NHS

West Midlands Strategic Commissioning Group

Standards for the Care of Critically Ill & Critically Injured Children in the West Midlands

Version 2

May 2004

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Agreed by the West Midlands Steering Group
May 2004
Chair — Dr C S Ralston

Contents

Standards

Core Standards

Service-specific Standards

Appendices

Foreword

I am pleased to welcome this second version of the Standards for the Care of Critically Ill and Critically Injured Children in the West Midlands. These Standards are an excellent piece of work and will make an important contribution to improving the quality of care for children and their families. Working towards these Standards will help organisations to meet the expectations of the *National Service Framework for Children — Standard for Hospital Services* and the recently published *Standards for Better Health*.

Organisations within the West Midlands have been developing Standards and using them for peer review visits for several years. I congratulate you on the progress you have achieved so far and the service improvements that have resulted. The revised Standards and plans for future peer review visits will ensure that improvements continue to be made.

Professor Al Aynsley-Green

National Clinical Director for Children

Definitions

Children

These Standards refer to the care of critically ill or critically injured children. The term 'children' refers to those aged 0 to 16 years although occasionally, for particular reasons, young people who are slightly older may be cared for in the same facilities. The special needs of adolescent young people are not specifically mentioned in the Standards but should be borne in mind.

Critically ill and critically injured

The care of both critically ill and critically injured children is covered by these Standards. For simplicity, 'critically ill' is used throughout to refer to 'critically ill or critically injured'. These are children requiring, or potentially requiring, high dependency or intensive care whether medically, surgically or trauma-related.

Parents

The term 'parents' is used to include mothers, fathers, carers and other adults with responsibility for caring for a child or young person.

In-patient paediatrics

Paediatric medical and/or surgical care led by consultant paediatricians and with facilities for overnight stays.

Introduction

Background — Version 1

Many people providing care for sick children in the West Midlands will have been aware of the first version of these Standards. Version 1 was produced in 2002 following an extensive period of development and consultation involving a Working Party and five subgroups. I was honoured to chair the Working Party and am grateful for the support of colleagues for this work. In particular, the Regional Committee of the Royal College of Paediatrics and Child Health gave their approval to the development of the Standards.

Version 1 of the Standards was used as the basis for peer review visits to all acute hospitals in the West Midlands. Two pilot visits took place in the spring of 2002 and visits to other hospitals were undertaken between January and July 2003. These visits yielded much learning for all involved, particularly those who took the opportunity to visit other hospitals as reviewers. The evaluation of the visits was very positive with 74% of Trust contacts and 63% of appraisers considering the process useful or very useful in improving services for children. An Overview Report of the visits was produced which summarised the common findings across the acute hospitals in the West Midlands. Copies of the Overview Report are available to interested individuals and organisations from claire.launders@bbcha.nhs.uk.

Revising the Standards

Applying the Version 1 Standards to a wide range of clinical situations across the West Midlands revealed the need for some changes to the Standards. The evaluation of the peer review visits also showed the need for revisions. In particular, people said that they found the Standards 'long winded' and thought that some of the duplication between sections could be removed. The Standards and Peer Review Steering Group (membership of which is given in Appendix 1) has therefore produced this revised version.

The Standards Document

As far as possible, the Standards are drawn from published work such as the Department of Health papers on Paediatric Intensive Care (PIC) development and other relevant care standards, such as '*Accident and Emergency Services for Children*' and the PIC Society '*Standards for critical care*', including definitions of levels of care (Appendix 2). The full list of references is given in Appendix 3. The revised Standards also draw on '*Getting the right start*: *National Service Framework for Children — Standard for Hospital Services*'. We have tried to make the Standards consistent with the National Service Framework wherever possible.

It must be recognised, however, that some of the recommendations are written as a result of the consensus view of the Steering Group and constitute a reasonable level of care or clinical practice, rather than clinically proven fact.

The philosophy of the document is therefore one that expresses an acceptable level of care, which the Steering Group believes all institutions caring for acutely ill children should aim to achieve.

It is also clear that the Standards will not currently be met in their entirety by institutions undertaking acute paediatric care. They are intended as a benchmark towards which services should be working and which are achievable by all hospitals in due course.

Although the layout of Version 2 differs significantly from Version 1, we have kept the content of the Standards the same as far as possible. Hopefully, progress in improving care for critically ill children can therefore be shown.

We acknowledge that primary care and ambulance services make an essential contribution to the care of critically ill children. It has not been possible at this stage to include these services within the scope of these Standards. Ambulance services should, however, be working to the current version of the Joint Royal College Ambulance Liaison Committee Guidelines.

Audit/Information collection

Data collection and audit form an essential part of the process of service review. A West Midlands coordinating group has been established to support the collection of data on high dependency care and monitor, analyse and feed back information to acute units as a means of assessing service need. As part of this process, a West Midlands review of child deaths will be established.

Education & training

The peer review visits showed that many hospitals have significant problems with ensuring adequate medical and nurse training in paediatric resuscitation and high dependency care. An Education and Training Subgroup, chaired by Dr Penny Dison, has therefore been established to undertake a training needs analysis, review current training provision, identify gaps in provision and sources of funding and develop a plan to address the training shortfall within the West Midlands.

Retrieval and transfer

The West Midlands Specialised Services Agency is leading work to improve and sustain arrangements for the retrieval and transfer of the West Midland's most critically ill children.

Information for children and families

The peer review visits found a variable picture of information for children and young people themselves. Some units had excellent material whereas others had very little. We are exploring ways of sharing good practice in this area.

Service Reviews

The evaluation of the first round of critically ill children peer review visits indicated strong support for re-visits with a consensus that these should take place approximately two years after the initial visits. Plans are therefore being made for a second round of visits in 2005.

Acknowledgements

I would like to express my thanks to all members of the Steering Group for their hard work in acting as Team Leaders for the peer review visits, considering and agreeing the visit reports and 'hanging on' through the process of revising the Standards. We could not have got this far without their loyal, thoughtful and good-tempered support. My thanks also go to Jane Eminson and Claire Launders for their work in organising the visits and revising the Standards. Finally, I would like to acknowledge and appreciate the tremendous effort that many people put into preparing for peer review visits to their Trusts and being part of visiting teams.

Conclusion

Both the Working Party that developed Version 1 of the Standards and the Steering Group responsible for Version 2 have attempted to be as objective as possible about the minimum Standards which should be applied to the delivery of acute paediatric care. The underlying purpose of the Standards and the peer review visits is to ensure safe and effective services and to help improve the quality of care. The Steering Group believes that the Standards are a valuable aid to improving care and we therefore recommend this document for widespread adoption. We hope it can form the basis for a realistic assessment of service need, a means of monitoring progress and a stimulus to service development.

Dr Charles S Ralston

Chair of Steering Group

May 2004

Structure of the Standards

The structure of Version 2 of the Standards is different from that in Version 1. The structure has been changed in order to remove duplication and ensure consistency between the sections of the Standards. Standards have been divided into those that are core and those that are specific to certain services. The service-specific standards are additional to the core standards for each area and the Trust-wide core standards.

CORE STANDARDS

A Trust-wide core standards

These standards apply to all hospitals that provide care for children.

B Core standards for each area

The area standards apply to each A&E department, Paediatric Assessment Unit and unit providing day case or in-patient paediatric care. During peer review visits, each area will be separately reviewed against the standards in this section. Standards have not yet been developed for other areas where children are seen, for example, out-patient and imaging departments.

SERVICE-SPECIFIC STANDARDS

These standards are divided into three sections. The standards in sections C to E are additional to the core standards (sections A and B).

C Reception of critically ill children

These standards apply to A&E departments, Paediatric Assessment Units and paediatric wards that accept emergency admissions.

D Paediatric high dependency care

All paediatric in-patient units may need to provide paediatric high dependency care for up to 48 hours and so are expected to achieve these standards.

E Retrieval and transfer of the most critically ill children

These standards apply to Paediatric Intensive Care Units (PICUs) that undertake retrieval and transfer of the most critically ill children.

The applicable standards will depend on the local configuration of services. Figure 1 illustrates the standards applicable to different settings.

Figure 1 Applicable standards

	Applicable standards	All Trusts (see note 1)	A&E Dept.	Paediatric Ward admitting emergencies	Paediatric Assessment Unit	Day surgery Unit	Elective inpatient unit	PICU with retrieval Team
A	Trust-wide core standards	✓	✓	✓	✓	✓	✓	✓
B	Core standards for each area		✓	✓	✓	✓	✓	See note 2
C	Reception of critically ill children		✓	✓	✓			
D	Paediatric high dependency care			✓			✓	
E	Retrieval and transfer							✓

Notes:

1. These standards apply to all Trusts providing hospital services for children.

2. Area standards are applicable to paediatric intensive care units. PICUs are, however, subject to more stringent nationally-set standards and are nationally peer reviewed against these standards.

Each standard has three sections. The first is a reference number. The second is the wording of the standard that should be achieved. The third section, 'demonstration of compliance', indicates how achievement of the standard may be shown. Where written guidelines or protocols are mentioned, these should be available. They may cover more than one standard and the format and content of guidelines should be as each Trust sees fit. They should show that the standard has been met. Some standards do not mention written information as necessary for compliance. In these cases, information will be gathered as part of the review process, for example, from viewing facilities and equipment.

Each section of the Standards starts with a set of Objectives. These indicate the intentions behind the Standards and provide guidance in the event of any doubt about their interpretation.

A

Trust-wide Core Standards

Objectives

- All NHS Trusts should be clear of their role in the care of critically ill children and of the other units that will normally be expected to provide other elements of this care.
- All NHS Trusts should comply with published guidance on health services for children, in particular, the *National Service Framework for Children — Standard for Hospital Services*.
- Hospitals with Minor Injury Units should receive only children with minor clinical conditions and have in place a protocol for use in the event of a critically ill child, or potentially critically ill child, presenting.

Responsibility for these standards lies with the Board level lead for children's services (standard 9).

Ref.	Standard	Demonstration of compliance
CONFIGURATION OF SERVICES		
1	The Trust should be clear whether it provides the following services and the hospital site or sites on which each service is available: • Minor injury unit • Accident and emergency department • Paediatric receiving area / assessment unit • In-patient paediatric facilities • Paediatric day surgery unit • Paediatric intensive care unit retrieval and transfer service.	Written description of services.
2	On each hospital site there should be: • 24 hour consultant paediatrician cover, and • 24 hour consultant anaesthetist cover.	Medical staff rotas. *Notes:* *1 This standard is not applicable to hospital sites providing a minor injuries service only.* *2 On hospital sites providing day surgery only, this standard applies to the time during which children may be present.*
3	24 hour paediatric resident cover of middle grade or above should be available on each hospital site providing care for children.	Medical staff rotas. *Notes: This standard is not applicable to hospital sites providing a minor injuries and / or day surgery service only.*

Ref.	Standard	Demonstration of compliance
4	Hospitals without on-site in-patient paediatric medical facilities should have protocols for accessing paediatric medical advice agreed with a local paediatric medical unit and regularly reviewed.	Written protocol covering 24-hour advice. *Note: This standard is not applicable to hospital sites with resident paediatric medical staff. It is applicable to other hospitals where children receive care, including those with minor injuries and / or day surgery units only.*
5	There should be a nominated consultant anaesthetist with responsibility for policies and procedures relating to emergency treatment of children in liaison with the lead area consultant/s (standard 25).	Name of consultant anaesthetist.
6	There should be a nominated consultant surgeon responsible for policies and procedures relating to the management of emergency paediatric surgery and trauma in liaison with the lead area consultant/s (standard 25).	Name of consultant surgeon.
7	On the same hospital site as accident and emergency facilities there should be in-patient medical paediatric facilities.	Facilities available.
8	There should be 24-hour access to pharmacy, biochemistry, haematology, imaging and physiotherapy services and daily access to dietetic services. These services should be able to support the care of children.	Facilities available. *Notes:* *1 This standard includes appropriate reporting arrangements.* *2 On hospital sites providing day surgery only, this standard applies to the time during which children may be present.*
ORGANISATION OF SERVICES		
9	A Board level lead for children's services should be identified.	Named Board-level lead.

A

Ref.	Standard	Demonstration of compliance
10	Trusts providing hospital services for children should have a single group responsible for the coordination and development of care of children. The membership of this group should include: ● the nominated lead consultants and nurses for each of the areas where children may be critically ill (standards 25 and 28), ● the nominated lead surgeon and lead anaesthetist (standards 25 and 28) and ● the Resuscitation Officer with lead responsibility for children. The accountability of the group should include the Trust Board-level person with responsibility for children's services (standard 9). The relationship of the group to the Trust's mechanisms for child protection (standard 13) and clinical governance issues relating to children (standard 14) should be clear.	Terms of reference, membership and accountability of the group. *Note: This group may have other functions so long as the standard is met in relation to terms of reference, membership and accountability.*
11	The mechanism for approval of policies and procedures relating to the care of critically ill children should have been agreed by the Trust-wide group (standard 10) or a sub-group thereof.	Mechanism for approval of policies and procedures, agreed by Trust-wide group. Policies and procedures agreed in accordance with this mechanism. *Note: The mechanism for approval may be through the group itself or through other structures within the Trust.*
12	All policies and procedures relating to the care of critically ill children should comply with Trust document control procedures.	Policies and procedures meeting reasonable document control standards of monitoring, review and version control.
13	All staff involved with the care of children should have received regular training in local child protection procedures and be aware who to contact if they have concerns about child protection issues.	Training records. Staff awareness of local policy and the appropriate person to contact with concerns. *Note: Further details of the child protection requirements on hospital Trusts are given in the National Service Framework for Children — Standard for Hospital Services paragraphs 4.9 to 4.14.*

Ref.	Standard	Demonstration of compliance
14	The Trust should have implemented all aspects of the 'National Service Framework for Children: Standard for Hospital Services' relating to clinical governance, including those relating to serious events and near misses.	Investigation and reporting arrangements. Evidence of multi-disciplinary learning. Presence of a risk register. *Note: Further details of the serious events and near miss' requirements on hospital Trusts are given in the National Service Framework for Children — Standard for Hospital Services paragraph 4.6.*
15	If the Trust's services (standard 1) include a Minor Injury Unit, this Unit should have a protocol in use in the event of a critically ill child, or potentially critically ill child, presenting. This protocol should include transfer to an appropriate paediatric unit.	Written protocol.

B

Core Standards for each Area

Objectives

- Critically ill children should be cared for in an appropriate environment and, wherever possible, participate in decisions about their care.
- Families should be able to participate fully in decisions about the care of their child and in giving this care.
- Appropriate support services should be available to children and their families during the child's critical illness and, if necessary, through bereavement.
- Care should be provided by appropriately trained staff in appropriately equipped facilities.
- With the exception of elective day surgery, all types of service should be available on a 24-hour basis.
- All facilities should have a multi-disciplinary approach to care where the expertise of all members of the multi-disciplinary team is valued and utilised.
- The lead centre retrieval team should carry out retrieval of appropriate children who need transfer to the paediatric intensive care facility, within the agreed catchment population.
- Exceptions to the normal retrieval arrangements should follow agreed guidelines.
- All transfers should be carried out by appropriately trained and equipped staff.

These standards apply to each area of the hospital where a) critically ill children may arrive and / or b) where day case or in-patient care is given. Standards have not yet been developed for other areas where children are seen, for example, out-patient and imaging departments.

Support for children and their families is needed throughout a critical illness. Appendix 4 gives further advice on facilities and support for families of critically ill children. Where reference is made to parents, this includes mothers, fathers, carers and other adults with responsibility for caring for a child or young person.

Responsibility for these standards lies with the nominated lead consultant (standard 25) and nominated lead nurse (standard 28) for each area. Ensuring the appointment of a nominated lead consultant and nominated lead nurse for each area is the responsibility of the Board level lead for children's services (standard 9).

Ref.	Standard	Demonstration of compliance
SUPPORT FOR CRITICALLY ILL CHILDREN AND THEIR FAMILIES		
16	There should be a child friendly environment, including toys and books / magazines for children of all ages. There should be visual and, ideally, sound separation from adult patients.	Facilities available. *Note: This standard does not apply to areas used only for resuscitation of children.*
17	There should be parental access to the child at all times except when this is not in the interest of the child.	Examples of information for children and parents.
18	Children should be offered appropriate information to enable them to share in decisions about their care.	Examples of age-appropriate information.
19	Parents should have information, encouragement and support to enable them fully to participate in decisions about, and in the care of, their child.	Examples of information for children and parents.
20	Parents should be informed of the child's condition, care plan and retrieval (if necessary) and this information should be updated regularly.	Written guidelines on communication with parents.
21	Parents of children needing emergency transfer should be given all possible help regarding transport, hospital location, car parking and location of the unit to which their child is being transferred.	Examples of information for parents. Information should include at least a map, directions, car parking advice and contact numbers.
22	Information on support services should be available.	Information for parents on support services, including interfaith support, social workers, interpreters and bereavement support, available in all departments.
23	A policy on financial support for families of critically ill children should be developed and communicated to parents.	Information for parents covering, at least, costs of travel, car parking and, if applicable, overnight accommodation.
24	Appropriately qualified play specialists should be available 7 days a week.	Name/s of play specialists. *Note: Play specialists should have the Hospital Play Specialist or equivalent qualification.*
MEDICAL STAFFING		
25	There should be a nominated consultant responsible for: ● Protocols covering the assessment and management of the critically ill child ● Ensuring training of appropriate medical staff. This consultant should undertake regular clinical work within the area for which s/he is responsible.	Name of consultant.

B

Ref.	Standard	Demonstration of compliance
26	The nominated consultant (standard 25) should ensure that all relevant medical staff have appropriate, up to date paediatric resuscitation training.	Training records. *Note: The level of training and updating appropriate to different staff is shown in Appendix 10.*
27	There should be 24-hour availability of medical staff and always a doctor on duty with up to date APLS/PALS or equivalent training.	Medical staff rotas and training records. *Notes:* *1 The level of training and updating appropriate to different staff is shown in Appendix 10.* *2 In areas providing day surgery only, this standard applies to the time during which children may be present.*
NURSE STAFFING		
28	There should be a nominated senior children's trained nurse with responsibility for: ● Protocols covering the assessment and management of the critically ill child ● Ensuring training of appropriate nursing staff. This nurse should undertake regular clinical work within the area for which s/he is responsible.	Name of nurse.
29	The nominated lead nurse (standard 28) should have significant training and experience in the care of acutely ill children.	Details of training and experience. *Note: As standard 26.*
30	The nominated nurse (standard 28) should ensure that all relevant nursing staff have appropriate, up to date paediatric resuscitation training.	Training records. *Note: As standard 26.*
31	There should always be at least one nurse on duty with up to date PLS or equivalent training.	Nursing rotas and training records. *Notes: As standard 27.*
EQUIPMENT AND FACILITIES		
32	An appropriately designed and equipped area, or adequate mobile equipment, for resuscitation and stabilisation of critically ill children of all ages should be available. Drugs and equipment should be checked in accordance with local policy.	Suitable area containing the drugs and equipment listed in Appendix 5. Policy covering frequency of checking and evidence of checks having taken place in accordance with this policy.
POLICIES AND PROCEDURES		
33	Protocols should be in use covering: ● admission ● discharge ● treatment of all major conditions, including head injuries, meningococcal infection, asthma and status epilepticus.	Written protocols.

Ref.	Standard	Demonstration of compliance
34	Protocols should be in use covering resuscitation and stabilisation.	Written protocol.
35	Protocols for accessing advice from a lead PIC centre should be regularly reviewed and easily available.	Written protocol for 24-hour advice, including referral protocols and contact numbers. *Note: Relevant contact numbers are given in Appendix 6. Essential referral information is given in Appendix 7.*
36	Protocols should be in use covering transfer to a lead PIC centre.	Written protocol. *Note: Drug infusion concentrations compatible with lead centre practice are given in Appendix 8.*
37	The transfer protocol (standard 36) should include local guidelines on the maintenance of intensive care for a critically ill child until the child's condition improves or the retrieval team arrives. These guidelines should stipulate the location/s in which children may be maintained.	Local guidelines on maintenance of intensive care.
38	If the maintenance guidelines in standard 37 includes the use of an adult intensive care unit, then the protocol should specify: ● The circumstances under which a child will be admitted to and stay on the adult intensive care unit. ● A children's nurse is available to support the care of the child. ● There has been discussion with a PICU about the child's condition. ● A local paediatrician has agreed to move the child to the intensive care unit and is available for advice during their stay there.	Local guidelines on maintenance of intensive care. *Note: This standard is not applicable if an adult intensive care unit is not one of the possible areas for maintenance of intensive care.*
39	Decisions on whether a child needs to be transferred should be taken by the appropriate local consultant with a lead centre consultant.	Written protocol. Audit of retrievals is a desirable additional demonstration of compliance.
40	Arrangements should be in place covering when the lead centre is full or the retrieval team cannot function.	Written protocol. *Note: This protocol may include reference to the transfer contingency plan (standard 42).*
41	There should be arrangements for the transfer of children requiring specialised intensive care not available in the lead centre, including burns care and ECMO.	Written protocol. *Notes:* *1 Paediatric burns referral information is given in Appendix 9.* *2 This standard is not applicable to areas providing elective surgery only.*

B

Ref.	Standard	Demonstration of compliance
TRANSFER CONTINGENCY PLAN		
42	Arrangements should be in place for situations where retrieval is clinically inappropriate or time-critical, for example, severe head injury or intra-cranial bleeding where retrieval may introduce unsafe delay. The arrangements should include: ● advice from the lead PIC centre (standard 35), ● a list of the 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 nurse and one doctor, ● training and experience of escort team (standards 43, 44), and ● equipment (standard 45).	Written protocol.The protocol should specify what conditions are 'time critical' for the particular hospital/s concerned. *Notes:* *1 This standard is applicable to transfers within lead centres.* *2 This standard cannot be met if any of standards 35, 43, 44 and 45 are not met.*
43	The referring consultant should judge the appropriateness of the medical escort. This would normally be a senior clinician with experience and / or training in a) care of the critically ill child or b) emergency transfer or c) airway management.	Written protocol. *Note: This standard is applicable to transfers within lead centres.*
44	The referring consultant should judge the appropriateness of the accompanying nurse. This would normally be a senior nurse with experience and / or training in a) care of the critically ill child or b) emergency transfer or c) airway management.	Written protocol. *Note: This standard is applicable to transfers within lead centres.*
45	Appropriate drugs and equipment available for an emergency transfer. Drugs and equipment should be checked in accordance with local policy.	Inventory of drugs and equipment. Policy covering frequency of checking and evidence of checks having taken place in accordance with this policy. *Note: The drugs and equipment listed in Appendix 5 are a guide to those that should be available for an emergency transfer.*

C

Reception of Critically Ill Children

Objectives

- All hospitals which are 'open' to children should be able to:
  - — receive, assess, resuscitate and stabilise a child and immediately refer to the high dependency area or paediatric intensive care team on site

  or
  - — have the ability to initiate and maintain paediatric intensive care until the retrieval team arrives.

- All Accident and Emergency (A&E) Departments and Minor Injury Units should comply with the guidance for A&E Departments published in "A&E Services for Children 1999".

These standards apply to each area in the hospital (except minor injuries units) where critically ill children may arrive. They are additional to the standards in section B which should also be met. Responsibility for these standards lies with the nominated lead consultant (standard 25) and nominated lead nurse (standard 28) for each area.

Ref.	Standard	Demonstration of compliance
MEDICAL STAFFING		
46	The nominated consultant in A&E (standard 25) should have had specific experience in paediatrics or paediatric accident and emergency care.	Training history *Notes:* *1 This standard is only applicable to A&E departments.* *2 This standard is not applicable to A&E units seeing less than 50,000 patients (all ages) per year.*
47	There should be a nominated paediatric consultant responsible for liaison with the nominated consultant in A&E (standard 25).	Name of consultant. *Note: This standard is only applicable to A&E departments.*
POLICIES AND PROCEDURES		
48	A system for alerting and organising the appropriate team within the hospital (for example, paediatric resuscitation team, trauma team) should be in place.	Written protocol.
49	A triage system should be operating which recognises the needs of the paediatric population and ensures that all non-ambulant patients are triaged immediately.	Written protocol.
50	Protocols for accessing advice from the local in-patient paediatric medical unit should be agreed and regularly reviewed.	Written protocol covering 24-hour advice. *Note: This standard is only applicable to A&E departments.*

D

Paediatric High Dependency Care

Objectives

- All hospitals providing in-patient paediatric facilities must be prepared to care for children who are, or who become, critically ill. All such units should be able to provide:
  - Resuscitation
  - Paediatric high dependency care for up to 48 hours
  - Paediatric intensive care prior to retrieval and transfer.

These standards apply to each area in the hospital providing in-patient care for children. They are additional to the standards in section B which should also be met. Responsibility for these standards lies with the nominated lead consultant (standard 25) and nominated lead nurse (standard 28) for each area.

Ref.	Standard	Demonstration of compliance
SUPPORT FOR CRITICALLY ILL CHILDREN AND THEIR FAMILIES		
51	Parents should be given written information about the unit, including visiting arrangements, ward routine and location of facilities within the hospital that the parents may want to use.	Examples of information for parents.
52	Facilities should be available for the parent of each child, including: ● Somewhere to sit away from the ward, ● A quiet room for relatives, ● A kitchen, toilet and washing area, and ● A changing area for other young children.	Facilities available.
53	Overnight facilities should be available for the parent or carer of each child, including a foldaway bed or pullout chair-bed next to the child.	Facilities available.
54	Units expecting to provide high dependency care for longer than 48 hours should have appropriate facilities for parents and carers to stay overnight, for example, one of: ● A bed at "dressing gown" distance, ● Accommodation away from the ward, ● A hostel for parents to stay with their children in preparation for going home.	Facility available. *Note: This standard is not applicable to units that expect to provide high dependency care for up to 48 hours only.*

Ref.	Standard	Demonstration of compliance
MEDICAL STAFFING		
55	There should be a nominated paediatric consultant with lead responsibility for policies and procedures relating to high dependency care.	Name of consultant. *Note: This may or may not be the same person as the nominated lead for the area (standard 25).*
56	A doctor who is paediatric airway competent should be available 24-hours a day.	Written details of arrangements agreed by nominated lead consultant (standard 55).
57	There should be access to other appropriate specialties depending on the usual case mix of patients, for example, 24-hour ENT cover for tracheostomy care.	Details of arrangements.
NURSE STAFFING		
58	There should be a nominated lead nurse with responsibility for policies and procedures relating to high dependency care. This should be a senior children's trained nurse with appropriate qualifications (eg. high dependency, ENB 415) or at least five years experience in acute paediatric care at E grade (or equivalent) or above.	Name of nurse. *Note: This may or may not be the same person as the nominated lead nurse for the area (standard 28).*
59	There should be 24-hour on-site access to a senior nurse with intensive care skills and training (eg. ENB 100,405,415).	Details of arrangements.
60	Children needing high dependency care should be cared for by a trained children's nurse with PLS (or equivalent). This nurse should also have high dependency training or at least five years experience in acute paediatric care at E grade (or equivalent) or above.	Nursing rotas showing at least one nurse per shift with appropriate qualifications/experience or local audit of high dependency care.
61	Nurse staffing for children needing high dependency care should be 0.5:1 or 1:1 if nursed in a cubicle.	Local audit of high dependency care.
62	If children with tracheostomies are cared for on the ward, there should be a nurse with skills in tracheostomy care on each shift.	Details of arrangements. *Note: This standard is not applicable if children with tracheostomies are not admitted.*
FACILITIES AND EQUIPMENT		
63	An appropriately designed and equipped area for providing high dependency care for children of all ages should be available. Drugs and equipment should be checked in accordance with local policy.	Suitable area containing the drugs and equipment listed in Appendix 5. Policy covering frequency of checking and evidence of checks having taken place in accordance with this policy. *Note: This may or may not be the same area as in standard 32.*

E

Retrieval and Transfer of the most Critically Ill Children

Objectives

- Lead PIC centres should be able to provide specialist care and facilities, including a paediatric intensive care unit, and to retrieve critically ill children from other units.
- The lead centre retrieval team should carry out retrieval of appropriate children within the agreed catchment population who need transfer to the paediatric intensive care facility.
- All transfers should be carried out by appropriately trained and equipped staff.

Responsibility for these standards lies with the nominated lead consultant (standard 76) and nominated lead nurse (standard 80) for the Retrieval Service. Ensuring the appointment of a nominated lead consultant and nominated lead nurse for the Retrieval Service is the responsibility of the Board level lead for children's services (standard 9).

Ref.	Standard	Demonstration of compliance
64	PIC centres should provide a programme of ongoing education and training for staff involved in acute paediatric care. This should include emergency transfer, resuscitation and stabilisation of the sick child, and high dependency care.	Programme details.
65	The lead PIC centre Retrieval Service should be able to respond to requests for retrieval on at least 95% of days.	Arrangements for Retrieval Service. Audit of ability to respond.
66	There should be a 'back up' plan for days when the Retrieval Service is not available.	Written arrangements.
67	The lead PIC centre should have arrangements for emergency transport agreed with the local ambulance service. These arrangements should include contact information, vehicle specification and response times.	Written arrangements agreed with ambulance service.
68	The retrieval team should arrive at the referring unit within 3 hours of first contact with the lead centre.	Audit of retrievals.
69	There should be equity of opportunity to access to the lead centre Retrieval Service.	Audit of response to referring hospitals.
70	Wherever possible, a child should undergo one retrieval journey only.	Audit of retrievals involving more than one retrieval journey.

Ref.	Standard	Demonstration of compliance
71	Where it is feasible, parents should be given the option to accompany their child during the transfer.	Written guidelines covering parents accompanying children during transfer.
72	The retrieval team should be aware of the designated area/s for retrieval in each of the referring hospitals.	List of designated areas.
73	Retrieval training exercises should be run at least annually.	Record of training exercises.
74	Ambulance response times should be audited.	Examples of audit.
75	Audit of essential referral and outcome information should be undertaken and the results shared with referring hospitals.	Examples of audit. Evidence of results being shared with referring hospitals. *Note: Essential referral information is given in Appendix 7.*
MEDICAL STAFFING		
76	There should be a nominated lead consultant for the Retrieval Service responsible for training, protocols and audit.	Name of consultant.
77	24 hour consultant advice should be available to the Retrieval Service and this consultant should be able to join the retrieval team if necessary.	Medical staffing rota.
78	The lead centre should have the requisite number of consultant and trainee staff to ensure 24-hour cover for both the PICU and Retrieval Service.	Medical staffing rota.
79	The nominated lead consultant for the Retrieval Service should specify which medical staff are appropriately trained and experienced to carry out retrieval.	List of medical staff authorised by the nominated lead consultant for the Retrieval Service to undertake retrievals.
NURSE STAFFING		
80	There should be a Lead Nurse for the Retrieval Service responsible for training and audit of the process and for sustaining regular links to referring hospitals.	Name of nurse.
81	The staffing ratios at the lead centre should be such to allow 24-hour availability of nursing staff trained to perform retrieval.	Nursing rotas.
EQUIPMENT AND FACILITIES		
82	The retrieval team should be fully equipped to deal with children of different ages. Drugs and equipment should be checked in accordance with local policy.	Equipment available. Policy covering frequency of checking and evidence of checks having taken place in accordance with this policy.
83	The lead centre should provide adequate information to referring hospitals to enable them to comply with standard 21.	Examples of information.

Appendices

Appendix 1

Standards and Peer Review Steering Group Membership

Dr Ali Akbar	Consultant Paediatrician	Sandwell & West Birmingham Hospitals NHS Trust
Dr John Alexander	Consultant PICU	University Hospital North Staffordshire NHS Trust
Simon Brake	Lead Commissioning Manager, Children's Services	West Midlands Specialised Services Agency
Donna Darbyshire	Directorate Manager, Children's Directorate	South Birmingham Primary Care Trust
Dr Penny Dison	Consultant Paediatrician	Royal Wolverhampton Hospitals NHS Trust
Yvonne Heward	Lecturer Practitioner, Children's Intensive Care Nursing	Birmingham Children's Hospital NHS Trust
Corinna Mason	Clinical Nurse Specialist, PICU	Birmingham Children's Hospital NHS Trust
Mike McLeod	Senior Resuscitation Officer	Birmingham Children's Hospital NHS Trust
Pat Moseley	Chair, Birmingham Branch	Action for Sick Children
Carole Potts	Children's Services Manager	Sandwell & West Birmingham Hospitals NHS Trust
Dr Charles Ralston	Consultant Paediatric Anaesthetist	Birmingham Children's Hospital NHS Trust
Dr Iain Robertson-Steel	Consultant Medical Director	West Midlands Ambulance Service NHS Trust
Ms Liz Symonds	A&E Consultant	Hereford Hospitals NHS Trust
Janet Wakefield	Divisional General Manager, Women & Children's Division	University Hospital North Staffordshire NHS Trust
Dr Duncan Watson	Consultant Anaesthetist	University Hospitals Coventry & Warwickshire NHS Trust

Peer Review Team

Jane Eminson	Review Co-ordinator	Independent Consultant
Claire Launders	Review Administrator	Birmingham and The Black Country Strategic Health Authority

Appendix 2

Paediatric Dependency

The following are published categories of patient dependency by nationally recognised authorities.

It is difficult to categorise all patients in a uniform way. Dependency will be dictated by a combination of presenting condition, medical intervention and nursing intensity. High dependency care in this document refers to those patients requiring single organ support and a minimum nurse: patient ratio of 0.5:1 during some part of their illness.

Categories of High Dependency Patient

(Department of Health, 1996)

1 Patients requiring single organ support (excluding advanced respiratory support).
2 Patients requiring more detailed observation/monitoring than can safely be provided on a general ward.
3 Patients who no longer need intensive care but are not well enough for a general ward.
4 Post-operative patients who need close monitoring for more than a few hours.

Categories of Organ System Monitoring and Support

(Department of Health, 1996)

1 Advanced Respiratory Support

- Mechanical ventilatory support (excluding CPAP) or non-invasive ventilation.
- The possibility of a sudden, precipitous deterioration in respiratory function requiring immediate endotracheal intubation and mechanical ventilation.

2 Basic Respiratory Monitoring and Support

- The need for more than 40% supplementary oxygen.
- The possibility of progressive deterioration to the point of needing advanced respiratory support.
- The need for physiotherapy to clear secretions at least 2-hourly, whether via a tracheostomy, mini tracheostomy, or in the absence of an artificial airway.
- Patients recently extubated after a prolonged period of intubation and mechanical ventilation.
- The need for mask-CPAP or non-invasive ventilation.
- Patients who are intubated to protect the airway, but needing no ventilatory support and who are otherwise stable.

3 Circulatory Support

- The need for vasoactive drugs to support arterial pressure or cardiac output.
- Support for circulatory instability due to hypovolaemia from any cause and which is unresponsive to modest volume replacement.
- This will include, but not be limited to, post-surgical or gastrointestinal haemorrhage or haemorrhage related to a coagulopathy.
- Patients resuscitated following cardiac arrest where intensive or high dependency care is considered appropriate.

4 Neurological Monitoring and Support

- Central nervous system depression, from whatever cause, sufficient to prejudice the airway and protective reflexes.
- Invasive neurological monitoring.

5 Renal Support

- The need for acute renal replacement therapy (haemodialysis, haemofiltration or haemodiafiltration).

Paediatric Intensive Care Society: Levels of Care

Level I
High Dependency Care requiring nurse to patient ratio of 0.5:1

Close monitoring and observation required but not requiring acute mechanical ventilation. Examples would include the recently extubated child who is stable and awaiting transfer to a general ward; the child undergoing close post-operative observation with ECG and pulse oximetry, receiving intravenous fluids or parenteral nutrition. Children requiring long term chronic ventilation (with tracheostomy) are included in this category.

Level II
Intensive Care requiring nurse to patient ratio of 1:1

The child requiring continuous nursing supervision who is usually intubated and ventilated (including CPAP). Also the unstable nonintubated child, for example some cases with acute upper airway obstruction who may be receiving nebulised adrenaline. The recently extubated child. The dependency of a level I patient increases to level II if the child is nursed in a cubicle.

Level III
Intensive Care requiring nurse to patient ratio of 1.5:1

The child requiring intensive supervision at all times who needs additional complex therapeutic procedures and nursing. For example, unstable ventilated children on vasoactive drugs and inotropic support or with multiple organ failure. In addition the dependency of a level II patient increases to level III if the child is nursed in a cubicle.

Level IV
Intensive care requiring a nurse to patient ratio of 2:1

Children requiring the most intensive interventions such as unstable or level III patients managed in a cubicle, those on ECMO, and children undergoing renal replacement therapy.

Appendix 3

References and general guidance on health services for children

1 United Nations Organisation,
"The UN Convention on the Right of the Child" 1992.
(CM1976) HMSO.

2 Children Act 1989,
HMSO

3 The NHS and Community Care Act 1990,
HMSO

4 Department of Health,
"The Children Act 1989 – an Introductory Guide".

5 "The Allitt Inquiry" (The Clothier Report)
HMSO 1994 and subsequent guidance DGM(94)26

6 A Review of Safeguards and Standards of Care" Hospital Advisory Service
WHC (99) 2 [The Secretary of State's letter contains action for all hospitals admitting children.]

7 Action for Sick Children
"Emergency Health Services for Children and Young People" 1997

8 Paediatric Intensive Care
"Framework for the Future"
NHSE 1997

9 Paediatric Intensive Care
"A Bridge to the Future"
NHSE 1997

10 "Accident and Emergency Service for Children"
June 1999

11 Working Together to Safeguard Children
Department of Health 1999

12 "Children's Surgery — a First Class Service"
RCS, 2000

13 Framework for the Assessment of Children in Need and their Families.
DoH, Dept of Education & Employment and Home Office, 2000

14 Report of the Consent Working Party.
BMA, March 2001.

15 "Paediatric Intensive Care Society Standards Document"
Paediatric Intensive Care Society, 2001

16 Learning from Bristol: The Department of Health's Response to the Report of the Public Inquiry into children's heart surgery at the Bristol Royal Infirmary 1984–1995. Department of Health. 2002.

17 Getting the right start: National Service Framework for Children. Standard for Hospital Services. Department of Health. 2003.

18 National Service Framework for Children. Emerging Findings. Department of Health. 2003.

Appendix 4

Facilities and support for parents of critically ill children admitted to paediatric high dependency areas or intensive care units

This list of recommendations represents the gold standard which should be met in specialist centres. Action for Sick Children hopes that all DGH with a children's ward and high dependency area will strive to meet these quality standards as far as possible.

Facilities

Overnight facilities should be provided for the parent or carer of each child, to include all of the following:

- Somewhere for them to sit away from the ward.
- A quiet room for use by relatives whose child is critically ill.
- A kitchen, toilet and washing area together with changing facilities for other young children in the family.
- Provision for breastfeeding mothers.

Parents should not be charged for overnight accommodation. The following choices should be offered:

- A foldaway bed or pullout chair bed next to the child.
- A bed at "dressing gown" distance (so that the parent can be called quickly but has some privacy and is more likely to have a good night's sleep).
- Accommodation away from the ward. This is particularly useful for specialist units where the children have longer stays. Sometimes it is possible for both parents to stay or for whole families to come for the weekend when this kind of facility is available.
- Hostels in specialist centres for parents to stay with their children as a preparation for going home, where complex home care is needed.

Support

A family care nurse should be appointed who would lead a family support service. He or she would act as a link with the family from admission through to discharge from PICU. Liaison with the Health Visitor and Community Carers when the child leaves hospital would be an important part of this role.

A welcome pack with written information about the unit would be helpful. This should include details about ward routine and the location of facilities within the hospital which the parents might want to use such as the chapel/prayer room and cafeteria. Some parents will be from a long way away and may have particular difficulties.

Children & families from Black & Ethnic Minority Communities

The need for link workers, advocates and interpreters to facilitate communication, religious and cultural understanding between English speaking health care workers and non English speaking users has long been recognised. It is not satisfactory to use untrained interpreters, whether relatives, neighbours or friends since interpreting requires a knowledge of two languages i.e. that of the health professional and that of the patient. Untrained interpreters may unwittingly cause distress when they try to save the parents the pain and shock of serious information by not telling them the whole truth. Parents should be told about the availability of interpreters on admission.

It would be helpful if the hospital could forge links with the local minority ethnic community, religious and cultural leaders as well as outreach workers. Staff should be able to provide contact with local leaders if parents need this.

Costs

The following points should also be borne in mind:

- Car Parking: Special arrangements should be in place for the parents of children who are critically ill.
- Travel Costs: Transport could be a considerable problem for families when their child is admitted to a specialist unit outside their home area.

It is very important that parents are able to stay with their child in hospital and to visit as often as possible. Travel costs to visit children in hospital can be a major problem for some families and limit how often they can visit.

The NHS Travel Costs Scheme will refund fares of the patient and an escort for a child attending hospital where the parents are on Income Support or Family Credit but there are no arrangements to cover the cost of visiting. Visiting parents on Income Support can apply to the Social Fund but many are refused and offered a loan instead.

Action for Sick Children research has found that many families suffer financial distress as a result of visiting. Commissioners need to include the cost of visiting in their contracts for services with specialist units and arrangements for reimbursement for those in need at the hospital.

Catering

Kitchen facilities should enable parents to prepare simple meals to help reduce the expense of buying hospital food. This is also more convenient for those with siblings present. Minimum provision should include a kettle, microwave, toaster and refrigerator.

References

"Health for All Our Children, Achieving Appropriate Health Care for Black and Minority Ethnic Children and their Families."
Quality Review Series.
Action for Sick Children 1993

"Health Services for Children and Young People, A Guide for Commissioners and Providers."
Quality Review Series, Section 3.
Action for Sick Children 1996

"Emergency Health Services for Children and Young People, A Guide for Commissioners and Providers."
Action for Sick Children 1997

"Getting the Right Start. The National Service Framework for Children."
Standard for Hospital Services.
DoH April 2003

Pat Moseley

Chairman, Birmingham Branch Action for Sick Children

February 2004

Appendix 5

Drugs and equipment for resuscitation and stabilisation areas

Immediate availability

Epinephrine (Adrenaline)	1:10,000
Epinephrine (Adrenaline)	1:1,000
Atropine sulphate	
Lidocaine 1% (lignocaine)	10mg/ml
Amiodarone	50mg/ml
Calcium chloride 10%	100mg/ml
Sodium bicarbonate	4.2% and 8.4%
Nebulisable beta agonist (salbutamol or terbutaline)	
Nebulised Budesonide	
Hydrocortisone	
Furosemide (frusemide)	20mg/ml
Antibiotics customised to local microbiology	
Rectal diazepam	5mg and 10mg
IV diazepam	5 mg/ml
IV lorazepam	4 mg/ml
Paraldehyde	
Phenytoin sodium	50mg/ml
Dextrose 10%	
Chlorphenamine (chlorpheniramine)	10mg/ml
Naloxone	400mcg/ml

Drugs available in the department

Anaesthetic Drugs

Thiopental (thiopentone)	Suxamethonium
Propofol	Rocuronium, Vecuronium
Ketamine	Atracurium

Other Drugs

Adenosine	3mg/ml
Alprostadil (prostaglandin E1)	0.5mg/ml
Aminophylline	25mg/ml
Amiodarone	50mg/ml
Dobutamine	250mg vials
Dopamine	40mg/ml
Flecainide	10mg/ml
Flumazenil	100mcg/ml
IV Salbutamol	500 mcg/ml
Mannitol	10% and 20%
Midazolam	5mg/ml
Morphine	10mg/ml
Norepinephrine (noradrenaline)	
Propranolol	1mg/ml

Equipment List for A&E and High Dependency areas

	In A&E		In HD	
	Essential	Desirable	Essential	Desirable
Dry white board and markers	●		●	
APLS / good practice algorithms	●		●	
Organized emergency trolley	●		●	
Printed drug doses/tape	●		●	
Clock	●		●	

Monitoring Equipment

	In A&E		In HD	
	Essential	Desirable	Essential	Desirable
ECG monitor / defibrillator with paediatric paddles 0–400 joules and hard copy capabilities	●		●	
Pulse oximeter (adult / paediatric probes)	●		●	
Blood pressure cuffs (infant, child, adult, thigh)	●		●	
A method of measuring core temperature, covering both hypo- and hyper-thermia (eg. rectal, tympanic membrane, naso-pharyngial thermometer)	●		●	
Otoscope, ophthalmoscope, stethoscope	●		●	
Cardiopulmonary monitor with capability to monitor	●		●	
Invasive arterial and central venous pressure	●		●	
Noninvasive blood pressure monitoring (infant, child, adult cuffs)	●		●	
Portable capnograph	●		●	
Arterial / capillary blood glucose monitor	●			●
Access to blood gas machine	●		●	
Access to 12 lead ECG	●		●	

Airway Control/Ventilation Equipment

	In A&E		In HD	
	Essential	Desirable	Essential	Desirable
Bag-valve-mask device: paediatric (500 mL) and adult (1000 / 2000 mL) with oxygen reservoir	●		●	
Infant, child, and adult masks	●		●	
Oxygen delivery device with flow meter	●		●	
Clear oxygen masks, standard and non-rebreathing (neonatal, infant, child, adult)	●		●	
Nasal cannula (infant, child, adult)	●		●	
Oral airways (sizes 0–5)	●		●	
Suction devices-catheters 6–14 fr yankauer-tip	●		●	
Nasal airways (infant, child, adult)	●		●	
Nasogastric tubes (sizes 6-16 fr)	●		●	
Laryngoscope handle and blades: curved 2,3; straight or Miller 0,1,2,3	●		●	
Endotracheal tubes: uncuffed (2.5-5.5), cuffed (6.0-9.0)	●		●	
Stylets for endotracheal tubes (paediatric, adult)	●		●	
Lubricant, water soluble	●		●	
Magill forceps (various sizes)	●		●	
Laryngeal masks (size 0–3)		●		●
Tracheal guide		●		●
Tracheostomy tubes (shiley sizes 0–6)		●		●
Oxygen blender	●		●	
Paediatric ventilators		●		●
Chest drain set	●		●	
Cricoidotomy set		●		●

Vascular Access

	In A&E		In HD	
	Essential	Desirable	Essential	Desirable
Butterflies (19–25 gauge)	●		●	
Needles (18–27 gauge)	●		●	
Intraosseous needles	●		●	
Catheters for intravenous lines (16–24 gauge)	●		●	
IV administration sets and extension tubing with calibrated chambers	●		●	
Paediatric infusion pumps	●		●	
Syringe drivers	●		●	
I.V. fluids	●		●	
Lumbar puncture set	●		●	
Urinary catheters: Foley 6–14 Fr	●		●	
Fracture immobilisation	●			●
Cervical Collar – hard and soft	●		●	
Spinal board (child/adult)	●			●
Femur splint	●			●
Extremity splints	●		●	

Miscellaneous

	In A&E		In HD	
	Essential	Desirable	Essential	Desirable
Weighing scale	●		●	
Heating source (for infant warming)	●		●	

Appendix 6

Useful contact numbers

Guidelines for referral to lead centre — advice or emergency transfer, including retrieval

- Referral to a PICU should be on a Consultant to Consultant basis whenever possible.
- The referring unit should contact the PICU at the numbers given below.
- It will be the responsibility of the PICU to contact any sub-speciality teams that may be required for the management of the patient e.g. neurosurgery or renal.
- If the patient cannot be accepted onto the PICU immediately, it is the responsibility of the PICU to advise the referring team of mutually acceptable alternatives. This could be referral to another unit or management of the patient locally for a limited period of time until the patient can be retrieved.
- Referring units should not normally expect to manage a patient requiring intensive care for longer than 24-hours.

Local PICU	Number
Birmingham Children's Hospital	
Retrieval line	0121 678 6006
PICU direct line(s)	0121 333 9652 / 9653
North Staffordshire Hospital	
Direct lines	01782 552 745 / 746

Other Useful Contact Numbers

Contact	Number
Emergency bed service	020 7407 7181
ECMO centres	
Glenfield Hospital, Leicester	0116 287 1471 Bleep ECMO Co-ordinator
Great Ormond Street, London	020 7813 8523 020 7813 8180 ECMO Office
Freeman Hospital, Newcastle	0191 223 1016
Yorkhill Hospital, Glasgow	0141 201 4081
Other PICU	
Royal Liverpool Children's	0151 252 5241/2
Leicester Royal Infirmary	0116 258 6302
John Radcliffe Hospital, Oxford	01865 220 632
Nottingham University Hospital (QMC)	0115 970 9232
Bristol Royal Hospital for Children	0117 342 8377

Appendix 7

West Midlands paediatric retrieval — Essential referral information (minimum dataset)

Patient		Hospital	
Name		Consultant	
D. O. B.		Contact telephone	
Age		Contact bleep	
Weight		Patient location	

Brief history
Diagnosis
Reason for referral

Airway	Intubated	Y	N	ETT size	ETT length	
Breathing	Spontaneous			Assisted	Rate	
	FiO2			SaO2	PIP	PEEP
Circulation	HR			BP	Cap refill	
	Access			Volume given	Inotropes	
Neurology	GCS					

Blood gases	pH	pC02	p02	HC03	BE
Blood count	Hb	WBC	Plat	N	L
Electrolytes	Gluc	Na	K	Urea	Creat
	Ca	Mg			
Imaging					

Appendix 8

Drug infusion concentrations compatible with lead centre practice

Drug	Dose made up to 50mls fluid vol	Fluid type	Drug Infusion rate	Delivered Dose Range
Sedation				
Morphine	1 mg/kg	Dx / NS	0.5–3.0 ml/hr	10–60 µg/kg/hr
Midazolam	6 mg/kg	Dx / NS	1.0–3.0 ml/hr	2–6 µg/kg/min
Muscle relaxant				
Vecuronium	3 mg/kg	Dx / NS	1.0–10.0ml/hr	1–10 µg/kg/min
Rocuronium	Neat (10 mg/ml)		0.05–0.1 x weight	0.5–1.0 mg/kg/hr
Inotrope — central				
Dobutamine	30 mg/kg	Dx / NS	0.5–2 ml/hr	5–20 µg/kg/min
Dopamine	30 mg/kg	Dx / NS	0.5–2 ml/hr	5–20 µg/kg/min
Epinephrine (adrenaline)	0.3 mg/kg	Dx / NS	0.5–5 ml/hr	0.05–0.5 µg/kg/min
Inotrope – peripheral				
Dobutamine	7.5 mg/kg	Dx / NS	2.0–8.0 ml/hr	5–20 µg/kg/min
Dopamine	7.5 mg/kg	Dx / NS	2.0–8.0 ml/hr	5–20 µg/kg/min
Epinephrine (adrenaline)	0.075 mg/kg	Dx / NS	2.0–4.0 ml/hr	0.05–0.1 µg/kg/min

Appendix 9

Paediatric Burns — Referral Information

Background

It is planned to build a dedicated Paediatric Burns Centre on the Birmingham Children's Hospital site to facilitate the transfer and development of the pre-existing service at Selly Oak Hospital (SOH), Birmingham. The new unit will be commissioned in the summer of 2007.

In the interim, it has been agreed by University Hospital Birmingham, Birmingham Children's Hospital (BCH) and the Specialist Services Agency that the acute elements of the current service will be provided on the BCH site, co-located with the previously commissioned burns high dependency cubicle.

On December 1st 2003 this transfer of service responsibility took place and the acute paediatric burns beds are located in Ward 5 at BCH.

Consultant Burns Surgeons with responsibility for paediatrics:

Mr Remo Papini
Mr Naiem Moiemen
Miss Yvonne Wilson

Contact telephone numbers:

0121 627 8784	Selly Oak (consultant contact)
0121 333 9999	BCH (Plastics/Burns Registrar on-call contact)

Either of these numbers will allow contact with medical staff able to advise on clinical management or co-ordinate admission to the BCH Unit.

NB: It should be recognised that until the new burns unit is commissioned the bed capacity for the service at BCH is limited to about 50% of previous SOH capacity. Referral out of the West Midlands may therefore be unavoidable.

Dr C S Ralston

Medical Director — Surgical and Critical Care Services

January 2004

Appendix 10

Paediatric resuscitation training and updating

Training

The following training is appropriate for the different groups of staff:

Staff Group	Appropriate Minimum Training
MEDICAL STAFF	
Consultant who may be on call for acute paediatrics or A&E	APLS
Consultant anaesthetists who may be called to care for a child	See note 1
Middle-grade doctor in acute paediatrics or A&E	PALS or EPLS
SHO in acute paediatrics or A&E	PLS[2]
Medical staff (all grades) caring for children in settings other than acute paediatrics and A&E	PLS[2]
NURSING STAFF	
Retrieval team	PALS/EPLS/APLS
Nominated lead nurse for an area (standard 28)	PALS/EPLS/APLS
Qualified nurses	PLS
Health care assistants	PBLS

Notes:

1 The expected level of paediatric resuscitation training for anaesthetists is subject to discussion. No minimum training is therefore recommended at this stage. Further guidance is expected in the near future and this appendix will be updated when this is issued.

2 Where PLS training is not available, local paediatric life support training should be undertaken within the first 20 days of employment. This should be of at least 8 hours duration in total and include both lectures in recognition of ill children and practical skills training in defibrillation, basic airway management and intraosseous access. Assessment of competence should be undertaken and evidence of competence should be documented.

3 Abbreviations: APLS Advanced Paediatric Life Support; PALS Paediatric Advanced Life Support; EPLS European Paediatric Life Support; PLS Paediatric Life Support; PBLS Paediatric Basic Life Support.

Updating frequency

APLS	4 years	PALS	3 years	EPLS	3 years
PLS	4 years	PBLS	Local policy		

Further guidance is being developed on high dependency training and on the use of scenario training.

Published by The West Midlands Specialised Services Agency