordinated services delivered by both health and social care agencies. The Healthcare Commission, which has a statutory duty to 'pay particular attention to the need to uphold the rights and welfare of children', has undertaken an improvement review to assess the quality of healthcare for children in hospital based on Standard 7 of the NSF, 'Children and Young People in Hospital', and reported its findings on 31 October 2006. Later on in the process, the Commission will provide a national picture of the services that are being provided and what improvement needs to take place.
- 11.4** The Healthcare Commission has published (31 August 2006) a review of the Hospital Standard. Access to local services that are staffed by appropriately trained and experienced staff are a key theme of the review.

29 www.bristol-inquiry.org.uk/final_report/

30 www.victoria-climbié-inquiry.org.uk/finreport/finreport.htm

- 11.5 Other issues, such as implementation of the European Working Time Directive and the consultant contract, are leading organisations and practitioners to look at new and different ways of doing things. Expansion of access, capacity and choice within the NHS means that children and their families are now able to access care in different settings, eg walk-in centres, treatment centres and changes in the out-of-hours service within primary care will, in some places, lead to changes in provision of services. With this comes the need to ensure that staff working with these children have the right skills and competencies to recognise and treat serious illness.
- 11.6 Since 1997, there have been significant improvements in paediatric critical care. The *Framework for the Future* and associated documents set out a clear blueprint for the provision of paediatric intensive care. There has been significant investment in this service and a further good-practice document on high-dependency care has been published. A nationally established database (PICANet) will be able to provide us with key information regarding activity and outcomes in this specialty.
- 11.7 It is recognised that practitioners and organisations need to be working together in new and different ways to ensure the continued provision of high-quality services delivered as close to home as possible. The Ill Child Standard of the NSF describes a locally managed children's network, and each SHA was given £90,000 to facilitate the development of such a network.

12. The needs of families

12.1 A marker of good practice is that, at all stages of the care pathway, the need for information and support for the family is borne in mind.

Access to services

12.2 All children and young people who are sick or injured, or thought to be, will have timely access to appropriate advice and effective services that address their health, social, educational and emotional needs throughout the period of their illness.³¹

12.3 Being responsible for a child who becomes acutely or critically sick or injured is a worrying experience. Children are more likely to be from vulnerable families: attendance rates and severity of illness and injury are higher in children from more deprived areas.³² Children may become sick very quickly, and parents or carers have to make judgements about how to act in the best interests of their child. At the onset of an illness, it can be very difficult to distinguish between a trivial problem, such as a viral infection, and a much more serious condition, such as meningitis.³³ Parents feel responsible for acting competently and fear the consequences of not doing so,³⁴ but their assessment of severity of illness and the need for admission to hospital correlates well with that of doctors.³⁵ They need to know what to do and how to access the most appropriate services. Local arrangements for emergency care of sick or injured children, both in working hours and out of hours, should be clear and well publicised.³⁶

31 Department of Health (2004) *National Service Framework for Children, Young People and Maternity Services*. Standard 6: Children and Young People who are Ill, p 4
<http://www.dh.gov.uk/childrensnfs/>

32 Beattie TF, Gorman DR, Walker JJ (2001) The association between deprivation levels, attendance rates and triage category of children attending a children's accident and emergency department, *Emerg Med J*, pp 110–11

33 Department of Health (2004) *National Service Framework for Children, Young People and Maternity Services*. Standard 6: Children and Young People who are Ill 2.3, p 6

34 Kai J (1996) Parents' difficulties and information needs in coping with acute illness in preschool children: a qualitative study, *BMJ* 313, pp 987–90

35 MacFaul R, Glass EJ, Jones S (1994) Appropriateness of paediatric admissions, *Archives of Disease in Childhood* 71, pp 50–58

36 Department of Health (2004) *National Service Framework for Children, Young People and Maternity Services*. Standard 6: Children and Young People who are Ill 6. Access, p 13

Support

- 12.4** A crucial factor influencing the ability of families to cope with a crisis will be how well their psychosocial needs are met by staff. A qualitative study by Noyes revealed the major impact of crisis on mothers immediately following their child's critical illness and admission to PICU.³⁷
- 12.5** The importance of staff training is recognised, and further research may be justified to examine the impact of crisis and critical illness on families, to enable staff to provide the best possible support.

Child and adolescent mental health services

- 12.6** Staff need to have an understanding of how to assess and address the emotional well-being of children, and be able to identify significant mental health problems. There is a need for robust liaison arrangements to secure child and adolescent mental health services (CAMHS) input as appropriate, including psychiatry, psychology, individual and family psychotherapy, social work and CAMHS-trained nurses. This is an essential service for the sick child, and their siblings and parents, in cases where the presenting illness has a psychological component or where psychological distress occurs as a result of the illness. The liaison team needs to be multidisciplinary, providing both direct and indirect clinical work, staff consultation and support, and it needs to be situated within the paediatric unit to allow easy and prompt referral and access.

Families requiring extra support

- 12.7** At first contact, services should identify children and families requiring extra support, for example those who need interpreters or advocates, and children with special needs, including disabled children. In the case of an emergency admission, priority should be given to providing support on the spot. Lists of named interpreters and advocates trained to work with children should be available within the hospital. Where there are child protection concerns, face-to-face interpreters are preferable to remote providers of interpreting services, and such interpreters will need additional training and support.³⁸ All staff should understand and be sensitive to the cultural needs of families from minority ethnic populations. Written information should be translated into appropriate languages, and alternative means of providing information, such as CDs and DVDs, can be helpful.

³⁷ Noyes J (1999) The impact of knowing your child is critically ill, *Journal of Advanced Nursing* 29, pp 427–35

³⁸ Department of Health (2004) *National Service Framework for Children, Young People and Maternity Services*. Standard 7: Hospital Services, Chapter 3: Hospital Standard Part One Child-Centred Services 3.2, p 13

Ambulance services

- 12.8 Operational staff, including those dealing with emergency calls in ambulance controls, should receive training to ensure that they are fully aware of the specific needs of children and young people, and their parents or carers, and are able to provide initial reassurance and support.³⁹

Hospital parking

- 12.9 Hospitals should ensure that free parking spaces for families with children are available next to the A&E department.⁴⁰ Arrangements should be in place to ensure that families do not incur parking penalties.

Consent

- 12.10 DH guidance⁴¹ on consent should be followed, and all staff should be familiar with the concept of children's competence to give consent. Consent policies should include what to do when there is disagreement between a competent young person and their parent. They also need to address the situation where health professionals believe that a particular treatment is crucial, perhaps life saving, for a child, but parents refuse to give consent.⁴²

Hospital care

- 12.11 Hospital care of children should be provided in buildings that are accessible, safe, suitable and family friendly. All A&E departments should have an area that is physically separated (out of sight and sound) from adults.⁴³ All staff caring for children should receive training in the specific needs of children and their families, to ensure they receive the considerable support they will need at a very distressing time.^{44,45} Parents should have access to their child at all times, except when this is not in the best interests of the child. Children and their parents should be offered appropriate information to enable them to share in decisions about their care. Parents should be regularly updated about their child's condition and care plan, including transfer/retrieval (if necessary). They should be able to be with their child in the resuscitation

39 NSF Standard 6: Children and Young People who are Ill 6.7, p 18

40 HBN 22 2.13 Accident & Emergency facilities for adults and children. NHS Estates 2003

41 Department of Health (2001) *Reference Guide to Examination or Treatment and Seeking Consent Working with Children*

42 NSF Standard for Hospital Services Chapter 3: 3.21, p 17

43 NSF Standard for Hospital Services Chapter 5: Hospital Standard Part Three Quality of Setting and Environment 5.1 5.5 5.7, pp 36–37

44 NSF Standard for Hospital Services Chapter 3: 3.16, p 16

45 NSF Standard for Hospital Services Chapter 4: Quality and Safety of Care Provided 4.44, p 31

room if they wish, unless this hampers the resuscitation. They must be given appropriate information and support. Resuscitation rooms should be designed with adequate space to accommodate them.⁴⁶

Breaking bad news

- 12.12** There should be a designated room set aside in A&E, appropriately furnished and equipped for staff to discuss information with families.⁴⁷ The way in which bad news is given is an important factor in how it is received, understood and dealt with.⁴⁸ It is important that health professionals receive education and training to develop the skills needed to break bad news effectively.⁴⁹ Families should have access to support services, including bereavement support, eg social workers, chaplains and counsellors.

Adult ICU

- 12.13** Critically sick children who are admitted to an adult intensive care unit should be cared for in a suitable environment separate from adults. Staff must be aware of the precise needs of paediatric patients and the importance of parental involvement.⁵⁰ There should be co-operation with the paediatric department to ensure the appropriate support of staff with paediatric skills, including play specialists. Facilities should be available for parents to remain with their children overnight.⁵¹

Transfer/retrieval

- 12.14** Parents should be given all possible support when a child is transferred. A survey⁵² of 233 parents' experiences of a specialised paediatric retrieval service demonstrated that the two main reasons for greatest dissatisfaction were distress at being separated from their critically sick child and logistical problems locating and parking at the new hospital. A three-month pilot of parental accompaniment was undertaken in 2002, with a follow-up audit in 2004, following adoption of the policy as standard practice. The results

46 HBN 22 3.70, p 23

47 HBN 22 3.91, p 4

48 NSF Standard for Hospital Services Chapter 3 3.20, p 17

49 Farrell M, Ryan S and Langricle B (2001) 'Breaking bad news' within a paediatric setting: an evaluation report of a collaborative education workshop to support health professionals, *Journal of Advanced Nursing* 36, pp 765–75

50 Wheeler Hilary J (2005) The importance of parental support when caring for the acutely ill child, *Nursing in Critical Care* 10, pp 56–62

51 NSF Standard for Hospital Services Chapter 3 3.20, p 17

52 Colville G, Orr F and Gracey D (2003) 'The Worst Journey of our Lives': parents' experiences of a specialised paediatric retrieval service, *Intensive and Critical Care Nursing* 19(2) (April) pp 103–8

showed 'that parental accompaniment during paediatric retrieval is feasible, appears beneficial for parents, and generally provides little in the way of stress or hindrance to staff'.⁵³ If they cannot accompany the child in the ambulance, parents should be offered transport to the admitting hospital by ambulance or taxi. Arrangements should be in place to ensure that financial support for the costs of transport (and, if applicable, overnight accommodation) can be provided in these circumstances.^{54,55} Staff should recognise that parents may be too distressed to drive safely. If parents wish to arrange their own transport, they should be provided with information to enable them to find the admitting hospital and department, including a contact name and phone number.

53 Davies J, Tibby SM and Murdoch IA (2005) Should parents accompany critically ill children during inter-hospital transport? *Archives of Disease in Childhood* 90, pp 1270–73. First published online 12 May 2005

54 West Midlands Strategic Commissioning Group (2004) *Standards for the Care of Critically Ill and Critically Injured Children in the West Midlands*

55 Action for Sick Children (1996) *Illness and Disability in Children and Young People. A Guide for Commissioners and Providers*, p 25

Glossary

Term	Definition
ALSG	Advanced life support group
Critically sick child	A sick or injured child with actual or impending: <ul style="list-style-type: none">• respiratory failure;• circulatory failure;• neurological failure.
GPS	General paediatric surgery
HD	High dependency
NSF	National Service Framework for Children, Young People and Maternity Services
PIC	Paediatric intensive care
Pre-hospital care	All care given before the patient arrives at a hospital (other than a minor injuries unit), ie a hospital delivering the services of a district general hospital or more comprehensive services. It does not include any phase of inter-hospital transfer to a specialised unit.
'Scoop and run'	A situation where a child must be transferred very rapidly to a specialist facility, almost certainly by the local team rather than awaiting the retrieval team, eg the child with an extradural haematoma. Ambulance staff may use the phrase to mean a child has just been put into the ambulance without even simple support, eg oxygen – an extremely poor standard of care to be discouraged.
Stabilisation	The measures taken to maintain or improve a child's sick condition after resuscitation.
Stable	The patient's condition is no longer deteriorating, having responded to appropriate resuscitative/supportive measures. This does not mean they are no longer at risk, and it will usually be necessary to continue with additional intensive treatment and management in order to maintain stability and prevent further deterioration.

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