

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 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

Gateway approval number 4758

Executive summary

1. A working group with representation from the Royal Colleges of Paediatrics & Child Health, Anaesthetists, Nursing and Surgery, and the Association of Paediatric Anaesthetists has considered issues regarding anaesthetic and other services available to children who are critically ill or injured in district general hospitals (DGHs) and produced this report.
2. The report is structured into the following chapters
 - a. Introduction
 - b. Generic skills required of all personnel
 - c. Assessing the levels of urgency in surgical and medical cases
 - d. Pre-hospital care for the critically ill child
 - e. Training the competent resuscitation team
 - f. Stabilisation
 - g. Surgical specialties provided in a district general hospital
 - h. Transfer of the critically ill child
 - i. Networks of care
 - j. Standards and audit
 - k. The policy context
 - l. The needs of families
3. It is hoped that this report will be of value both to health care professionals and managers providing and planning care for the critically ill or injured child, and for those who are commissioning the service.

Introduction

4. A significant proportion of surgery in children is carried out in DGHs. The consultants providing anaesthetic services for these cases will also have skills relevant to emergency situations. These include administering an anaesthetic for emergency surgery, securing the airway and vascular access, stabilisation, and managing cases with acute upper airway obstruction
5. However, fewer anaesthetists in DGHs are now involved in elective paediatric surgery, potentially reducing their ability to manage paediatric emergencies.
6. Whilst anaesthetic issues were the impetus for this work, the group emphasised that a team approach to the skills and competencies needed by those who deal with the ill child in his or her entire journey is essential.
7. The Group concluded that the scope of its work was to review:
 - a. the child's journey, including pre-hospital care, hospital care, and retrieval to an intensive care unit
 - b. the work of a Consultant Anaesthetist involved in children's care
 - c. skills and competencies required for the care of the critically ill child
 - d. methods of assessing the severity of illness
 - e. how members of the team should work together
 - f. how the family's perspective should influence care planning

- g. the maintenance and audit of standards of practice
- h. issues of responsibility and risk

8. Elective surgery in children was excluded

Generic skills

9. Five generic skills may be expected of all personnel involved with the care of critically ill or injured children in the DGH.
- to recognise the critically ill child
 - to initiate appropriate immediate treatment.
 - to act within a team
 - to maintain and enhance skills
 - to be aware of issues of safeguarding children

Further skills are desirable in general practitioners, nurse practitioners, ambulance personnel, and emergency care practitioners

Levels of urgency

10. The NCEPOD classification of operations by level of urgency was applied to paediatric surgery
11. Medical cases may be classified by the potential need to transfer to a paediatric intensive care unit

Prehospital care

12. The care of the critically ill child should begin as soon as the requirement has been recognised
13. The seriously ill child may be identified via a number of pathways. It is important that all those to whom an ill or injured child may present, either by telephone or in person, have the skills and competencies to identify that the child may be seriously ill and take appropriate action.
14. Telephone triage can be difficult and should use established algorithms. Specific training in the use of these is advised.
15. Additional training for general practitioners in recognition and early resuscitation of ill children is advantageous and because of the relative infrequency of exposure to such events regular refresher training is helpful.
16. Initial face to face triage may be by nurse practitioners who may not come from a paediatric background. It is strongly recommended that the generic skills 1-5 are a core part of training.

17. Recommendations for paediatric training of Paramedics and Ambulance Technicians were considered
18. 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.

Training the competent resuscitation team

19. Within the resuscitation team, generic skills 1 - 5 are required of all front-line staff. The team should always include practitioners with the additional skills gained on a paediatric life support (PLS, EPLS) courses
20. The team should include some clinicians with the skills and knowledge to identify the key features of life-threatening illness and injury in order to lead the resuscitation team and to institute emergency treatments gained from an advanced paediatric life support course (APLS).
21. Courses, simulator training and guidelines were reviewed
22. There is an individual obligation on the professional to keep skills and competencies up to date and practised. An anaesthetist in a DGH with limited opportunities to maintain paediatric skills may benefit from a short attachment to a larger centre.
23. There is a team obligation to practise in order to maintain competency
24. There is an organisational obligation to ensure that environment and equipment meets the standards required for the effective delivery of resuscitation and stabilisation

Stabilisation

25. "Stabilisation" of a child's condition is required in two situations:
 - 1 Following resuscitation
 - 2 Worsening of the condition of an acutely ill child, where urgent management is required to prevent further life-threatening deterioration
26. Following the initial stages of resuscitation of a critically ill/collapsed child, stabilisation should be the responsibility of a multidisciplinary team led by a clinician of appropriate seniority
27. Local guidelines should be in place regarding where a critically ill child should be looked after until the child's condition improves or the retrieval team arrives.
28. Formal checks of drugs and equipment in stabilisation areas should be performed regularly to ensure preparedness.

29. Common standards for managing and stabilising critically ill children should be developed that are applicable to different settings.
30. All hospitals providing in-patient care for children should have arrangements for High Dependency (HD) Care
31. The Group endorsed the DH recommendations for an organisational lead for high dependency care and in the context of a DGH networked with a tertiary centre
32. The Group expressed concern about the situation where a hospital with no on-site in-patient paediatric facilities continues to provide unrestricted access to children via the via the Accident and Emergency Department
33. Under exceptional circumstances a child may have to be managed in an adult ICU. There should be guidelines agreed with the PIC centre that specify these circumstances

Surgical specialties provided in a District General Hospital

34. All surgeons undertaking emergency surgical care of children should have had training in the care of children and regularly update their skills in care of the critically ill surgical child.
35. Emergency surgery in children should only take place in hospitals which have in-patient children's facilities and provide elective surgical care.
36. Hospitals providing emergency children's surgery need to have suitably trained anaesthetists, paediatricians, paediatric nurses and paediatric High Dependency care. They should be part of a clinical network providing access to tertiary services and PIC.
37. A comprehensive emergency surgical service could be provided by concentrating services for a larger population or networking with other local hospitals.

Transfer of the critically ill child

38. There should be an action plan/contingency arrangements for those occasions when, because of extreme urgency, transfer must be undertaken by the referring hospitals
39. On occasion an emergency response is required to transfer a critically ill child from one unit to another. This scenario should be discussed prospectively with the ambulance service
40. Ambulance Trusts need to be involved in the planning of the system of care for critically ill and injured children within each network.
41. The organisation, staffing, training, and audit of the retrieval service will be agreed within the network.

Networks

42. Services for the critically ill or injured child should be planned within a network.
43. Links should be established with a specialist/tertiary paediatric facility in a lead centre so that authoritative advice is available at all times.
44. 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.

Standards of care

45. Whilst concentrating upon the responsibilities of healthcare professionals to provide the best care they can deliver for their patients, the group also emphasised the corresponding responsibilities of an NHS Trust to support them if a good outcome is not achieved. This should be part of clinical governance arrangements.
46. Data collection, audit and inspection form an essential part of the process of service review and improvement. The Group considered three successful examples: TARNlet, peer review by the Association of Paediatric Anaesthetists, and the Standards for the Care of Critically Ill & Critically Injured Children developed in the West Midlands
47. The Working Group welcomed the opportunity to meet with representatives of the Healthcare Commission who are developing the Services for Children in Hospital pilot thematic review

The needs of families

48. At all stages of the care pathway the need for information and support for the family must be borne in mind

Key issues and recommendations

49. The Key issues which arose during discussion are indicated in the text, and tabulated in Appendix 10. They were used to produce the group's Recommendations.

Recommendations of the Working Group

Skills, training, and maintaining competence

1. Five generic skills are expected of all personnel involved with the care of critically ill or acutely ill children:
 - i. to recognise the critically ill child
 - ii. to initiate appropriate immediate treatment
 - iii. to act within a team
 - iv. to maintain and enhance skills
 - v. to be aware of issues of safeguarding children
2. 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 ill children who may be regarded as “time critical” in terms of primary transfer.
 - Pre-Hospital Paediatric Life Support (PHPLS) training should be offered to paramedics
3. For General Practitioners
 - additional training in recognition and early resuscitation of ill children should be available
 - because of the relative infrequency of these cases, regular refresher training is needed.
4. For emergency care practitioners
 - The inter-collegiate advisory group on paediatric A&E services should assist in preparation of training materials
 - 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 specialities
5. For each of these groups, as well as hospital clinicians, use of the DH DVD on Spotting the Sick Child is recommended
6. An anaesthetist in a DGH with limited opportunities to maintain paediatric skills may benefit from a short attachment to a larger centre.
7. For telephone triage
 - Established algorithms such as those used by NHS Direct or ambulance services (AMPDS or CBD) should be used
 - Specific training in the use of these tools and regular audit for compliance is required.

Ambulance Trusts

8. There should be an action plan and contingency arrangements for those occasions when, because of extreme urgency, transfer must be undertaken by the referring hospitals.
9. Ambulance Trusts need to be involved in the planning of the system of care for critically ill and injured children within each network.
10. The organisation, staffing, training, and audit of the retrieval service should be agreed within the network.
11. A policy should be developed in each clinical community to guide ambulance crew to which hospital to take a critically ill or injured child. A flexible approach is necessary to allow for local geography, times of travel, hospital facilities available
12. A child who is desperately sick or who has arrested should be taken to the nearest hospital, even if it has no paediatric facilities, since any adult trained doctor should be able to assist with resuscitation.

Hospital Trusts

Resuscitation

13. The resuscitation team should always include practitioners who have undertaken the Paediatric Life Support (PLS) or European Paediatric Life Support (EPLS) courses
14. The team should be led by clinicians with the skills and knowledge to identify the key features of life-threatening illness and to institute emergency treatments as taught on the APLS course.

Stabilisation

15. Stabilisation requires a team of competent individuals comprising as a minimum a paediatrician, an anaesthetist and a nurse working in concert with A&E staff or ward staff: the nurse-patient ratio should be at least 1:1.
16. 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 ill child.
17. Local guidelines should be in place regarding where a critically ill child should be stabilised until the child's condition improves or the retrieval team arrives.
18. Formal checks of drugs and equipment used in stabilisation areas should be performed regularly; the Group recommends daily.
19. Common standards for managing and stabilising critically ill children should be developed that are applicable to different settings.

High dependency care

20. All hospitals providing in-patient 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 Department Of Health 2001 reproduced in Appendix 8 of this Report

Planning

21. Individual units should work towards classifying paediatric surgical cases by NCEPOD category and medical cases by severity of illness and need to transfer to HDU or PIC.
22. Where a hospital with no on-site in-patient paediatric facilities provides unrestricted access to children via the accident and emergency department very careful consideration should be given as to how a critically ill child should be managed and to provision of 24 hour cover.

Governance

23. There is an individual obligation on the professional to keep skills and competencies up to date and practised.
24. There is a team obligation to practise in order to maintain competency.
25. There is an organisational obligation to ensure that environment and equipment meet the standards required for the effective delivery of resuscitation and stabilisation.
26. The respective responsibilities of professionals to deliver the best possible care and 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 best for the patient and his or her employers have a duty to support him or her whatever the outcome
27. Data collection, audit and inspection form an essential part of the process of service review and improvement.

Emergency care networks

28. Services for the critically ill or injured child should be planned within a network comprising District General Hospitals and a tertiary centre with a Paediatric Intensive Care Unit.
29. Within hospital and within the network it is essential that there are clear lines of communication to access appropriate emergency care teams, clinicians and advice.
30. There should be guidelines agreed with the PIC centre that specify the circumstances under which a child is admitted to an adult intensive care unit.

Surgery in children

31. All surgeons undertaking emergency paediatric surgical care should have had training in the care of children and regularly update their skills in care of the critically ill surgical child.
32. Emergency surgery in children should only take place in hospitals which have in-patient children's facilities and provide elective surgical care.

Recommendations

33. Hospitals providing emergency children's surgery need to have suitably trained anaesthetists, paediatricians, paediatric nurses and paediatric high dependency care. They should be part of a clinical network providing access to tertiary services and PIC.
34. 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.
35. Protocols within the network should be developed for care of the child presenting with
 - airway obstruction
 - an uncomplicated head injury
 - a head injury followed by clinical deterioration
 - an expanding extradural haemorrhage
 - suspected ventriculo-peritoneal shunt malfunction
 - raised intracranial pressure
 - acute scrotum
 - fractures
 - airway obstruction
 - severe burns
36. It is necessary to ensure that front-line staff receive adequate training in the recognition of neurovascular compromise in children with fractures.

Support to the family

37. Appropriate information, encouragement and support should be available to parents to enable them fully to participate in decisions about, and delivery of, the care of their child.
38. 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.
39. All staff should receive training in the specific needs of children and their families.
40. Organisation of transfer and retrieval should include arrangements to minimise difficulties for families.

1. Introduction

- 1.1. To consider issues regarding anaesthetic and other services available to children who are critically ill or injured in district general hospitals, discussions occurred between the Royal College of Anaesthetists, the Royal College of Paediatrics and Child Health, and the Department of Health Child Branch. It was decided to form a working group, with representation from these three bodies together with the Royal Colleges of Nursing and Surgery and the Association of Paediatric Anaesthetists. Its membership is shown on p57. The group met in March, June and November 2004.
- 1.2. All four administrations were represented clinically on the working group, which was enriched by hearing of 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 are relevant to all.

Background

- 1.3. A large proportion of surgery in children is carried out in district general hospitals (DGHs) and includes general surgery, orthopaedics, and ENT. The consultants who provide an anaesthetic service for elective surgery have skills which 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
 - together with an ENT surgeon, managing acute upper airway obstruction
- 1.4. A number of factors have reduced, and threaten further to reduce, the participation of DGH anaesthetists in elective paediatric surgery. Tomlinson¹ (2003) reviews the changes and discussions which have occurred since the 1989 NCEPOD report.² In Appendix 1, Boston & 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

¹ Tomlinson A Anaesthetists and care of the critically ill child. Anaesthesia 2003
58: 309 - 311

² Campling EA, Delvin HB The Report of the National enquiry into perioperative deaths. London: NECPOD, 1989

access skills in small children. Fear of criticism that they are acting beyond their competence, and time pressures arising from the working time directive, may reduce their willingness to provide anaesthesia for the child requiring emergency surgery. This may result in children needing to be transferred long distances for relatively minor surgical procedures.

- 1.5. Anaesthetists may doubt their competence 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

- 1.6. The definition of terms used in this report is shown in the Glossary p56.

Scope

- 1.7. The Group concluded that the scope of its work was to review:
 - 1.7.1. **The child's journey** The outcome for an injured or sick child brought to a DGH depends not only on the care s/he receives there, but also (a) pre-hospital care and (b) arrangements for retrieval to an intensive care unit. Both of these, together with the networking arrangements which support clinicians remote from PIC facilities, were therefore within the Group's remit. For the purposes of this document, the journey ends with admission to PIC.
 - 1.7.2. **The work of a Consultant Anaesthetist involved in children's care** Anaesthetic input is required for the following:
 - Emergency resuscitation of children with trauma or medical conditions such as collapse, septic shock, coma
 - Emergency surgery for children, including trauma (for example, dealing with fractures); general surgery (e.g. obstructed hernia, appendicitis, acute scrotum); plastic surgery (e.g. dog bites, facial lacerations, abscess)
 - 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 already is compromised and the child will tolerate intubation by an A+E Doctor, or paediatrician with limited anaesthetic skills. In contrast the stabilisation of a deteriorating child with advancing disease may require a rapid sequence induction of anaesthesia. That is an anaesthetic procedure. It is required in septic shock, advancing coma, etc. This step needs to be taken

while awaiting arrival of the Paediatric Intensive Care retrieval team who may be several hours away.

- Elective surgery for children across a range of specialities
- 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.

1.7.3. Skills and competencies required for the care of the critically ill child Although the stimulus to this work was the problems facing anaesthetists, the group concluded that they should consider professional attributes rather than professional labels. We recognised that resuscitation skills should be possessed by front-line doctors, nurses, paramedics, emergency care practitioners. Many of the strategies developed by anaesthetists to develop and maintain paediatric competencies are relevant to other professional groups.

The RCN has recently produced a framework³ for the development of nursing roles within services for children and young people consisting of role descriptors and competencies mapped across a continuum from novice to expert, according to the:

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

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

1.7.5. The family's perspective Having a child who is severely injured or who is suddenly very ill is an enormous stress upon the family. It was vital to have an informed view about the avoidable elements of this stress and how it may be mitigated.

1.7.6. Standards and audit 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 audit, and also engaged in discussion with the Healthcare Commission about data items which may be used in the inspection process.

³ Services for children and young people: preparing nurses for future roles *RCN guidance 2004*
http://www.rcn.org.uk/publications/pdf/services_children_and_young_people.pdf

1.7.7. **Responsibility and risk** Whilst concentrating upon 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) .

1.7.8. **Severity of illness** We considered the NCEPOD definitions⁴ 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).

Structure of the Report

1.8. These considerations led to a structure concentrating upon the skills and competencies needed by the teams who deal with the ill child in his entire journey. We first consider generic skills, and a classification of levels of urgency. We consider the 5 steps

- Pre-hospital care
- Resuscitation
- Stabilisation
- Emergency surgery
- Retrieval

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

1.9. The key issues identified by the Group are indicated in the text as (*KEY ISSUE n*).

Coincident work

1.10. The work of the group was informed by the principles and standards of the NSF for children, Every Child Matters, and the Change for Children Programme. We also drew heavily on a recent text⁵. Pieces of detailed work which interface with this Report include:

- A checklist for children's unscheduled care
- Work to improve pain control in pre-hospital care

⁴ Who operates when? 2nd report 2003 (WOW II) THE 2003 REPORT OF THE NATIONAL Confidential ENQUIRY INTO PERIOPERATIVE DEATHS
<http://www.ncepod.org.uk/pdf/2003/03full.pdf>

⁵ Paediatric Anaesthesia and Critical Care in the District Hospital. Neil S Morton and Jane M Peutrell, editors

Introduction

- Commissioning Tertiary and Specialised Services for Children and Young People. A report by the Royal College of Paediatrics and Child Health May 2004 ⁶
- NICE guideline on major trauma
- QIS Standards in Anaesthesia & Self Assessment Framework
- Guidance for provision of paediatric anaesthetic services, Royal College of Anaesthetists, 2004

1.11. The Scottish Executive has recently produced a report⁷ on emergency care for acutely ill/injured children and young people which has been produced by a sub-group of the Child Health Support Group. Its 24 recommendations appear as Appendix 2.

1.12. The Faculty of Paediatrics, RCPI and the Irish Standing Committee of the Association of Anaesthetists of Great Britain and Ireland have produced a report on care of the Critically Ill Child in Irish Hospitals which appears as Appendix 3.

⁶ Commissioning Tertiary and Specialised Services for Children and Young People
Royal College of Paediatrics and Child Health May 2004.
www.rcpch.ac.uk/publications/recent_publications/tert.pdf

⁷ Report on emergency care for acutely ill/injured children and young people,
produced by a sub-group of the Child Health Support Group of the Scottish Executive.
<http://www.scotland.gov.uk/library5/health/eccic.pdf>

2. Generic skills

2.1. Five generic skills may be expected of all personnel (Table 1) involved with the care of critically ill or acutely ill children in the DGH.

1. to recognise the critically ill child
2. to initiate appropriate immediate treatment.
3. to act within a team
4. to maintain and enhance skills
5. to be aware of issues of safeguarding children

(KEY ISSUE 1)

Table 1 Front-line staff, all of whom may be expected to possess the 5 generic skills
<ul style="list-style-type: none"> • 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 at all levels of training and surgical nurses • Intensive care staff, including doctors of all disciplines and levels of training, nurses and technicians

Generic skills 1 & 2

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
- A paramedic

Generic skill 3: The ability to work in a team

2.3. Members of the team will

- have different competencies and skill levels
- maintain their skills
- 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 unit (eg from A&E department to surgery) and within clinical network (e.g. to a neighbouring PIC)

- undertake scenario practices
- undertake audit
- vary in composition with local circumstances

Generic skill 4:

2.5. Acquiring and maintaining skills is considered later in the document.

Generic skill 5:

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

3. Levels of urgency

- 3.1. NCEPOD (The National Confidential Enquiry into Patient Outcome and Death, formerly The National Confidential Enquiry into Perioperative Deaths) classifies operations by level of urgency⁸ (Table 2).

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

- 3.2. These definitions of urgency apply primarily to adult surgery but can be easily applied to paediatric surgical cases (Table 3). Exemplars 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 recommended.

⁸ Who operates when? 2nd report 2003 (WOW II) THE 2003 REPORT OF THE NATIONAL CONFIDENTIAL ENQUIRY INTO PERIOPERATIVE DEATHS
<http://www.ncepod.org.uk/pdf/2003/03full.pdf>

Table 3: NCEPOD definitions of urgency applied to paediatric surgery		
Category	Exemplars	Qualifiers
Emergency	Expanding intracranial haematoma Severe haemorrhage Airway obstruction Supracondylar fracture with neurovascular compromise Testicular torsion	Age of child (neonate, <5y, >5 y) Setting of presentation Transfer thresholds and distances Availability of competent team by setting
Urgent	Appendicitis (perforated) Open fracture or potential neurovascular compromise Airway foreign body	Anticipated pathophysiological changes Response to initial therapy Rate of change (improvement/deterioration) Age of child (neonate, <5y; >5y) Setting Transfer thresholds and distances Availability of inpatient paediatrics/HDU/PICU Daytime versus out of hours
Scheduled	Non-perforated appendix Closed orthopaedic trauma	Age Inpatient paediatrics /HDU/PICU Daytime versus out of hours
Elective	Not considered	

Vignette: child with appendicitis
<p>The medical director of a DGH initiates a discussion about paediatric surgery, choosing appendicitis in a 5 year old as an exemplar. The hospital is part of a clinical network for paediatric surgery, within which it has been agreed</p> <ol style="list-style-type: none"> a. that an initially conservative approach will be taken to appendicitis without evidence of perforation, followed by interval appendicectomy b. that the network will move towards laparoscopic appendicectomy but that there are currently insufficient surgeons trained in paediatric laparoscopic surgery. <p>Amongst the consultants at the hospital are 2 general surgeons and 3 anaesthetists who have maintained paediatric skills.</p> <p>It is agreed that</p> <ol style="list-style-type: none"> 1. Children with abdominal pain will initially be assessed by the paediatricians, because of the difficulty in distinguishing medical causes of abdominal pain (e.g. urinary infection, basal pneumonia) from surgical (e.g. appendicitis). 2. If appendicitis is diagnosed out of hours, a clinical decision will be made whether s/he needs urgent operation, operation the next day, or conservative management. 3. A 5 year old with suspected appendicitis may be operated on out of hours if a paediatrically competent surgeon and anaesthetist and supporting staff and a suitably staffed postoperative bed are available. If they are not and 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 NCEPOD format. The Group reviewed the recommendations of the Report on High Dependency (HD) Care for Children produced by an Expert Advisory Group for the Department of Health 2001⁹. This gives guidance on provision of HD care and conditions requiring HD and intensive care, guidance which is immediately applicable in a hospital with both HD and PIC facilities. The situation is more complex in a unit without PIC, where the decision that PIC is required implies calling the retrieval team. The decision to transfer will therefore be on case-by-case basis, and may be a difficult clinical decision. The child's condition may be evolving, and a decision to transfer may be taken on the basis of potential rather than actual critical illness.
- 3.4. This requires close communication between PIC team and DGH team. To prevent the situation that the retrieval team is 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 HD Report is reviewed and a list of conditions derived, taking into account local factors, stratifying critical conditions into:
- A. NEEDS TRANSFER TO PIC BY THE RETRIEVAL TEAM AS SOON AS POSSIBLE
- e.g. Arrest at home
Severe bronchiolitis
Severe status asthmaticus
Infective causes of airway obstruction
Severe diabetic keto-acidosis
Meningococcal septicaemia with shock
- B. NEEDS ADMISSION TO AN HD FACILITY AND DISCUSSION WITH PIC
- to discuss management, and
 - to warn the PIC team that retrieval may become necessary
- C. NEEDS ADMISSION TO AN HD 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:
- Severity of illness
 - Degree of urgency
 - Specialized service needed, e.g. burns, neurosurgery, etc.

^{9 9} HIGH DEPENDENCY CARE FOR CHILDREN - REPORT OF AN EXPERT ADVISORY GROUP FOR DEPARTMENT OF HEALTH 2001
http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4010058&chk=GcylXt

- 3.6. Individual units should work towards classifying surgical cases into NCEPOD categories and medical cases by need to transfer to PIC.
(*KEY ISSUE 2*)

4. Pre- hospital care for the critically ill child

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

Presentation

- 4.2. The seriously child may be identified via a number of pathways. The parents, other caregiver or non medically trained person may suspect that the child is seriously ill or injured and this may lead them to:
1. dial 999 to access the emergency services
 2. contact the General Practitioner (GP)
 3. attend a Walk in Centre or Minor Injuries Unit (MIU)
 4. ring NHS Direct
 5. contact another unscheduled care service
 6. take the child directly to an Emergency Department
- 4.3. It is important that all those to whom an ill or injured child may present, either by telephone or in person, have the skills and competencies to identify that the child may be seriously ill and take appropriate action. (*KEY ISSUE 3*) (NSF standard 6.4)
- 4.4. The following practitioners are likely to be involved in this situation and it is advisable that they receive specific training in the recognition and, if appropriate, initial management of the seriously ill child.

4.4.1. Telephone triage staff

- NHS Direct
- other unscheduled care centres
- GP surgeries
- ambulance service

Telephone triage can be difficult and is dependent on the quality of information given. It is suggested that all services using such a device for identification of seriously ill children use established algorithms such as those used by NHS Direct or ambulance services (AMPDS or CBD). Specific training in the use of such tools is required and regular audit for compliance is advised. (*KEY ISSUE 4*)

4.4.2. General Practitioners

The signs of serious illness in children in the early stages are subtle 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 situation worrying. Additional training for GPs in recognition and early resuscitation of ill children is advantageous and because of the relative infrequency of exposure to such events regular refresher

training is helpful. (*KEY ISSUE 5*) The Department of Health has produced a DVD on recognition of serious illness in children¹⁰.

4.4.3. Nurse Practitioners

Initial face to face triage may be by nurse practitioners in MIUs, walk in centres or GP surgeries. Although there are some facilities which specifically employ paediatric nurse practitioners, many will not come from a paediatric background. It is strongly recommended that the generic skills 1-5 are a core part of training.

4.4.4. Paramedics and Ambulance Technicians (ATs)

Only about 1:100 calls to an ambulance service will concern a child sufficiently unwell to merit any intervention. Ambulance staff may not be regularly exposed to ill children and may require support. The care of children has been a required subject on the syllabus of the UK paramedic course from April 2000, although the national syllabus including paediatric care has been available since April 1998. There is now a section on paediatrics in the paramedic course that is mandatory but does not require any practical exposure to children. Most ambulance services have trained the existing paramedic staff in their yearly training updates, but there may be a few paramedics who have still had no training in paediatrics. ATs are not taught this syllabus and it is up to the individual service as to the depth of training given.

It is helpful if Ambulance services obtain the support of local paediatricians in the delivery of training. (*KEY ISSUE 6*)

A key element of this training should be the recognition and management of seriously ill children who may be regarded as "time critical" in terms of primary transfer. (*KEY ISSUE 7*)

4.4.5. Emergency Care Practitioners (ECPs)

ECPs are an emerging role in the emergency care network and generally come from either a nursing or paramedic background. They are anticipated to fulfil a number of rôles in the new structure of unscheduled care. These might include

- Telephone triage and advice in ambulance control or unscheduled care facility
- Visiting the patient at home following a 999 call triaged as not appropriate for a blue light response
- Working in an MIU
- Working in a walk in centre or other unscheduled care facility, including undertaking home visits on behalf of the GP
- Working in a GP's surgery and responding to unscheduled care requests

¹⁰ *Spotting the Sick Child*. An educational tool for Health Care Practitioners, to aid in recognition of serious illness in children. Produced by Dr Ffion Davies for the Department of Health. September 2004

There are a number of courses available to train ECPs and the group recommends that the syllabus of the course chosen by any particular service covers 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 specialities. (KEY ISSUE 8)

Competencies & Skills

- 4.5. Generic skills 1-5 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). (KEY ISSUE 9)

Example of GP care
A 10 month old child presented to the GP's surgery with a short history of increasing difficulty breathing. He was cyanosed, floppy, his heart rate was 184 beats/min, 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 6 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 paediatricians to await the child. The child was well enough to be discharged 3 days later.

"Drive-by" policies

- 4.6. An ambulance crew will normally take a patient to the nearest available hospital. There may be situations where the ambulance should drive not to the nearest hospital but to another more able to deal with a critically sick or injured child, for example:
- 4.6.1. Where there are 2 almost equi-distant DGHs, one with and one without paediatric facilities
 - 4.6.2. Where a unit with a PIC unit is, say, only 10-15 minutes further than a unit without
- 4.7. 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
- 4.7.1. the infrequency with which Paramedics see seriously ill children

4.7.2. ambulance technicians do not have a paediatric course as part of their training and there are a significant number of "double tech" crews

4.7.3. 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

4.7.4. 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.

4.8. The Group's conclusions about this dilemma were

4.8.1. A flexible approach is necessary to allow for local geography, times of travel, hospital facilities available

4.8.2. A policy should be developed in each clinical community to guide ambulance crew to which hospital to take a critically ill or injured child

4.8.3. A child who is desperately sick or who has arrested should be taken to the nearest hospital, even if it has no paediatric facilities, since any adult trained doctor should be able to assist with resuscitation.

5. Training the competent resuscitation team

Skill levels

- 5.1. Within the resuscitation team, the generic skills 1 - 5 are required of all front-line staff.
- 5.2. The team should always include practitioners with the additional skills
 - to assess and open the airway using airway shunts
 - high-flow oxygen by various means
 - to access the circulation by the intravenous or intraosseous route
 - to administer appropriate fluid safely
 - to recognise and respond to the need for pain relief
 - to identify key features for emergency treatments to turn around the child's deterioration
 - to recognise and be able to respond to child protection concerns
- 5.3. With the exception of child protection and the identification of key features to identify emergency treatments these skills are taught on the paediatric life support (PLS) and European Paediatric Life Support (EPLS) courses. (*KEY ISSUE 10*) The child protection skills are available on a course which is currently being developed by the RCPCH.
- 5.4. Within the team, some clinicians require the skills and knowledge to identify the key features of life-threatening illness and injury in order to lead the resuscitation team and to institute emergency treatments, e.g. status asthmaticus, status epilepticus, septicaemia, meningitis, severe head injury, multi-system trauma, etc. These skills and competencies can be gained from an advanced paediatric life support course (APLS). (*KEY ISSUE 11*)

Courses

- 5.5. The UK resuscitation and paediatric emergency medicine courses which have wide availability, requirement for training and support from professional bodies (such as the Royal Colleges), and a quality control and standards process are described in Appendix 6. Courses can never substitute for the long periods of supervised training and experience which make up the development of an experienced paediatric anaesthetist or other paediatric specialist but are a starting point for skills and knowledge and with ongoing reflection and revision, competencies can be developed and maintained. Key outcomes from courses are the ability to work in teams and to manage a patient with an unknown life threatening condition by a structured approach.

Guidelines for Resuscitation from Cardio-respiratory Arrest

- 5.6. The Resuscitation Council (UK) publishes guidelines for
- Paediatric Basic Life Support
<http://www.resus.org.uk/pages/pbls.htm>
 - Paediatric Advanced Life Support
<http://www.resus.org.uk/pages/pals.htm>
 - Newborn Life Support <http://www.resus.org.uk/pages/nls.htm>
- 5.7. Following publication of the Consensus on Science and Treatment Recommendations (CoSTR2005), the European Resuscitation Council (ERC) and the Resuscitation Council (UK) will compile and publish new guidelines for BLS, ALS, EPLS, and NLS. The ERC guidelines (on which the guidelines of the RC (UK) are based) will be published in the journal Resuscitation in December 2005. The guidance recommended for the UK by the Resuscitation Council (UK) will be published at about the same time.

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.^{11,12} Simulator technologies vary 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 in testing team skills, interactions and working. Simulation is not intended to replace the need for learning in the clinical environment and simulation 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 the professional to keep skills and competencies up to date and practised. (*KEY ISSUE 12*) This can be achieved by attendance at specialised courses for particular skills, personal practice and the use of a log book 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.

¹¹ Maran NJ, Glavin RJ. Low to high fidelity simulation- a continuum of medical education? Medical Education 2003; 37(Suppl 1): 22-28.

¹² National Association of Medical Simulation www.patientsimulation.co.uk

- 5.10. There is a team obligation to practise in order to maintain competency. (*KEY ISSUE 13*) Many emergency departments are now instituting weekly or monthly sessions to practice “scenarios” in teams. A team practice uses a scenario such as a child unconscious from a head injury, a infant apnoeic from bronchiolitis or a child in shock from meningococcal septicaemia to enable members of teams to work together in their “real environment” both to keep skills sharp with frequent practice and also to test out the equipment, infrastructure and communications network.
- 5.11. Within hospitals there are a number of individuals who would be suitable to lead on sessions such as these. They would include the following
- Resuscitation training officer
 - Designated liaison paediatrician
 - Lead anaesthetist for paediatrics
 - A & E consultant with a special interest in paediatrics
- 5.12. There is an organisational obligation to ensure that environment and equipment meet the standards required for the effective delivery of resuscitation and stabilisation ^{13, 14, 15}. (*KEY ISSUE 14*) . The efficacy can be tested by regular “scenario practice” within the work place to ensure that equipment and setting are effective to deliver the care the child needs.

¹³ HIGH DEPENDENCY CARE FOR CHILDREN - REPORT OF AN EXPERT ADVISORY GROUP FOR DEPARTMENT OF HEALTH 2001

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

¹⁴ Paediatric intensive care a framework for the future report from the National Coordinating Group on Paediatric Intensive Care to the Chief Executive of the NHS

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

¹⁵ National Service Framework for Children and Young People
<http://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:

6.1.1. Following resuscitation

6.1.2. Worsening of the condition of an acutely ill child, where urgent management is required to prevent further life-endangering deterioration

Table 4. Stabilisation includes all or some of the following:

1	Securing the airway, usually by means of a securely fixed endotracheal tube
2	Establishing ventilation
3	Establishing secure venous access
4	Correcting poor perfusion and acidaemia
5	Inserting an arterial line
6	Treating cerebral oedema
7	Obtaining a full history
8	Carrying out a full physical examination
9	Performing baseline investigations e.g. chest X ray to confirm position of ET tube, electrolytes, glucose
10	Performing "aetiological" investigations which must be done acutely, e.g. <ol style="list-style-type: none"> Blood culture before giving antibiotics Serum insulin, cortisol and intermediary metabolites in hypoglycemia Urine for metabolic and toxicological screen
11	Initial treatment of the causative pathology e.g. bronchodilators for asthma, antibiotics for sepsis
12	Deciding location of continuing care
13	Arranging transfer to a PIC
14	The transfer itself

Comment: And what else?

Categories of child requiring stabilisation

6.2. Underlying causes of critical status may be:

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

Children of any age may require stabilisation.

Stabilisation Team

6.3. Stabilisation requires a team of competent individuals comprising as a minimum a paediatrician, an anaesthetist and a nurse working in concert with A&E staff or ward staff: the nurse-patient ratio should be

at least 1:1. (*KEY ISSUE 16*) Other staff may be required: for example a general surgeon, an ENT surgeon, additional support including ODPs, theatre nurses, recovery nurses and radiographers; also access to other medical and support services e.g. radiology, pathology.

- 6.4. Following the initial stages of resuscitation of a critically ill/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 lead by a clinician of appropriate seniority, who has the competencies and knowledge to manage and oversee the treatment of a critically ill child. (*KEY ISSUE 15*)
- 6.5. Roles of the anaesthetist and the paediatrician in stabilisation
 - 6.5.1. Whereas immediate resuscitation using bag and mask should be within the competence of all front-line staff, it is better for any consultant anaesthetist to be managing 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 best for his patient; and his employers have a duty to support him 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 their stage of training: it will often be necessary to summon senior help.
 - 6.5.2. Consultants in paediatrics will be nominally responsible and therefore in charge of very many of these cases. Clearly, if the child is seriously ill, the paediatric consultant must play a more than nominal role. They should be actively and proactively involved in the clinical management and not just leave it to junior staff and the anaesthetist. In addition it is expected that the paediatric consultant will be involved in the management of critically ill children admitted following severe trauma head injury.

Management and organisational issues

- 6.6. The Group endorsed the DH recommendations for organisational lead for high dependency care (Appendix 8) and considered that in the context of a DGH networked with a tertiary centre the multidisciplinary HD users' group has responsibilities as in Appendix 8. The users' group will benefit from inclusion of management, and its lead clinician will liaise with the Trust Board member responsible for children's services¹⁶. (*KEY ISSUE 17*)
- 6.7. The Group expressed concern about the situation where a hospital with no on-site in-patient paediatric facilities continues to provide unrestricted access to children via the accident and emergency

¹⁶ National Service Framework for Children and Young People
<http://www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/ChildrenServices/ChildrenServicesInformation/fs/en>

department. In these hospitals, there will usually be no on-site paediatricians and the other medical staff (including the anaesthetist) will have little, if any, on-going exposure to children during the normal working day. Very careful consideration should be given as to how a critically ill child should be managed and provision of 24 hour cover. (*KEY ISSUE 18*). Ambulance Trusts should be involved in these discussions, as described in paras 4.6-8.

Location and Environment

- 6.8. Stabilisation may take place in a number of different locations:
- the Accident and Emergency Department
 - the General Intensive Care Unit
 - the Paediatric High Dependency Unit
 - the Post-Anaesthesia Care Unit
 - an anaesthetic room
 - The paediatric ward
- 6.9. Local guidelines should be in place regarding where a critically ill child should be looked after until the child's condition improves or the retrieval team arrives. (*KEY ISSUE 19*) Whatever the location, the area should be:
- appropriately designed and equipped
 - stocked with all necessary drugs, fluids and consumables
 - have the full range of equipment adequately to monitor resuscitate, treat and nurse critically ill children of all ages; this includes the ability to intubate and ventilate
- 6.10. Formal checks of drugs and equipment in stabilisation areas should be performed regularly to ensure preparedness. (*KEY ISSUE 20*) The use of drug packs and equipment which are easily portable is strongly recommended: this will facilitate transfer of the critically ill child within the hospital (e.g. to the radiology department/CT scan); they will also be essential in "scoop-and-run" situations

Protocols

- 6.11. Common standards for managing and stabilising critically ill children should be developed that are applicable to different settings. (*KEY ISSUE 21*) Care pathways and agreed protocols should cover resuscitation, stabilization 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.

Communication and Links

6.12. Within hospital 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 are therefore required which provide clear details of how to obtain speedy/timely and competent advice and support. These should be disseminated to all personnel and locations in the hospital providing acute care for children. (*KEY ISSUE 22*)

6.13. Communication within networks is considered in Section 9.

High Dependency Care

6.14. All hospitals providing in-patient care for children should have arrangements for High Dependency (HD) Care as recommended in Appendix 8 (*KEY ISSUE 23*) reproduced from the HD report.

The Child in an Adult ICU

6.15. The majority of critically ill children are managed in tertiary paediatric units/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 whilst awaiting the arrival of the retrieval team. It may also be appropriate to admit a child to an adult ICU for a very brief period of IPPV, without transferring to a tertiary unit e.g. the child who has undergone surgery and developed a suxamethonium apnoea; the epileptic child where 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 be appropriate for the adolescent with trauma to be cared for in an adult ICU. There should be guidelines agreed with the PIC centre that specify the circumstances under which a child is admitted to the adult intensive care unit (*KEY ISSUE 24*), a children's nurse should be available to support the care of the child and a local paediatrician will need to be available for advice; there may also need to be discussion with the PICU.

Maintaining competence in paediatric anaesthesia by refresher weeks

6.16. In addition to in-house CME/CPD and refresher courses run by the RCoA, and the APA, an anaesthetist in a DGH with limited opportunities to maintain paediatric skills may benefit from a short attachment to a larger centre. (*KEY ISSUE 25*) One anaesthetist's experience of a week spent in Cardiff is given in the box.

Paediatric anaesthesia refreshment

Dr Chris Heneghan, Consultant Anaesthetist, Nevill Hall Hospital, Abergavenny

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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 paed 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.

- 6.17. A scheme has operated successfully in Yorkhill NHS Trust, Glasgow, in which anaesthetists from remote hospitals spend a structured week in the paediatric anaesthetic department.
- 6.18. Issues to be faced are
 - 6.18.1. Frequency of refresher weeks: it is suggested that once every 3 years, with an APLS refresher half-way between each visit, is desirable
 - 6.18.2. Capacity: the needs of visiting consultants must be balanced with the needs of trainees
 - 6.18.3. 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 (DGH)

7.1. General principles

- All surgeons undertaking emergency surgical care in children should have had training in the care of children and regularly update their skills in care of the critically ill surgical child.
- Emergency surgery in children should only take place in hospitals which have in-patient children's facilities and provide elective surgical care.
- Hospitals providing emergency children's surgery need to have suitably trained anaesthetists, paediatricians, paediatric nurses and paediatric HD 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.

(KEY ISSUE 26-29)

General Paediatric Surgery (GPS)

7.2. The Group considered:

- 7.2.1. Training issues (Appendix 1); it was recognised that DGH elective surgical provision is currently under discussion
- 7.2.2. Classification of urgency (see Tables 2 and 3), and hence
- 7.2.3. Cases which might be operated upon as an emergency in a DGH
- 7.2.4. Categories of cases which should not be operated on outwith a tertiary centre, namely
 - 7.2.4.1. Neonatal Surgery
 - 7.2.4.2. Oncology
 - 7.2.4.3. Specialist Urology
 - 7.2.4.4. Major Trauma. Stabilisation should occur in the DGH before transfer to the tertiary centre **see Neil's note about Table in Commissioning Tertiary document**

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

Surgical specialties provided in a district general hospital

carries no such risk). Arrangements should be in place for exploratory surgery of the acute scrotum to be carried out without delay. (*KEY ISSUE 30*)

7.5. Exemplars

Examples of General Paediatric Surgical (GPS) Care	
Example	Concepts illustrated
A 5 month old with a classical history of intussusception is brought to A&E. The paediatrician is unable to feel an abdominal mass, but abdominal Xray 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 6 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 child of one year 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 8.30 AM 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

7.6. 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 seen in DGHs frequently. 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

(*KEY ISSUE 30*)

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 commonest 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.

The management of other urgent paediatric ophthalmic conditions, such as ocular and orbital tumours, glaucoma, and cataract can generally be deferred until the next working day and usually will require referral to a specialist centre.

Oral & Maxillofacial Surgery

- 7.8. Major trauma is best managed by resuscitation, stabilisation and transfer to an appropriate centre.
- 7.9. Facial lacerations, dental trauma, facial and craniofacial trauma, postoperative bleeding, orofacial infections and management of the compromised airway in children account for 20 – 25% of maxillofacial emergencies.
- 7.10. 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 CEPOD guidelines). These emergency cases should be stabilised and surgically managed on appropriate lists with appropriate consultant surgeon and anaesthetist support.

Orthopaedics and Trauma

- 7.11. The Group considered orthopaedic cases under the NCEPOD classification.
- 7.11.1. Emergency. Major Trauma with multiple fractures or other soft tissue injuries requiring PIC should be stabilised and transferred to the tertiary centre.
- 7.11.2. 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
- a. front-line staff receive adequate training in the recognition of neurovascular compromise (*KEY ISSUE 31*)
 - b. networking arrangements are in place for rapid transfer

Surgical specialties provided in a district general hospital

- c. scenario practice is used to maintain individual and team skills.

7.11.3. 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 speciality. 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 is often occurring without the appropriate resource reallocation to these units.

7.11.4. Solutions for the care of fractures should be explored, such as:

- 7.11.4.1. Immobilisation of a fracture and adequate analgesia, and operation during a daytime operating list by appropriately trained staff the following day
- 7.11.4.2. Visiting paediatric specialists providing an outreach service for elective and "scheduled" work
- 7.11.4.3. 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.

(KEY ISSUE 30)

Otolaryngology (ENT)

7.12. About 30% of elective surgery carried out on children under the age of 14 years 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 in-patient and out-of-hours emergency service located at the larger centres, where training of junior doctors is also concentrated.

7.13. 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 6-9 consultants in an-call rota, the infrequent exposure of an individual consultant to such emergencies makes maintenance of clinical competence a challenge.

- 7.14. Solutions for the management of airway obstruction should be explored
- 7.14.1. Formal network arrangements for the transfer of cases with severe, though not yet critical, airway obstruction. This will always require an anaesthetic escort, and in most circumstances therefore retrieval by the PIC team. The difficulty of judging whether to call the retrieval team is well-recognised, because the situation may rapidly deteriorate or, as a result of treatment, improve.
 - 7.14.2. If there are sufficient anaesthetists and ENT surgeons who have maintained acute airway skills a paediatric rota may be possible to maintain.
 - 7.14.3. APLS teaching includes the technique of inserting a crico-thyroid needle. Every A&E receiving paediatric emergencies will have an APLS trained person always available, who can perform this in an extreme emergency.

(KEY ISSUE 30)

Vignette: 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 in-patient 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 SAS 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

- 7.15. 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.

Surgical specialties provided in a district general hospital

- 7.16. Burns Units and Burns Centres will have networking arrangements for stabilisation and transfer.

8. Transfer of the critically ill child

- 8.1. This chapter considers
- 8.1.1. those occasions when, because of extreme urgency, transfer must be undertaken by the referring hospitals
 - 8.1.2. 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. (*KEY ISSUE 32*) 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 is normally be escorted by a doctor and a nurse with experience and/or training in a) care of the critically ill child and/or b) emergency transfer and/or c) airway management.
- 8.4. Appropriate drugs and equipment are 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 ill 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 in the public domain. It is therefore advisable that the scenario is discussed prospectively with the ambulance service to agree the response formally, to 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 ill and injured children within each network. (*KEY ISSUE 33*)

Example of organisational planning with ambulance service
An ambulance service Director of Operations and Medical Director met with the Lead Consultants in Intensive Care from the two DGHs in the region who used the service to transfer critically ill patients. A list of conditions was drawn up that would require a very urgent response (such as uncontrolled intracranial bleeding or intra-abdominal haemorrhage) and given to the ambulance control staff. It was agreed by the hospital that a Category A (less than 8 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 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, has agreed to provide suitably trained staff for such transfers and the group has worked together to ensure uniformity and adequacy of equipment and supplies (e.g. oxygen).

Retrieval

The organisation, staffing, training, and audit of the retrieval service will be agreed within the network. (*KEY ISSUE 34*)

- 8.7. 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.
- 8.8. In certain circumstances, a Retrieval Service may be independent, covering a geographical area and servicing several paediatric intensive care units.
- 8.9. The lead centre retrieval service will be able to respond to requests for retrieval to an agreed standard.
- 8.10. When the service is not available, a 'back up' plan is implemented.
- 8.11. 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.
- 8.12. Equity of access to the retrieval service is required.
- 8.13. Wherever possible, a child should undergo one retrieval journey only.
- 8.14. The retrieval team should be aware of the designated area/s for retrieval in each of the referring hospitals.
- 8.15. The importance of retrieval training is emphasized with training exercises carried out at least annually.
- 8.16. 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.

8.17. Primary transports (by referring hospitals) will be necessary for some conditions such as expanding intracranial haematoma.

8.18. 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

8.19. The retrieval service is staffed as a remote intensive care bed requiring 1:1 nursing and its own medical staff member.

8.20. All transfers are carried out by appropriately trained and equipped staff.

- 8.21. A nominated lead consultant for the retrieval service is responsible for training, protocols and audit.
- 8.22. 24 hour consultant advice is available to the retrieval service and this consultant is able to join the retrieval team if necessary.
- 8.23. The lead centre has the requisite number of consultant and trainee staff to ensure 24-hour cover for both the PICU and retrieval service.
- 8.24. The nominated lead consultant for the retrieval service specifies which medical staff are appropriately trained and experienced to carry out retrievals.
- 8.25. The lead nurse for the retrieval service is responsible for training and audit of the process and for sustaining regular links to referring hospitals.
- 8.26. The staffing ratios at the lead centre allow 24-hour availability of nursing staff trained to perform retrieval.
- 8.27. The retrieval team is fully equipped to deal with children of different ages. Drugs and equipment are checked in accordance with local policy.
(*KEY ISSUE 34*)

Information for Families See also Section 12

- 8.28. Appropriate information, encouragement and support are available to parents to enable them to fully participate in decisions about and in the care of their child. (*KEY ISSUE 35*)
- 8.29. Parents should be informed of their child's condition, care plan and retrieval and this information should be updated regularly.
- 8.30. 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.
- 8.31. Appropriate information to children is available to enable them to share in decisions about their care.
- 8.32. Information on support services should be available.

9. Networks

- 9.1. Services for the critically ill or injured child should be planned within a network. (*KEY ISSUE 36*)
- 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 (e.g. 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.¹⁷
- 9.4. The NSF 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 ill.¹⁸ Where possible specialised care should be provided locally in conjunction with local children's services, through outreach services operating within a clinical network.¹⁹

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' (DH policy collaborative November 2004).

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

¹⁷ Edwards N., Clinical Networks. *BMJ* 2002; 324:63 (12 January)
<http://bmi.bmjournals.com/cgi/content/full/324/7329/63>

¹⁸ Department of Health (2004) *The Children's National Service Framework for Children, Young People and Maternity Services*. London, Department of Health [Standard 6]

¹⁹ RCPCH (2004) *Commissioning Tertiary and Specialised Services for Children and Young People*, London: RCPCH

population, facilitating patient involvement and the pooling of knowledge and resources.

9.6. 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

9.6.1. 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.

9.6.2. 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.....'²⁰ They focus on clinical service delivery which may be grouped by function or by client group or by 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.

9.6.3. Specialist networks have developed between specialist centres usually in a tertiary area of practice e.g. paediatric

²⁰ NHS Scotland. [What are managed clinical networks? Managed clinical networks: a guide to implementation](#)

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.²¹

9.7. Role of the tertiary centre.

In a clinical network the tertiary centre(s) have a 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 PIC 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 PIC units

²¹ McFall, J. Putting It Right: The Case for Change in Northern Ireland's hospitals Services. Belfast. DHSS. (1998)
<http://www.nio.gov.uk/press/1998/nov/981130c-dhss.htm>

10. Standards of care

Responsibility and risk

10.1. Whilst 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 for the Trust to support them if a good outcome is not achieved, should be part of clinical governance arrangements. (*KEY ISSUE 37*)

Table 5: Responsibilities of professionals and of Trusts in care of the critically ill child	
Responsibility of professional ²²	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, e.g. <ul style="list-style-type: none"> by ensuring adequately trained staff 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

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). (*KEY ISSUE 38*)

²² These duties are consistent with, and implicit in, the General Medical Council's statement on Duties of a Doctor. <http://www.gmc-uk.org/standards/doad.htm>

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 methodology²³ 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, drowning

Peer review by the Association of Paediatric Anaesthetists²⁴

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 and family's perspective, and has been 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.
- 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.

²³ <http://www.tarn.ac.uk/introduction/tarnlet.htm>

²⁴ Quality in paediatric anaesthesia: a pilot study of interdepartmental peer review P. M. Crean, M. A. Stokes, C. Williamson and D. J. Hatch Anaesthesia 2003; 58: 543

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 Ill & 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.
 - Whilst there is every expectation that this process will help to improve standards, follow-up and research is necessary to prove this.

Inspection

- 10.7. The three foregoing audits are voluntary and a means to 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 with 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 majority of the NSF hospital standard. All of the seven proposed themes are relevant to the Working Group, the first three particularly so.

Themes are
<ul style="list-style-type: none">• Medical and surgical care (access and safety)• Critical and high dependency care• Pain management • Governance • Communication• Age-appropriate environment• Coordination (including discharge and transition)

11. The policy context

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 Kennedy report²⁵ and the Laming Inquiry²⁶ 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.

The publication of the Children's and YP National Service Framework Hospital Standard in 2003 and the remaining standards in 2004 have 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 groups work and it is important that this Report is viewed in conjunction with the NSF.

The Healthcare Commission is currently working with 17 trusts to pilot a review of the Hospital Standard, which will be applied to all acute trusts across England in autumn 2005. Access to local services that are staffed by appropriately trained and experienced staff will be key themes of the review. The assessment will depend on collection of data from all trusts, with a follow-up visit (focusing on corporate and clinical governance) in a minority of trusts.

Other issues such as the 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 e.g. Walk in Centres, Treatment Centres and changes in the Out of Hours 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.

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. A nationally established database (PICaNET) will be able to provide us with key information regarding activity and outcomes in this speciality.

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 has been given £90,000 to facilitate the development of these.

²⁵ http://www.bristol-inquiry.org.uk/final_report/

²⁶ <http://www.victoria-climbie-inquiry.org.uk/finreport/finreport.htm>

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. (*KEY ISSUE 39*)

12.2 Access to Services

All children and young people who are ill, or thought to be ill, or injured will have timely access to appropriate advice and to effective services which address their health, social, educational and emotional needs throughout the period of their illness.²⁷

Being responsible for a child who becomes acutely or critically ill 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.²⁸ 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.²⁹ Parents feel responsible for acting competently and fear the consequences of not doing so³⁰ but their assessment of severity of illness and the need for admission to hospital correlates well with that of doctors.³¹ They need to know what to do and how to access the most appropriate services. Local arrangements for emergency care of ill or injured children both in working hours and out-of-hours, should be clear and well publicised.³²

12.3 Families requiring extra support

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

²⁷ The National Service Framework for Children, Young People and Maternity Services Standard 6: Children and Young People who are Ill p4 DOH 2004

²⁸ Beattie TF, Gorman DR, Walker JJ, The association between deprivation levels, attendance rates and triage category of children attending a children's accident and emergency department. *Emerg Med J* 2001; 110-111

²⁹ NSF Standard 6 Children and Young People who are Ill 2.3 p6 DOH 2004

³⁰ Kai J. Parents' difficulties and information needs in coping with acute illness in preschool children: a qualitative study *BMJ* 1996: 313 987 – 90

³¹ MacFaul R, Glass EJ, Jones S. Appropriateness of paediatric admissions. *Arch Dis Childhood* 1994; 71: 50-58

³² NSF Standard 6. Children and Young People who are Ill 6. Access p13 DOH 2004

and such interpreters will need additional training and support.³³ All staff should have understanding of 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 cassettes and videos can be helpful.

12.4 Ambulances Services

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.³⁴

12.5 Hospital Parking

Hospitals should ensure that free parking spaces for families with children are available next to the A&E Department.³⁵ Arrangements should be in place to ensure that families do not incur parking penalties.

12.6 Consent

DOH guidance³⁶ 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.³⁷

12.7 Hospital Care

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 which is physically separated (out of sight and sound) from adults.³⁸ 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.^{39, 40} Parents should have access to their child at all

³³ NSF for Children, Standard [7] for Hospital Services Chapter 3: Hospital Standard Part One Child-Centred Services 3.2 p13 DOH 2004

³⁴ NSF Standard 6 Children and Young People who are Ill 6.7 p18 DOH 2004

³⁵ HBN 22 2.13 Accident & Emergency facilities for adults and children. NHS Estates 2003

³⁶ Reference Guide to Examination or Treatment and Seeking Consent Working with Children DOH 2001

³⁷ NSF for Children Standard for Hospital Services Chapter 3: 3.21 p17

³⁸ NSF for Children Standard for Hospital Services Chapter 5: Hospital Standard Part Three Quality of Setting and Environment 5.1 5.5 5.7 pp36-37

³⁹ NSF for Children Standard for Hospital Services Chapter 3. 3.16 p16

⁴⁰ NSF for Children Standard for Hospital Services Chapter 4: Quality and Safety of Care Provided 4.44 p31 DOH 2003

times except when this is not in the best interest of the child. Children and their parents should be offered appropriate information to enable them to share in decisions about their care. They should be regularly updated about their child's condition and care plan including transfer/retrieval (if necessary). Parents should be able to be with their child in the resuscitation 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.⁴¹

12.8 Breaking Bad News

There should be a designated room set in A&E, appropriately furnished and equipped for staff to discuss information with families.⁴² The way in which bad news is given is an important factor in how it is received, understood and dealt with⁴³. It is important that health professionals receive education and training to develop the skills to break bad news effectively⁴⁴. Families should have access to support services including bereavement support e.g. social workers, chaplains and counsellors.

12.9 Adult ITU

Critically ill children who are admitted to an adult intensive care unit should be cared for in a suitable environment separate from adults. There should be co-operation with the paediatric department to ensure the appropriate support of staff with paediatric skills and which include play specialists. Facilities should be available for parents to remain with their children overnight.⁴⁵

12.10 Transfer/Retrieval

Parents should be given all possible support when a child is transferred. A survey⁴⁶ of 233 parents' experience of a specialised paediatric retrieval service demonstrated that the two main reasons for greatest dissatisfaction, were distress at being separated from their critically ill child and logistic problems locating and parking at the new hospital. 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 costs of transport (and if applicable overnight accommodation) can be provided in these circumstances.^{47, 48} Staff should

⁴¹ HBN 22 3.70 p23

⁴² HBN 22 3.91 p24 NHS Estates 2003

⁴³ NSF for Children Standard for Hospital Services Chapter3 3.20 p17 DH 2003

⁴⁴ 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: 765-775.

⁴⁵ NSF for Children Standard for Hospital Services Chapter3 3.20 p17 DOH 2003

⁴⁶ Colville G. Orr F. Gracey D. "The Worst Journey of our Lives" parents' experiences of a specialised paediatric retrieval service. *Intensive & Critical Care Nursing*. 2003 Apr;19(2):103-8.

⁴⁷ Standards for the Care of Critically Ill & Critically Injured Children in the West Midlands West Midlands Strategic Commissioning Group April 2004

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

⁴⁸ Illness and Disability in Children and Young People. A Guide for Commissioners and Providers 98. p25 Action for Sick Children 1996

Glossary

Term	Definition
The critically ill child	The ill or injured child with actual or impending <ul style="list-style-type: none"> • Respiratory failure • Circulatory failure • Neurological failure
GPS	General paediatric surgery
PIC	Paediatric intensive care
HD	High dependency
NSF	National Service Framework for Children and Young People
Pre-hospital care	All care given to the patient given before the child arrives at a hospital (other than a minor injuries unit) i.e. 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.
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.
Stabilisation	The measures taken to maintain or improve a child's condition after resuscitation, or to if critically ill.
"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 e.g. 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.

Membership of the Working Group

Dr Neil Bennett	Association of Paediatric Anaesthetists
Dr Keith Dodd	Royal College of Paediatrics and Child Health
Ms Julie Flaherty	Nurse Consultant in Children's Emergency Care
Dr Chris Heneghan	Royal College of Anaesthetists
Dr Ian Maconochie	RCPCH lead on NHS Direct
Dr Neil Morton	Consultant Paediatric Anaesthetist, Yorkhill Hospital, Glasgow
Dr Barbara Phillips	Consultant in Emergency Medicine, Alder Hey Children's Hospital
Dr Anna-Maria Rollin	Royal College of Anaesthetists
Dr Peter Crean	Consultant Paediatric Anaesthetist, Northern Ireland and President, Association of Paediatric Anaesthetists
Dr Fiona Jewkes	Medical Director, Wiltshire Ambulance Trust
Miss Leela Kapila	Royal College of Surgeons
Mr VE Boston	British Association of Paediatric Surgeons
Ann Seymour	Parent representative
Jane Scott	Department of Health
Fiona Smith	Royal College of Nursing
Prof Stuart Tanner	Department of Health (chair)

Invited attendance

Dr Charles Ralston	Chair of the West Midlands Steering Group, Standards for the care of Critically Ill and Critically Injured Children
Maggie Kemmner	Healthcare Commission
Fiona Wray	Healthcare Commission

Support to the Working Group

Paul Hughes	Department of Health
Glyn Spriggs	University of Sheffield