

Standards for Paediatric Emergency Care

Expert Consensus Report for Emergency Centres in
Western Cape

Edited by:
Baljit Cheema
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STANDARDS FOR PAEDIATRIC EMERGENCY CARE

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NOTE: This document reports the consensus of an expert group convened by the Western Cape (WC) Department of Health (DoH). The standards recommended in this report have been presented to and reviewed by the Executive Committee of the WC DoH. Whilst the report is considered a valuable expert consensus document, it has NOT been approved for implementation and this document does NOT represent WC DoH official policy.

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LIST OF ACRONYMS AND ABBREVIATIONS

ACRWC	African Charter on the Rights and Welfare of the Child
AED	Automated external defibrillator
AHA	American Heart Association
ALS	Advanced Life Support
APLS	Advanced Paediatric Life Support
APR	Advanced paediatric resuscitation
AVPU	Alert-Voice-Pain-Unresponsive
BAA	Basic Ambulance Assistants
BLS	Basic Life Support
BPR	Basic Paediatric Resuscitation
BVM	Bag-valve mask
CCA	Critical Care Assistant
CHC	Community health centre
ChildPIP	Child Problem Identification Programme
CoSTR	Paediatric and Neonatal Basic and Advanced Life Support Consensus on Resuscitation Science and Treatment Recommendations
CQI	Continuous quality improvement
CRT	Capillary refill time
CT	Computerised tomography
DoH	Department of Health
EC	Emergency centre
ECLMP	Emergency Case Load Management Plan
ECT	Emergency Care Technician
EDL	Essential Drug List
EMCT	Emergency Medicine Cape Town
EMDS	Emergency Medical Dispatchers
EML	Essential Medicines List
EMS	Emergency medical services
EN	Enrolled Nurse
ENA	Enrolled Nursing Assistant
ENA	US Emergency Nursing Association
ERC	European Resuscitation Council
ETAT	Emergency Triage Assessment and Treatment
ETT	Endo-tracheal tube
FEC	Fundamentals of Emergency Care
GCS	Glasgow Coma Score
HPCSA	Health Professional Council of South Africa
HR	Heart rate
HRO	High Reliability Organisation
ICAS	Independent Counselling and Advisory Services
ICU	Intensive Care Unit
ILCOR	International Liaison Committee on Resuscitation
ILCOR	International Liaison Committee on Resuscitation
ILS	Intermediate Life Support
IM	Intramuscular
IMCI	Integrated Management of Childhood Illnesses
IV	Intravenous
LMA	Laryngeal Mask Airway
N/S	Normal saline
NCS	National Core Standards
NDip	National Diploma
P1	Priority 1
PAT	Paediatric Assessment Triangle

PDSA	Plan-Do-Study-Act
PFS	Paediatric Flying Squad
PN	Professional Nurse
POC	Point of Care
P-SATS	Revised Paediatric South African Triage Scale
R/L	Ringers lactate
RR	Respiratory rate
SAAPI	South African Association of Pharmacists in Industry
SANC	South African Nursing Council
SATS	South African Triage Scale
SATS-AT	South African Triage Scale – Assessment and Treatment
TEWS	Triage Early Warning Score
TWG	Technical Work Group
UNCRC	United Nations Convention on the Rights of the Child
WC	Western Cape
WCCEC	Western Cape College of Emergency Care
WHO	World Health Organisation

Chapter 1: Introduction

Baljit Cheema and Tony Westwood

The right to emergency care is enshrined in article 27(3) of the South African Constitution. However, this has little meaning if the quality of emergency care itself is poor. Setting standards in health care is an important means of achieving quality services. This is especially true of the emergency environment, where the work is unpredictable, fast-paced and demanding, yet often determines significant outcomes.

Standards for the expected quality of health care in South Africa have been set in the document, National Core Standards [NCS] for Health Establishments in South Africa (National Department of Health, 2011). Whilst the majority of them apply to emergency care directly or indirectly, there is also a specific emergency care standard. Standard 1.6.1 states: 'Emergency patients are attended to, examined and stabilised appropriately and then referred or transferred if needed.' Furthermore, two of the six priority areas of the NCS relate directly to emergency care, namely waiting-time reduction and patient safety. Standards in these domains are particularly vital to improving the quality of emergency care for children.

Emergency services need to be tailored to the special requirements of child patients and their families. This is necessary due to children's size, immaturity, dependency and their many differences to adults in terms of emergency pathologies. However, provincially in the Western Cape Department of Health (DoH) as well as nationally in South Africa, existing policy and standards documents for health care, such as the Essential Medicines List (EMLs), NCS and the 2009 Package of Care for Acute Hospitals, give limited guidance on emergency care standards for children. Likewise, there is little guidance on critical issues such as staffing, training and equipment specifically in relationship to paediatric emergency patients..

Recognising the effects that these gaps have on the quality of emergency care available to ill and injured children in the Western Cape, the Provincial Clinical Governance Committees for both Child Health and Emergency Medicine established a joint Technical Work Group (TWG) to develop a set of standards for emergency care in public health services in the province. This report is the result of that process. It comprehensively addresses many aspects of emergency care provision for children, and is recognised by the Western Cape DoH as a valuable consensus report by an expert group of clinicians.

TERMS OF REFERENCE OF THE TWG

1. Advisory sub-committee to the Department of Health and the respective Provincial Clinical Governance Coordinating Committees for Child Health and for Emergency Medicine.
2. Define the standards that should be incrementally attained for emergency care of children.
3. Define what skills and competencies are required by staff to meet these standards – and identify suitable training courses and programmes that can help staff to achieve these.

4. Define the equipment, drugs and resources required to meet the standards.
5. Delineate the key areas/topics where emergency care guidelines for children are required – and then oversee the development of these guidelines in conjunction with the Paediatric Guidelines Work Group.
6. Delineate Continuous Quality Improvement procedures and systems that should be in place to ensure monitoring and evaluation of standards.

MEMBERS OF THE TWG

Baljit Cheema (Chair); Andrew Argent; Heloise Buys; Clare Davis; Michael Hendricks; Peter Hodgkinson; Michael Lee; Zanele Nxumalo; Arina Schlemmer; Liezl Smit; Tony Westwood.

SCOPE OF STANDARDS

Definition of standard: The TWG used the definition from the NCS: ‘A standard is a statement of an expected level of quality delivery.’ Each standard is therefore phrased as a statement of what *must* be in place or achieved.

Age limit: These standards are intended largely for children up to the age of 13 years, but they may be entirely appropriate for adolescent emergency care.

Level of facility: The remit of the TWG was to delineate expected standards of care for children utilising emergency transport services as well as emergency centres (ECs) in community health centres and district, regional and central hospitals. For reasons of applicability, the TWG decided that the standards should apply only to those ECs that provide 24-hour emergency care under the supervision of an authorised doctor. Thus, the standards in this document apply to public government ECs in 24-hour community health centres; to smaller district (e.g. False Bay and Montagu), larger district (e.g. Khayelitsha and Mitchells Plain), regional and central hospitals; and to emergency transport services. Most of these standards would also be applicable to ECs in the private sector. However, they do not apply to specialised settings such as psychiatric or maternity hospitals.

Standards that apply to all EC patients: The TWG attempted to stay within the remit of emergency care of children, but in certain areas (such as Continuous Quality Improvement, education, stress and debriefing, and staff wellness and retention) it did not make sense to limit the standard to paediatric patients only.

Chapter 2: Infrastructure

Baljit Cheema and Tony Westwood

INTRODUCTION

The needs of sick children and their accompanying families are often not considered in the design of emergency centres (ECs) and hospitals. This chapter outlines standards that will not only help to guide the design of new ECs but also assist in re-modelling existing ones to make them safer and more user-friendly for children and their families.

STANDARDS

ARRIVAL

1. There must be clear signage to the EC.
 - 1.1. Signage indicating the quickest route to the EC must be clearly visible at all times of day.
 - 1.2. If children are seen in a different area of the hospital or EC at certain times of day, this must be clearly sign-posted.
 - 1.3. If certain entrances/passages are closed out of hours, alternative routes must be clearly sign-posted.

EC DESIGN

2. Children must have complete audio-visual separation from adult EC areas.
3. There must be no barriers to a child getting a swift initial triage assessment in the EC.
 - 3.1. Triage must take place before any reception or administrative processes.
 - 3.2. Security personnel must not block entry of carers with child-patients.
4. Child-patients must have a separate waiting area from adults.
5. The triage area or room:
 - 5.1. A separate triage area for children is strongly recommended for busier L2 and L3.
 - 5.2. If a combined adult and paediatric triage room is to be used, then children must be protected as far as possible from exposure to disturbing sights and sounds.
6. The resuscitation room:
 - 6.1. Resuscitation of children in the EC must take place in the designated resuscitation area and not in non-resuscitation areas such as the paediatric room.
 - 6.2. The resuscitation room in busier L2 and L3 ECs must have a designated paediatric bay.
 - 6.3. The resuscitation room in less busy units must have a bed/area that can be used for paediatric resuscitations.

7. Children triaged to the Orange category must be taken to the Majors area and have access to a bed or cot and monitoring.
 - 7.1. In busier L2 and L3 units a separate paediatric Majors areas is recommended.
 - 7.2. In units where adult and paediatric majors are to be combined, EC design must incorporate adequate space for paediatric beds/cots within all EC Majors areas and these must be sheltered from view of the main adult Majors area.
8. All clinical areas where children may be assessed and examined must have railings and curtains for privacy.
9. Children's areas of the EC must have sufficient space for a play area.
10. Ambient temperature must be regulated as children lose heat quickly.

BATHROOM FACILITIES

11. Toilet facilities must be clean and hygienic.
12. Soap, hand towels and toilet paper must be provided.
13. A safe and adequately sized nappy-changing area must be available.
14. Toilet-seat adaptors for small children must be provided.
15. Low toilet bowls (or safe steps) enabling children to reach the toilet and toilets with child-friendly flushing devices are recommended.
16. Low hand-basins with child-friendly taps are recommended.

RATIONALE

ARRIVAL

A distressed parent with a sick child is usually in an anxious state and needs simple, obvious directions to get to the children's emergency area as quickly as possible. Clear signage – that is, signage which is highly visible and easily distinguished – is required. If children are seen in different locations at certain times of day, or if some entrances or passages are closed at different times of day, the signage must indicate this and give alternative routes.

EC DESIGN

Unfortunately, most ECs are not designed with children in mind. At best, a 'paeds room' and/or a 'rehydration corner' may be found in some of them, but proper attention to the needs of children and their families requires considerably more planning than this.

First, the EC must be designed so that triage processes are encouraged to take place before the administrative and reception procedures. A good step in this direction is making the triage room an obvious 'first port of call' in an EC.

Second, there are many disturbing sights, sounds and scenes in ECs, and children should be shielded from them. The waiting areas for children must be separated from those for adults. If this is not immediately feasible, curtains or screens can be used as an interim measure to help prevent children from witnessing unpleasant injuries, intoxicated persons, and so on.

In the waiting room, more space is required for paediatric patients than a similar number of adult patients, given that a larger group of accompanying carers and siblings usually needs to be seated. Often carers will also bring essentials such as nappies, snacks, drinks, clothes and blankets with them. These elements, too, have to be considered when allocating space not only to the paediatric waiting area but to consultation rooms, cubicles and bed-spaces where children will be seen.

RESUSCITATION AREA

Where they exist in the Western Cape, paediatric-specific areas of an EC are seldom designed for high-intensity, acute resuscitation work. The full range of essential resuscitation equipment is normally not kept in these locations, and even if it is, it is likely to be stored in a cupboard, bag or box; by contrast, in a resuscitation area this equipment can be laid out for easy access. Furthermore, paediatric areas usually do not have enough staff to manage resuscitations safely. These areas are often deliberately located 'out of the way' of the main EC, making it difficult for staff to attract attention for assistance if a child's condition deteriorates.

For reasons of this kind, children who require active resuscitation, as well as those who are very sick or unstable, must be managed in the EC resuscitation area and not in non-resuscitation areas such as the paediatric room.

In CHCs and smaller L1 ECs, where children make up only a small percentage of patients, it may not make sense to have designated 'ring-fenced' paediatric resuscitation beds. However, in busier L1 ECs, as well as in L2 and L3 ECs seeing larger numbers of sick children, an appropriate proportion of the resuscitation trolley spaces must be kept available for children who are triaged to category Red.

There is always a possibility that adults will occupy all the resuscitation beds. One way of helping to ensure that a surface is available for children in the resuscitation room is to have cots or neonatal resuscitation stations in this area, as adults cannot utilise them. If this recommendation is applied, it is important that children in cots are not simply squeezed in between adult resuscitation beds: care must be taken that they have adequate space and monitoring equipment. The practice of cross-sharing monitors (that is, where a monitor displays vital signs not from the patient in the nearest bed but from one on a trolley sandwiched between resuscitation beds) is very dangerous because it can lead to erroneous clinical decisions if doctors and nurses fail to realise that the signs are from another patient.

PAEDIATRIC MAJORS

Children who are sick enough to be triaged to the category Orange (that is, they need to be seen in less than 10 minutes) deserve to be taken to a bed-space where they can lie down, be monitored and get assessed. All too often Orange-category paediatric patients are left in their mothers' arms in waiting areas or in rehydration corners and asthma bays without being monitored.

As such, there must be:

- **either** sufficient paediatric beds or cots in the Majors area, and these must be shielded as far as possible from the adult beds; **or**
- if the unit is L2 or L3 and/or sees large numbers of children, serious consideration must be given to having a separate Paediatric Majors area.

Bathrooms: Child patients in ECs must have access to hygienic and safe bathrooms. Consideration must be given to installing child-sized toilets with child-friendly flush handles and low-level sinks with child-friendly-taps.

Chapter 3: Child Rights and Child- and Family-Friendly Emergency Standards

Baljit Cheema and Tony Westwood

INTRODUCTION

'The test of the morality of a society is what it does for its children'

~ Dietrich Bonhoeffer

Emergency centres (ECs) can be loud, hectic and scary places even for adults. Children could be easily traumatised emotionally by these environments, ones in which they are surrounded by the sights and sounds of sick adults who may be suffering from distressing injuries, psychosis and/or intoxication. Children need to be protected as far as possible from exposure to these upsetting scenes.

Similarly, the parents who accompany them to the EC are likely to be under stress and may not have had time to bring essentials such as nappies or feeds with them. If they then find themselves in a hostile and unhelpful environment, their visit may become an ordeal. Small measures such as child-friendly facilities, distractions and caring communication from staff can make a big difference. This chapter outlines some of the key elements that can help to lessen the ordeal that children and families endure in ECs.

Children's rights are enshrined in the United Nations Convention on the Rights of the Child (UNCRC), the African Charter on the Rights and Welfare of the Child (ACRWC) and the Bill of Rights in the Constitution of the Republic of South Africa. Thus, by international, regional and national law, children in South Africa are entitled to all the same rights as adults (except the right to vote); in recognition of their dependency and vulnerability, there are additional rights that apply specifically to children.

Making these rights a reality in the emergency setting is challenging but not impossible. All emergency health workers, managers, service coordinators and policy-makers must be aware of children's rights and ensure that we work towards progressively achieving them. This chapter outlines some key principles underlying children's rights and gives consideration to health-care professionals' obligations to report child abuse and neglect. A more detailed explanation of these topics is provided in Appendix A (excerpted from: Appendix A (excerpted from Jamieson L & Lake L (2013) *Children's Act Guide for Health Professionals*. Edition 5. Cape Town: Children's Institute, University of Cape Town).

STANDARDS

EMS

17. Child patients:

17.1. A caregiver must be allowed to travel with the child – this can apply to young persons up to the age of 18 years.

17.2. Children must not be transported in the same ambulance as adult emergency patients unless it is in the child's best interest to do so.

17.3. Where this cannot be avoided, child patients must not be transported with the following types of patients (unless it is in their best interests to do so):

- those with traumatic injuries;
- those with drug, alcohol or psychiatric problems;
- those with the risk of infectious disease risk (e.g. TB, viral illnesses);
- unstable adults requiring stabilisation en route; or
- those with any other distressing or potentially harmful conditions.

18. EMS staff must be aware of simple techniques of reassurance and distraction to reduce stress to the child.

SAFETY

19. Children within the EC must be safe from harm or abduction – ideally, the paediatric area must be access-controlled 24 hours a day.

19.1. If this is with security personnel, the station must be manned all the times.

19.2. Access control must not prevent or delay entry of sick children.

19.3. Access control points must not prevent those inside the paediatric area from seeing persons awaiting entry outside the area.

19.4. Access control must not prevent or delay sick children from being moved to resuscitation areas.

20. All children in the EC must be supervised by an adult at all times.

20.1. If the carer needs to leave, then a member of staff must be informed and supervisory arrangements made until the carer returns.

20.2. Parents of other children must not be asked to perform this role.

21. In all areas where children are seen (with the exception of the resuscitation area):

21.1. All potentially harmful equipment (including sharps, sharps bins and garbage bins) must be secured in such a way as to be out of reach of children.

21.2. All plug sockets must be fitted with child-proof devices.

21.3. All electrical wiring must be safely secured.

21.4. All drugs or medicines must be kept out of reach to children.

ENVIRONMENT

(See also Chapter 2: Infrastructure.)

22. Children must have complete audio-visual separation from adult EC areas.

23. Suitably child-friendly environments and distractions must be available. For example:

- appropriate décor: paintings, murals, mobiles, colourful curtains and furnishings;
 - a play area with books, colouring items, toys, etc.;
 - a TV/DVD player with a range of cartoons or children's movies; and
 - computer games for older children.
24. Adequate space must be provided for children and their families in waiting and clinical areas.
25. A 'counselling room' must be available for sensitive discussions.
26. Ambient temperature must be regulated as children lose heat quickly.

FOOD AND COMFORT

27. A breast-feeding room or area must be available for nursing mothers.
28. Formula milk and baby food must be available for young infants.
29. Food must be provided for carers, siblings and children who are waiting in the EC.
30. Nappies, in a full range of sizes, and nappy-changing facilities must be available.

COMMUNICATION, REASSURANCE AND DISTRACTION

31. Staff must communicate with both the carer and the child (where he or she is of an age to understand, and in an age-appropriate manner) about anticipated waiting times, possible diagnosis and any planned investigations or procedures that will take place in the EC.
32. Age-appropriate reassurance must be given to scared or nervous children.
33. Children must be allowed to ask questions about their health care.
34. Staff must be aware of distraction and play as means to reduce stress to the child. For example:
- use of stories, bubbles, musical toys, books, etc.; and
 - badges and bravery certificates for children.

CHILD RIGHTS, PARTICIPATION & CONSENT

35. **Children must be recognised as holders of rights which are protected by law and these rights must be respected in emergency settings; in particular, the following rights must be upheld:**
- 35.1 The best interests of the child.
- 35.2 The child's right to participate (to be heard and taken seriously).
- 35.3 The child's right to guidance with respect to his or her evolving capacities.
- 35.4 The child's right to information and health education.
36. **The consent provisions of the Children's Act must be adhered to:**
- 36.1 *If a child has the capacity to consent:* Children who meet the necessary age and maturity requirements are required to give consent to treatment, surgery, HIV testing and the disclosure of their HIV-positive status.
- 36.2 *If the child does not have the capacity to consent:* If the child is too young, or the health professional assesses him or her not to have the capacity to consent or refuse

treatment, then the parents, guardian or caregiver must make the decision on his or her behalf.

36.3 *If the child's parents, guardians or caregivers unreasonably refuse to give consent:* In a medical emergency which is urgent and life-threatening, the superintendent of the hospital may give consent on their behalf.

36.4 *Consent for HIV testing:* A child under the age of 12 years can consent to an HIV test if he or she is sufficiently mature to understand the benefits, risks and social implications of the test, but must be given appropriate pre- and post-test counselling.

REPORTING OBLIGATIONS FOR ABUSE AND NEGLECT

37. All staff working with children in the emergency environment must be aware of the legal requirements, criteria and correct procedures regarding:

37.1 compulsory reporting of sexual abuse, physical abuse causing injury and deliberate neglect; and

37.2 voluntary reporting of children in need of care and protection.

DIGNITY AND PRIVACY

38. A child has the right to dignity and privacy.

38.1. The child and/or parents must give consent for the child to be undressed.

38.2. The child must be covered with a sheet or blanket if undressed.

38.3. There must be curtains around the examination area.

39. Confidentiality: If a child or adolescent confides information and requests that it not be shared with his or her carer, the health-care professional must make every effort to maintain that confidentiality whilst acting in a manner that is in the best interest of the child and in keeping with the law. This may require consultation with the senior in the EC.

RATIONALE

EMS

Interaction with EMS personnel and the journey to the EC give children their first impression of what awaits them in the emergency environment. There is no reason why EMS personnel should not be able to employ simple techniques of reassurance and communication to help put children at ease. It is important that, whenever possible, personnel are honest with children about the procedures that are to be undertaken. This does not have to take long or require special skills, but for children it can make the difference between feeling afraid and feeling safe and comfortable.

SAFETY

The EC is a bustling environment where many people – patients, visitors, staff – come and go, making it hard to keep track reliably of who should and should not be there. In such a high-turnover situation, predators could take advantage of vulnerable children, so security measures must be put in place to make it impossible. Ideally, the paediatric areas of an EC should be access-controlled, either by a 24-hour security guard or a swipe-card system.

It is imperative, however, that access-control measures do not hinder the entrance of sick children or delay children in being taken to the resuscitation area. Doors made of glass, or built with large windows, are necessary to enable people inside the paediatric area to see if anyone is waiting outside.

By nature, children are very inquisitive, and once ambulant – whether crawling, walking or running – can get up to all manner of mischief. In the EC, many hazardous items (e.g. drugs, sharps, cables and electricity sockets) are potentially within reach of an adventurous little hand or mouth, so it is easy to see why the EC could be a disaster zone for unsupervised young children. In the EC's chaotic environment, it can be hard for mothers, even when giving their best attention, to keep track of offspring who may be running around. The risks are heightened when a mother is forced to leave her child in the care of another person whilst going to make a phone call or visit the bathroom. These dangers must be anticipated and preventative safety measures taken in order to minimise them.

ENVIRONMENT

When children are distressed, their vital signs and appearance tend to become abnormal. The problem this creates for medical and nursing staff in the EC is differentiating between children who are simply 'upset' and those who could be seriously unwell. As such, making the ambience of the ECs paediatric areas more child-friendly is not merely a cosmetic touch: any measure that helps to calm and soothe a child will allow the medical and nursing assessments to be more reliable and easier to perform. Children with normal vital signs and appearance are much less likely to undergo emergency investigations, prolonged stays in the EC, or admission.

One of the general principles of the Children's Act is the recognition of 'the child's need for development – including the need for play and recreational activities that suit the child's age'. Achieving this in the emergency setting is not impossible. Simple items such as colourful murals, age-appropriate posters and eye-catching mobiles are friendlier than stark walls and ceilings. A play area helps parents, child-patients and siblings have a more pleasant time in the EC. This area can be small and straightforward. Some ideas which are easy to implement include:

- child-sized tables and chairs with some paper, colouring pictures and crayons;
- interactive wall-mounted plastic or wooden toys with moving parts;
- a box of safe plastic toys (with antibacterial wet-wipes to clean before use); and
- a shelf or box of books for children of different ages.

The safety of toys needs to be considered sensibly. For example, they should not have loose parts that could cause choking; soft toys are hard to clean and pose an infection-control risk.

If it is possible, a TV and DVD player should be installed for showing cartoons, children's shows or films as this helps to keep children settled whilst waiting in the EC. Older children are well entertained by age-appropriate computer games, which can be hand-held or wall-mounted.

While theft, loss and breakage of play-area items are common problems, this is not a reason to prevent such an area from being set up. All removable toys and books should be labelled as hospital property with permanent-marker pens.

FOOD AND COMFORT

Childhood emergencies are often rapid in onset and unpredictable, with the result that carers may not have time or opportunity to bring essentials with them. Small children and infants have

lower blood sugar stores in their bodies and need to feed more frequently than adults. A range of infant feeds – both formula milk and solids – must be kept in all ECs where children are seen. Nappies are another essential item, and must be available in a range of sizes. Infants who are hungry or have wet nappies will be uncomfortable, distressed and crying. Stocking feeds and nappies in the EC is hence not a matter of ‘giving hand-outs’ – it is humane and assists the clinical assessment.

In addition, carers may have been forced to bring along other siblings. These children must not be forgotten, since they will need food and drink if they are in the EC for long periods. Provincial policy dictates that all child-patients as well as their carers and accompanying siblings will be served meals whilst in hospital, which includes the EC. To accommodate situations where families bring their own food and supplies to the EC, it is helpful to provide a facility enabling them to prepare feeds or drinks and heat up food.

COMMUNICATION, REASSURANCE AND DISTRACTION

Good communication is essential both when gathering a history *from* child-patients and their families and when imparting information *to* them about the diagnosis and proposed management (see also the section on safe discharge in Chapter 12: Patient Safety and Continuous Quality Improvement).

The manner in which something is said is as important as the message itself. Children can be put at ease in simple ways, such as kneeling down to their level, smiling and talking in a friendly voice, or asking them about things of interest to them, like sport, cartoons or school.

Openness, honesty and clarity are important elements in gaining their trust (and that of their parents). In this regard, children should not be given false reassurance. If a procedure will be painful, it is better to say, ‘There will be a sharp *ouch* but it will be over quickly’ than to pretend it is not going to hurt.

Communication is such a key aspect of paediatric emergency care that it is recommended that all EC staff should be trained formally in good communication techniques (see Chapter 9: Training and Chapter 10: Teaching and Education in the Emergency Centre).

In terms of play and distraction, materials do not have to be expensive or elaborate to be effective. For instance, colourful pictures, mobiles or bubbles (containers can be refilled with water and washing-up liquid) all work well in gaining the attention of small children. In many countries EC and EMS staff bravery certificates they can award to children who have used their service. Small gestures like these can change a strange, scary experience into a pleasant, safe-feeling one.

As far as possible, children should be communicated with in their home language. Some hospitals have telephonic interpreting services. These should be used when appropriate.

CHILD RIGHTS

*Acknowledgement: Grateful thanks are extended to Lori Lake and Lucy Jamieson for permission to use extracts of their work in, first, the sections below marked with an asterisk and, second, Appendix A. These extracts are taken from: Jamieson L & Lake L (2013) *Children’s Act Guide for Health Professionals*. Edition 5. Cape Town: Children’s Institute, University of Cape Town.

In chaotic and overwhelmed emergency environments, it can sometimes feel as if neither the human rights of patients nor those of the staff have any chance of being respected. Some may

ask as well why children's rights should be promoted when similarly deserving groups (such as pregnant women, the disabled, elderly patients and sufferers of mental illness) do not receive special attention. Engaging in such wide-reaching moral and ethical debates is beyond the scope of this document. However, if we accept that we need to start somewhere, and that children's rights are not a bad place at which to do so, then hopefully in time we can move on to progressively realise the rights of *all* citizens.

➤ **Key Principles**

- **Best-interests principle**

*The South African Constitution states that 'a child's best interests are of paramount importance in every matter concerning the child'. The Children's Act further stipulates that the best-interests standard must be applied in all matters concerning the protection, care and well-being of the child. Thus, in all decisions, actions and proceedings regarding the health and well-being of children, the best-interests standard must be applied.

- **Right to participation**

*According to article 12 of the UNCRC and section 10 of the Children's Act, all children are entitled to views on all matters affecting them. The Children's Act and the National Health Act respect the rights of all child patients to participate in decisions affecting their health and well-being and to have their views and opinions considered and respected. This right to participate does not always extend to a right to make decisions, but it does entail that, wherever possible, children must be given the right to be:

- involved and consulted in decisions about their health care; and
 - given relevant information and explanations in an age-appropriate manner, and,
 - wherever possible, give their assent and/or consent to procedures, investigations and treatments.
- **Evolving capacities**

*The evolving-capacities principle recognises that as children grow and develop they have increasing competencies and greater capacity to take responsibility for decisions affecting their lives. The evolving-capacities approach requires health workers to progressively involve children more fully in decisions relating to their health.

- **Right to information**

*The UNCRC and Children's Act include an obligation to ensure that children and their parents have access to education and information to enable them to achieve the best possible health. What is of particular note for emergency settings is that there is an obligation to ensure that child patients receive information in a format that allows them fully to understand their own health status and treatment options. This is also a requirement of section 6(2) of the National Health Act (61 of 2003).

➤ **Consent**

In this section the actual standards themselves are repeated for the sake of clarity:

36. The consent provisions of the Children's Act must be adhered to:

36.1 *If a child has the capacity to consent:* Children who meet the necessary age and

maturity requirements are required to give consent to treatment, surgery, HIV testing and the disclosure of their HIV-positive status.

*Children older than 12 years, who are of sufficient maturity and have the mental capacity to understand, must be consulted and informed about their health care; in particular, they must be asked for their consent to procedures and treatments. This means that children cannot be subjected to these procedures against their will. If a child unreasonably refuses to give consent, then the Minister of Social Development or the courts (not the parent, caregiver or guardian) must be approached to overrule the child's refusal, or in the case of a medical emergency (that is life threatening AND requires urgent treatment), the superintendent of the hospital may be approached to give consent.

In the emergency setting, a challenge in this regard is that there is a lack of defined procedures for assessing maturity and mental capacity. It is also common that children and/or adults are too distressed to make rational decisions – handling such situations is complex and requires skill, experience and training (see Chapter 11: Stress and Debriefing).

36.2 If the child does not have the capacity to consent: If the child is too young, or the health professional assesses him or her not to have the capacity to consent or refuse treatment, then the parents, guardian or caregiver must make the decision on his or her behalf.

36.3 If the child's parents, guardians or caregivers unreasonably refuse to give consent: In a medical emergency which is urgent and life-threatening, the superintendent of the hospital may give consent on their behalf.

Such a parent, caregiver or guardian can also refuse to give consent. However, the refusal must be on reasonable grounds. Medical treatment and surgery cannot be refused solely based on religious, cultural or other beliefs – there must also be a medically acceptable alternative to the proposed treatment or surgery. In a medical emergency that is urgent and life threatening, the superintendent of the hospital may override cases unreasonable refusal and give consent to treatment. In all other cases you must approach the courts or Minister of Social Development for consent.

36.4 Consent for HIV testing: A child under the age of 12 years can consent to an HIV test if he or she is sufficiently mature to understand the benefits, risks and social implications of the test.

Figure 1: Consent to medical treatment and surgical operations

MEDICAL TREATMENT

Section 129 of the Children's Act 38 of 2005 states that a child may consent to his or her own medical treatment or to the medical treatment of his or her child if:

- a) the child is over the age of 12 years; and
- b) the child is of sufficient maturity and has the mental capacity to understand the benefits, risks, social and other implications of the treatment.

SURGICAL OPERATIONS

A child may consent to the performance of a surgical operation on him or her, or on his or her

child if:

- a) the child is over the age of 12 years; and
- b) the child is of sufficient maturity and has the mental capacity to understand the benefits, risks, social and other implications of the surgical operation; and
- c) the child is duly assisted by his or her parent or guardian.

Source: Jamieson L & Lake L (2013) *Children's Act Guide for Health Professionals*. Edition 5. Cape Town: Children's Institute, University of Cape Town

➤ **Reporting Obligations**

All staff working with children in the emergency environment must be aware of their legal duties in relation to reporting the abuse and neglect of children. The details of the legal duties are found in both the Children's Act and the Sexual Offences Act. Health professionals are subject to compulsory reporting obligations regarding sexual abuse, physical abuse causing injury and deliberate neglect in children. There are additional voluntary reporting criteria for children in need of care and protection. In these cases it is essential that you explain to the child the reasons why you need to breach confidentiality in line with your legal obligations to report abuse and neglect.

➤ **Dignity and Privacy**

Children have a right to dignity and privacy in the EC. Just because they are young does not mean they do not feel embarrassed or upset if they are undressed or discussed in public. Neither child nor adult patients should be undressed or examined in public spaces such as waiting rooms, corridors or asthma chairs. A curtained cubicle or enclosed consultation room is needed for the dignity and privacy of all patients, young or old. If no other options are available, then mobile screens should be used to shield undressed patients from public view.

Child-sized hospital gowns must be available in ECs, and blankets or sheets provided so that children can be covered when being examined.

Recommended Reading: *Children's Act Guide for Health Professionals*

This is an excellent guidebook for all health professionals working with children. It gives a comprehensive explanation of the Children's Act in a simple, clear and practical way. Where necessary, it also deals with relevant sections of the South African Constitution as well as other key legislation such as the Sexual Offences Act and the Choice on Termination of Pregnancy Act. In addition, the authors look at children's rights in South Africa in the context of regional and international laws and treaties.

The *Guide* is highly recommended for all health-care staff who interact with children.

Read **Appendix A** for further extracts from Jamieson L & Lake L (2013) *Children's Act Guide for Health Professionals*. The full Guide is downloadable at www.ci.org.za.

Chapter 4: Triage

Baljit Cheema

INTRODUCTION

Triage is the rapid sorting of patients into priority groups based on the severity of illness. Waiting times to see a clinician in emergency centres (ECs) can be lengthy, so it is vital that those who are most unwell are seen first.

Seriously ill babies and infants are at a greater risk than adults of being misclassified as 'stable', given that they are likely to be carried in their parents' arms and may be wrapped up in blankets. Children and babies can also be more difficult to assess due to their inability to communicate, lack of cooperation with examinations, and wide variation in presenting symptoms. What is more, EC staff may be less confident in the proper assessment of children and babies.

The majority of ECs in the Western Cape have paediatric as well as adult attendances, and it is thus necessary to ensure that triage is undertaken with a high level of competence for both groups of patients.

STANDARDS

TOOL AND TRAINING

40. Children in the Western Cape should be triaged using the Paediatric version of revised South African Triage Scale (P-SATS).
41. All EMS staff must be fully trained in P-SATS use.
42. All EC nursing staff must be fully trained in P-SATS use.
43. All EC doctors must be familiar with P-SATS.

PROCESS

44. Patients presenting for emergency care must be able to enter the EC via a rapid and easily accessible entrance at any time of day or night without delays.
45. Triage must occur before any administrative or reception procedures.
46. All children should be visually inspected by a trained health professional immediately upon arrival.
47. Formal triage must take place within 15 minutes of arrival at the facility.
48. A senior nurse must be allocated to the triage area at all times.
49. It is unsafe for junior, agency or student nurses to work in triage if they have not been trained in triage. Even after training they must be closely supervised.

50. Time from triage to being seen by clinician should be within Provincial guidelines: Red – immediate; Orange < 10 minutes; Yellow < 60 minutes; and Green < 4 hours.
51. Any child waiting longer than deemed safe by their triage category must be re-triaged.
52. All mothers must be told to inform the triage nurse if their child's condition worsens.
53. In epidemic or major-incident circumstances, triage systems and treatment priorities may need to change according to the facility's Major Incident Plan, which must incorporate plans for ill or injured children.

DOCUMENTATION AND EQUIPMENT

54. Appropriate triage documentation paperwork must be available at triage.
55. Equipment necessary for triage of children must be available in the triage area.
56. Weighing scales for babies and children must be available.
57. Children must be weighed in kilograms and not pounds.
58. Resuscitation of critically ill children must not be delayed to get a weight – the weight can be estimated from age-based formulae or length-based tapes.
59. Triage data for children must be kept and regularly audited.

RATIONALE

TOOL AND TRAINING

Triage should be being performed in all Western Cape ECs, and all pre-hospital personnel should be triaging patients prior to transport. The South African Triage Scale (SATS) is the official triage tool for both adult and paediatric patients in the province.

The paediatric SATS underwent extensive revision in 2011 to incorporate core elements of the World Health Organisation (WHO) Emergency Triage Assessment and Treatment (ETAT) triaging system. The Revised Paediatric SATS (P-SATS) tool now includes the ETAT 'ABCccD' approach to rapidly identifying emergency signs. For patients with no emergency signs there is the additional safety net of a Triage Early Warning Score (TEWS). The TEWS is a composite score calculated from vital signs, mobility, level of consciousness and presence or absence of trauma.

All staff allocated to triage must be properly trained in the use of the SATS tool. This includes both pre-hospital and EC staff. Generally speaking, it is EC nurses who triage and not doctors. However, it is essential that doctors have a basic knowledge of the triage tool and processes so that they understand triaging decisions and cooperate with the process.

PROCESS

➤ Entrance

Patients presenting for emergency care must be able to enter the EC via a rapid and easily accessible entrance at any time of day or night without delays. For reasons of improved flow, efficiency and patient safety, patients presenting for routine outpatient appointments ideally

should have a separate entrance. Any delay or impediment before triage can be unsafe; therefore, all reception and administrative processes must occur after triage has taken place.

➤ **Initial Inspection**

Even with the most efficient triaging there can be a build-up of patients waiting for triage. As such, it is crucially important to have a safety net even before formal triage takes place: a trained health professional should visually inspect all new children as soon as possible after arrival in the EC. This initial inspection is to rapidly identify any very obviously sick children. It could involve an informal 'eyeballing' by a trained nurse, or be done using a purpose-made rapid-identification tool such as the Paediatric Assessment Triangle (PAT). Clearly, initial inspection is vital in settings with high patient loads, higher acuity presentations and longer queues at triage.

If there is either no waiting time or only a very short one (e.g. less than 15 minutes), then the same nurse allocated to triage can rapidly inspect all new arrivals prior to triaging the next patient. However, when there is a longer waiting time, it is best if a separate nurse is allocated to the waiting area to inspect all children on arrival, to re-triage (see below) and monitor the condition of patients in the waiting area.

➤ **Triage**

Formal triage should take place as soon as possible after visual inspection – but no longer than 15 minutes after arrival through the gates or entrance of the health facility. The reason is that while children may appear 'stable' at first glance, further evaluation may show them to have serious presenting complaints (e.g. poisoning, not waking as normal), worryingly abnormal vital signs (e.g. rapid breathing, very fast heart rates) and/or abnormal screening tests (e.g. low oxygen saturations, low blood glucose).

➤ **Staffing of Triage Area**

Safe triage of children in ECs requires a senior nurse to be allocated to the triage area at all times. This is because clinical judgement and acumen are frequently relied upon in order to correctly detect children who appear 'not too sick' to the untrained eye but who have subtle signs or worrying features. The practice of assigning junior, agency or student nurses (who are usually not trained in triage) to work in the triage area is unsafe. If these nurses must be allocated to triage, then they must be properly trained and closely supervised by a senior nurse.

➤ **Re-triage**

Any patient can deteriorate while waiting in the EC but children are at a greater risk of this as they have a reduced ability to compensate for hypoxia, shock and other severe systemic upsets; small babies in particular have immature immune systems that are unable to control or limit infective processes. Deterioration in small children is also more likely to be masked or missed because they may well remain quiet in their carers' arms, meaning that the signs of deterioration are not as noticeable as they are in the case of a 'collapsing' adult.

As such, all children waiting longer than permitted for their triage category must be re-triaged, and their reviewed status should be documented on the triage sheet along with the time of re-triage. Another safety net is to empower the parent or carer to return to the triage nurse if he or she notices any worsening of the child's condition.

➤ **Waiting Times**

The Minister of Health has highlighted in the NCS that reducing patient waiting times is a priority. The Western Cape provincial triage policy incorporates targets for time-frames in which emergency patients should be seen after triage. These are as follows:

Table 1: South African Triage Scale (SATS) time-frame in which each patient category must be seen

Category	Time
Red	Immediate
Orange	< 10 minutes
Yellow	< 60 minutes
Green	< 4 hours

Every effort must be made to comply with these targeted waiting times.

➤ **Major Incident Triage**

In the event of a major incident or epidemic outbreak, local hospital and pre-hospital emergency services are likely to be overwhelmed. Normal functioning will be disrupted and alternative modes of operation will need to be employed. These should be detailed in each facility's Major Incident Plan, which should give specific consideration to the triage and emergency treatment plans for children. The reason for doing so is that simpler, more rapid triage systems are often utilised in mass casualty incidents, with the result that patients who are very sick may be down-triaged because staff and resources are directed to those who are more likely to survive.

DOCUMENTATION AND EQUIPMENT

All the necessary paperwork and equipment should be readily available in the triage area, which ought to be re-stocked regularly and laid out in a user-friendly way. Triage posters and memory aids (e.g. laminated key-chain TEWS cards) should be easily visible and available for triage staff.

Weighing is *not* a part of triage – however, it is an important part of safe paediatric care. Traditionally, the weighing of a child is performed soon after arrival and often with the triaging process. All scales must be set to weigh in kilograms and not pounds, as there have been critical incidents where weight in pounds was mistakenly used to calculate doses of medications and led to death or disability. For any seriously ill child, a weight can be estimated from standard age-based formulae (e.g. APLS) or from length-based tapes (e.g. Broselow Tape or PAWPER tape).

It is essential to keep regular and reliable information about the numbers of children presenting for emergency care as well as basic details about their triage. This will help to determine the paediatric emergency burden for ECs in the Western Cape and allow for meaningful tailoring of emergency resources, staff training and service provision.

Chapter 5: Assessment, Treatment and Disposition

Baljit Cheema

INTRODUCTION

The clinical condition of children arriving at an emergency centre (EC) can range from completely well to critically ill. The very sick ones must be rapidly identified (see Chapter 4: Triage), and all patients must be assessed and appropriately managed in a timely manner in keeping with best practices in clinical emergency care.

The standards in this chapter have been outlined as a set of components of good quality emergency care of children in ECs. At an earlier stage of the standard-setting process, a set of standards specifically for a range of common paediatric medical, surgical and traumatic conditions was defined as part of the Pathways to Care project; these standards are available to download from the EMCT website (www.EMCT.info).

STANDARDS

COMPONENTS OF QUALITY EMERGENCY CARE OF CHILDREN IN ECS

60. **Recognition:** Children with signs or symptoms of serious illness or with potential for deterioration must be rapidly identified through the implementation of a triage system.
61. **Assessment and diagnosis:** All clinicians in the EC must be trained to take a focused history, perform an appropriate examination, and correctly diagnose and manage paediatric patients.
62. **Key treatments:** The correct treatments should be given in a timely manner for emergency conditions in children in ECs.
63. **Key bedside and laboratory investigations** must be available and used only where they will enhance patient care.
 - 63.1 Laboratory services must be available 24/7.
 - 63.2 The results of key investigations must be returned within one hour for on-site laboratories and four hours for off-site laboratories.
 - 63.3 A dedicated system must be in place for reviewing all laboratory reports timeously to identify abnormal results for appropriate action.
64. **Key imaging services** must be available within a reasonable period of time for individuals who require these services.
 - 64.1 Images must be reported and available to EC staff within 24 hours.
 - 64.2 A dedicated system must be in place for reviewing all radiological imaging reports timeously to identify abnormal results for appropriate action.

65. **Observations:** Basic vital signs should be recorded at least hourly for all seriously ill children receiving emergency treatment in the EC.
66. **Discharge:** Safe discharge practices must be adhered to.
67. **Documentation:** Detailed, legible notes must be available from the time of arrival at triage through to the time of disposition of the patient from the EC.

RATIONALE

COMPONENTS OF QUALITY EMERGENCY CARE OF CHILDREN IN ECS

For the purposes of this document, good quality emergency care of children is seen as consisting of a number of broad components:

- recognition;
- assessment and diagnosis;
- administration of key treatments;
- key bedside and laboratory investigations;
- key imaging services;
- observations;
- safe discharge; and
- documentation.

➤ **Recognition**

Children with emergency conditions must be recognised promptly. Whilst the resuscitation of children in cardio-respiratory arrest or other obvious emergencies is often undertaken rapidly, these are the easy ones to recognise. High-quality emergency care involves the timely detection of children with serious illnesses with more subtle signs and symptoms. Such children may appear less obviously sick, but they nonetheless require time-critical interventions.

➤ **Assessment and Diagnosis**

Key signs relating to particular conditions need to be actively sought out (e.g. signs of respiratory distress, shock or severe dehydration). Ideally these children should be identified at triage, but some will develop signs only during the waiting period. All clinicians in the EC must be trained to take a focused history, perform an appropriate examination and correctly diagnose and manage paediatric patients.

➤ **Administration of Key Treatments**

Administering key treatments in a timely manner is an essential component of quality emergency care for all patients. In 2010-2011 an expert group was assembled to define a set of condition-specific standards for a range of common paediatric medical, surgical and traumatic conditions as part of the Pathways to Care research project. This process was led by Dr Peter Hodgkinson, Professor Andrew Argent and Professor Lee Wallis. The group consisted of senior professionals from the fields of paediatrics, emergency medicine, trauma, nursing and pre-hospital care as well as representation from senior management. The majority of the current TWG were members of this preliminary expert consensus group.

These condition-specific standards were agreed upon by expert consensus. Sub-groups of experts from within the group were initially allocated to each of the specific conditions. Discussions were held and consensus reached within the sub-groups on a list of expected standards for the emergency care of those conditions. The sub-groups then presented their draft standards to the wider group, and a further round of consensus was sought. Thereafter, the standards were given precise wording and the group members achieved a final round of consensus. The final-consensus versions of the recommended standards that were used in the Pathways to Care project to compare actual emergency practice with recommended practice in the Western Cape are available to download from the EMCT website (www.EMCT.info)

These standards define key treatment steps for a limited range of common conditions (e.g. fluids for shock, and adrenaline nebulisation for severe croup). Because improved outcomes in children have been shown to occur with timely administration of emergency treatments, time-frames have been stipulated where appropriate (e.g. antibiotics for septic shock and severe pneumonia within 30 minutes of seeing a health-care professional).

There is also a requirement to administer the correct drug, dose and route (e.g. anticonvulsant medications to fitting children, and correct dose and route of steroid and bronchodilator for asthma). Some of the standards require that Provincial, Paediatric or Emergency Medicine guidelines are followed (e.g. the Provincial Dehydration Protocol).

➤ **Key Bedside and Laboratory Investigations**

Certain simple bedside tests can detect life-threatening conditions such as hypoglycaemia and hypoxia. Checking blood glucose is very important in all floppy, lethargic or seriously ill children (particularly those with malnutrition). Similarly, it is necessary to check oxygen saturation in all children presenting with respiratory distress.

Laboratory blood investigations should be done only where they are likely to be of value in patient care and not in a routine manner, thereby avoiding unnecessary costs and pain to the child.

The proper evaluation of emergency patients requires that all ECs must have access to laboratory services 24/7/365. The laboratory may be on-site or at another location. In the interests of patient safety it is essential that results are returned to EC staff in a timely manner. On-site laboratories must return results within one hour and off-site labs, within four hours.

➤ **Key Imaging Services**

Emergency radiological imaging must be used wisely as children have a higher lifetime risk than adults of developing malignancies after radiation exposure. Where radiological imaging tests are required, the ALARA principles should be followed.

It is necessary for all ECs to have access to a range of key imaging services 24/7/365 (either on- or off-site) and for images to be reported in a timely manner.

➤ **Observations**

Children undergoing emergency treatment in ECs should have regular nursing observations measured and recorded. Basic vital signs (heart rate, respiratory rate and temperature) should be measured at least hourly in all seriously ill children receiving treatment in the EC. Depending on the clinical condition, additional parameters, such as oxygen saturation, blood glucose, blood pressure and level of consciousness, may also be needed regularly. The normal values for vital

signs in children vary with age, and therefore it is important that vital signs are interpreted by age.

Sometimes the observations will need to be done very frequently. For example, children who have had a head injury, convulsions or reduced level of consciousness may be placed on neuro-observations every 15 minutes, while children on ventilators may require 15-30-minute observations, along with frequent recordings of ventilator and infusion settings.

Weighing children is important because their medications and fluids are calculated on the basis of weight. The weight must be measured in kilograms and not pounds. Although weighing is not a part of triage, it is often done at the same time for the sake of convenience. However, emergency treatment of a child must never be delayed in order to get a weight, as this can be estimated instead.

➤ **Safe Discharge**

There are precious few absolute certainties in emergency medicine, and even less so in paediatric emergency medicine. A clinician sending a child home from the EC is often beset with worries about the 'what-if's'. *What if that innocent-looking rash evolves into a non-blanching meningococcal rash? What if the diarrhoea worsens? What if it is meningitis and not a simple headache?* Every doctor makes a reasoned judgment on the most-likely diagnosis and then enacts a plan accordingly. However, it is always wise to acknowledge that one could be wrong and ensure that sensible plans are in place if things do not go as expected.

The key to discharging a child safely from the EC is communicating with the parent or carer (and, where possible, with the child) *in language that is easy to understand*. Upon leaving the EC, the parent must understand the following:

- the diagnosis or differentials being considered if no clear diagnosis fits;
- the likely progression or natural history of the condition;
- the correct administration of prescribed medications:
 - the dose, frequency, route and duration of medications; and
 - the potential side-effects of these medications;
- signs that signal a worsening of the condition and what to do if this happens;
- signs of failure to resolve and what to do if this happens, as well as how and when to do it; and
- any follow-up plans – where, when and with whom.

A copy of the discharge letter must be given to the parent or carer of child-patients. This is needed if the child has to present elsewhere for care regarding this or future illnesses. In addition, it is very helpful to make brief notes in the child's RTHC as this is less likely to be lost and will accompany the child on further medical visits.

During acute consultations and discharge discussions, parents or carers are usually not able to absorb and retain detailed information, so it is also extremely useful to give them advice sheets about common conditions.

➤ **Documentation**

The EC notes must include descriptions of the child's clinical condition at presentation and his or her progress at reviews, along with documentation of the date and time of each assessment

and the person performing it. Similarly, all drugs, treatments, investigations, interventions and procedures must be documented.

All too often emergency notes are brief, barely legible and without dates or times. The date, time and name of the person performing the assessment should be noted clearly. Detailed documentation of the child's condition at presentation, subsequent response to treatment and progress in the EC is an essential element of quality emergency care. It also helps medical staff to gauge if the child's condition is improving or worsening, and becomes crucial if there is a prolonged period in the EC and/or changeover of staff.

When reviewing EC folders, it is often difficult to work out what procedures or interventions a child has undergone and which medications and/or fluids were administered, by what route and at what time. Usually this information is not fully recorded in the doctor's notes, and one has to rely on items such as drug charts ('blue boards') or nursing notes for further information.

Unfortunately, nursing staff who have administered emergency drug treatments or fluids do not always sign for them. This kind of lapse is more likely to happen in understaffed or overwhelmed resuscitation rooms. Accurate information on timing of administration of medications and fluids will help to give insight into the quality and efficiency of emergency management of children in ECs.

Documentation standards apply not only to medications but also to other core treatments or interventions in the EC (e.g. oxygen: time of commencement, route and concentration of oxygen given; nasogastric tube: size, time and checking of position; and intravenous/intra-osseous line: site, number of attempts, gauge of cannula or type of needle used).

The Western Cape Province has specially designed EC documentation stationery for emergency paediatric cases. This must be used in order to bring uniformity to note-keeping and documentation.

Chapter 6: Referral, Transfer and Transport

Baljit Cheema, Michael Lee and Tony Westwood

INTRODUCTION

Referral and transfer of emergency patients between health facilities is an everyday activity, yet it is frequently complicated by lack of communication and coordination. Much of this chapter is not specific to paediatric patients, but, given that referral and transfer is such a problematic area, it is necessary to delineate standards in detail.

The decision to transport a critically ill patient to another medical facility is based on an assessment of the potential benefits of transport weighed up against its potential risks. Because critically ill children are a particularly fragile group and face an increased risk of mortality and morbidity during inter-facility transport, these risks must be minimised and the outcomes improved through careful planning, good communication and the use of appropriately qualified and equipped personnel.

STANDARDS

REFERRAL

68. Referral pathways and processes must be agreed for all emergency centres (ECs) and must be prominently displayed and easily available.
69. All staff working in ECs (including locums) must be aware of paediatric referral pathways.
70. Each receiving institution must define a detailed list of paediatric conditions (medical, surgical and traumatic, as well as those relating to specialties, e.g. cardiology and ENT) that can be handled at that institution and provide it to its referral partners (including EMS).
71. All critically ill paediatric cases who are being referred must be discussed with the receiving medical facility.
72. If there is deterioration in the child's condition prior to or during transport that requires more intensive care (e.g. intubation and ventilation), this needs to be communicated to the receiving facility so that the necessary resources can be made available prior to the patient's arrival.
73. Locally agreed referral pathways must be followed – depending on local arrangements, referring clinicians may not need to discuss every case being referred but must do so in cases of uncertainty or where advice is needed.
74. The receiving facility must accept all critically ill paediatric cases from their drainage area regardless of bed availability.
75. If there is a shortage of an appropriate bed for a critically ill patient in the receiving institution, the patient must be accepted by and transferred to the EC of the receiving centre without delay.

76. At times of in-patient bed shortage it is the responsibility of the receiving institution's bed-management team to invoke its escalation policy in keeping with the Western Cape's Emergency Case Load Management Plan (ECLMP).
77. An unstable or critically ill child must NEVER be left at a lower level of care due to bed shortages at the receiving centre.
78. There should be a reliable, designated telephone number (ideally, mobile) that is carried 24 hours a day by the person designated as the receiving centre clinician call-taker for each speciality at the receiving institution. Rosters with these details must be kept in the Telephone Exchange and in the EC.
79. At the receiving facility, all referral calls must involve an experienced clinician (intern call-takers may not give advice or refuse referral of a child without senior input).
80. Duties of the receiving-centre clinician call-taker:
 - 80.1 A patient-centred approach must be adopted from the outset.
 - 80.2 The best interests of the child and family must be put ahead of any other concerns.
 - 80.3 The receiving-centre clinician call-taker has a duty to find out details of the child's condition and to provide advice to optimise stabilisation prior to transfer.
 - 80.4 Inform the referring clinician about the details of where the child needs to be sent to in the receiving hospital.
81. The receiving centre should maintain a logbook or database of all referral calls.
82. In-patient specialties that accept children to a facility directly must communicate and liaise with the EC if the patient is to be received in the EC.
83. A comprehensive referral letter should accompany every child being referred.
84. All relevant clinical information must be sent with the patient, including radiology films and laboratory results.
85. An incident-reporting mechanism must be available at both the referring and receiving facility for reporting any problematic referrals.
86. The patient remains the responsibility of the referring doctor until such time as he or she (the patient) reaches the receiving hospital (Western Cape ECLMP 7.1.4).

TRANSFER AND TRANSPORT

87. Retrieval teams must be available for the transfer of critically ill children and neonates.
88. When requesting transport of critically ill children, the referring facility must ensure that the severity of the child's condition is effectively communicated to the call-taker at the EMS Communications Centre (including, at a minimum, triage colour, vitals, special equipment, and the urgency and level of the EMS crew required).
89. Effective verbal and written communication during patient handovers must take place between EMS practitioners and doctors from receiving and referring ECs. The DeMIST handover procedure is the minimum handover that must occur.
90. Prior to departure, the EMS crew responsible for the management of the patient must independently assess the child's clinical condition and suitability for transport and familiarise themselves with the treatment already undertaken.

91. The EMS Communications Centre or EMS crew (if able) must notify the receiving EC of the estimated time of arrival, the condition and medical interventions initiated in critically ill children prior to their arrival at the EC (if not already informed).
92. For all transports and transfers of critically ill children, a clearly defined communication system (trunking radio/telephone) must be available between the EMS crew effecting the transfer and the medical team receiving the patient.
93. EMS crews that do not feel comfortable about effecting the transport of a critically ill child (due to lack of necessary equipment or suitable qualifications) must voice their concerns to the referring physician so that the referring physician can initiate further treatment to stabilise the patient and/or arrange alternative transport with a more qualified EMS crew. The EMS crew must help to facilitate communication with the EMS Communications Centre in order to expedite transport of the child with an alternative EMS resource if appropriate.
94. Critically ill paediatric patients must not be conveyed along with adult patients for the purposes of inter-facility transfers unless it is in the child's best interests to do so.
95. Critically ill or injured paediatric/neonatal patients who fit the criteria of the Paediatric Emergency Call Out Pathway protocol must be transported by the Paediatric Flying Squad (PFS) or a suitably equipped Advanced Life Support crew if PFS is not available.
96. All emergency care practitioners must be aware of the closest most appropriate medical facility to which paediatric emergencies must be transported.
97. In the absence of specific protocols (e.g. Paediatric Burns Referral Guidelines, Paediatric Polytrauma Referral Guidelines, etc.), EMS personnel must base the destination medical facility on the patient's initial on-scene triage code.
98. To ensure the effective disposition of paediatric patients, pre-hospital EMS referral guidelines must be easily accessible to all EMS staff and ECs.
99. Any Advanced Life Support Paramedic tasked with effecting the inter-facility transport of a critically ill child or neonate must be proficient and up to date with advanced life support skills and knowledge for children and neonates.
100. No EC may refuse to assess and accept a child delivered by an ambulance, regardless of geographical origin or triage code.

RATIONALE

REFERRAL

➤ Referral Pathways

Referring an emergency patient from one health facility to another is a frequent occurrence, and it is in the patient's best interests that the process be as simple, smooth and efficient as possible. Local referral pathways must be agreed upon, but this alone will not solve the problem. Even where local referral pathways have been agreed on, the information might only be found filed away in the offices of nursing managers or heads of units. Referral pathways must be known to all staff members who are part of the process, including pre-hospital personnel and those at the frontline in referring or receiving units.

It is important to call ahead and notify the receiving centre of a critically ill child who is being referred to it. However, both making and receiving referral calls can be very time-consuming and take up a considerable portion of a frontline clinician's workday. Depending on local referral agreements, it may not be deemed essential to call in advance for every child being referred – for example, it may be deemed that a stable child who clearly meets the referral criteria does not require a call. It is the responsibility of every receiving hospital to have clearly defined referral pathways from its drainage area for every kind of patient.

➤ **Services Offered Locally**

Often there is uncertainty about what services are offered at which local facilities. Even with defined packages of care for different levels of facilities, the types of services offered can vary considerably due to local agreements and conditions. This is especially problematic for EC settings, which experience a high turnover of staff – including shift workers and locums – that may be unfamiliar with local services. It is thus essential to know 'who offers what, where and when' so that emergency patients can be referred to appropriate facilities rather than ones that do not offer the required service.

➤ **Responsibilities of the Receiving Centre**

It is vitally important that those accepting referrals on behalf of in-patient paediatric and sub-specialty teams (e.g. neurosurgery, orthopaedic surgery, paediatric surgery or paediatric intensive care) are also aware of referral pathways. Very often the person responsible for taking calls at receiving institutions ('the receiving-centre clinician call-taker') will be a junior doctor, i.e. a registrar, medical officer or, in some cases, an intern. It is not acceptable for interns to give advice or refuse patient transfers – they must first discuss this with a senior doctor. Junior doctors often rotate and might work in units only for short periods: hence it is the responsibility of senior doctors to ensure that their juniors adhere to referral pathways and maintain good standards of communication and behaviour with lower levels of care.

It is essential that receiving-centre clinician call-takers are experienced enough in paediatric emergency care to be able to ascertain details of the child's condition and provide advice to optimise stabilisation prior to transfer. Interns are insufficiently qualified to perform this role – if they are required to receive referral calls, then they must discuss every case with a senior doctor.

It is wholly unacceptable for receiving-centre clinician call-takers to be rude, dismissive or obstructive to colleagues trying to refer children to higher levels of care. Often there is poor understanding of the lack of skills and resources at lower levels of care, with the result that patients who would benefit from moving to a higher-level centre are rejected inappropriately.

Any critically ill child must be accepted by the receiving centre for his or her drainage area regardless of bed availability, as it is in the best interests of the child to be in a facility with higher levels of skill, expertise and resources. There is a tendency to delay the transfer of a critically ill child whilst discussions are held, beds swapped around and/or other units called. Out of hours it is often the junior doctor on-call at the receiving centre who is doing all the discussions and bed negotiations, whilst also being responsible for a busy clinical service. This is liable to lead to prolonged periods of time during which the critically ill child is left in the facility with the lower level of care. To avoid this, critically ill children must be accepted by and transferred to the receiving centre EC as soon as possible and negotiations regarding a suitable

bed should be commenced simultaneously by the hospital bed-management team utilising the procedures in the ECLMP.

➤ **Referrals Logbook/Database**

It is essential for all who receive referrals (be they ECs or in-patient receiving teams) to keep a record of all referrals calls received, the discussion and the outcome. The information recorded should include:

- date and time of call;
- patient name, date of birth and hospital number;
- details of referring doctor and referring centre;
- the telephone number where this doctor can be reached;
- chief complaint and condition of patient;
- advice given by receiving-centre call-taker;
- accepted for transfer – yes or no; and
- IF NO: explain the reasons and the plan for ongoing patient care.

This information could be recorded by hand into a logbook carried by the receiving-centre clinician call-taker or typed into a secure computer database that is accessible at convenient locations. It is important that referral data be reviewed by a senior doctor so that the team can regularly identify any problematic patterns or errors (see Chapter 12: Patient Safety and Continuous Quality Improvement).

➤ **Referral Letter and Accompanying Information**

All children who are referred must have a comprehensive referral letter detailing their care and accompanied by all relevant and available results and images. The suggested content of the letter includes:

- date and time;
- name and contact details of referring facility (and ward) and clinician;
- patient detail
- weight (actual or estimated);
- brief history and relevant past medical history;
- time of patient's initial arrival at referring facility and clinical condition on arrival;
- initial resuscitation measures and ongoing management, with relevant timings;
- response to initial treatment and ongoing management;
- appropriate vital signs on arrival or as appropriate (e.g. post-resuscitation and/or pre-departure);
- details of additional investigations and/or imaging, including the times at which these were undertaken and the results;
- drugs given – name, route, dose, timing;
- fluids given - name, route, dose, timing;
- signature and name of referring clinician; and
- name of receiving facility (and ward) and clinician

➤ **Reporting Referral Problems**

Unfortunately, the referral of emergency patients can be fraught with difficulties, be they poor communication, delays or the failure of clinical care during the referral or transfer process. In

order to help improve systems and reduce these difficulties, it is crucial that they are reported in a timely fashion so that problem areas can be identified and addressed. Meaningful improvements are possible only when problems are made known and then analysed to determine how, when and why they happen (see Chapter 12: Patient Safety and Continuous Quality Improvement).

➤ **Medical Responsibility for Referred Patients**

It is important to note that the ECLMP states: 'The patient remains the responsibility of the referring doctor until such time as they reach the receiving hospital' (ECLMP 7.1.4) Therefore, it is imperative that the referring doctor remain involved in and cognisant of the child's level of illness, all emergency care given, the response to treatment, and his or her stability for transfer. In rare cases where a child is very unstable but must be moved in his or her best interests, the referring doctor may opt to accompany the child to provide further medical care during transport. This may not be possible in some circumstances (e.g. at rural hospitals, or where there is lack of medical cover) and must be decided on a case-by-case basis.

It must be understood that the arrival of EMS practitioners is not a signal for referring doctors and nurses to withdraw and leave the care of the patient to EMS. Teamwork and cooperation are necessary to ensure optimal emergency care throughout the referral and transport process. Retrieval teams will play a crucial role in these cases.

TRANSFER AND TRANSPORT

➤ **Retrieval Teams**

Transport of critically ill children and neonates is a daunting job, and in many countries it is performed by dedicated retrieval teams. There is no set standard for the composition of paediatric or neonatal retrieval teams, but most of them comprise of one or more of the following trained staff members: a doctor, advanced nurse practitioner, critical-care nurse, neonatal nurse or paramedic. Retrieval teams with specialised skills and knowledge must be available to provide high-quality critical care for children and babies during transportation.

➤ **EMS Skills**

Referring physicians must ensure they are comfortable with having the patient transported by the particular EMS crew tasked with effecting the transfer. In turn, the crew have an obligation to advise the referring physician if they deem the patient too unstable for their level of expertise or qualification.

➤ **Communication**

If the child's condition deteriorates prior to transport and requires further intensive care (e.g. intubation and ventilation), the receiving facility must be notified of it so that the necessary resources can be made available before the patient arrives.

The EMS crew transporting a critically ill child must be able to communicate with the receiving-centre clinicians for advice and support. Currently, any communication of this sort has to be done via the EMS Control Centre, as the majority of receiving units do not have radio systems (while those that do, typically do not use them). Another method is to equip EMS crews with

mobile telephones, making it easier for them to keep the receiving centre updated during the transfer about the patient's clinical status and expected time of arrival.

➤ **Handover**

To ensure good quality emergency care and reduce the risk of errors during transition of care, proper handover procedures must be followed. A structured handover procedure equips all health-care practitioners actively involved in the care of the child with the relevant clinical information. This will lead to the correct prioritisation of the patient, provide information on the treatment already initiated en route, and give the receiving clinicians vital knowledge of which they might have been unaware. The DeMIST handover procedure (see Appendix R) is the minimum handover that must occur. Note that it must be used not only when the EMS crew hands over patients to a receiving centre but also in the handover from the referring facility to the EMS crew.

Chapter 7: Clinical Guidance

Liezl Smit and Tony Westwood

INTRODUCTION

Children are not small adults, a fact which scares many doctors and nurses working in the emergency centre (EC) – especially if children present at odd hours of the day and no senior staff are available to ask for advice. However, evidence-based and/or expert-derived clinical tools provide support and guidance for clinicians when managing sick children. Such tools help to improve the quality of emergency care; in particular, they facilitate rapid and effective treatment by standardising management and serving as a gauge according to which adherence to practice standards can be measured.

Terminology is important in this field, because there are many different ways to interpret the words ‘protocol’, ‘guideline’ and ‘guidance’. For the purposes of this document a *protocol* is defined as a set directive from which a practitioner may not deviate; *clinical guidelines* give a formally graded level of evidence for each recommendation made, and *clinical guidance* consists of expert-derived recommendations which are not coercive and generally do not give levels of evidence for every recommendation.

A great deal of manpower, resources and funding are needed to produce good quality clinical guidelines (e.g. National Institute of Clinical Excellence (NICE) UK), and South Africa does not yet have an adequate level of capability to do so in respect of frontline EC practice. Therefore, for the purposes of this report, the term ‘clinical guidance’ will be used to refer to the recommended clinical tools to aid emergency care of children in ECs.

STANDARDS

101. Emergency Centre (EC) clinical guidance must be:

- 101.1. based on best available evidence;
- 101.2. locally relevant;
- 101.3. compatible across levels of care;
- 101.4. standardised;
- 101.5. easily accessible;
- 101.6. taught to staff;
- 101.7. taken into consideration by EC clinicians;
- 101.8. audited; and
- 101.9. regularly reviewed and updated.

102. Development of EC clinical guidance must:

- 102.1. be developed as part of a centrally coordinated process in order to ensure standardisation;
- 102.2. address common clinical conditions (based on local burden of disease);
- 102.3. include symptom-based approaches;
- 102.4. focus on the management in the initial 4-6 hours after presentation;

- 102.5. be presented in formats appropriate for the EC setting; and
- 102.6. include a date for review.

RATIONALE

EC CLINICAL GUIDANCE

Specific clinical guidance is needed to reflect the unique needs of infants and children and to cover high-risk or difficult areas of practice in the EC.

The EC clinical guidance has to be standardised across the province to ensure a high-quality standard of paediatric emergency care in different settings. EC clinical guidance should also be compatible across levels of care – ideally, it should dovetail with other existing local tools used in various adjoining services, such as pre-hospital care HPCSA protocols, the primary care Essential Drug List (EDL), the nurse-led primary care clinics' Integrated Management of Childhood Illnesses (IMCI), and paediatric ward guidance. Contradictions cause confusion and sub-optimal patient care.

Whilst the management of EC emergencies must be guided to a degree by international standards, it must also remain relevant to the skills, staffing and resources available locally. Where possible, appropriate evidence must be sought and appraised using standard appraisal methods. However, particularly in a high-risk specialty such as paediatric emergency medicine (where performing clinical research is fraught with difficulty), good quality evidence is not always available to inform recommendations. In such cases, best-practice guidance must be developed on the basis of the consensus of senior clinicians and invited experts. New evidence becomes available all the time, and guidelines thus need to be reviewed regularly and updated to reflect advances in training, medical knowledge, science and technology.

Large numbers of evidence-based clinical guidelines, guidance tools and clinical protocols, have been developed in the field of paediatric emergency care internationally and, to a lesser extent, locally. When developing local clinical guidance, pre-existing tools need to be evaluated in context for their local relevance, validity and applicability.

EC staff must have access to relevant clinical guidance 24/7/365. Staff should not have to search for guidance; all too often printed documents are safely locked away in offices or cupboards. Access should be ensured by various means, which can include both printed and electronic versions, with key guidance displayed on walls for easy reference in acute areas.

Staff should be trained regularly on clinical guidance, and notes should be routinely audited for compliance (see Chapter 9: Training).

DEVELOPMENT OF CLINICAL GUIDANCE

All clinical guidance needs to be developed through a centrally coordinated, peer-reviewed process in order to prevent the use of multiple, contradictory or outdated versions of such guidance.

EC clinical guidance can be seen as consisting of five main categories:

- **Symptom-based Guidance*** – most children present to the EC with undifferentiated symptoms such as fever, difficulty breathing or limp. Symptom-based (diagnostic) tools help to steer the clinician through a group of differential diagnoses towards the most likely cause of the child's complaints.
- **Management Guidance*** serves to guide the investigation, treatment, monitoring and disposition of patients for whom a likely diagnosis has been reached. More experienced clinicians may go directly to these.
- **Procedural Guidance** serves to assist with correct performance of procedures in the EC (e.g. lumbar puncture, intraosseous line insertion).
- **Process Guidance** serves to give information on how to follow EC processes properly (e.g. ordering CT scans out of hours, or ordering blood products or sending samples to an off-site laboratory).
- **Referral Guidance** deals with local referral pathways and how to follow them.

Symptom-based guidance should be linked to relevant management guidance. For example, difficulty in breathing can incorporate algorithms that direct the clinician to the pneumonia, bronchiolitis, asthma or croup guidance, as appropriate.

EC clinical guidance should aim to cover all the common clinical conditions as based on the local disease profile. In the Western Cape, diarrhoea and vomiting, breathing difficulties, fever and seizures are common paediatric presentations. They are often complicated by underlying malnutrition and/or immune suppression, and these factors must be taken into consideration in the design of clinical guidance. Poverty, overcrowding, lack of education or ability to understand care discharge instructions are also important elements that could affect whether a child can be safely discharged. As such, they, too, must be addressed as part of the guidance.

Further examples of paediatric specific guidance include: normal paediatric vital sign ranges; triage tools; pain assessment scales; children involved in major-incident planning; infection control; procedural sedation; and transfer policies. Non-accidental injury, child sexual assault child protection, mental health and death of a child in the emergency department are complex areas where good quality guidance is necessary to ensure the best care and service to children and their families.

EC clinical guidance should be specific for, and relevant to, the EC setting and must not assume higher levels of paediatric expertise or knowledge. EC clinical guidance must address the recognition and management of life-threatening symptoms (ideally using the standard ABC approach), as well as the stabilisation, ongoing monitoring and referral decision processes necessary to ensure effective patient care. Specific key points for the management in the first 4-6 hours after arrival in the EC need to be included. For example, what signs or symptoms should be looked for to monitor response to initial treatment; what investigations and observations should be done; and what referral options should be considered?

* These guidelines should be age-specific for conditions where age has a specific bearing on the differential diagnosis and management (e.g. fractures in the non-walking infant, or fever in babies under three months of age).

A standardised format (see Appendix B for an example) will help to ensure comprehensive coverage of the topic, allow clinicians to become familiar with the layout and make for ease of use. Ideally, the format should include a first page with an algorithm for easy reference or display, followed by a more detailed descriptive document which would include the steps and processes to follow in reaching a diagnosis or managing the condition. The guidance ideally should include references, evidence levels where appropriate, and a review date.

Chapter 8: EC Clinical Staffing for Paediatric Emergencies

Clare Davies and Andrew Argent

INTRODUCTION

The emergency centre (EC) is a high-stress, high-risk, rapid-turnover environment where undifferentiated patients of all ages are present at any hour with all manner of illnesses and injuries. It is essential, then, that this chaotic, demanding area is adequately staffed with appropriately trained personnel to ensure a safe, high-quality service to all patients, both adults and children. Calculating the ideal staffing numbers for ECs is difficult, but efforts must be made nonetheless to ensure that staffing is adequate to provide reliable care for patients and takes care to avoid overwhelming, exhausting and burning out staff.

Benchmarking in health care is a method of comparing one unit's practice with the best-performing unit in that field. The US Emergency Nursing Association (ENA) warns, however, that 'best performing' is not the same as a 'best practice'. They define best-practice staffing as 'that which provides timely and effective patient care while providing a safe environment for both patients and staff, as well as promoting an atmosphere of professional nursing satisfaction'. This definition can be applied equally to medical staffing.

STANDARDS

EC STAFFING STRUCTURE

103. The staffing structure of an EC must consist of a lead doctor and lead nurse who together guide a team of professionals assigned to work exclusively in the EC.
104. In mixed adult and paediatric ECs, there must be a designated nurse and doctor who act in an advocacy role for paediatric emergency care.
105. All EC staff must be appropriately trained to manage paediatric emergencies (see Chapter 9: Training).
106. All agency staff and locums must have the stipulated level of paediatric training if they are required to manage paediatric patients (see Chapter 9: Training).
107. Orientation to the EC must occur for any new staff member – whether permanent or temporary.
108. Staffing numbers must be appropriate for the design, workload and patient demographics of the EC and must be sufficient to ensure safe and efficient care of all patients
109. Due consideration must be given to ensuring an adequate staff skill mix when rostering and allocating staff to specific areas:

- 109.1. An appropriately trained person must be dedicated to triage of children (see Chapter 4: Triage).
- 109.2. An appropriately trained nurse/doctor team dedicated to the resuscitation of children must be identified for every shift. An additional member of staff dedicated to caring for the family during resuscitations is ideal.

DOCTOR STAFFING STANDARDS

110. If the WCG: Health medical staffing model (Appendix C) is being used to calculate EC doctor staffing needs, the formula must be adapted to reflect the longer time taken to assess and manage children compared to adults. The recommended time per paediatric patient by intensity is as follows:

Table 2: WCG: Health medical staffing model for time per patient

	Intensity		
	Low	Moderate	High
Minutes/patient	15	40	50

Source: WCG: Health Regional Hospital Medical Staffing Model (2010)

- 111. The senior on-call EC doctor must be available at all times for consultation by junior EC medical and EC nursing staff.
- 112. Specialist consultation must be easily and rapidly available should the need arise.

NURSING STAFFING STANDARDS

- 113. In mixed adult and paediatric ECs, both general and paediatric nurses must be employed, with the proportion of paediatric nurses reflecting the paediatric workload of the unit (see Chapter 9: Training).
- 114. In mixed adult and paediatric ECs, any paediatric nurse on duty must be allocated to work with paediatric patients as far as possible.

STAFF WORKING HOURS AND STAFF RETENTION

- 115. In high-turnover ECs, doctors' shift duration must not exceed eight hours. In low-turnover ECs, doctors' shift duration must not exceed 12 hours.
- 116. A maximum shift duration of 12 hours must not be exceeded for EC nursing staff.
- 117. The maximum number of consecutive 12-hour shifts worked must be limited for both doctors and nurses. This should be inclusive of overtime/agency shifts.
- 118. Safe staffing standards must be maintained at all times, including when staff are on leave or away on training.
- 119. A staff retention plan must be in place.
- 120. A proportion of non-clinical time must be allocated to clinical members of staff, depending on their role, the intensity of the clinical work and additional responsibilities.

RATIONALE

EC STAFFING STRUCTURE

Experience suggests that an EC is more efficient if the staff are allocated to work in the EC on a full-time basis. Staff are then able to gain familiarity with the EC systems, workload and environment and develop the group cohesiveness necessary for optimal functioning in this dynamic workplace. A senior doctor and senior professional nurse (PN) must be allocated to lead the EC team to promote strong interdisciplinary teamwork, ensure regular training, promote best-practice clinical guidance and see to it that continuous quality improvement systems are in place.

To maintain standards of care, any locum or agency staff must be approved and overseen by the senior personnel. No such persons should be allowed to work in the EC without prior proof of completion of the required paediatric training (see Chapter 9: Training) and a full orientation to the EC.

LEAD DOCTOR AND NURSE FOR PAEDIATRICS

The vast majority of ECs are mixed units seeing both adults and children. In addition to their overall lead EC doctor and nurse, these units must have a designated lead doctor and lead PN for paediatric emergency care to ensure that the needs of children are adequately considered. Specifically, their roles include ensuring that:

- All staff have undergone the required training for emergency management of children as outlined in Chapter 9: Training.
- Paediatric cases and topics are discussed at educational meetings (see Chapter 10: Teaching and Education in the Emergency Centre).
- Best-practice clinical guidance and policies for emergency paediatric conditions are in place (see Chapter 7: Clinical Guidance).
- The EC is maintaining or working towards a child- and family-friendly environment (see Chapter 3: Child Rights and Child- and Family-Friendly Emergency Standards).
- Paediatric equipment and resources are available and up to date (see Chapters 13 and 14).

In regional and tertiary hospitals, the designated paediatric lead PN must have obtained a postgraduate paediatric qualification. At a regional level, the lead doctor must (as a minimum) have successfully completed advanced paediatric resuscitation (APR) training and should have at least six months of clinical experience in emergency medicine, paediatrics or paediatric emergency medicine. At a tertiary hospital level, the lead doctor must have completed specialist training in emergency medicine, paediatrics or paediatric emergency medicine and have completed APR training.

ORIENTATION OF NEW STAFF TO THE EC

Before they commence any clinical work, any new personnel must be orientated to the EC facility, the EC team and their own role within that team. This orientation must include:

- Clear information about their role and what is expected of them.

- The layout of the EC – If they are to be involved in resuscitations, they must have a comprehensive orientation to the resuscitation room and its equipment, supplies, systems and the like.
- An explanation of how the EC functions, including how it interrelates with essential services such as radiology, laboratories, pharmacy, and other specialties and wards within the same institution. An explanation of how the EC fits into referral pathways with local health facilities is also needed.
- An introduction to key members of the EC – and clarity on their line-management.
- An explanation of where to find the policies and clinical guidance of the EC (ideally this should be provided to staff members in advance of commencing their first shift so that they can familiarise themselves with it).
- Information about the ICAS system and how to access it if needed (see Chapter 11: Stress and Debriefing).

STAFFING CALCULATIONS

Determining the ideal number of medical and nursing staff required for the safe and efficient functioning of an EC is problematic as many complex factors have to be taken into account. Hospital in-patient wards often have strict entry criteria for the age, sex and type patients they admit, plus they have a limited number of beds and a predictable workload. The EC, by contrast, sees a huge variety of patients, from neonates to geriatrics with the full spectrum of potential conditions; many of these patients need urgent or immediate attention, and none of them are scheduled or expected. Because the EC must provide a 24/7/365 service, it has to adapt and become 'elastic', frequently expanding to accommodate patients numbers well in excess of available beds. The day-to-day workload of most ECs is highly variable and largely unpredictable.

There is no single universally accepted method for calculating ideal staffing of ECs. Some centres have opted for simple patient:staff ratios, whilst others argue vehemently that ratios do not take into account key variables such as length of stay in the EC, patient acuity and the level of emergency intervention required. Several different strategies for calculating EC staffing are outlined in Appendix D.

DOCTOR STAFFING

The medical staffing model of WCG: Health is outlined in Appendix C. This model assumes that adult and paediatric patients in the three intensity groups (low, medium, high) will take the same amount of a doctor's time. However, this is incorrect as all parts of the diagnostic and management process frequently take longer in children.

First, the history takes longer because it cannot be taken from the patient but has to come from carers, who, themselves must often try to intuit or guess at symptoms. In addition, it takes longer to examine a child in an EC than an adult since the child may be frightened and uncooperative. Similarly, any investigations, be they blood work or radiology, take significantly longer to achieve as children may have to be coaxed, restrained, distracted and/or sedated. Practical interventions such as siting intravenous lines, intubation, urinary catheterisation and nebulisation take considerably more time and skill, because they are simply more difficult to perform in children. Drug dose and fluid calculations must be done according to the child's weight, which requires additional time to look up doses, perform calculations and ensure the

dosages are correct. Most doctors working in ECs are less confident with paediatric emergencies and are more likely to need to consult and seek the advice of specialists or a senior before being able to complete a management plan.

For all these reasons, the recommendation is that the time periods in Table 3 are assigned to the different intensity categories for paediatric patients.

Table 3: Recommended time per patient by intensity group for children

	Intensity		
	Low	Moderate	High
Minutes/patient	30	60	120

SPECIALIST CONSULTATION

The EC senior doctor must be available for telephonic consultation by junior staff after hours for complex cases, problematic referrals or resource difficulties that affect safe patient care. The on-call roster must be up to date and readily available.

Access to consultation with a range of specialists both in-hours and after-hours is necessary for the smooth functioning of any EC. For paediatric cases, a wide range of specialties may need to be consulted, the more common ones being paediatrics, paediatric intensive care, anaesthetics, surgery, ENT, neurosurgery, orthopaedics, burns and dermatology. On-call duty rosters and contact details of all relevant specialists must be up to date and clearly displayed. Reliable systems must be in place to enable timely consultations to be held by telephone, at the patient's bedside or by means of transfer to another facility (see Chapter 6: Referral, Transfer and Transport).

NURSE STAFFING

With regard specifically to paediatrics, the ratio of specialist child nurses PN's to general PN's employed in the EC must reflect the percentage of children in attendance. At minimum, in a tertiary level hospital one paediatric trained PN must be on every shift, while at other facilities all PNs must know how to contact a paediatric-trained PN if child-nursing advice is required. When on shift, the paediatric-trained PN should be allocated to work with paediatric patients as far as possible. (See Chapter 9: Training for more detail about nurse training requirements.)

STAFFING OF TRIAGE AND RESUSCITATION AREAS

Within the EC environment there are a number of specific locations and roles that require the staff allocated to them to have particular skills, knowledge and experience. Triage is one such area. In terms of nurse staffing, it is essential that all nursing staff allocated to it have been formally trained and certified proficient in the use of SATS. Serious illness can present in unusual and subtle ways in children; as such, correctly identifying potentially sick children at triage requires good clinical acumen, which comes only with experience. Therefore, the most senior nurse available must be allocated to triage. This is not a role for a junior, student or inexperienced nurse. If these more junior staff are allocated to work in triage, they must always be supervised by a senior nurse (see Chapter 4: Triage).

Similarly, the resuscitation of children requires specific knowledge and skills. All EC clinical staff should be able to initiate paediatric basic resuscitation, and every shift must have at least one

person who is proficient at more advanced paediatric (see Chapter 9: Training). While this is not essential for CHCs and smaller district hospitals, in larger ECs with more than one doctor and a combination of general and paediatric nurses it is good practice to identify, within each shift, an appropriately trained doctor and nurse who will be the team-leaders for any paediatric resuscitation events. Ideally an additional member of staff should be allocated to support and update the family during the resuscitation of any critically ill or injured child.

SHIFT-WORK

The constant, hectic and intense pace of work of the EC makes it a stressful and tiring work environment. Under these conditions the maintenance of staff health and motivation is crucial. Chapter 11 outlines the standards pertaining to stress in the workplace, debriefing and the psychosocial aspects of staff health; the section below addresses the issue of staff working hours.

The EC must be staffed 24/7/365 and so shift-work for doctors, nurses and support staff is unavoidable. However, shift-work has been recognised to be strongly associated with many negative effects on physical and mental health. Depression, anxiety, fatigue, cardiovascular disease, gastrointestinal disorders and cancer have all been found to be increased in people working outside of the 'normal' eight-hour, Monday-to-Friday pattern. The EC in particular is an intense clinical environment, with one of the highest decision densities of any clinical area; it is also accompanied by constant multi-tasking and the likelihood of frequent interruptions. The need to be continuously attentive for an excessive number of hours is therefore likely to lead to both staff stress and fatigue. These factors, combined with tiredness and lack of sleep, can result in poor clinical decision-making and an increase in the likelihood for clinical errors and, ultimately, risks to patient safety.

➤ Hours

It is thus recommended that doctors working in demanding, intense, high-turnover ECs must not be required to work shifts longer than eight hours in duration. For those working in less demanding, low-turnover ECs, shifts of 12 hours must be the limit. If using a 12-hour shift pattern, it is essential to provide a portion of time away from direct patient care. To safeguard patient safety it is recommended that successive 12-hour shifts be limited, for example, to no more than three consecutive 12-hour shifts or no more than five consecutive eight-hour shifts. Since the work of a nurse is more likely to naturally facilitate a variety of clinical and non-clinical tasks, nursing shifts of a maximum of 12 hours are permissible, with the proviso that adequate breaks are given and ideally no more than three consecutive shifts are rostered. These standards are inclusive of overtime/agency shifts, and all doctor and nursing shifts should include adequate meal breaks.

To prevent additional pressure, the staffing standards must be maintained during periods of staff absence due to training or leave, and staffing must be augmented during times of seasonal peaks and unexpected surges or epidemics.

As outlined in Chapter 10: Teaching and Education in the Emergency Centre, all staff must be provided with on-duty time to attend the necessary formal training courses and more senior staff must be allocated additional time to conduct the following activities:

- supervision of junior staff;
- education of team members on paediatric topics;

- clinical administrative tasks;
- quality improvement activities;
- staff review processes; and
- provision of resources for paediatrics.

➤ ***Staff Retention***

Active consideration of staff well-being and fulfilment is likely to increase the stability of the EC workforce. A retention plan for the EC must be in place. This plan should demonstrate evidence of consideration of training needs, individual career paths, personal staff needs, the need for experience in other related clinical settings, and upcoming retirements.

Chapter 9: Training

Clare Davies and Andrew Argent

INTRODUCTION

Children present for emergency care with illnesses and injuries that can be very different to those of adults. Often the symptoms, signs and treatment plans are dependent on age and/or developmental level. Children almost never present to ECs alone, and so emergency providers must know how to communicate with and provide care and support not only to the children but their families as well. All EC staff must thus have adequate paediatric knowledge and skills (including communication skills) to ensure they are able to care for this group appropriately.

Despite the fact that children under the age of 15 years account for nearly 30% of South Africa's population, both undergraduate nurses and medical students spend very limited time learning about children or being on clinical placements in paediatric clinical areas. Emergency medicine is also not a standard part of either undergraduate nurse or doctor training. It is doubtful whether undergraduate training adequately prepares doctors or nurses for managing children, but it is even less likely that it equips them with the necessary skills and knowledge to handle paediatric emergencies confidently and safely.

In addition to knowledge and skills, effective teamwork is required to ensure the proper functioning of an EC environment. The relentless 24/7/365 demand for emergency care and the intense nature of the work dictates the need for shift-work, which results in frequent handovers and regular use of temporary agency staff and locums. Collective effort is therefore needed to ensure good teamwork and sound knowledge of one's role within the team and the wider EC system.

This chapter outlines the recommendations for the training of both nurses and doctors in ECs. (Training recommendations for EMS staff are addressed in Chapter 15: Standards for Emergency Care of Children in EMS.)

STANDARDS

PAEDIATRIC TRAINING

121. Both medical and nursing undergraduate curricula must contain sufficient paediatric and paediatric emergency training to permit high-quality basic emergency care to be initiated for paediatric patients presenting at any level of health care.
122. ECs must ensure that adequate numbers of nurses have received specialist paediatric nurse training as stipulated in Table 4.
123. ECs must ensure that adequate numbers of doctors have received advanced additional paediatric training as stipulated in Table 4.

TRIAGE TRAINING

124. All nurses must receive training in the South African Triage Scale (SATS) at a level suitable to their role and facility level as stipulated in Table 5.
125. All doctors must be familiar with SATS.
126. Attendance on a formal SATS training course must occur prior to or as soon as possible after commencement of employment in the EC.

RESUSCITATION TRAINING

127. All staff must receive paediatric resuscitation training at a level suitable to their role and facility level (see appropriate tables for more information).
128. All multi-disciplinary team members likely to be involved in paediatric resuscitation must attend paediatric resuscitation courses.
129. Formal resuscitation training must be repeated at least as frequently as required by the governing body for that qualification.
130. Attendance at a formal triage/resuscitation training course must occur prior to or as soon as possible after commencement of employment in the EC.
131. Team simulation training using paediatric scenarios must occur in every EC.
132. Adult-only ECs must also have the required skills and equipment to resuscitate a child.

COMMUNICATION AND TEAMWORK TRAINING

133. All staff must receive training in communication skills and teamwork.

FUNDING AND ATTENDANCE OF TRAINING COURSES

(See Chapter 10: Teaching and Education in the Emergency Centre.)

RATIONALE

PAEDIATRIC TRAINING

Training resources, time for training and funding are all limited in the public health system. Training should therefore be focused on the right people to ensure maximum results for the minimum effort and cost. Nurses and permanent doctors are usually the most static professionals in ECs, so it makes good sense to ensure they are as well trained as possible. Junior doctors rotate on a regular basis and hence often rely (at least initially) on existing nursing and permanent doctors' knowledge when working in a new department. Ensuring that nurses' and permanent doctors' training is up-to-date could hence make a significant difference to clinical outcomes.

➤ *Specialised Paediatric Training for Nurses*

The amount of time allocated to paediatrics in undergraduate training is not well documented. This is because the course curricula are designed to meet the requirements of South African

Nursing Council (SANC) general nurse registration, namely the components of general, community and psychiatric nursing and midwifery. It is reasonable to assume that paediatrics would be addressed in at least the midwifery and community components, but specific details are unavailable and probably vary between training institutions. From available information, it is estimated that both Professional and Enrolled nurses in South Africa spend less than 10% of their training time on paediatric-specific issues. Nurses thus qualify without an in-depth knowledge of how best to care for or communicate with children and their families. Increasing and improving the amount and level of paediatric nursing taught in undergraduate nursing programmes is therefore essential.

For those nurses working in environments that frequently see children, there is also a need to enhance their paediatric and paediatric emergency knowledge and skills at a postgraduate level.

Table 4: Postgraduate paediatric training recommendations for nurses and doctors in the EC

Facility level	Nurse training recommendations	Doctor training recommendations
24-hour CHCs and small district hospitals	At least one senior registered nurse in the hospital must have a postgraduate diploma in Child or Child Critical Care Nursing. This nurse must then act as a 'champion' for children across that clinical setting.	All doctors must have completed training in common paediatric emergency conditions and their management to a similar level as the Fundamentals of Emergency Care (FEC) training course for adult emergencies.
Bigger district and regional hospitals	At least one senior registered nurse in the EC must have a postgraduate diploma in Child or Child Critical Care Nursing. This nurse must then act as a 'champion' for children across that clinical setting.	All except the most junior doctors must have passed an advanced paediatric resuscitation (APR) course and have at least three months of experience in paediatrics or paediatric surgery if the hospital emergency department sees children. All supervisory doctors in the area must have completed specialisation in paediatrics, paediatric emergency medicine or emergency medicine.
Tertiary hospitals	One registered nurse per shift must have a postgraduate diploma in Child or Child Critical Care Nursing.	All except the most junior doctors in the EC must have completed at least six months of postgraduate experience in paediatric or paediatric surgery and have completed an APR course. All supervisory doctors in the area must have completed specialisation in paediatrics, paediatric surgery or emergency medicine.

To note:

- A 'champion' is described as the person who is responsible for ensuring that the needs of children and their families are recognised in the EC and that measures are taken for children and their families to receive the quality of care they deserve.
- The content of this training should include assessment and management of common paediatric emergency conditions, for example, respiratory (asthma, pneumonia, bronchiolitis), shock, gastroenteritis and dehydration management; convulsion protocols for children; hypoglycaemia; sepsis; neonatal emergencies; and trauma.

This training should focus on three aspects: clinical knowledge and skills; communication skills; and organisation skills. With respect to the EC, this would enable nurses to provide the most appropriate and timely care to children and communicate effectively with children, families and the multidisciplinary team. It would also facilitate the smooth running of an EC so as to ensure that children are transferred to the place most suited to their care needs in the shortest period of time.

However, a number of challenges exist. Countrywide, only four postgraduate and four post-basic paediatric nursing courses are on offer, and only one postgraduate paediatric critical care course. While there is a one-year postgraduate nursing trauma course, its focus is on adult trauma, with only two weeks allocated to paediatrics.

Increased nurse training is therefore required to improve the emergency care of children. The recommendations for such training are presented in Table 5 below.

Table 5: Triage and resuscitation recommendations for nurses and doctors in the EC

Facility level	Nurses' triage and resuscitation	Doctors' triage and resuscitation
24-hour CHCs and small district hospitals	<p>1. Basic Paediatric Resuscitation (BPR)</p> <p>All nursing staff must pass a basic paediatric resuscitation course.</p> <p>2. Triage</p> <p>All Enrolled Nurses (ENs) and Enrolled Nursing Assistants (ENAs) must pass a course in the SATS.</p> <p>All Professional Nurses (PNs) must pass a course in the SATS together with additional components of assessment and treatment (SATS-AT).</p>	<p>1. Basic Paediatric Resuscitation (BPR)</p> <p>All doctors must have passed a basic paediatric resuscitation course.</p> <p>2. Triage</p> <p>All doctors must be familiar with the SATS.</p> <p>3. Advanced paediatric resuscitation (APR)</p> <p>One senior doctor working in or covering the EC must have passed a course in APR.</p>
Bigger district and regional hospitals	<p>1. Basic Paediatric Resuscitation (BPR)</p> <p>All nursing staff must pass a basic paediatric resuscitation course.</p> <p>2. Triage</p> <p>All Enrolled Nurses (ENs) and Enrolled Nursing Assistants (ENAs) must pass a course in the SATS.</p> <p>All Professional Nurses (PNs) must pass a course in the SATS together with additional components of assessment and treatment (SATS-AT).</p> <p>3. Advanced Paediatric Resuscitation (APR)</p> <p>One senior PN working in the EC must pass a course in APR. This person</p>	<p>1. Basic Paediatric Resuscitation (BPR)</p> <p>All doctors must have passed a basic paediatric resuscitation course.</p> <p>2. Triage</p> <p>All doctors must be familiar with the SATS.</p> <p>3. Advanced paediatric resuscitation (APR)</p> <p>At least one doctor per shift must have passed a course in APR.</p>

	must act as the 'APR champion'.	
Tertiary hospitals	<p>1. Basic Paediatric Resuscitation (BPR)</p> <p>All nursing staff must pass a basic paediatric resuscitation course.</p> <p>2. Triage</p> <p>All Enrolled Nurses (ENs) and Enrolled Nursing Assistants (ENAs) must pass a course in the SATS.</p> <p>All Professional Nurses (PNs) must pass a course in the SATS together with additional components of assessment and treatment (SATS-AT).</p> <p>3. Advanced Paediatric Resuscitation (APR)</p> <p>One senior PN per shift must pass a course in APR, and one of these PNs must act as the 'APR champion'.</p>	<p>1. Basic Paediatric Resuscitation (BPR)</p> <p>All doctors must have passed a basic paediatric resuscitation course.</p> <p>2. Triage</p> <p>All doctors must be familiar with the SATS.</p> <p>3. Advanced Paediatric Life Support (APLS)</p> <p>All except most junior doctors must have passed a course in APR.</p>

To note:

- *'All nursing staff' includes enrolled nursing assistants, enrolled nurses and professional nurses.*
- *An 'APLS champion' is defined as a senior professional nurse who takes a particular interest on behalf of the emergency nursing team in ensuring that APLS guidelines are disseminated among the team and that the appropriate resources are present in the department to facilitate adherence to these guidelines.*
- *'All doctors' includes all doctors who work in the EC in a clinical role.*
- *SATS-AT covers basic assessment and initiation of treatment for airway, breathing, circulation, convulsions and severe dehydration emergencies in children, and is adapted from the WHO ETAT and its derivative, ETAT-SA.*

➤ **Specialised Paediatric Training for Doctors**

Paediatrics is a major discipline in all undergraduate programmes for medical students in South Africa. Content is not mandated. In particular, no standards are given for emergency care skills by the Health Professions Council of South Africa. A recent survey of content of paediatric curricula (A. Fourie, personal communication) demonstrated that paediatric resuscitation in some form is part of the curriculum in four of the six universities that responded to the questionnaire. Rotation through acute care settings is common, with some universities having an exit practical paediatric resuscitation exam.

Interns have four months of internship in paediatrics. During their internship they are encouraged to take resuscitation courses (including paediatric), but as no mandated course or curriculum for training exists, emergency care and exposure to acute paediatrics is likely to be variable. For recommendations regarding this training, see Tables 4 and 5.

TRIAGE AND RESUSCITATION TRAINING

Outcomes from paediatric cardiac arrest can be extremely poor, and every effort must be made to recognise as rapidly as possible children who are at risk. Once the child at risk has been recognised, timely and effective therapy must be instituted because it is known that this significantly decreases mortality and morbidity.

➤ *Standards for Triage Training*

Skilful triage is needed to identify critically ill and potentially seriously unwell children rapidly and correctly. The South African Triage Scale (SATS) is used in all ECs in the Western Cape, and training in it must be provided to ensure understanding and competent use. Table 5 provides information about recommended triage training for nurses and doctors in ECs.

➤ *Standards for Formal Resuscitation Courses*

In addition to triage training, health professionals working in ECs should also have received training in the resuscitation of children. Prior to the commencement of their employment, doctors are required to complete all resuscitation courses appropriate to the level of the facility. For nurses, these courses must be completed as soon as reasonably possible. Table 5 gives recommendations about the type of formal training nurses and doctors require at different facility levels.

The American Heart Association (AHA) and European Resuscitation Council (ERC) are the major global players in terms of resuscitation guidelines, and the majority of regional and national guidelines follow one or another of their guidelines.

Resuscitation methods, techniques and protocols must be reviewed with each update of the Paediatric and Neonatal Basic and Advanced Life Support Consensus on Resuscitation Science and Treatment Recommendations (CoSTR) released by the International Liaison Committee on Resuscitation (ILCOR). The next ILCOR consensus recommendations are due to be released in October 2015.

The AHA and ERC both use the ILCOR CoSTR updates as a basis for revising their resuscitation guidelines. However, it must be noted that there are often significant differences between the AHA and ERC interpretations of the ILCOR recommendations. This leads to variation between American- and European-orientated resuscitation guidelines. Notably, the Advanced Paediatric Life Support (APLS) course is based on ERC guidelines whilst the Paediatric Life Support (PALS) course is based on AHA guidelines. In South Africa, the paediatric and paediatric intensive-care fraternity is more aligned with the ERC interpretation ILCOR recommendations. In the interests of consistency, then, resuscitation courses in keeping with ERC approach are recommended.

➤ *Standards for the Structure of Formal Resuscitation Courses*

Whilst accredited international resuscitation courses such as APLS and PALS address key emergency paediatric conditions, they do not always adequately address the most common health conditions presenting to ECs locally (e.g. pneumonia, diarrhoea, malnutrition and HIV), nor are they designed for the practical conditions and challenges encountered in the public health sector of the Western Cape. It is therefore recommended that when these courses are taught, their content be adapted where possible to include local health concerns and context.

The development of paediatric resuscitation courses specifically tailored for the South African context should also be considered.

Many hospital paediatric resuscitations will involve multi-disciplinary teams comprising, for instance, anaesthetists, paediatricians, surgeons and intensivists. It is recommended that formal resuscitation courses are run with candidates from the full range of disciplines and specialties that may need to be involved in the resuscitation of children.

➤ **Maintenance of Resuscitation and Triage Knowledge and Skills**

When it comes to maintaining triage and resuscitation knowledge and skills, the phrase to keep in mind is 'use it or lose it'. Daily application of the triage system should ensure that practice is sharpened over time – but even triage knowledge and skills have to be refreshed regularly with formal training. Continuous quality improvement (CQI) measures must also be in place to monitor and evaluate the accuracy, timeliness and overall quality of triage (see Chapter 12: Patient Safety and Continuous Quality Improvement).

The frequency of paediatric resuscitations will vary from one setting to another, and this significantly affects the retention of resuscitation knowledge and skills. Research has shown that the retention of such knowledge and skills over time is poor unless frequent 'booster' training sessions are provided. As such, it is recommended that formal training courses must be repeated at the frequency indicated by the governing association. In the case of staff who have not been on approved resuscitation training courses, it is recommended that they complete such training as soon as possible after commencement of employment in the EC.

➤ **Simulation Training**

It is recommended that every EC conduct regular team simulation training using paediatric resuscitation scenarios. Training simulations should be held in the EC's own resuscitation environment on daily, weekly or monthly basis and involve the attendance and participation of the entire clinical EC staff team.

It is important that the simulations be made as realistic as possible. Thus, they should be run in real-time, with staff putting monitors on a mannequin, fetching equipment and drugs, applying oxygen, siting intravenous lines (which can be done into fake arms or rolled towels) and the like. The team must also formally calculate, draw up and administer medications and fluids as they would in a real resuscitation. Doing so will facilitate learning by bringing to light areas of weakness in the team's knowledge; it will also help to identify problems and pitfalls in the availability of key medications and equipment.

The team simulation training exercises are recommended for a number of reasons:

- Adult learners retain information best when learning is active, participatory and occurs in the real world of the learners.
- The exercises allow resuscitation skills to be practised and thus not forgotten through lack of use.
- Errors can be made and learned from in a safe and supportive environment.
- The exercises provide staff members with the opportunity to learn the location of equipment and medications that are frequently required in a resuscitation situation.
- Any missing, wrongly stored or hard-to-find items can be highlighted and changes made to ensure smoother running of real-life resuscitations.

- By practising together, the team is likely to become more cohesive, efficient and confident when under the stress of a real resuscitation.
- The exercises can be used as a quality-improvement measure.

Adult-only ECs: In an emergency it is known that parents and carers of sick children will often take their child to the nearest health facility irrespective of whether it is designated for adults only. For this reason, staff working in adult-only ECs must have the required knowledge and skill to be able to resuscitate a child. It is even more important for these ECs to refresh their paediatric resuscitation skills regularly through the use of team simulation with paediatric scenarios, since they will not be frequently required to use their skills on actual patients.

COMMUNICATION AND TEAMWORK TRAINING

Communicating well is vital when engaging with children and their caregivers, but the ability to do this does not come naturally to everyone. Training and practice in communication skills is therefore crucial.

The EC is a demanding, chaotic environment in which effective multidisciplinary teamwork is key to providing high-quality care. To ensure such a level of team functioning, all staff need to be able to communicate well and conduct themselves professionally. In particular, good interpersonal, time-management and conflict-resolution skills are essential. Whilst these skills are now being taught in undergraduate training, often they can only be mastered when it becomes possible to apply them in practice. Further training in these areas is thus always beneficial.

FUNDING AND ATTENDANCE OF TRAINING COURSES

(See Chapter 10: Teaching and Education in the Emergency Centre.)

Chapter 10: Teaching and Education in the Emergency Centre

Michael Hendricks

INTRODUCTION

Teaching and education about paediatric emergencies play a key role in saving children's lives, reducing morbidity and ensuring optimal emergency management. We can enhance the chances of achieving these outcomes by means of ongoing teaching and supervision based on adult-learning principles that are capable of being applied even within busy paediatric emergency centres. This chapter outlines the main recommendations for education and teaching related to paediatric emergencies and then explains the rationale for them.

STANDARDS

UNDERGRADUATE AND POSTGRADUATE TEACHING

134. Teaching in paediatric emergency care must be included in all nursing and medical undergraduate curricula.
135. Teaching in paediatric emergency care must be included in paediatric, emergency medicine and family medicine registrar curricula.

CONTINUING STAFF EDUCATION IN THE EC

136. Regular EC staff teaching must include:
 - 136.1 clinical topics relevant to the emergency care of children in the Western Cape;
 - 136.2 clinical skills necessary to provide paediatric emergency care;
 - 136.3 non-clinical skills necessary to work in an EC (e.g. communication with children and families); and
 - 136.4 simulation team training using paediatric scenarios in the EC.
137. A structured emergency teaching programme including at least 25% paediatric emergency topics must be established.
138. Continuing staff education must include the full EC clinical team.
139. Paediatric emergency cases must be discussed at regular departmental mortality and morbidity meetings.
140. EC education leaders must be creative and flexible about how best to achieve learning in the EC environment.

THE ROLE OF HEALTH-CARE PROFESSIONALS AS TEACHERS

141. A lead person must be designated to organise and run the EC teaching programme.
142. Senior staff must be allocated a portion of non-clinical time in which they teach and supervise junior members of staff.
143. Health-care staff in positions requiring them to teach regularly must be facilitated in gaining formal education training.

FUNDING AND ATTENDANCE OF TRAINING COURSES

144. All staff must be permitted adequate paid time to attend stipulated training courses.
145. The cost of the stipulated training courses must be covered by the employer, with the understanding that failure to attend the course without reason will result in disciplinary measures.
146. Managers must request and be supplied with proof of course completion from the staff members on their return to work.
147. Safe staffing standards must be maintained at times when staff are attending training.
148. Community education must be provided about simple life-saving measures.

RATIONALE

UNDERGRADUATE, POSTGRADUATE AND IN-SERVICE TRAINING

➤ *The Need for EC Training in Paediatric Emergencies*

It is recommended that teaching in paediatric emergencies be provided to medical students and all nursing students (professional, staff and assistant nurses). In addition, all registrars and all other medical staff who regularly come into contact with children in ECs must be appropriately trained in paediatric emergencies.

In South Africa, however, many ECs are staffed by community service doctors and interns who lack paediatric emergency knowledge and clinical skills and who would benefit from additional teaching and training. Studies done in developed countries show that medical errors are a significant cause of morbidity and mortality; they also show that, through continuous academic teaching and feedback, EC staff can be encouraged to implement evidence-based guidelines and improve the quality of care they provide.

In ECs, staff require a range of skills and knowledge to provide care to children effectively. Non-clinical skills such as communication skills enable staff to establish rapport, take a good clinical history, provide information and demonstrate desirable attitudes like caring, empathy, honesty and a non-judgmental approach. Staff also need to be equipped with skills to undertake a skilful clinical examination and apply procedures such as basic and advanced airway and ventilation, intravenous and intra-osseous access, lumbar punctures, venepuncture and sterile urine-sample collection techniques. Refresher training is essential for maintaining knowledge and skills in paediatric resuscitation and emergency care.

➤ **Suggested Clinical Topics**

The International Federation for Emergency Medicine provides an outline of the clinical topics that should be included within paediatric emergency education. The topics described (see Figure 1) are relevant to both medical and nursing staff, but the depth of information taught in each case should be tailored accordingly.

Figure 2: The International Federation for Emergency Medicine's suggested clinical topics for inclusion in paediatric emergency education

International Federation for Emergency Medicine core clinical teaching topics:

- The differences between normal children and adults with regard to their physical, physiological and psychosocial characteristics.
- The changes in these characteristics with the child's age.
- Child-specific diagnoses (e.g. bronchiolitis, intussusception, congenital abnormalities) presenting as emergencies, and diagnoses that present in different ways (e.g. urinary tract infection).
- The method of initial assessment and management of all children who present to their local workplace.
- Common illnesses and injuries (serious and minor).
- Identification of potentially seriously ill children.
- The management of children in terms of using different sizes of equipment and administering smaller dosages of medications and fluids, which often involves calculations.
- Child- and family-centred care.
- Medico-legal factors involved when assessing and managing children, such as consent and refusal to treatment, confidentiality and parental responsibility.
- Knowledge of child protection issues, the recognition of risk factors for child abuse and actions to take if these are identified.
- Primary prevention of paediatric illness and injury, which can be highly effective and important at a young age (e.g. promotion of healthy diet in children; having an active lifestyle; using safety devices like child car-seats and bike helmets; prevention of drug abuse; shielding children from harmful images in the media).

Furthermore, a number of additional clinical topics are recommended in order to ensure that teaching and education are relevant to the local child health profile. For example:

- Identification and management of children with malnutrition, TB and/or HIV.
- The assessment and management of children with local priority conditions like pneumonia and gastroenteritis.
- Local clinical guidance (see Chapter 7: Clinical Guidance).
- Local referral criteria and pathways (see Chapter 6: Referral, Transfer and Transport).

➤ **EC Teaching Methods**

The EC is a busy and chaotic environment, so teaching will always be a challenge. EC education leaders will need to be creative and flexible in achieving the best learning possible under their differing circumstances. The following teaching methods could be used in combination for furthering staff education in the EC:

- **Regular EC education meetings** (e.g. case discussions, journal clubs, M & M's, invited speakers).
- **Short, focused clinical teaching** (e.g. on symptom-oriented, radiology- or lab-result-based skills and procedures). To capture the largest attendance possible, teaching sessions can be scheduled to take place regularly at opportune periods such as shift overlaps or handover times, but given that these are by nature busier times of day, the teaching must then be quick and focused.
- **Opportunistic bedside teaching** (e.g. clinical signs, demonstration of procedures). These impromptu lessons cannot be planned in advance, but standardised processes or templates such as the 1-minute Preceptor can be very helpful.
- **'One-minute-Wonderboards' or a 'Hot-topic of the Week'**: simple yet relevant teaching points (e.g. a missed fracture on an x-ray, a supraventricular tachycardia on an ECG or a common diagnostic dilemma) can be conveyed by placing display boards in highly visible places in the EC such as the staff tea-room, the doctors' room or the main workstations.
- **Simulation teaching**, which is useful for team work and leadership (see Chapter 9: Training).
- **E-learning and the use of online resources**

THE ROLE OF HEALTH-CARE PROFESSIONALS AS TEACHERS

It is often assumed that health-care staff working in the clinical environment are able to teach clinical skills and knowledge effectively. This, however, is an assumption and may not be the case. Health-care staff in positions in which they are required to teach regularly must be facilitated in gaining formal training in education. They need skills and knowledge in *how* to teach so that their valuable experience and expertise can be passed on properly to others.

There are various ways in which this can be achieved, including:

- funding for and time to attend courses that teach health-care professionals how to teach;
- guidance in how to prepare lectures and conduct small-group discussions;
- guidance in how to evaluate and provide feedback on educational activities;
- access to useful educational resources; and
- guidance in how to develop and coordinate paediatric emergency education programmes.

FUNDING AND ATTENDANCE OF TRAINING COURSES

In order to maintain staff knowledge and skills and thereby ensure patient safety, the funding and provision of time to attend the stipulated training becomes the responsibility of the employer. An employer, however, can reasonably expect that individual staff members who have been granted the opportunity to attend training will indeed do so and participate actively in it. With financial constraints being the norm in the public health system, it is disheartening to hear of occasions when staff do not attend or engage in courses, especially so when a fee has already been paid. It is therefore considered reasonable that any staff member attending training must be required to provide proof of completion on return to work, and that those failing to attend must expect disciplinary measures.

An additional measure that could help to increase participation and learning during training courses is the requirement for staff either to contribute a small amount towards the cost of the course or disseminate their knowledge formally on their return. Furthermore, to ensure that newly gained knowledge and skills are not lost, the EC that funded the training could create the obligation that staff remain employed by it for a set period of time after the course has been completed.

For staff members left behind whilst others attend training courses, there is the very real challenge of maintaining high-quality care with reduced numbers. In the public health sector, it is common that staff members are not replaced on the roster when attending training; those remaining are then required to accept the additional workload, a fact which may lead to unsafe patient care. In highlighting this potentially risky situation, it is strongly recommended that safe staffing standards must be maintained at all times irrespective of whether staff are absent due to training commitments.

COMMUNITY EDUCATION

Community education could have considerable impact and should be aimed at groups such as schoolchildren, teachers, church groups and staff at crèches. Among the topics which could be taught at community level are basic first aid (including burns management), choking child manoeuvres, injury prevention, recognition of the sick child and principles of oral rehydration therapy.

Chapter 11: Stress and Debriefing

Heloise Buys

INTRODUCTION

Death or severe illness in a child is a devastating event for all concerned, and it is never easy to deal with in the emergency setting. Emotionally, this event tends to be much more traumatic to staff and family alike than the death of an adult. Emergency Medical Services (EMS) and EC staff need to be able to cope with repetitive intense exposure to illness, trauma and the grief and anguish of bereaved families; what is more, they need to be able to deal with their *own* emotions as well.

STANDARDS

149. A designated counselling/debriefing room must be available.
150. Every EC must have a standard operating procedure on how to facilitate family presence at resuscitation and how to support families whose children have required resuscitation.
151. There must be 24-hour access to a social worker, and social workers' duty rosters must be on display in the unit for easy reference.
152. All health-care institutions must have a written policy on how to manage stress in the workplace.
153. During their EC orientation all new staff should be made aware of how to access the free 24-hour Independent Counselling and Advisory Services (ICAS) support service provided by the provincial Department of Health.
154. A culture of mutual psychological support must be encouraged
155. Institutional budgets must ensure employee-wellness support services are provided.
156. Signage in key areas must indicate how the support service can be contacted and accessed.
157. Line managers must be trained to recognise and manage staff members displaying stress and know how to deal with, support and monitor the impaired members in a confidential and professional manner.
158. Personnel must be offered training/guidance in 'how to break bad news'.
159. Following any critical paediatric events, both doctors and nurses must have access to the district paediatrician (or professional of equivalent level) for feedback and support.
160. After each major resuscitation/unusual event a team debriefing session with or without support from a counselling team should follow automatically.

RATIONALE

THE EMOTIONAL NEEDS OF THE CHILD AND FAMILY

➤ *Family-Witnessed Resuscitation*

Family-witnessed resuscitation has become accepted in many EC settings, and whilst the anguish of these events may be extreme, it is felt that this exposure leads to better family emotional recovery. The family members should be briefed and supported by a designated member of staff, and explanations of the measures being undertaken can be given as events unfold. Families' grief reactions may vary but they should be anticipated so that alternative debriefing arrangements can be made if they appear to be adversely affecting resuscitation efforts.

Furthermore, in the case of children with terminal illnesses, support from the Palliative Care Team provides invaluable assistance in making them comfortable in the late phases of their illness. The team would also assist the family in coming to terms with the outcome, and may be equally beneficial in helping staff members deal with their own grief.

➤ *Supporting Grieving Family Members in the Emergency Setting*

There is no easy way to break bad news, but it should be given compassionately and with honesty. It is always best to have both parents present and to gauge their knowledge and understanding so that the level of the discussion can be adjusted accordingly. Medical jargon should be avoided and time and allowance made for each family to deal with the news. Family support systems should be identified and activated; time and empathy are good investments.

➤ *Protecting the Child in the Health-Care Environment*

Sick children and their families need policies to ensure their mental health and well-being are not adversely affected by their time in the EC (see Chapter 12: Patient Safety and Continuous Quality Improvement). In addition, children need protection to ensure that their experience in health-care facilities is dignified and specifically catered for by measures such as paediatric-trained staff, appropriately equipped ambulances, designated and child-friendly areas kept separate from adult areas, and appropriately kitted emergency rooms and admission suites (see Chapter 3: Child Rights and Child- and Family-Friendly Emergency Standards). Every aspect of their care should conform to their rights under the Children's Act.

THE EMOTIONAL NEEDS OF EC STAFF

➤ *Workplace-Related Stress*

Frequent exposure to death, illness and injury can engender deep compassion amongst EC staff, but it must also be recognised as a huge contributor to the emotional stress felt by health-care workers. Addressing the stress experienced within the emergency setting has not been part of the ethos in the emergency care package – and this needs to change.

The sadness and anguish felt after such events are normal and should be acknowledged: expressing sadness and distress should not be seen as weakness of character but a part of the healing process. It is important that health-care workers do not repress or downplay their

feelings, because often this can lead to compassion fatigue and dysfunction in one or more areas of a person’s life; it could also result in an inability to function professionally as well as to provide patients or colleagues with emotional support. In addition, feelings of guilt may arise, especially later during the M & M process when modifiable factors are inspected.

➤ **What is a Normal Grief Reaction in the Workplace?**

While feelings of grief are normal after traumatic experiences, they may develop into extreme negative experiences if they become controlling or overwhelming and interfere with normal physical well-being and thinking. The difference between a normal grief reaction and a pathological one needs to be recognised – in both cases a managing and coping strategy should be sought. Staff members need to be able to recognise abnormal stress-reaction in themselves and in their colleagues.

➤ **Dealing with Stress**

Stress can be dealt with at two levels: individual or institutional. The risk of exposure to stress within the emergency services is high. It is important for managers to have procedures in place that ensure their staff are protected from inevitable work-related stress. Each frontline staff member should be made aware of how to recognise the spectrum of feelings and emotions that represent the response to work-related events. They should be aware, for example, that it is normal to feel distressed and very sad under certain circumstances, but also be able to recognise when these feelings start to have unhealthy impacts.

Figure 3: Recognising signs and symptoms of work-related stress

Psychological	Physiological	Behavioural
<ul style="list-style-type: none"> • Feelings of numbness • Despair • Guilt • Depression • Social withdrawal • Lack of interest • Emotional lability • Marital disharmony • Callousness – towards self, colleagues and family 	<ul style="list-style-type: none"> • Headache • Heart disease • Hypertension • Palpitations • Sweatiness • Weight loss or gain • Post-traumatic stress 	<ul style="list-style-type: none"> • Absenteeism • Burnout • Substance abuse

The effects of traumatic events and repetitive exposure are cumulative and may impact negatively on personal and interpersonal relationships in the individual’s work and family environments. Likewise, for health-care staff working in the pre-hospital setting, the horrors of trauma/non-trauma scenes involving both adults and children will impact on individual workers in somewhat different ways and manifest in physical, behavioural and psychological ailments that may include:

- **Violence against staff:** In certain community settings health-care staff may experience unfair and unjustified abuse by patients and their families. The abuse may be verbal or physical, and it is expected that there are institutional systems in place to deal with it.

Managers should work hard to make the workplace a 'zero-tolerance zone' for all forms of violence, whether physical or verbal. Steps should be taken to ensure that all safety policies are fully operational. Any events or incidents should be properly reported and addressed, with there being immediate follow-up through the provision of support and the review of preventive strategies.

- **Additional institutional factors:** Other factors adding to the stress burden of health-care workers include excessive workload, inadequate staffing, inadequate training, long hours, shift-work, repeated exposure to difficult family demands, lack of support systems and poor communication. To counter these effects, measures must be put in place by the institutional management to support its workforce (see Figure 3).

Figure 4: Strategies to counter the effects of work-related stress

- Setting achievable goals
- Providing adequate staff-patient ratios
- Providing adequate resources
- Adequate training
- Orientation of new staff regarding code of conduct and professionalism
- Communication, conflict-resolution and time-management training must be offered for all EC staff
- Awareness training on the hazards of work-related stress
- Adequate staff safety and security
- Protection from occupationally-acquired diseases, some potentially lethal
- Adequate time off
- A designated relaxation/tea room
- Structural designs that let in more natural light and reduce noise levels

In addition, the Saakvitne and Pearlman '**A-B-C**' approach may be useful in the management of stress:

- **A** denotes Awareness of self and relates to one's acknowledgement of the signs of personal mental strain.
- **B** denotes maintaining the Balance of work, living, play/relaxation and sleep; it is essential that individuals strive for balance and perspective.
- **C** denotes Connection with colleagues, family and friends as powerful support systems. Every health-care worker should have a Coping strategy
- **D** might be added to this model to denote Debriefing. Despite the paucity of well-conducted clinical trials, it is generally agreed that properly conducted debriefing may offer benefit to EC workers. This process allows not only for defervescence but also reflection and integration of the stressful event into a valuable learning experience.

After each major resuscitation or unusual event a team debriefing session, with or without support from a counselling team, should follow automatically. There should be no hesitation in seeking professional help when it is needed (e.g. from ICAS). Institutional policies should also reviewed in order to improve working conditions or protect staff. In this regard, examples of measures that could be implemented include:

- access to on-site staff wellness programmes (e.g. BP, POC blood tests, gym facilities, yoga classes and massage services);
- periodic health-risk assessment questionnaires, which may help make employees aware of their stress levels and lead them to take self-preservation measures;
- access to on-site staff health services: in previous days GP services were provided, which reduced absenteeism because staff could attend to their health issues on site;
- team-building ventures to allow avenues of 'play' as a form of stress-prevention;
- positive-feedback sessions;
- refresher training on techniques of professional behaviour, particularly regarding interactions with irate clients; and
- where possible, shifts structured with periods of non-clinical tasks, which may offer relief from burnout.

➤ **Debriefing Procedures**

Family and staff debriefing can be done with individuals or groups. With group debriefing, it is useful for staff members to process their experiences of the traumatic event with other members of the same team or shift and support each other under the guidance of an empathetic facilitator. The timing of the debriefing process should be considered carefully. It ought to occur when the staff member is ready, but not too soon after the event: 48 to 72 hours afterwards (rather than within the first 24 hours) may be ideal. Inadequate and insensitive debriefing can be harmful and should never be enforced. Debriefing should also be culturally sensitive.

Proper inspection of and reflection on the traumatic event helps to verbalise sadness, fears and feelings of guilt. Staff members may have a need to talk through certain aspects what happened, particularly since there is always a likelihood that some will believe matters could have been handled differently (and better). The goal is ultimately to allow emotions to stabilise and normalise so as to avoid the build-up of long-term stress.

The therapeutic process of debriefing usually involves a structured approach:

- Identification of the incident.
- Reactions: Insight into what happened is often gained once the staff involved express their reactions and emotions.
- Analysis of the situation is undertaken in a respectful and sensitive manner, with the facilitator identifying gaps and the reasons for them. This phase of the debriefing involves feedback, reflection and discussion.
- A summary concludes the session; this phase often commences by asking what modifiable factors exist and what could be done differently.
- Resources and literature should be provided where appropriate.
- Arrangements for further support should be offered.
- Support and feedback following a critical paediatric event are also crucial to ensuring staff well-being. Both nurses and doctors may want to clarify their understanding of aspects of the event, reflect on decisions that were made and discuss the eventual outcome. In doing so, EC staff members may be better equipped in the future when faced with a similar event. Line managers are in a natural position to provide such

support, but in some instances they may be unable to assist or an additional contact person is required. The district paediatrician is regarded as being in the best position for this role.

Sadly, critical illness and death in children is something that will be seen in our ECs. Even in the face of frequent experience of trauma and stress, we must aim for professional service delivery with compassionate family support. EC health-care workers at all levels face high levels of stress that may lead to mental, behavioural and physical problems. The individual and institutional interventions outlined above will be of considerable benefit to patients, families and EC staff.

The onus is on institutional management to recognise its responsibility to provide support and set out standard operating procedures for the promotion and management of the mental well-being of its workforce, with the ultimate goal being to render better care for children. Additionally, each component of the paediatric emergency service should have a mechanism for dealing with grief and debriefing family members. Individuals, too, need to identify and utilise their personal coping strategies.

Chapter 12: Patient Safety and Continuous Quality Improvement

Baljit Cheema

INTRODUCTION

The emergency centre (EC) is among the most unpredictable and error-prone environments in any hospital, and has been likened to a 'natural laboratory for error'. As such, the adoption of Patient Safety concepts and Continuous Quality Improvement (CQI) methodology is a non-negotiable aspect of improving emergency care. Children are particularly vulnerable to being victims of errors and sub-standard care in ECs, and this chapter outlines a number of patient-safety measures and core CQI concepts that will help to safeguard them.

STANDARDS

PATIENT SAFETY

161. All EC staff and management must be made aware of the propensity for error in ECs so that they can help to recognise, reduce and mitigate the effects of errors.
162. EC staff and management must identify patient-safety priority areas for paediatric patients and implement improvements.
163. Regular data must be gathered on key quality and safety indicators – these must include paediatric indicators.
164. There must be a reliable way of keeping track of all children in the EC.
165. An escalation policy must be in place if children are waiting longer than permitted by their triage category.
166. Handover:
 - 166.1 When handing over patients, all emergency staff (including EMS, nurses and doctors) must communicate so as to promote continued best-quality emergency care and protect patient safety at all times.
 - 166.2 At shift changes, both nursing and medical staff must communicate about every child present in the EC, even those waiting to be seen.
 - 166.3 Handovers must be standardised so that all key information is passed on.
167. Shift-work:
 - 167.1 Staff must not work prolonged hours (see Chapter 8: EC Clinical Staffing For Paediatric Emergencies).

- 167.2 Shift patterns must take account of new scheduling patterns that are considered to be less detrimental to staff well-being and performance.
168. Paediatric-specific medication safety measures such as age/weight-appropriate dosing schedules and/or paediatric drug-dose calculators must be in place.
169. All paediatric drug doses administered in the EC must be checked by a second trained professional (doctor or nurse).
170. Infection control measures in keeping with national and international standards must be adhered to in ECs (e.g. strict hand-hygiene, safe distance between patients, separation of infectious patients).
171. The EC environment must be 'child-proofed' in terms of safety in all areas where mobile children may be seen (see Chapter 3: Child Rights and Child- and Family-Friendly Emergency Standards).
172. Paediatric beds in the EC:
- 172.1 Children triaged as Orange category must be taken to a Majors bed.
- 172.2 Child-patients must not share beds or stretchers in ECs or ambulances.
- 172.3 Carers must not be expected to hold children or babies in their arms for longer than two hours – if they are waiting longer than this, a safe, age-appropriate option must be provided on which the child can lie down.
- 172.4 It is unacceptable for children or babies to be placed on blankets on the floor.

CQI

173. All ECs must have an operational CQI programme in place to provide ongoing monitoring of quality of care and compliance with patient-safety standards.
174. Policies for reporting, evaluating and learning from critical incidents, medication errors and other patient-safety events must be in place.
175. All ECs must hold monthly Mortality and Morbidity meetings.
176. The Child Healthcare Problem Identification Programme (ChildPIP) must be used to analyse any child deaths in the EC.
177. Paediatric patient chart reviews must be conducted regularly to evaluate actual clinical practice and adherence with clinical guidelines and standards.
178. Telephone referrals:
- 178.1 The receiving-centre should maintain a logbook or database of all referral calls from local facilities.
- 178.2 A senior doctor must review the logbook/database regularly. Statistics from the logbook/register should be collated and presented at monthly mortality and morbidity meetings.

RATIONALE

PATIENT SAFETY

➤ *Error in the EC*

The EC lends itself to the study of error, as there are so many possibilities for it. Current thinking about patient safety emphasises that most adverse events are the result of inherent or 'latent errors' in the system. These so-called 'accidents waiting to happen' are also known as 'blunt end' factors and stand at the opposite end of the scale from the individual at the 'sharp end'. By implication, the staff member who makes the mistake that leads to the 'active error' should not be held solely accountable for it or singled out for 'naming, shaming, blaming and retraining'. This will not address the underlying circumstances that allowed the error to occur in the first place, and will also deter staff from coming forward in the future.

One way of 'error-proofing' our ECs is for all EC staff to become 'error literate' – that is, they need to be trained to recognise and contain error as well as understand error-producing conditions like fatigue and biased thinking. All EC staff must also know the importance of reporting errors so that systems can be improved to prevent further mishaps. Crucially, staff must be able to trust that reporting errors will not land them in trouble.

Figure 4 (see overleaf) shows a process map of potential sources of error common in most ECs. The overall process is presented as a linear model. Generally, green nodes are individual and red nodes, systemic. Sources of error may occur in parallel or at multiple stages in the sequence, they often overlap with each other, and/ or are additive in their overall effect on patient safety.

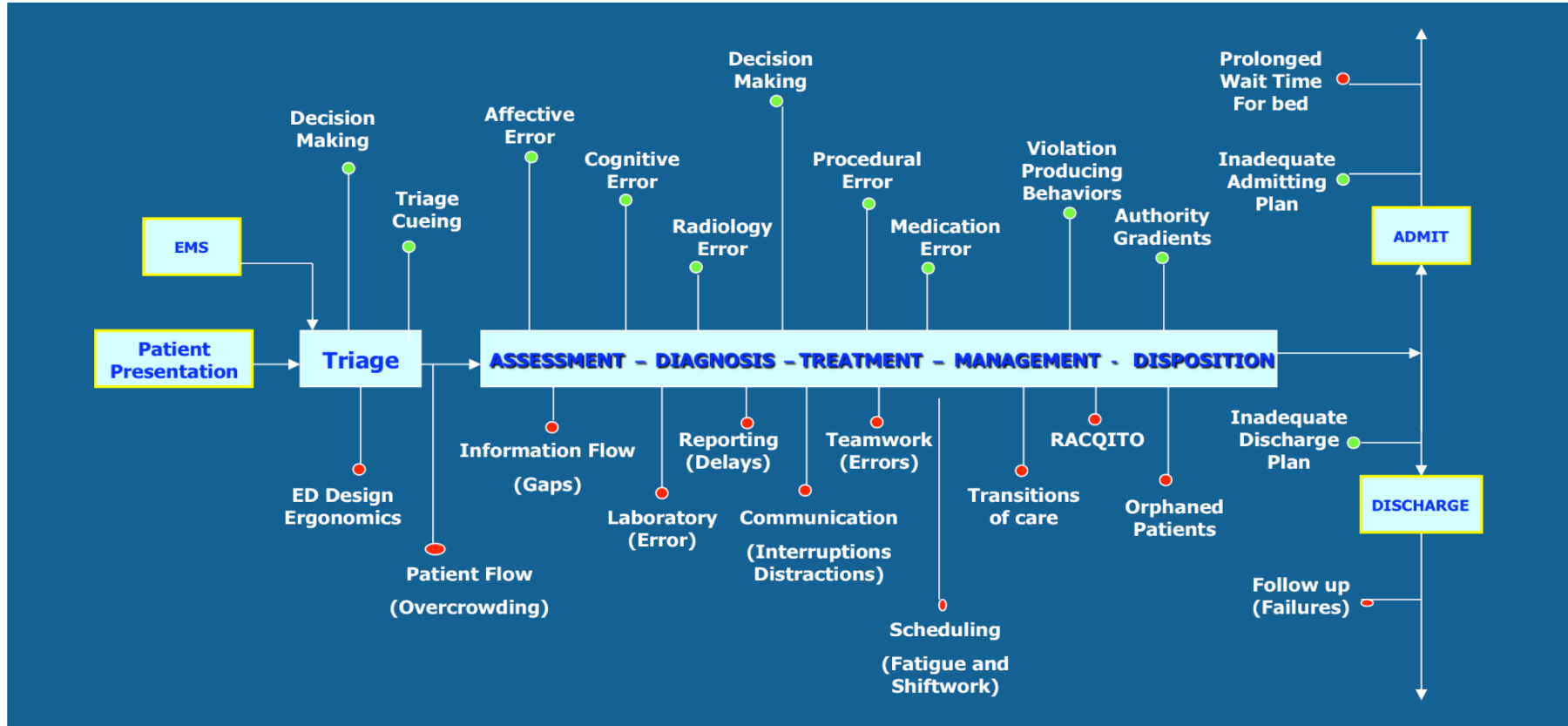
➤ *Patient-Safety Mindset*

Emergency medicine patient-safety work has been informed by lessons drawn from so-called High Reliability Organisations (HROs) such as the aviation industry, nuclear power plants and aircraft carriers. These are similarly high-risk environments with considerable potential for error – yet they consistently perform reliably and safely.

Numerous analyses of HROs' key strengths point to a set of attitudes and practices that empower and rely upon all staff to work as a team, with emphasis on good communication and error identification and containment. HROs recognise that 'to err is human' and therefore build safety systems that rely not on any particular individuals but rather on teams working in highly structured and safe ways with multiple in-built safety-nets. These organisations strongly encourage reporting of any actual or potential hazards, a practice which is supported by fostering of a blame-free culture.

Concepts and tools such as 'Lean Thinking' from the motor industry have become increasingly popular and widely accepted as useful in improving health-care quality and safety. Inspired by Toyota Production Systems, Lean Thinking focuses on eliminating waste and improving value for the customer through the joint efforts of all staff, but it is led in particular by ideas and innovations from frontline employees.

Figure 5: Process mapping of sources of error in the EC



Source: Crosskerry et al. (2009) *Patient Safety in Emergency Medicine*.

In these new systems, improvement is understood as hinging on 'respectful interacting and heedful interrelating' with all levels of staff – most crucially with frontline staff, who are most likely to know where and why things go wrong and how best to put them right. However, in less evolved systems, frontline staff are usually the last to be consulted but the first to be blamed when things go wrong.

The practice of 'name, blame, shame and retrain' is all too common in health-care systems. Understandably, it results in employee mistrust and a desire to keep quiet about actual or potential errors. In contrast, HROs and Lean Thinking place shop-floor workers at the heart of any improvement processes and promote an atmosphere of trust, openness and honesty that encourages all staff to work together to improve the system.

➤ **Reliable Data**

It is often said that 'numbers drive change' – but what numbers are we talking about? And why, when we are so busy with clinical work, must we collect them? Reliable facts and figures about our own local environment help to demonstrate the work that we do and the burden under which we do it. Important paediatric numbers include: numbers of children seen; the children's ages, presenting problems, triage categories; the time taken to be seen by a doctor; and how long it takes before key medications are given. These numbers allow us in turn to advocate for resources as well as to prioritise the most pressing problems and plan local solutions.

Given the opportunity, frontline workers often will be able to suggest simple adjustments and alterations in the way things are done that can help 'unblock' the worst delay-points (bottle-necks) and bypass or alleviate all kinds of unnecessary hindrances. Measuring numbers before and after any such interventions will tell us whether our changes have helped. We cannot know what needs improving and where should we start unless we have good information.

It is essential to have regular, reliable information about the numbers of children presenting for emergency care and basic details about their triage. This will help to determine the paediatric emergency burden for ECs in the Western Cape allow for meaningful tailoring of emergency resources, staff training and service provision.

➤ **Tracking of Patients in ECs**

ECs are frenetic, high-turnover places, and while it is hard to keep track of patients, keeping track of EC workload is vitally important for patient safety and efficient EC functioning. The EC senior must have access to continuously updated information about the EC's status in respect of variables such as how many patients there are, the acuity levels of both seen and unseen patients, and the waiting times for triage, seeing a doctor and getting a bed. This gives him or her an overview of the current workload, how acutely unwell the patients are and how long they have they been waiting.

The information must then be tallied against other factors: how many staff are available to deal with this workload, what is their skill level and skill mix, and what are imminent pressures (e.g. shift changes, staff being off sick, major incident warnings from Metro Control)? These considerations allow for escalation plans to be implemented (e.g. call in consultants, request diverts, open additional beds) and for adjustments to the operations of the shop floor (e.g. send an MO to triage to do rapid 'see and treat' of minors patients, request a paediatric MO to come to EC to assist with paediatric cases). By being continuously aware of the EC status, the EC senior is able to predict, prepare for and adapt to circumstances in a safer and more timely manner.

➤ **Handover**

One area of EC work frequently cited as being prone to error is 'care transition' (or handover). Because the EC has to function 24/7/365 and shift-work is necessary, patient care will need to be transitioned to new providers. Countless studies have demonstrated the heightened dangers of handover time: patients being missed; incorrect information being given; correct information being misheard; medications either duplicated or not given; wrong treatments or investigations on wrong patients; and so on. Quite rightly, then, there is a huge drive to tighten up handover practices, with various tools and templates being recommended for standardising and assisting with these transitions.

➤ **Shift-Work**

Another critically important (but rather neglected) area of patient safety is shift-work itself. Shift-work that disturbs circadian rhythms is known to be the most damaging of all. The detrimental health effects are well documented, and include increased risk of cancer, cardiovascular disease, diabetes and infertility. There are also adverse socio-psychological effects on general well-being and family life (including anxiety disorders, mood disturbance, obesity and marital break-up). It is, however, the 'neurocognitive' effects of sleep deprivation and fatigue that have the most impact on a shift-workers' ability to provide safe care in the EC. They are wide-ranging, and among them are impaired memory; poor attention and concentration; longer reaction times; increased distractibility; and a much greater propensity to make all manner of errors.

We cannot get away from the need for staff to work night shifts, but there is much that can be done to lessen its impact. The hours between 0200 and 0600 are considered the most critical 'anchor period' for most humans – as long as some sleep is gained in this period, the body suffers much less disruption to circadian rhythms. Studies of EC shift-work patterns and sleep have led to suggestions such as educating shift-workers about good sleep strategies, light exposure and planned naps during night shifts (a minimum of 45 minutes followed by 15-30 minutes' wake-up time), but ideally two hours is preferred. Novel rostering patterns – such as 'casino shifts', where night shifts run from 9 p.m. to 3 a.m. and 3 a.m. to 9 a.m. – have also been advocated as ways of reducing the adverse effects of shift-work.

➤ **Paediatric Majors**

Children who are sick enough to be triage category Orange (i.e. they need to be seen in less than 10 minutes) deserve to be handled with the same degree of 'intensity' that adult Orange patients receive. In other words, they should be taken to a monitored bed-space where they can lie down, be monitored and get assessed.

All too often, Orange paediatric patients are left in a queue in their mothers' arms without any form of monitoring or regular observation by nursing staff. An adult slipping into a coma or collapsing with hypotensive shock will attract immediate attention when she keels over dramatically, but a baby in blanket can easily go unnoticed. Therefore, all Orange category children must be taken to paediatric beds or cots in the Majors area, where they must be shielded as far as possible from infection hazards as well as disturbing sights and sounds. If the unit sees large numbers of children, then serious consideration should be given to having a separate Paediatric Majors areas (see Chapter 2: Infrastructure).

➤ **Cots for Children**

Children and babies who are in the EC for long periods will want to sleep. Their mothers will tire of holding them in their arms and be tempted to lay them on blankets on the floor. This is extremely hazardous – there have been cases in ECs where babies were stepped on. Cots or beds (with side-guards to prevent falling out) must be available in the EC even for those patients who are not admitted but are waiting to be seen or being worked up. In the absence of adequate cots or beds, neonatal cribs or Moses baskets can be used for small babies as long as they are safe and secure.

CONTINUOUS QUALITY IMPROVEMENT

CQI is not about just having a 'quality officer' tucked away in an office somewhere – a person who performs distant audits and emerges to scold staff about unsafe practices. It is about developing a 'safety culture', which involves first educating and getting *all* staff on board, from managers, nurses and doctors to the cleaners and porters. Along with educating and motivating the team, a robust package of 'patient-safety routines' must be adopted and then promoted until patient safety becomes second nature and 'just a part of what we do around here'.

➤ **Incident Reporting**

One fundamental element of that 'routine patient safety package' is regular and comprehensive collection of information on 'safety and quality incidents'. These include critical incidents, adverse events, near-misses and any other potential sources of error. The reporting system must be simple, quick, easily available and non-persecutory. There should be an option for the persons reporting to remain anonymous if they choose. Critical-incident reports must be investigated and analysed in a timely manner, with plans made to prevent further events. Early feedback must be given to staff.

➤ **Mortality and Morbidity meetings**

Another vital component of the CQI package is regular mortality and morbidity meetings that include paediatric cases. Information on any child deaths must be gathered using the Child Healthcare Problem Identification Programme (ChildPIP). This detailed analytical tool lends itself very well to helping to identify any preventable factors in the EC care that could have contributed to the death. In turn, identifying these factors allows for learning and the prevention of similar incidents in the future. The critical-incident reporting system should be used as a key source of morbidity information, and statistics must be presented about the number and type of reports, the problems identified and the resulting actions that were taken.

➤ **Chart Reviews**

In order to evaluate how children are being dealt with, regular chart reviews of paediatric cases must be done. These will help to highlight problem areas such as gaps in knowledge, medication errors and poor documentation. The findings of the chart reviews should be used in a constructive manner to guide teaching and training topics.

Chapter 13: Equipment and Consumables

Peter Hodgkinson, Arina Schlemmer and Zanele Nxumalo

INTRODUCTION

Emergency centres (ECs) must be stocked with the equipment necessary to provide emergency care to paediatric patients of all ages. Age- and size-appropriate equipment of good quality and in working condition is fundamental for best-practice paediatric emergency care.

STANDARDS

179. All ECs must be fully equipped with paediatric resuscitation equipment and consumables catering for all ages as per Appendix D.
180. Paediatric resuscitation equipment and consumables must be kept in an organised, user-friendly and accessible location such as a designated paediatric resuscitation trolley.
181. Other essential equipment and consumables specified in Appendix E must be available in all ECs where paediatric patients may present.
182. The presence and functionality of paediatric resuscitation equipment and consumables must be checked every shift.
183. Following all resuscitation events, paediatric resuscitation equipment must be cleaned, checked and consumables restocked immediately.
184. All staff providing patient care must be trained and familiar with the paediatric resuscitation equipment used in their own EC.
185. ECs that do not routinely manage paediatric patients must have a minimum of a paediatric resuscitation kit with paediatric appropriate equipment and consumables.

RATIONALE

Currently, most ECs cater for both paediatric and adults patients; however, equipment purchase is often based on the needs of adult patients, and consequently may be unsuitable for paediatric use. The EC equipment budget should include a realistic and proportional allocation for paediatric-specific equipment and consumables.

SELECTION OF PAEDIATRIC SPECIFIC EQUIPMENT AND CONSUMABLES

The selection should be realistic and match the requirements of the facility. Each EC needs to tailor-make decisions about the type and quantity of equipment it requires according to its level of care and paediatric caseload.

- Where possible, *electronic equipment* such as ECG machines, defibrillators as well as saturation, heart-rate and blood-pressure monitors must have neonatal, paediatric and adult mode set according to the patient's age group for accuracy of observation.

Matching consumables (e.g. oxygen saturation probes, BP cuffs, ECG electrodes and leads, defibrillator gel, capnography probes and leads) appropriate to age and size must be available. Where possible, multifunction equipment should be preferred as this is far better than having multiple separate single-function items (e.g. having one multifunction monitor specifically for resuscitation and observation areas).

- *Respiratory support equipment* (CPAP and ventilators) must have paediatric capabilities and adequate supplies of all appropriate masks, tubing, connectors, filters, humidification and so on. CPAP has a clear role to play in the emergency care of children with respiratory illness, and may prevent the need for invasive ventilation – it should be available in all hospital ECs and for advanced EMS transport.
- *Infusion and syringe pumps* to enable the delivery of small doses of infusion drugs less than 1 ml per hour must be available for the administration of medications such as inotropes, analgesia and sedation drugs. Matching consumables (syringes and extension sets) must be stocked.

Equipment must be regularly serviced and upgraded to replace outdated and malfunctioning items, to keep up with new innovations, and to cater for changing case mix and complexity.

In addition, standardising EC equipment with that in the rest of the facility is helpful to ensure continuity and safety when patients are transferred to wards, high care and intensive care. Staff familiarity with commonly used items helps to reduce errors in the use of equipment.

Within facilities, patient transport equipment should include oxygen cylinders, oxygen gauges, oxygen flow meters, portable ventilators and monitors. Portable monitors and ventilators (with connections and leads compatible with EC bedside equipment) will facilitate safe transfers.

ORGANISATION OF EQUIPMENT AND CONSUMABLES

In ECs that cater for both paediatric and adult patients, paediatric emergency equipment and supplies ideally should be kept separate from adult equipment. All staff must know the layout of the EC and the location of all (resuscitation) equipment to prevent confusion and delays when accessing these items.

Key resuscitation equipment and consumables must be kept in a highly visible and organised manner allowing for the rapid identification of missing items. Visual management systems, such as marking outlines of essential equipment on storage surfaces (similar to toolbox organisation systems), can be very useful in this regard. Clear labelling will also assist in the organisation and restocking of consumables.

EQUIPMENT-CHECKING

The resuscitation trolley and defibrillator must be checked at the start of every shift (and after each use of the equipment). This is to ensure that all essential items are present and in working order. Staff must be specifically allocated to do this task every shift and complete and sign off a checklist. Examples of checklists are included in Appendix F and G.

An inventory of all clinical equipment should be maintained in order to keep track of equipment that has been sent for repairs or loaned to other departments (e.g. transport items and equipment).

RESTOCKING OF CONSUMABLES

The EC must be regularly re-stocked with consumables to ensure efficiency. Ideally, re-stocking should be done at the start of each shift change. This can be augmented by additional re-stocking, for example after surge periods.

The first-in, first-out principle should apply in the storeroom and all clinical areas. This can be achieved by packing new stock at the back or bottom to avoid ending up with expired stock that can be used inadvertently. Stock management systems (e.g. alert cards to trigger re-ordering when stock is low) can optimise and prevent stock-outs, and should be considered in the EC's high-turnover environment.

CARE AND MAINTENANCE OF EQUIPMENT

All electronic and mechanical equipment requires regular maintenance according to servicing requirements. Ideally, a designated clinical technologist must be allocated this duty for each EC. A designated area for storing equipment with enough plugs to keep monitors plugged in and charged is ideal.

ENTERAL FEEDING EQUIPMENT

Nasogastric tube (NGT) rehydration is well evidenced for rehydration of children with dehydration secondary to gastroenteritis or where IV access is not available as per Western Cape gastroenteritis protocols. Specific equipment needs to be available for infusion of oral rehydration solution (ORS) fluids via an NGT – ideally with dedicated equipment and set-up including an enteral feeding pump and infusion line (see WC Metro gastroenteritis equipment list in Appendix H). However, if this is not available, then NGT rehydration can be administered using an enteral-giving set with an IV in-line controller (e.g. Dialaflo put in backwards) and connected with a specific connector to the NG tube.

Chapter 14: Medications and Fluids

Peter Hodgkinson, Arina Schlemmer and Zanele Nxumalo

INTRODUCTION

Every emergency centre (EC) that sees paediatric patients needs a range of medications and fluids suitable for children (some of which may overlap with adult medications), and these must be accessible at all hours. Certain medications and intravenous (IV) fluids required for paediatric patients are not used in adults. Further differences for paediatrics medications include the variety of formulations (e.g. drops, syrups or suppositories) and concentrations appropriate for different ages. Whilst common resuscitation fluids for children are the same as for adults, paediatric patients do require different IV maintenance fluids with particular attention to dextrose and electrolyte content.

The range of concentrations and formulations – and the requirement to calculate most dosages per kilogram of body weight – means that extra vigilance and awareness are necessary when calculating and administering drugs and fluids to children in the EC.

STANDARDS

186. All ECs receiving children must be equipped with an appropriate range of medications and fluids to deal with paediatric emergencies.
187. Resuscitation medication (catering to all paediatric age groups), as listed in Appendix I, must be immediately available in the resuscitation area of ECs.
188. Aids for the estimation of a child's weight must be available in the resuscitation area.
189. Paediatric dosage guidelines for common emergency drugs must be immediately available in the resuscitation room of all ECs.
190. Emergency, post-resuscitation and stabilisation (Appendix J) must be available for rapid access in the EC.
191. Appropriate IV fluids for children must be available in the EC (Appendix K).
192. A range of analgesics appropriate for children must be available in the EC (Appendix L).
193. Routinely used drugs for treatment of common paediatric condition in the EC, as well as routine discharge medications for children (Appendix M), must be available in the EC.
194. Commonly needed discharge medications for children leaving the EC, during hours when pharmacy services are not available, must be pre-prepared, packaged and labelled by a pharmacist and regularly re-stocked.
195. An after-hours access system must be available for specific, unusual drugs.
196. Ideally pharmacy services must be available for 24/7 dispensing and consultation. At a minimum, on-site services must be available until 23h00 every day (including weekends).
197. EC medications must be appropriately stored and controlled by a pharmacist.

198. All facilities must have access to a 24-hour poison information centre.
199. Drugs for disaster situations must be available as per facility disaster planning.
200. ECs that do not routinely manage paediatric patients must have a minimum of a paediatric resuscitation kit with paediatric appropriate resuscitation and stabilisation medications.

RATIONALE

DOSING CALCULATIONS

Children require dosing calculations to be done according to body weight and/or age; thus, resources are necessary to measure weight. In an emergency, it is acceptable to estimate weight – this requires methods of weight estimation to be available (e.g. formulae and length-based weight calculators or tapes). Since it can be difficult (or even dangerous) for staff to try to memorise the various dosages for children’s medications, it is necessary to have paediatric dosing schedules readily available in all ECs. Dosing information and dilution/infusion charts for medications commonly used during paediatric resuscitation must be placed clearly in the resuscitation areas of ECs (e.g. laminated posters on the wall or attached to the resuscitation trolley).

MEDICATION ERROR-PREVENTION

Paediatric drug prescribing, calculation and administration are highly error-prone processes due to the range of ages, weights and drugs that are involved. Methods to reduce medication errors must be in place. Examples include: having a second qualified person check drug dosing and the correctness of the amount drawn up for administration; awareness of, and clear separation of, similarly named, coloured and/or packaged drugs; and clear verbal and/or written prescription as well as training of the personnel involved.

STANDARD RESUSCITATION DRUG TROLLEYS

Resuscitation drugs should be kept in a familiar, standardised format. At the very least, this standardisation should apply *within* institutions (so that the same cart is found in the EC, wards, theatre, OPD, radiology suites and so on), but ideally it should also apply *across* different institutions. Drugs that are similarly packaged must be clearly labelled and stored so that they cannot be mistaken for one another. A well-organised, tidy resuscitation trolley with clear labelled sections for different medications (and equipment) will allow rapid access and recognition of items during the resuscitation as well as make it easy to identify missing or depleted items for re-stocking. (See Chapter 13: Equipment and Consumables.)

MEDICATION STORAGE, CONTROL AND SCHEDULING

Medications have specific maintenance and storage requirements. These requirements need to be reviewed regularly, and this is a job that must be done by a trained pharmacist rather than EC nursing staff. A number of specific protocols and practices have to be followed, including:

- *daily* stock-checking (of drugs, available quantities and expiry dates);
- *daily* refrigerator check (temperature control, stock-checking, access);

- scheduling control through access restrictions (locked schedule cupboard/s) and associated documentation should be in place as guided by legislation, but without hindering emergency access to essential resuscitation drugs. Drugs that are scheduled and require refrigeration need specific consideration (e.g. Lorazepam).

Figure 6: The South African drug classification system

Schedule 0 = Sold in any shop
Schedule 1 = Sold by pharmacists
Schedule 2 = Sold by pharmacist and sale record
Schedule 3 = Prescription, repeated 6 months
Schedule 4 = Prescription, repeated 6 months
Schedule 5 = Prescription, repeats stipulated
Schedule 6 = Prescription, therapeutic narcotics
Schedule 7 = Controlled substances
Schedule 8 = Strictly controlled substances
<i>Condensed from section 22 A of the Medicines and Related Substances Act 101 of 1965.</i>

Source: Department of Health, South African Association of Pharmacists in Industry (SAAPI)

EC PHARMACY SERVICES

Pharmacy services must be available at all ECs, and ideally 24/7 in order to match EC working hours. Until this is achieved, extended pharmacy hours until 23h00 must be considered where the number of presentations warrants this. The extended-hours pharmacy service does not have to be equivalent to the full service offered in normal working hours but must be adequate for common EC needs.

The pharmacy should make available adequate stocks of pre-packaged and labelled supplies of commonly used medication to be given to children discharged from the EC after hours and/or when no pharmacy is available. In particular, any medications requiring reconstitution (e.g. antibiotic syrups) must be pre-prepared by the pharmacists and replenished regularly to ensure adequate stocks.

Pre-prepared medications to be given to paediatric patients at discharge from the EC need to include the following information in a highly visible place on the packaging:

- name of medication;
- formulation and strength;
- dosing information;
- details of the dispensing facility; and
- expiry date.

SUMMARY OF APPENDICES FOR MEDICATIONS & FLUIDS

- I. Immediately available in paediatric resuscitation trolley
- J. Drugs for post-resuscitation and stabilisation drugs
- K. IV fluids for children
- L. Drugs for analgesia and sedation
- M. Drugs for treatment in EC and for discharged patients.

Chapter 15: Standards for Emergency Care of Children in EMS

Michael Lee and Baljit Cheema

INTRODUCTION

There is an absence of clearly defined written standards for the care of children in the pre-hospital environment in South Africa. This chapter provides health-care practitioners and management in the Western Cape with clear, comprehensive standards of care for children in pre-hospital and inter-facility settings. It also serves as a reference to assist clinic and hospital staff in familiarising themselves with the capabilities and functions of the various emergency care practitioners within the Western Cape Department of Health (DoH) pre-hospital environment.

In line with the Western Cape DoH Patient Centred Quality Care initiative as well as the Children's Act 38 of 2005, it is required that, in matters concerning the care, protection and well-being of a child, all emergency care (EC) practitioners must act at all times in the best interests of the child.

STANDARDS

STAFFING

201. All paediatric patients, in the pre-hospital environment, must be managed by the minimum of an Intermediate Life Support (ILS) crew member.
202. Basic Ambulance Assistants (BAA) must work under supervision at all times with all ambulances crewed with at least one Intermediate Life Support practitioner (with the exception of Advanced Life Support (ALS) ambulances).
203. A medical practitioner with pre-hospital expertise must be available for consultation 24 hours a day.

TRAINING AND CONTINUED PROFESSIONAL DEVELOPMENT

204. All emergency care practitioners must be competent in assessing, managing and safely transporting common paediatric emergencies to the nearest most appropriate medical facility. The assessment and appropriate treatment must be in accordance with prevailing, evidenced-based, best-practice protocols.
205. All emergency care practitioners must be competent in basic paediatric/neonatal life support.
206. ALS practitioners must be competent in advanced life support procedures for neonates and paediatrics.

207. In order to maintain competency in the emergency management of the critically ill child, all operational emergency medical services (EMS) practitioners (BLS, ILS and ALS) must be re-certified as prescribed by designated courses.
208. Formal resuscitation training must be repeated at least as frequently as required by the governing body for that qualification.
209. The Human Resource Development (HRD) training department must structure their programmes to allocate at least 5 CPD points annually to paediatric emergency topics.
210. As per Skills Development Policy, all staff must be given the opportunity to attend approved and designated training courses which are required for competency in the assessment and management of paediatric emergencies during normal hours.
211. All ambulance bases (with the exception of satellite stations) must have access to suitable electronic teaching aids and audio-visual projection facilities as well as the required paediatric training equipment (e.g. paediatric manikins, cardiac monitor, rhythm simulator).
212. At least one paediatric case must be presented at every mortality and morbidity forum.
213. EMS staff must be aware of the concept, and the potential psychological benefits, of family presence during the resuscitation of a child.

CLINICAL CARE PROTOCOLS AND SCOPE OF PRACTICE

214. Management of paediatric emergencies must be guided by accepted up-to-date evidence-based regional and national resuscitation guidelines (e.g. WC EM Guidance, APLS).
215. All emergency care practitioners must have access to the latest protocols for their respective qualification as prescribed by the Health Professional Council of South Africa (HPCSA).

TRIAGE

216. All emergency care practitioners must be trained in the application of the South African Triage Scale (SATS).

DRUGS AND RESOURCES

217. All medications approved for use by emergency care practitioners by the HPCSA must be readily available.
218. Pre-calculated dose guidelines and approved weight formulae for children of all ages must be available in the form of charts/cards and length-based drug dosage tapes.
219. Up-to-date, evidenced-based guidelines pertaining to paediatric emergency care must be available to all emergency care practitioners (e.g. HPCSA ALS, ILS and BLS guidelines, EM Guidance).
220. A portable cooler-box/bag must be available for the storage of medications that need to be kept refrigerated on the ambulance (e.g. Lorazepam).
221. A dedicated medications fridge must be available for the on-site storage of medications that need to be kept refrigerated.

EQUIPMENT

222. Equipment to manage paediatric emergencies appropriate to qualification must be available in all ambulances.

SECURING OF CHILDREN FOR TRANSPORT

223. All equipment necessary for the safe transport and securing/immobilising paediatric patients of all ages must be available (e.g. car seats, transport incubators, immobilisations devices).

224. Guidance must be available for securing patients using mechanisms other than in stretchers.

225. Unless it is in the patient's best interests, no baby, infant or child must be transported or transferred in the carer's arms – such patients must be appropriately secured at all times. Unstable babies must never be put into kangaroo care for transportation.

226. Children must not share stretchers in ambulances.

TRANSFERS AND TRANSPORT

227. Retrieval teams must be available for the transfer of critically ill children and neonates.

228. When requesting transport of critically ill children, the referring facility must ensure that the severity of the child's condition is communicated effectively to the call-taker at the EMS Communications Centre (including, as a minimum: triage colour, vitals, special equipment, urgency and level of EMS crew required).

229. During patient handovers effective verbal and written communication must take place between EMS practitioners and doctors from receiving and referring ECs. The DeMIST handover procedure is the minimum handover that must occur.

230. Prior to departure, the EMS crew responsible for the management of the patient must independently assess the child's clinical condition and suitability for transport and familiarise themselves with the treatment already undertaken.

231. The EMS Communications Centre or EMS crew (if able) must notify the receiving EC of the estimated time of arrival and the condition of, and medical interventions initiated in, critically ill children prior to their arrival at the EC (if not already informed).

232. For all transports and transfers of critically ill children, a clearly defined communication system (trunking radio/telephone) must be available between the EMS crew effecting the transfer and the medical team receiving the patient.

233. EMS crews that do not feel comfortable effecting the transport of a critically ill child (due to lack of necessary equipment or suitable qualifications) must voice their concerns to the referring physician so that the referring physician can initiate further treatment to stabilise the patient and/or arrange alternative transport with a more qualified EMS crew. The EMS crew must help facilitate communication with the EMS Communications Centre in order to expedite transport of the child with an appropriate EMS resource.

234. Critically ill paediatric patients must not be conveyed along with adult patients for the purposes of inter-facility transfers unless it is in the child's best interests to do so.

235. Critically ill or injured paediatric/neonatal patients who fit the criteria of the Paediatric Emergency Callout Pathway protocol must be transported by the Paediatric Flying Squad (PFS) or a suitably equipped ALS crew if PFS is not available.
236. All emergency care practitioners must be aware of the closest most appropriate medical facility to which paediatric emergencies must be transported.
237. In the absence of specific protocols (e.g. Paediatric Burns Referral Guidelines, Paediatric Polytrauma Referral Guidelines) EMS personnel must base the destination medical facility on the patient's initial on-scene triage code.
238. To ensure the effective disposition of paediatric patients, pre-hospital EMS referral guidelines must be easily accessible to all EMS staff and ECs.
239. Any Advanced Life Support Paramedic tasked with effecting the inter-facility transport of a critically ill child or neonate must be proficient and up to date with advanced life support skills and knowledge for children and neonates.
240. No EC may refuse to assess and accept a child delivered by an ambulance, regardless of the child's geographical origin or triage code.

EMERGENCY MEDICAL DISPATCH

241. In order for them to identify the possibility of a life-threatening paediatric emergency, EMS call-takers must be of a suitably trained professional level that includes their having the ability to interrogate the caller and utilise algorithmic template/questions.
242. Emergency Medical Dispatchers (EMDs) must correctly identify possible paediatric life-threatening emergencies and dispatch the nearest most appropriate EMS resource within the pre-defined acceptable time-frame.
243. EMDs must be aware of the triage categories of the South African Triage Scale and use the triage category in conjunction with the Paediatric Emergency Callout Pathway protocol to correctly identify the most appropriate resource to utilise when dispatching the inter-facility transport of critically ill or injured children.
244. Operational crews must have an easily accessible channel of communication whereby they can request expert consultation from an EMS Emergency Doctor on call or a Doctor at the receiving medical facility.
245. EMS call-takers must be able to give pre-arrival basic emergency first-aid instructions to callers in order to help provide the necessary assistance to the patient prior to the arrival of EMS crews.
246. Children less than one year old must not automatically be made Priority 1 (P1).

CHILD- AND FAMILY-FRIENDLINESS

247. A caregiver must be allowed to travel with the child – this can apply to young patients up to the age of 18 years.
248. Children must not be transported in same ambulance as adult emergency patients unless it is in the child's best interests to do so.
249. Where this cannot be avoided, child patients must not be transported with the following types of patients (unless it is in their best interests to do so):

- those with traumatic injuries;
 - those with drug, alcohol or psychiatric problems;
 - those with the risk of infectious disease risk (e.g. TB, viral illnesses);
 - unstable adults requiring en route stabilisation; or
 - those with any other distressing or potentially harmful conditions.
250. EMS staff must be aware of simple reassurance and distraction techniques to reduce stress to the child.

PATIENT SAFETY AND CONTINUOUS QUALITY IMPROVEMENT

251. EMS staff and management must identify patient-safety priority areas for paediatric patients and implement improvements using established tools such as Plan-Do-Study-Act (PDSA).
252. Regular data must be gathered on key paediatric quality and safety indicators.
253. Handovers must be standardised so that all key information is passed on.
254. All EMS staff and management must be made aware of the propensity for error in the pre-hospital environment:
- 254.1 Practical aspects of error recognition and containment in the pre-hospital environment.
 - 254.2 Common error producing conditions in the pre-hospital environment.
 - 254.3 Recognition of biases in critical thinking in themselves and their colleagues.
255. Paediatric-specific medication safety measures such as age/weight-appropriate dosing schedules and/or paediatric drug-dose calculators must be in place.
256. Infection control measures in keeping with both national and international standards must be adhered to in the pre-hospital environment (e.g. strict hand-hygiene, safe distance between patients, not transporting infectious patients with healthy patients).
257. All districts must have a fully functional CQI programme in place to provide ongoing monitoring of quality care and compliance with patient-safety standards.
258. Policies for reporting, evaluating and learning from adverse incidents, medication errors, inappropriate referrals and other patient-safety events must be in place.
259. All districts must hold monthly mortality and morbidity meetings.
260. Paediatric Patient Report Form reviews must be conducted regularly to evaluate actual clinical practice and adherence to clinical guidelines and standards.

RATIONALE

STAFFING

Different levels of emergency care practitioners are found in the Western Cape Department of Health (DoH) Emergency Medical Service. The Service is based on a three-tiered system, with levels of qualifications as shown in Table 6 (overleaf).

The current operational staffing complement within the Western Cape DoH Emergency Medical Service is as follows:

- Basic Life Support: 53%;
- Intermediate Life Support: 38%; and
- Advanced Life support: 9%.

Therefore, 91% of current EMS staff are unable to manage critically ill children under the age of eight years old effectively.

TRAINING AND CONTINUED PROFESSIONAL DEVELOPMENT

The Western Cape College of Emergency Care (WCCEC) currently offers training for ILS and ALS practitioners. All emergency care practitioners must have the minimum clinical competencies, including recognition of the critically ill or injured child, basic life support skills and the ability to initiate appropriate treatment in accordance with protocols as set out by the HPCSA relative to their individual qualifications.

Performance of clinical skills deteriorates over time if they are not used. In order to maintain competency and adherence to prevailing best practices, as well as to maintain licensure with the HPCSA, all emergency care practitioners must have access to, and partake in, continued medical education programmes.

In order to maintain competency the following programmes must be offered:

- Refresher of Paediatric CPR (scenario-based with mannequins);
- Basic Life Support Refresher Course Pre-hospital Paediatric Intermediate Life Support;
- Pre-hospital Perinatal and Neonatal Education Courses (e.g. PHPEP); and
- Advanced Paediatric Resuscitation Course (e.g. PALS/APLS).

All course material must be in line with prevailing best practices, but the latter may need to be adapted to the Western Cape setting. Since many of them are intended for developed-world settings, they provide incomplete coverage of the local burden of disease and are based on unrealistic expectations about the equipment and resources that are available.

Pre-hospital practitioners receive far less training in the care of children than they receive for adults, and their confidence and competence is thus likely to be lower in this case than for adult clinical practice. Lecturers and course coordinators must be mindful of this fact and increase paediatric-specific content during training and CPD activities. All BLS, ILS and ALS courses should be reviewed in order to include greater paediatric and neonatal content.

Table 6: Western Cape DoH: Health course duration and capabilities of emergency care practitioners

Qualification	Course duration	Paediatric capabilities
Basic Ambulance Assistant (BLS)	6 weeks of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	CPR and choking, O ₂ administration, BVM ventilation, vital signs recording including HGT, suctioning, oral dextrose, Entonox, activated charcoal administration, use of an Automated External Defibrillator (AED), spinal immobilisation
Ambulance Emergency Assistant (ILS)	15 weeks of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	As for BLS plus: needle cricothyroidotomy, needle thoracentesis, peripheral IV access (8 years and older) and fluid administration, manual defibrillation, nebulisation with B ₂ agonists and anticholinergics, pulse oximetry, IV dextrose, declaration of death, non ICU neonatal/paediatric transfers
Emergency Care Technician (ALS)	2 years of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	As for ILS plus: supraglottic airway inspection (LMA), ETCO ₂ , peripheral IV access (1 year and older) including external jugular, intra-osseous insertion, umbilical vein cannulation, limited ALS drug administration, non-intubated neonatal/paediatric transfers
Critical Care Assistants (CCA) (ALS) & National Diploma in EMC (ALS)	10 months (CCA) or 3 years (National Diploma in EMC) of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	As for ECT plus: orotracheal intubation, femoral cannulation, surgical cricothyroidotomy, mechanical ventilation, drug infusions, vagal manoeuvres, cardioversion, pacing, neonatal/paediatric ICU transfers, use of syringe drivers, central line management, ALS drug administration
Degree in EMC (ALS)	4 years of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	As for CCA/NDip plus: rapid sequence induction and fibrinolysis

Paediatric topics that must be covered throughout all levels of training are:

- the approach to and assessment of a sick child;
- the early recognition of the high risk and/or critically ill child;
- eliciting a pertinent medical history from the family or carer;
- communication with children, using age-appropriate language;
- the basic pathophysiology of common paediatric emergencies;
- identification of common age-related illnesses and injuries;
- physiological and anatomical differences between paediatric and adult patients; and
- application of the South African Triage Scale for children and transport to the most appropriate medical facility.

The following additional learning objectives are specific to the Advanced Paediatric Resuscitation courses:

- the pathophysiology, signs and symptoms and management of paediatric arrhythmias;
- emergency pharmacology for paediatrics, including intravenous and intra-osseous skills; and
- advanced paediatric airway management.

CLINICAL CARE PROTOCOLS

The HPCSA protocols for emergency care practitioners are intended to serve as guidance for the treatment of patients by registered emergency care practitioners and should not replace sound clinical judgment. Consultation with fellow emergency care practitioners and/or medical practitioners in challenging or difficult situations is strongly recommended. If more up-to-date, evidence-based protocols appropriate to the pre-hospital environment become available, they may be relevant (e.g. APLS protocols, Western Cape Emergency Medicine Guidance).

The American heart Association (AHA) and European Resuscitation Council (ERC) are the major global players in terms of resuscitation guidelines, and the majority of regional and national guidelines follow one or another of their guidelines.

Resuscitation methods, techniques and protocols must be reviewed with each update of the Paediatric and Neonatal Basic and Advanced Life Support Consensus on Resuscitation Science and Treatment Recommendations (CoSTR) released by the International Liaison Committee on Resuscitation (ILCOR). The next ILCOR consensus recommendations are due to be released in October 2015.

The AHA and ERC both use the ILCOR CoSTR updates as a basis for revising their resuscitation guidelines. However, it must be noted that there are often significant differences between the AHA and ERC interpretations of the ILCOR recommendations. This leads to variation between American- and European-orientated resuscitation guidelines. Of note, the Advanced Paediatric Life Support (APLS) course is based on ERC guidelines whilst the Paediatric Life Support (PALS) course is based on AHA guidelines. In South Africa, the paediatric and paediatric intensive care fraternity are more aligned with the ERC interpretation ILCOR recommendations. In the interests of consistency, then, resuscitation courses in keeping with ERC approach are recommended.

SCOPE OF PRACTICE

The role of 'scopes of practice' documentation is not to define every activity of a licensed health-care practitioner (e.g. lifting and moving patients, taking blood pressure). Scope-of-practice documentation should focus on activities that are regulated by law (e.g. starting an intravenous line, administration of medication). These include technical skills which, if exercised improperly, represent a significant hazard to the patient and hence must be kept out of the hands of the untrained. There is currently a very rigid and limited scope of practice for paediatric patients in the pre-hospital setting – this is an issue that urgently needs to be reconsidered. If training in paediatric emergency care is increased, then the scope of practice of pre-hospital emergency practitioners should be broadened as well.

TRIAGE

The latest versions of SATS, the Paediatric Emergency Callout Pathway posters and/or Patient Referral Guidelines must be clearly displayed in all EMS ambulances as well as community health centres, clinics and secondary and tertiary medical facilities. Staff must be aware of these pathways. All EMS personnel must receive personal-issue SATS key-ring cards.

All children managed by emergency care practitioners must be triaged using SATS prior to arrival at an EC. EMS personnel must use SATS, in conjunction with the Paediatric Emergency Callout Pathway, Paediatric Burns Referral Guidelines and Paediatric Polytrauma Referral Guidelines. In the absence of other criteria, the patient destination should be as follows:

- Green patients to primary health care clinic, CDC or CHC; and
- Yellow, Orange and Red patients to the nearest district, regional or central hospital.

DRUGS AND RESOURCES

All ALS paramedics must have the necessary drugs at their disposal in order to care for the acutely ill or injured child. The medication must be easily accessible, clearly labelled and safely organised and stocked (see Chapter 14: Medications and Fluids). To decrease reliance on memory and thereby mitigate the risk of medication errors, pre-calculated dose guidelines for the preparation and administration of medications and intravenous fluids (e.g. PAWPER Tape and The Paediatric Flipper Card) suitable for the paediatric patient must be readily available.

In order to manage children with severe pain optimally in the pre-hospital setting, EMS staff should have access to non-invasive analgesic options such as Tilidine hydrochloride (Valeron) and nitrous oxide (Entonox).

Resuscitation medications must be reviewed with each update of the Paediatric and Neonatal Basic and Advanced Life Support ILCOR consensus recommendations and subsequent revisions of relevant guidelines.

A list of current authorised medications for use by ALS practitioners in the pre-hospital setting can be found in Appendix O.

EQUIPMENT

Each ambulance must be equipped with the necessary equipment and consumable stock needed to care for the acutely ill or injured child. All equipment and consumables must be easily accessible, functional and well stocked. Each pre-hospital health-care practitioner must inspect his or her allocated vehicle and complete a mandatory checklist prior to the commencement of

operational duties. All medical equipment must be checked and found to be functional. (See Chapter 13: Equipment and Consumables.)

TRANSFERS AND TRANSPORT

Critically ill patients are transported to alternative medical facilities to obtain definitive care, whether technical, cognitive or procedural, which is not available at the existing facility. The decision to transport a critically ill patient to another medical facility is based on an assessment of the potential benefits of transport weighed up against its risks. Critically ill children are at increased risk of mortality and morbidity during inter-facility transport. These risks must be minimised and the outcomes improved by means of careful planning, the use of appropriately qualified personnel, and the selection and availability of appropriate equipment.

It must be noted that the referring physician takes full responsibility for the appropriate management of the patient until the patient has been formally handed over to the EMS team. According to the Western Cape ECLMP, 'The patient remains the responsibility of the referring doctor until such time as they reach the receiving hospital' (section 7.1.4). Referring physicians must ensure they are comfortable with the patient being transported by the EMS crew tasked with effecting the transfer. This crew has an obligation to advise the referring physician if it deems that the patient is too unstable for its level of expertise or qualification.

If there is deterioration in the child's condition prior to or during transport that requires further intensive care (e.g. intubation and ventilation), then this needs to be communicated to the receiving facility so that the necessary resources can be made available prior to the patient's arrival.

To ensure and maintain good quality emergency care to all children and mitigate the risk of transition-of-care errors, proper handover procedures must be adhered to. A structured handover procedure provides all health-care practitioners actively involved in the care of the child with the relevant clinical information. Adherence to these procedures will lead to the correct prioritisation of the patient, provide information on the treatment already initiated en route and allow the communication of vital information to receiving clinicians, information of which they might otherwise be unaware. The DeMIST handover procedure (see Appendix R) is the minimum handover that must take place. The exact same procedure must be followed in the handover of patients from the referring facility to the EMS crew.

EMERGENCY MEDICAL DISPATCH

The person answering emergency calls at the communication centre (the 'EMS call-taker') is the principal link between the public requesting emergency medical assistance and the EMS. Currently EMS call-takers do not have even rudimentary training (i.e. first aid level 3), and there is no standardised format for taking information from public callers. The emergency medical dispatcher (EMD) is the person who receives information from the EMS call-taker and, on the basis of this information, determines the priority of the call.

The EMS call-taker and the EMD both play a critical role in the ability of the EMS system to respond appropriately to a perceived medical emergency. With proper training, the EMS call-taker could accurately question the caller for the most pertinent information. This then would allow the EMD to prioritise correctly and provide relevant information to the EMS responders. Similarly, with such training the EMS call-taker could give appropriate first-aid/CPR directions through the caller prior to the arrival of the EMS.

EMS call-takers and EMDs perform important functions that can enhance the efficiency and effectiveness of pre-hospital care for critically ill children. The goal of effective emergency medical dispatching is sending the most appropriate available EMS resources to the right location within an accepted time-frame. This goal can be ideally accomplished through an effective EMS dispatching system containing the following elements:

- systematic caller-interrogation algorithms led by chief-complaint;
- systematic pre-arrival first-aid medical instructions in the case of CPR, choking, seizures and other life-threatening paediatric emergencies;
- protocols that determine the vehicle-response mode (emergency or non-emergency) and configuration (ALS, ILS or BLS) based on the EMD's evaluation of the severity of injury or illness;
- referenced information for use by the dispatcher (e.g. PFS poster); and
- sufficient staffing of EMDs with multilingual capability where the Communications Centre's geographical service area has demonstrated frequent use of a particular language or languages other than English (in the Western Cape this would include a complement of call-takers fluent in Afrikaans, Xhosa and English).

It is not necessary to make every child under one year of age a Priority 1 as many of them will be stable for transfer and/or transport; it is likely that the practice of automatically making such children a Priority 1 diverts scarce resources from other cases in greater need.

What needs to be in place is a rational system for prioritising paediatric emergency cases. Identifying or developing a robust, reliable system that can achieve this requires in-depth consideration by EMS, EM and Paediatric colleagues. As a potential interim option, the following rapid telephone triage (using an adapted-for-purpose version of Revised Paediatric SATS) is recommended for consideration:

Red – Emergency ABCccDO; if any emergency signs, the child = P1

Orange – Very Urgent = P1

Yellow – Urgent = P2

Green – Routine = P2

CHILD- AND FAMILY-FRIENDLINESS

Taking a trip in the back of an ambulance can be a scary event even for adults, so when small children do this their fear and apprehension is likely to be much greater. Most paediatric ambulance trips are unplanned, and parents may not have had time to bring essentials such as nappies, feeds or toys to comfort children. We can see why transporting a sick child in an ambulance could be quite an ordeal. But it need not be a difficult or harrowing experience, as much can be done to alleviate the stress and unpleasantness for children and their families.

Interaction with EMS personnel and the journey to the EC give children their first impression of what awaits them and thus set the scene for what they can expect. That impression will be far more reassuring if smiling, pleasant professionals take a few moments to chat or play with them. There is no reason why EMS personnel should not be able to employ simple techniques of reassurance and communication to help put children at ease. This does not have to take long or require special skills, but for children it can make the difference between fear and comfort.

In terms of play and distraction, materials do not have to be expensive or elaborate to be effective. For instance, colourful pictures, mobiles or bubbles (containers can be refilled with water and washing-up liquid) all work well in gaining the attention of small children. These little things can signal to children that they are in a friendly place and can relax.

In many countries EC and EMS staff bravely certificates they can award to children who have used their service. A bright or colour-in piece of paper saying, 'I was very brave and good in the ambulance today' may encourage a child to feel, 'Hey, that wasn't too bad'. Parents and children alike will appreciate these small gestures.

PATIENT SAFETY AND CONTINUOUS QUALITY IMPROVEMENT

Current thinking about patient safety emphasises that most adverse events are the result of inherent or 'latent errors' in the system. These so-called 'accidents waiting to happen' are also known as 'blunt end' factors and stand at the opposite end of the scale from the individual at the 'sharp end'. By implication, the staff member who makes the mistake that leads to the 'active error' should not be held solely accountable for it or singled out for 'naming, shaming, blaming and retraining'. This will not address the underlying circumstances that allowed the error to occur in the first place, and will also deter staff from coming forward in the future.

Emergency Care Practitioners need to become 'error-literate', that is, they need to be able to recognise and contain errors, understand error-producing conditions and know the importance of reporting errors so that systems can be improved to prevent further mishaps.

CQI is not about just having a 'quality officer' tucked away in an office somewhere – a person who performs distant audits and emerges to scold staff about unsafe practices. It is about developing a 'safety culture', which involves first educating and getting *all* staff on board, from BLS and ALS to management. Along with educating and motivating the team, a robust package of 'patient-safety routines' must be adopted and promoted until patient safety becomes second nature and 'just a part of what we do around here'.

One fundamental element of that 'routine patient safety package' is regular and comprehensive collection of information on 'safety and quality incidents'. These include critical incidents, adverse events, near-misses and any potential sources of error. The reporting system must be simple, quick, easily available and non-persecutory. There should be an option for the persons reporting to remain anonymous if they choose. Critical-incident reports must be investigated and analysed in a timely manner, with plans made to prevent further events. Early feedback must be given to staff.

Another vital component of the CQI package is regular mortality and morbidity meetings that include paediatric cases. Information on any child deaths must be gathered in order to identify preventable factors that may have contributed to them within the EMS system. Doing so allows for learning and the prevention of similar incidents in the future. The critical-incident reporting system should be used as a key source of morbidity information, and statistics must be presented about the number and type of reports, the problems identified and the resulting actions that were taken.

Chapter 16: Summary of Standards for Care of Children in ECs

Technical Working Group

ARRIVAL

1. There must be clear signage to the EC.
 - 1.1. Signage indicating the quickest route to the EC must be clearly visible at all times of day.
 - 1.2. If children are seen in a different area of the hospital or EC at certain times of day, this must be clearly sign-posted.
 - 1.3. If certain entrances/passages are closed out of hours, alternative routes must be clearly sign-posted.

EC DESIGN

2. Children must have complete audio-visual separation from adult EC areas.
3. There must be no barriers to a child getting a swift initial triage assessment in the EC.
 - 3.1. Triage must take place before any reception or administrative processes.
 - 3.2. Security personnel must not block entry of carers with child-patients.
4. Child-patients must have a separate waiting area from adults.
5. The triage area or room:
 - 5.1. A separate triage area for children is strongly recommended for busier L2 and L3 ECs.
 - 5.2. If a combined adult and paediatric triage room is to be used, then children must be protected as far as possible from exposure to disturbing sights and sounds.
6. The resuscitation room:
 - 6.1. Resuscitation of children in the EC must take place in the designated resuscitation area and not in non-resuscitation areas such as the paediatric room.
 - 6.2. The resuscitation room in busier L2 and L3 ECs must have a designated paediatric bay.
 - 6.3. The resuscitation room in less busy units must have a bed/area that can be used for paediatric resuscitations.
7. Children triaged to the Orange category must be taken to the Majors area and have access to a bed or cot and monitoring.
 - 7.1. In busier L2 and L3 units a separate paediatric Majors areas is recommended.
 - 7.2. In units where adult and paediatric majors are to be combined, EC design must incorporate adequate space for paediatric beds/cots within all EC Majors areas and these must be sheltered from view of the main adult Majors area.

8. All clinical areas where children may be assessed and examined must have railings and curtains for privacy.
9. Children's areas of the EC must have sufficient space for a play area.
10. Ambient temperature must be regulated as children lose heat quickly.

BATHROOM FACILITIES

11. Toilet facilities must be clean and hygienic.
12. Soap, hand towels and toilet paper must be provided.
13. A safe and adequately sized nappy-changing area must be available.
14. Toilet-seat adaptors for small children must be provided.
15. Low toilet bowls (or safe steps) enabling children to reach the toilet and toilets with child-friendly flushing devices are recommended.
16. Low hand-basins with child-friendly taps are recommended.

EMS

17. Child patients:
 - 17.1. A caregiver must be allowed to travel with the child – this can apply to young persons up to the age of 18 years.
 - 17.2. Children must not be transported in the same ambulance as adult emergency patients unless it is in the child's best interest to do so.
 - 17.3. Where this cannot be avoided, child patients must not be transported with the following types of patients (unless it is in their best interests to do so):
 - those with traumatic injuries;
 - those with drug, alcohol or psychiatric problems;
 - those with the risk of infectious disease risk (e.g. TB, viral illnesses);
 - unstable adults requiring stabilisation en route; or
 - those with any other distressing or potentially harmful conditions.
18. EMS staff must be aware of simple techniques of reassurance and distraction to reduce stress to the child.

SAFETY

19. Children within the EC must be safe from harm or abduction – ideally, the paediatric area must be access-controlled 24 hours a day.
 - 19.1. If this is with security personnel, the station must be manned all the times.
 - 19.2. Access control must not prevent or delay entry of sick children.
 - 19.3. Access control points must not prevent those inside the paediatric area from seeing persons awaiting entry outside the area.
 - 19.4. Access control must not prevent or delay sick children from being moved to resuscitation areas.
20. All children in the EC must be supervised by an adult at all times.
 - 20.1. If the carer needs to leave, then a member of staff must be informed and supervisory arrangements made until the carer returns.

- 20.2. Parents of other children must not be asked to perform this role.
21. In all areas where children are seen (with the exception of the resuscitation area):
- 21.1. All potentially harmful equipment (including sharps, sharps bins and garbage bins) must be secured in such a way as to be out of reach of children.
 - 21.2. All plug sockets must be fitted with child-proof devices.
 - 21.3. All electrical wiring must be safely secured.
 - 21.4. All drugs or medicines must be kept out of reach to children.

ENVIRONMENT

(See also Chapter 2: Infrastructure.)

22. Children must have complete audio-visual separation from adult EC areas.
23. Suitably child-friendly environments and distractions must be available. For example:
- appropriate décor: paintings, murals, mobiles, colourful curtains and furnishings;
 - a play area with books, colouring items, toys, etc.;
 - a TV/DVD player with a range of cartoons or children's movies; and
 - computer games for older children.
24. Adequate space must be provided for children and their families in waiting and clinical areas.
25. A 'counselling room' must be available for sensitive discussions.
26. Ambient temperature must be regulated as children lose heat quickly.

FOOD AND COMFORT

27. A breast-feeding room or area must be available for nursing mothers.
28. Formula milk and baby food must be available for young infants.
29. Food must be provided for carers, siblings and children who are waiting in the EC.
30. Nappies, in a full range of sizes, and nappy-changing facilities must be available.

COMMUNICATION, REASSURANCE AND DISTRACTION

31. Staff must communicate with both the carer and the child (where he or she is of an age to understand, and in an age-appropriate manner) about anticipated waiting times, possible diagnosis and any planned investigations or procedures that will take place in the EC.
32. Age-appropriate reassurance must be given to scared or nervous children.
33. Children must be allowed to ask questions about their health care.
34. Staff must be aware of distraction and play as means to reduce stress to the child. For example:
- use of stories, bubbles, musical toys, books, etc.; and
 - badges and bravery certificates for children.

EC staff must not give false reassurance to children or their parents.

CHILD RIGHTS, PARTICIPATION & CONSENT

35. Children must be recognised as holders of rights which are protected by law and these rights must be respected in emergency settings; in particular, the following rights must be upheld:

35.1 The best interests of the child.

35.2 The child's right to participate (be to be heard and taken seriously).

35.3 The child's right to guidance with respect to his or her evolving capacities.

35.4 The child's right to information and health education.

36. The consent provisions of the Children's Act must be adhered to:

36.1 *If a child has the capacity to consent:* Children who meet the necessary age and maturity requirements are required to give consent to treatment, surgery, HIV testing and the disclosure of their HIV-positive status.

36.2 *If the child does not have the capacity to consent:* If the child is too young, or the health professional assesses him or her not to have the capacity to consent or refuse treatment, then the parents, guardian or caregiver must make the decision on his or her behalf.

36.3 *If the child's parents, guardians or caregivers unreasonably refuse to give consent:* In a medical emergency which is urgent and life-threatening, the superintendent of the hospital may give consent on their behalf.

36.4 *Consent for HIV testing:* A child under the age of 12 years can consent to an HIV test if he or she is sufficiently mature to understand the benefits, risks and social implications of the test, but must be given appropriate pre- and post-test counselling.

REPORTING OBLIGATIONS FOR ABUSE AND NEGLECT

37. All staff working with children in the emergency environment must be aware of the legal requirements, criteria and correct procedures regarding:

37.1 compulsory reporting of sexual abuse, physical abuse causing injury and deliberate neglect; and

37.2 voluntary reporting of children in need of care and protection.

DIGNITY AND PRIVACY

38. A child has the right to dignity and privacy.

38.1. The child and/or parents must give consent for the child to be undressed.

38.2. The child must be covered with a sheet or blanket if undressed.

38.3. There must be curtains around the examination area.

39. Confidentiality: If a child or adolescent confides information and requests that it not be shared with his or her carer, the health-care professional must make every effort to maintain that confidentiality whilst acting in a manner that is in the best interest of the child and in keeping with the law. This may require consultation with the senior in the EC.

TOOL AND TRAINING

40. Children in the Western Cape should be triaged using the Paediatric version of revised South African Triage Scale (P-SATS).
41. All EMS staff must be fully trained in P-SATS use.
42. All EC nursing staff must be fully trained in P-SATS use.
43. All EC doctors must be familiar with P-SATS.

PROCESS

44. Patients presenting for emergency care must be able to enter the EC via a rapid and easily accessible entrance at any time of day or night without delays.
45. Triage must occur before any administrative or reception procedures.
46. All children should be visually inspected by a trained health professional immediately upon arrival.
47. Formal triage must take place within 15 minutes of arrival at the facility.
48. A senior nurse must be allocated to the triage area at all times.
49. It is unsafe for junior, agency or student nurses to work in triage if they have not been trained in triage. Even after training they must be closely supervised.
50. Time from triage to being seen by clinician should be within Provincial guidelines: Red – immediate; Orange < 10 minutes; Yellow < 60 minutes; and Green < 4 hours.
51. Any child waiting longer than deemed safe by their triage category must be re-triaged.
52. All mothers must be told to inform the triage nurse if their child's condition worsens.
53. In epidemic or major-incident circumstances, triage systems and treatment priorities may need to change according to the facility's Major Incident Plan, which must incorporate plans for ill or injured children.

DOCUMENTATION AND EQUIPMENT

54. Appropriate triage documentation paperwork must be available at triage.
55. Equipment necessary for triage of children must be available in the triage area.
56. Weighing scales for babies and children must be available.
57. Children must be weighed in kilograms and not pounds.
58. Resuscitation of critically ill children must not be delayed to get a weight – the weight can be estimated from age-based formulae or length-based tapes.
59. Triage data for children must be kept and regularly audited.

COMPONENTS OF QUALITY EMERGENCY CARE OF CHILDREN IN ECS

60. **Recognition:** Children with signs or symptoms of serious illness or with potential for deterioration must be rapidly identified through the implementation of a triage system.

61. **Assessment and diagnosis:** All clinicians in the EC must be trained to take a focused history, perform an appropriate examination, and correctly diagnose and manage paediatric patients.
62. **Key treatments:** The correct treatments should be given in a timely manner for emergency conditions in children in ECs.
63. **Key bedside and laboratory investigations** must be available and used only where they will enhance patient care.
 - 63.1 Laboratory services must be available 24/7.
 - 63.2 The results of key investigations must be returned within one hour for on-site laboratories and four hours for off-site laboratories.
 - 63.3 A dedicated system must be in place for reviewing all laboratory reports timeously to identify abnormal results for appropriate action.
64. **Key imaging services** must be available within a reasonable period of time for individuals who require these services.
 - 64.1 Images must be reported and available to EC staff within 24 hours.
 - 64.2 A dedicated system must be in place for reviewing all radiological imaging reports timeously to identify abnormal results for appropriate action.
65. **Observations:** Basic vital signs should be recorded at least hourly for all seriously ill children receiving emergency treatment in the EC.
66. **Discharge:** Safe discharge practices must be adhered to.
67. **Documentation:** Detailed, legible notes must be available from the time of arrival at triage through to the time of disposition of the patient from the EC.

REFERRAL

68. Referral pathways and processes must be agreed for all emergency centres (ECs) and must be prominently displayed and easily available.
69. All staff working in ECs (including locums) must be aware of paediatric referral pathways.
70. Each receiving institution must define a detailed list of paediatric conditions (medical, surgical and traumatic, as well as those relating to specialties, e.g. cardiology and ENT) that can be handled at that institution and provide it to its referral partners (including EMS).
71. All critically ill paediatric cases who are being referred must be discussed with the receiving medical facility.
72. If there is deterioration in the child's condition prior to or during transport that requires more intensive care (e.g. intubation and ventilation), this needs to be communicated to the receiving facility so that the necessary resources can be made available prior to the patient's arrival.
73. Locally agreed referral pathways must be followed – depending on local arrangements, referring clinicians may not need to discuss every case being referred but must do so in cases of uncertainty or where advice is needed.
74. The receiving facility must accept all critically ill paediatric cases from their drainage area regardless of bed availability.

75. If there is a shortage of an appropriate bed for a critically ill patient in the receiving institution, the patient must be accepted by and transferred to the EC of the receiving centre without delay.
76. At times of in-patient bed shortage it is the responsibility of the receiving institution's bed-management team to invoke its escalation policy in keeping with the Western Cape's Emergency Case Load Management Plan (ECLMP).
77. An unstable or critically ill child must NEVER be left at a lower level of care due to bed shortages at the receiving centre.
78. There should be a reliable, designated telephone number (ideally, mobile) that is carried 24 hours a day by the person designated as the receiving centre clinician call-taker for each specialty at the receiving institution. Rosters with these details must be kept in the Telephone Exchange and in the EC.
79. At the receiving facility, all referral calls must involve an experienced clinician (intern call-takers may not give advice or refuse referral of a child without senior input).
80. Duties of the receiving-centre clinician call-taker:
 - 80.1 A patient-centred approach must be adopted from the outset.
 - 80.2 The best interests of the child and family must be put ahead of any other concerns.
 - 80.3 The receiving-centre clinician call-taker has a duty to find out details of the child's condition and to provide advice to optimise stabilisation prior to transfer.
 - 80.4 Inform the referring clinician about the details of where the child needs to be sent to in the receiving hospital.
81. The receiving centre should maintain a logbook or database of all referral calls.
82. In-patient specialties that accept children to a facility directly must communicate and liaise with the EC if the patient is to be received in the EC.
83. A comprehensive referral letter should accompany every child being referred.
84. All relevant clinical information must be sent with the patient, including radiology films and laboratory results.
85. An incident-reporting mechanism must be available at both the referring and receiving facility for reporting any problematic referrals.
86. The patient remains the responsibility of the referring doctor until such time as he or she (the patient) reaches the receiving hospital (Western Cape ECLMP 7.1.4).

TRANSFER AND TRANSPORT

87. Retrieval teams must be available for the transfer of critically ill children and neonates.
88. When requesting transport of critically ill children, the referring facility must ensure that the severity of the child's condition is effectively communicated to the call-taker at the EMS Communications Centre (including, at a minimum, triage colour, vitals, special equipment, and the urgency and level of the EMS crew required).
89. Effective verbal and written communication during patient handovers must take place between EMS practitioners and doctors from receiving and referring ECs. The DeMIST handover procedure is the minimum handover that must occur.

90. Prior to departure, the EMS crew responsible for the management of the patient must independently assess the child's clinical condition and suitability for transport and familiarise themselves with the treatment already undertaken.
91. The EMS Communications Centre or EMS crew (if able) must notify the receiving EC of the estimated time of arrival, the condition and medical interventions initiated in critically ill children prior to their arrival at the EC (if not already informed).
92. For all transports and transfers of critically ill children, a clearly defined communication system (trunking radio/telephone) must be available between the EMS crew effecting the transfer and the medical team receiving the patient.
93. EMS crews that do not feel comfortable about effecting the transport of a critically ill child (due to lack of necessary equipment or suitable qualifications) must voice their concerns to the referring physician so that the referring physician can initiate further treatment to stabilise the patient and/or arrange alternative transport with a more qualified EMS crew. The EMS crew must help to facilitate communication with the EMS Communications Centre in order to expedite transport of the child with an alternative EMS resource if appropriate.
94. Critically ill paediatric patients must not be conveyed along with adult patients for the purposes of inter-facility transfers unless it is in the child's best interests to do so.
95. Critically ill or injured paediatric/neonatal patients who fit the criteria of the Paediatric Emergency Call Out Pathway protocol must be transported by the Paediatric Flying Squad (PFS) or a suitably equipped Advanced Life Support crew if PFS is not available.
96. All emergency care practitioners must be aware of the closest most appropriate medical facility to which paediatric emergencies must be transported.
97. In the absence of specific protocols (e.g. Paediatric Burns Referral Guidelines, Paediatric Polytrauma Referral Guidelines, etc.), EMS personnel must base the destination medical facility on the patient's initial on-scene triage code.
98. To ensure the effective disposition of paediatric patients, pre-hospital EMS referral guidelines must be easily accessible to all EMS staff and ECs.
99. Any Advanced Life Support Paramedic tasked with effecting the inter-facility transport of a critically ill child or neonate must be proficient and up to date with advanced life support skills and knowledge for children and neonates.
100. No EC may refuse to assess and accept a child delivered by an ambulance, regardless of geographical origin or triage code.

EC CLINICAL GUIDANCE

101. Emergency Centre (EC) clinical guidance must be:
 - 101.1. based on best available evidence;
 - 101.2. locally relevant;
 - 101.3. compatible across levels of care;
 - 101.4. standardised;
 - 101.5. easily accessible;
 - 101.6. taught to staff;

- 101.7. taken into consideration by EC clinicians;
 - 101.8. audited; and
 - 101.9. regularly reviewed and updated.
102. Development of EC clinical guidance must:
- 102.1. be developed as part of a centrally coordinated process in order to ensure standardisation;
 - 102.2. address common clinical conditions (based on local burden of disease);
 - 102.3. include symptom-based approaches;
 - 102.4. focus on the management in the initial 4-6 hours after presentation;
 - 102.5. be presented in formats appropriate for the EC setting; and
 - 102.6. include a date for review.

EC STAFFING STRUCTURE

103. The staffing structure of an EC must consist of a lead doctor and lead nurse who together guide a team of professionals assigned to work exclusively in the EC.
104. In mixed adult and paediatric ECs, there must be a designated nurse and doctor who act in an advocacy role for paediatric emergency care.
105. All EC staff must be appropriately trained to manage paediatric emergencies (see Chapter 9: Training).
106. All agency staff and locums must have the stipulated level of paediatric training if they are required to manage paediatric patients (see Chapter 9: Training).
107. Orientation to the EC must occur for any new staff member – whether permanent or temporary.
108. Staffing numbers must be appropriate for the design, workload and patient demographics of the EC and must be sufficient to ensure safe and efficient care of all patients
109. Due consideration must be given to ensuring an adequate staff skill mix when rostering and allocating staff to specific areas:
- 109.1. An appropriately trained person must be dedicated to triage of children (see Chapter 4: Triage).
 - 109.2. An appropriately trained nurse/doctor team dedicated to the resuscitation of children must be identified for every shift. An additional nurse dedicated to caring for the family during resuscitations is ideal.

DOCTOR STAFFING STANDARDS

110. If the WCG: Health medical staffing model (Appendix C) is being used to calculate EC doctor staffing needs, the formula must be adapted to reflect the longer time taken to assess and manage children compared to adults. The recommended time per paediatric patient by intensity is as follows:

WCG: Health medical staffing model for time per patient

	Intensity		
	Low	Moderate	High
Minutes/patient	30	60	120

111. The senior on-call EC doctor must be available at all times for consultation by junior EC medical and EC nursing staff.

112. Specialist consultation must be easily and rapidly available should the need arise.

NURSING STAFFING STANDARDS

113. In mixed adult and paediatric ECs, both general and paediatric nurses must be employed, with the proportion of paediatric nurses reflecting the paediatric workload of the unit (see Chapter 9: Training).

114. In mixed adult and paediatric ECs, any paediatric nurse on duty must be allocated to work with paediatric patients as far as possible.

STAFF WORKING HOURS AND STAFF RETENTION

115. In high-turnover ECs, doctors' shift duration must not exceed eight hours. In low-turnover ECs, doctors' shift duration must not exceed 12 hours.

116. A maximum shift duration of 12 hours must not be exceeded for EC nursing staff.

117. The maximum number of consecutive 12-hour shifts worked must be limited for both doctors and nurses. This should be inclusive of overtime/agency shifts.

118. Safe staffing standards must be maintained at all times, including when staff are on leave or away on training.

119. A staff retention plan must be in place.

120. A proportion of non-clinical time must be allocated to clinical members of staff, depending on their role, the intensity of the clinical work and additional responsibilities.

PAEDIATRIC TRAINING

121. Both medical and nursing undergraduate curricula must contain sufficient paediatric and paediatric emergency training to permit high-quality basic emergency care to be initiated for paediatric patients presenting at any level of health care.

122. ECs must ensure that adequate numbers of nurses have received specialist paediatric nurse training as stipulated in Table 4.

123. ECs must ensure that adequate numbers of doctors have received advanced additional paediatric training as stipulated in Table 4.

TRIAGE TRAINING

124. All nurses must receive training in the South African Triage Scale (SATS) at a level suitable to their role and facility level as stipulated in Table 5.

125. All doctors must be familiar with SATS.
126. Attendance on a formal SATS training course must occur prior to or as soon as possible after commencement of employment in the EC.

RESUSCITATION TRAINING

127. All staff must receive paediatric resuscitation training at a level suitable to their role and facility level (see appropriate tables for more information).
128. All multi-disciplinary team members likely to be involved in paediatric resuscitation must attend paediatric resuscitation courses.
129. Formal resuscitation training must be repeated at least as frequently as required by the governing body for that qualification.
130. Attendance at a formal triage/resuscitation training course must occur prior to or as soon as possible after commencement of employment in the EC.
131. Team simulation training using paediatric scenarios must occur in every EC.
132. Adult-only ECs must also have the required skills and equipment to resuscitate a child.

COMMUNICATION AND TEAMWORK TRAINING

133. All staff must receive training in communication skills and teamwork.

FUNDING AND ATTENDANCE OF TRAINING COURSES

(See Chapter 10: Teaching and Education in the Emergency Centre.)

UNDERGRADUATE AND POSTGRADUATE TEACHING

134. Teaching in paediatric emergency care must be included in all nursing and medical undergraduate curricula.
135. Teaching in paediatric emergency care must be included in paediatric, emergency medicine and family medicine registrar curricula.

CONTINUING STAFF EDUCATION IN THE EC

136. Regular EC staff teaching must include:
 - 136.1 clinical topics relevant to the emergency care of children in the Western Cape;
 - 136.2 clinical skills necessary to provide paediatric emergency care;
 - 136.3 non-clinical skills necessary to work in an EC (e.g. communication with children and families); and
 - 136.4 simulation team training using paediatric scenarios in the EC.
137. A structured emergency teaching programme including at least 25% paediatric emergency topics must be established.
138. Continuing staff education must include the full EC clinical team.

139. Paediatric emergency cases must be discussed at regular departmental mortality and morbidity meetings.
140. EC education leaders must be creative and flexible about how best to achieve learning in the EC environment.

THE ROLE OF HEALTH-CARE PROFESSIONALS AS TEACHERS

141. A lead person must be designated to organise and run the EC teaching programme.
142. Senior staff must be allocated a portion of non-clinical time in which they teach and supervise junior members of staff.
143. Health-care staff in positions requiring them to teach regularly must be facilitated in gaining formal education training.

FUNDING AND ATTENDANCE OF TRAINING COURSES

144. All staff must be permitted adequate paid time to attend stipulated training courses.
145. The cost of the stipulated training courses must be covered by the employer, with the understanding that failure to attend the course without reason will result in disciplinary measures.
146. Managers must request and be supplied with proof of course completion from the staff members on their return to work.
147. Safe staffing standards must be maintained at times when staff are attending training.
148. Community education must be provided about simple life-saving measures.

STRESS AND DEBRIEFING

149. A designated counselling/debriefing room must be available.
150. Every EC must have a standard operating procedure on how to facilitate family presence at resuscitation and how to support families whose children have required resuscitation.
151. There must be 24-hour access to a social worker, and social workers' duty rosters must be on display in the unit for easy reference.
152. All health-care institutions must have a written policy on how to manage stress in the workplace.
153. During their EC orientation all new staff should be made aware of how to access the free 24-hour Independent Counselling and Advisory Services (ICAS) support service provided by the provincial Department of Health.
154. A culture of mutual psychological support must be encouraged.
155. Institutional budgets must ensure employee-wellness support services are provided.
156. Signage in key areas must indicate how the support service can be contacted and accessed.
157. Line managers must be trained to recognise and manage staff members displaying stress and know how to deal with, support and monitor the impaired members in a confidential and professional manner.

158. Personnel must be offered training/guidance in 'how to break bad news'.
159. Following any critical paediatric events, both doctors and nurses must have access to the district paediatrician (or professional of equivalent level) for feedback and support.
160. After each major resuscitation/unusual event a team debriefing session with or without support from a counselling team should follow automatically.

PATIENT SAFETY

161. All EC staff and management must be made aware of the propensity for error in ECs so that they can help to recognise, reduce and mitigate the effects of errors.
162. EC staff and management must identify patient-safety priority areas for paediatric patients and implement improvements.
163. Regular data must be gathered on key quality and safety indicators – these must include paediatric indicators.
164. There must be a reliable way of keeping track of all children in the EC.
165. An escalation policy must be in place if children are waiting longer than permitted by their triage category.
166. Handover:
 - 166.1 When handing over patients, all emergency staff (including EMS, nurses and doctors) must communicate so as to promote continued best-quality emergency care and protect patient safety at all times.
 - 166.2 At shift changes, both nursing and medical staff must communicate about every child present in the EC, even those waiting to be seen.
 - 166.3 Handovers must be standardised so that all key information is passed on.
167. Shift-work:
 - 167.1 Staff must not work prolonged hours (see Chapter 8: EC Clinical Staffing For Paediatric Emergencies).
 - 167.2 Shift patterns must take account of new scheduling patterns that are considered to be less detrimental to staff well-being and performance.
168. Paediatric-specific medication safety measures such as age/weight-appropriate dosing schedules and/or paediatric drug-dose calculators must be in place.
169. All paediatric drug doses administered in the EC must be checked by a second trained professional (doctor or nurse).
170. Infection control measures in keeping with national and international standards must be adhered to in ECs (e.g. strict hand-hygiene, safe distance between patients, separation of infectious patients).
171. The EC environment must be 'child-proofed' in terms of safety in all areas where mobile children may be seen (see Chapter 3: Child Rights and Child- and Family-Friendly Emergency Standards).
172. Paediatric beds in the EC:
 - 172.1 Children triaged as Orange category must be taken to a Majors bed.
 - 172.2 Child-patients must not share beds or stretchers in ECs or ambulances.

172.3 Carers must not be expected to hold children or babies in their arms for longer than two hours – if they are waiting longer than this, a safe, age-appropriate option must be provided on which the child can lie down.

172.4 It is unacceptable for children or babies to be placed on blankets on the floor.

CQI

173. All ECs must have an operational CQI programme in place to provide ongoing monitoring of quality of care and compliance with patient-safety standards.

174. Policies for reporting, evaluating and learning from critical incidents, medication errors and other patient-safety events must be in place.

175. All ECs must hold monthly Mortality and Morbidity meetings.

176. The Child Healthcare Problem Identification Programme (ChildPIP) must be used to analyse any child deaths in the EC.

177. Paediatric patient chart reviews must be conducted regularly to evaluate actual clinical practice and adherence with clinical guidelines and standards.

178. Telephone referrals:

178.1 The receiving-centre should maintain a logbook or database of all referral calls from local facilities.

178.2 A senior doctor must review the logbook/database regularly. Statistics from the logbook/register should be collated and presented at monthly mortality and morbidity meetings.

EQUIPMENT AND CONSUMABLES

179. All ECs must be fully equipped with paediatric resuscitation equipment and consumables catering for all ages as per Appendix E.

180. Paediatric resuscitation equipment and consumables must be kept in an organised, user-friendly and accessible location such as a designated paediatric resuscitation trolley.

181. Other essential equipment and consumables specified in Appendix F must be available in all ECs where paediatric patients may present.

182. The presence and functionality of paediatric resuscitation equipment and consumables must be checked every shift.

183. Following all resuscitation events, paediatric resuscitation equipment must be cleaned, checked and consumables restocked immediately.

184. All staff providing patient care must be trained and familiar with the paediatric resuscitation equipment used in their own EC.

185. ECs that do not routinely manage paediatric patients must have a minimum of a paediatric resuscitation kit with paediatric appropriate equipment and consumables.

MEDICATIONS AND FLUIDS

186. All ECs receiving children must be equipped with an appropriate range of medications and fluids to deal with paediatric emergencies.

187. Resuscitation medication (catering to all paediatric age groups), as listed in Appendix J, must be immediately available in the resuscitation area of ECs.
188. Aids for the estimation of a child's weight must be available in the resuscitation area.
189. Paediatric dosage guidelines for common emergency drugs must be immediately available in the resuscitation room of all ECs.
190. Emergency, post-resuscitation and stabilisation (Appendix K) must be available for rapid access in the EC.
191. Appropriate IV fluids for children must be available in the EC (Appendix L).
192. A range of analgesics appropriate for children must be available in the EC (Appendix M).
193. Routinely used drugs for treatment of common paediatric condition in the EC, as well as routine discharge medications for children (Appendix N), must be available in the EC.
194. Commonly needed discharge medications for children leaving the EC, during hours when pharmacy services are not available, must be pre-prepared, packaged and labelled by a pharmacist and regularly re-stocked.
195. An after-hours access system must be available for specific, unusual drugs.
196. Ideally pharmacy services must be available for 24/7 dispensing and consultation. At a minimum, on-site services must be available until 23h00 every day (including weekends).
197. EC medications must be appropriately stored and controlled by a pharmacist.
198. All facilities must have access to a 24-hour poison information centre.
199. Drugs for disaster situations must be available as per facility disaster planning.
200. ECs that do not routinely manage paediatric patients must have a minimum of a paediatric resuscitation kit with paediatric appropriate resuscitation and stabilisation medications as per Appendix I.

STAFFING

201. All paediatric patients, in the pre-hospital environment, must be managed by the minimum of an Intermediate Life Support (ILS) crew member.
202. Basic Ambulance Assistants (BAA) must work under supervision at all times with all ambulances crewed with at least one Intermediate Life Support practitioner (with the exception of Advanced Life Support (ALS) ambulances).
203. A medical practitioner with pre-hospital expertise must be available for consultation 24 hours a day.

TRAINING AND CONTINUED PROFESSIONAL DEVELOPMENT

204. All emergency care practitioners must be competent in assessing, managing and safely transporting common paediatric emergencies to the nearest most appropriate medical facility. The assessment and appropriate treatment must be in accordance with prevailing, evidenced-based, best-practice protocols.
205. All emergency care practitioners must be competent in basic paediatric/neonatal life support.

206. ALS practitioners must be competent in advanced life support procedures for neonates and paediatrics.
207. In order to maintain competency in the emergency management of the critically ill child, all operational emergency medical services (EMS) practitioners (BLS, ILS and ALS) must be recertified as prescribed by designated courses.
208. Formal resuscitation training must be repeated at least as frequently as required by the governing body for that qualification.
209. The Human Resource Development (HRD) training department must structure their programmes to allocate at least 5 CPD points annually to paediatric emergency topics.
210. As per Skills Development Policy, all staff must be given the opportunity to attend approved and designated training courses which are required for competency in the assessment and management of paediatric emergencies during normal hours.
211. All ambulance bases (with the exception of satellite stations) must have access to suitable electronic teaching aids and audio-visual projection facilities as well as the required paediatric training equipment (e.g. paediatric manikins, cardiac monitor, rhythm simulator).
212. At least one paediatric case must be presented at every mortality and morbidity forum.
213. EMS staff must be aware of the concept, and the potential psychological benefits, of family presence during the resuscitation of a child.

CLINICAL CARE PROTOCOLS AND SCOPE OF PRACTICE

214. Management of paediatric emergencies must be guided by accepted up-to-date evidence-based regional and national resuscitation guidelines (e.g. WC EM Guidance, APLS).
215. All emergency care practitioners must have access to the latest protocols for their respective qualification as prescribed by the Health Professional Council of South Africa (HPCSA).

TRIAGE

216. All emergency care practitioners must be trained in the application of the South African Triage Scale (SATS).

DRUGS AND RESOURCES

217. All medications approved for use by emergency care practitioners by the HPCSA must be readily available.
218. Pre-calculated dose guidelines and approved weight formulae for children of all ages must be available in the form of charts/cards and length-based drug dosage tapes.
219. Up-to-date, evidenced-based guidelines pertaining to paediatric emergency care must be available to all emergency care practitioners (e.g. HPCSA ALS, ILS and BLS guidelines, EM guidelines 2013).
220. A portable cooler-box/bag must be available for the storage of medications that need to be kept refrigerated on the ambulance (e.g. Lorazepam).
221. A dedicated medications fridge must be available for the on-site storage of medications that need to be kept refrigerated.

EQUIPMENT

222. Equipment to manage paediatric emergencies appropriate to qualification must be available in all ambulances.

SECURING OF CHILDREN FOR TRANSPORT

223. All equipment necessary for the safe transport and securing/immobilising paediatric patients of all ages must be available (e.g. car seats, transport incubators, immobilisations devices).

224. Guidance must be available for securing patients using mechanisms other than in stretchers.

225. Unless it is in the patient's best interests, no baby, infant or child must be transported or transferred in the carer's arms – such patients must be appropriately secured at all times. Unstable babies must never be put into kangaroo care for transportation.

226. Children must not share stretchers in ambulances.

TRANSFERS AND TRANSPORT

227. Retrieval teams must be available for the transfer of critically ill children and neonates.

228. When requesting transport of critically ill children, the referring facility must ensure that the severity of the child's condition is communicated effectively to the call-taker at the EMS Communications Centre (including, as a minimum, triage colour, vitals, special equipment, urgency and level of EMS crew required).

229. During patient handovers effective verbal and written communication must take place between EMS practitioners and doctors from receiving and referring ECs. The DeMIST handover procedure is the minimum handover that must occur.

230. Prior to departure, the EMS crew responsible for the management of the patient must independently assess the child's clinical condition and suitability for transport and familiarise themselves with the treatment already undertaken.

231. The EMS Communications Centre or EMS crew (if able) must notify the receiving EC of the estimated time of arrival and the condition of, and medical interventions initiated in, critically ill children prior to their arrival at the EC (if not already informed).

232. For all transports and transfers of critically ill children, a clearly defined communication system (trunking radio/telephone) must be available between the EMS crew effecting the transfer and the medical team receiving the patient.

233. EMS crews that do not feel comfortable effecting the transport of a critically ill child (due to lack of necessary equipment or suitable qualifications) must voice their concerns to the referring physician so that the referring physician can initiate further treatment to stabilise the patient and/or arrange alternative transport with a more qualified EMS crew. The EMS crew must help facilitate communication with the EMS Communications Centre in order to expedite transport of the child with an appropriate EMS resource.

234. Critically ill paediatric patients must not be conveyed along with adult patients for the purposes of inter-facility transfers unless it is in the child's best interests to do so.

235. Critically ill or injured paediatric/neonatal patients who fit the criteria of the Paediatric Emergency Callout Pathway protocol must be transported by the Paediatric Flying Squad (PFS) or a suitably equipped ALS crew if PFS is not available.
236. All emergency care practitioners must be aware of the closest most appropriate medical facility to which paediatric emergencies must be transported.
237. In the absence of specific protocols (e.g. Paediatric Burns Referral Guidelines, Paediatric Polytrauma Referral Guidelines) EMS personnel must base the destination medical facility on the patient's initial on-scene triage code.
238. To ensure the effective disposition of paediatric patients, pre-hospital EMS referral guidelines must be easily accessible to all EMS staff and ECs.
239. Any Advanced Life Support Paramedic tasked with effecting the inter-facility transport of a critically ill child or neonate must be proficient and up to date with advanced life support skills and knowledge for children and neonates.
240. No EC may refuse to assess and accept a child delivered by an ambulance, regardless of the child's geographical origin or triage code.

EMERGENCY MEDICAL DISPATCH

241. In order for them to identify the possibility of a life-threatening paediatric emergency, EMS call-takers must be of a suitably trained professional level that includes their having the ability to interrogate the caller and utilise algorithmic template/questions.
242. Emergency Medical Dispatchers (EMDs) must correctly identify possible paediatric life-threatening emergencies and dispatch the nearest most appropriate EMS resource within the pre-defined acceptable time-frame.
243. EMDs must be aware of the triage categories of the South African Triage Scale and use the triage category in conjunction with the Paediatric Emergency Callout Pathway protocol to correctly identify the most appropriate resource to utilise when dispatching the inter-facility transport of critically ill or injured children.
244. Operational crews must have an easily accessible channel of communication whereby they can request expert consultation from an EMS Emergency Doctor on call or a Doctor at the receiving medical facility.
245. EMS call-takers must be able to give pre-arrival basic emergency first-aid instructions to callers in order to help provide the necessary assistance to the patient prior to the arrival of EMS crews.
246. Children less than one year old must not automatically be made Priority 1 (P1).

CHILD- AND FAMILY-FRIENDLINESS

247. A caregiver must be allowed to travel with the child – this can apply to young patients up to the age of 18 years.
248. Children must not be transported in same ambulance as adult emergency patients unless it is in the child's best interests to do so.
249. Where this cannot be avoided, child patients must not be transported with the following types of patients (unless it is in their best interests to do so):
- those with traumatic injuries;

- those with drug, alcohol or psychiatric problems;
 - those with the risk of infectious disease risk (e.g. TB, viral illnesses);
 - unstable adults requiring en route stabilisation; or
 - those with any other distressing or potentially harmful conditions.
250. EMS staff must be aware of simple reassurance and distraction techniques to reduce stress to the child.

PATIENT SAFETY AND CONTINUOUS QUALITY IMPROVEMENT

251. EMS staff and management must identify patient-safety priority areas for paediatric patients and implement improvements using established tools such as Plan-Do-Study-Act (PDSA).
252. Regular data must be gathered on key paediatric quality and safety indicators.
253. Handovers must be standardised so that all key information is passed on.
254. All EMS staff and management must be made aware of the propensity for error in the pre-hospital environment:
- 254.1 Practical aspects of error recognition and containment in the pre-hospital environment.
 - 254.2 Common error producing conditions in the pre-hospital environment.
 - 254.3 Recognition of biases in critical thinking in themselves and their colleagues.
255. Paediatric-specific medication safety measures such as age/weight-appropriate dosing schedules and/or paediatric drug-dose calculators must be in place.
256. Infection control measures in keeping with both national and international standards must be adhered to in the pre-hospital environment (e.g. strict hand-hygiene, safe distance between patients, not transporting infectious patients with healthy patients).
257. All districts must have a fully functional CQI programme in place to provide ongoing monitoring of quality care and compliance with patient-safety standards.
258. Policies for reporting, evaluating and learning from adverse incidents, medication errors, inappropriate referrals and other patient-safety events must be in place.
259. All districts must hold monthly mortality and morbidity meetings.
260. Paediatric Patient Report Form reviews must be conducted regularly to evaluate actual clinical practice and adherence to clinical guidelines and standards.

Appendix A: Excerpts from *Children's Act Guide for Health Professionals*

This section is comprised of selected extracts reproduced with permission from Jamieson L & Lake L (2013) *Children's Act Guide for Health Professionals*. Edition 5. Cape Town: Children's Institute, University of Cape Town.

Reading the full guide is highly recommended for all health-care staff who interact with children. To download it in PDF and/or obtain further information, visit www.ci.org.za.

THE CHILDREN'S ACT 38 OF 2005

The Children's Act is a law which governs the provision of a range of services for children and families in South Africa. The original Children's Act 38 of 2005 was amended by the Children's Amendment Act 41 of 2007. Some of the provisions came into force on 1 July 2007, and the rest of them — along with their associated Regulations — on 1 April 2010.

WHY IS THE CHILDREN'S ACT IMPORTANT FOR HEALTH PROFESSIONALS?

In order to promote children's rights and well-being, the Children's Act provides a legal framework to guide people who are involved in the care, development and protection of children on the actions and steps they must take to secure children's rights. Among other things, the Act:

- states what the rights of children are;
- outlines the general principles that must be applied by anyone interacting with a child;
- states when a child can consent to medical treatment, surgical operations, HIV testing and disclosure;
- states who can consent when a child lacks legal capacity;
- states at what age a child can access contraceptives;
- defines a caregiver;
- defines a child in need of care and protection; and
- creates mandatory reporting requirements in respect of abuse and neglect.

All health professionals are required to perform their duties and responsibilities according to the Children's Act when working with children. It is therefore essential for health professionals to have thorough knowledge of this law.

RIGHTS UNDER THE CHILDREN'S ACT

WHAT ARE THE RIGHTS INFORMING HEALTH CARE PRACTICE?

The recognition that children are holders of rights is central to the philosophy and implementation of children's rights. Children are not merely passive recipients of adult care and protection. Rather, they are social actors entitled to contribute to the exercise of their rights and to participate in decisions that affect them. Such an approach has profound implications for the relationships between children and health professionals, and indeed between children and their parents.

➤ **General Principles**

The best interests of the child

The importance of considering the best interests of the child in all matters that affect the child is recognised in both the UNCRC and the African Charter on the Rights and Welfare of the Child. The Constitution notes that 'a child's best interests are of paramount importance in every matter concerning the child'. This includes matters affecting the health and well-being of the child. The Children's Act stipulates further that the best interest standard must be applied in all matters concerning the protection, care and well-being of the child. Thus, in all decisions, actions and proceedings regarding the health and well-being of children, the best interest standard must be applied.

The right to participate, to be listened to and to be taken seriously

All children capable of expressing a view are entitled to express that view on all matters affecting them and to have their views given due regard in accordance with the age and maturity of the child. This principle places a clear obligation on adults to listen to children and consider what they say seriously. It is important to understand the implications of this right.

All children are capable of forming a view. Even very young children can express their views, fears, concerns and outrage, and article 12 of the UNCRC requires that adults create the time and be willing to hear those views and give them respect. The extent to which they are able to fulfil the child's wishes will depend on the issue, the choices available, their implications and the child's capacity to understand the issue. But a child's view is not invalid simply because of his or her youth: a baby, as well as a 16-year-old, has a right to be listened to. But it may be necessary to explore different ways to enable younger children to express and articulate their concerns.

All children are entitled to views on all matters affecting them. Article 12 of the UNCRC (as well as section 10 of the Children's Act) covers all aspects of children's lives. Whether it is decisions within the family, in school, in the hospital or in matters of public policy, children are entitled to be consulted and involved. It is important to recognise that many decisions traditionally taken by adults have an impact on children, for example, the location and design of a hospital, the way in which clinics are organised, the management of hospital wards, or policies regarding sexual and reproductive health. These are all areas where children, and their parents, can make a useful contribution if properly consulted.

There is no point in listening to children if there is no commitment to consider what they say. This means being prepared to create the time to hear what children think and feel, and to give serious consideration to what they say. This does not mean there is an obligation to always comply with a child's wishes – but their views should not be dismissed simply because they are young or because they do not coincide with those of the adults involved.

The weight given to a child's views will depend on his or her age, maturity and level of understanding of the issue. This does not simply mean that older children's views will be given more weight. There is clear evidence, for example, that young children who have experienced major surgery and frequent medical interventions can have a profound understanding of the life and death implications of choices affecting them and are capable of making choices if properly supported by adults around them. The onus lies with the health professional to support the child and to build the child's capacity for health decision-making through a process of dialogue. The more competent a child, the more emphasis should be placed on his or her wishes and views.

The child's right to respect for his or her evolving capacities

The UNCRC stresses that parents have the right and responsibility to provide direction and guidance to their children. However, such guidance must be directed to the promotion of the child's rights and be provided 'in a manner consistent with the evolving capacities of the child'.

This principle [evolving capacity] in international law has profound implications for the human rights of the child. It recognises that as children grow and develop increasing competencies, they require less adult direction and support and have a greater capacity to take responsibility for decisions affecting their lives. The UNCRC recognises that children acquire these competencies at different ages depending on their environment, culture and individual life circumstances.

The concept of evolving capacities is central in achieving a balance between recognising children's right to be listened to and granted increasing autonomy, and recognising their right to protection and support in accordance with their relative immaturity and youth. This concept provides the basis for an appropriate respect for children's agency without exposing them prematurely to the full responsibilities normally associated with adulthood.

In many countries, consent procedures are often prescribed in law and pegged at a fixed age. For example, the old Child Care Act said that children acquired the competence to make informed decisions about health care at 14. This is not in line with an approach based on evolving capacities. The evolving capacities approach requires doctors to progressively involve children more fully in decisions relating to their health; to help parents recognise the importance of respecting children's active involvement; and to encourage an approach to decision-making which is open, participative and informed. The new Children's Act has lowered the age threshold to 12 and introduced a maturity test which helps to bring South African law more in line with the concept of evolving capacity as it requires an assessment of, and respect for, each individual child's maturity.

The right to information

The UNCRC and Children's Act include an obligation to ensure that children and their parents (and the community) have access to education and information to enable them to achieve the best possible health. Access to health-promoting information can play an important role in protecting children by enhancing their capacities to make informed decisions. Health professionals can play a key role in ensuring that children and their parents have the necessary knowledge and skill to make positive choices and live healthy lives.

These health provisions imply that health professionals should:

- provide information to help children to understand how they can lead healthy lives (e.g. information about sexual reproductive health, HIV/AIDS, nutrition, smoking, alcohol, illegal drugs, physical and psychological development);
- develop preventative and promotional materials in child-friendly formats that are age-appropriate and easy for children to understand (which is best done in partnership with children themselves);
- ensure that child patients receive information in a format that allows them to fully understand their own health status and treatment options;
- work collaboratively with parents and children to foster an understanding and respect for their respective rights and responsibilities with regard to decision-making in relation to the child's health; and
- advise children where they can go for further information and help.

The way information is given is crucial:

- it must be given in ways that are age-appropriate and consistent with the child's level of understanding;

- it must be given in a language which the child understands;
- it should preferably be provided by someone whom the child knows and trusts;
- time must be made available to enable the child to ask questions both immediately and after any treatment and time to consider the potential consequences, risks and benefits of more complex procedures; and
- the child needs to feel safe and confident that his or her concerns will be taken seriously when decisions are being made.

Parents should be as fully involved as possible so that they understand the treatment options and procedures and can support and reassure the child. Parents may also be able to translate medical information into a language that younger children can understand and support older children when making decisions about surgery. However, older teens may prefer to maintain their independence and privacy, and they are entitled to give consent to medical treatment, HIV testing and access to contraception independently.

Taken together these rights place an obligation on health professionals to:

- explore with children (and their caregiver/s) their treatment options, their level of understanding, their associated opinions and views (and only then can they assess children's competence to make decisions about their treatment and care);
- present information to children in a ways they will understand and that are appropriate to the child's evolving capacities;
- work collaboratively with both children and their parents to involve them as fully as possible in treatment and other decisions that affect the child;
- provide children with the opportunity and time to reflect on the proposed options and make an informed decision;
- provide a comfortable and supportive environment to allow the child to exercise his or her capacities, and to ask questions as the process unfolds;
- work collaboratively with children and their parents to understand how decisions affect or are affected by the child's unique circumstances (including their age, gender, culture, developmental capacities and abilities); and
- work with parents and children to ensure the child's best interests are intentionally considered and supported.

Children's right to protection and freedom and security of the person

Children are also entitled to protection from harm. Articles 19 and 37 of the UNCRC protect children from cruel, inhumane and degrading treatment and protect the child from all forms of violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse.

In the Constitution, these protection rights fall under the right to freedom and security of the person (section 12), as well as children's right to be protected from maltreatment, abuse, neglect and degradation (section 28(1)(d)). These rights have considerable similarities with articles 37 and 19 of the UNCRC. However, the Constitution goes one step further and gives everyone a right to bodily and psychological integrity (also called the right to physical integrity), which includes the right to make decisions concerning reproduction; the right to security in and control over one's body; and the right not to be subjected to medical or scientific experiments without informed consent.

The right to privacy and confidentiality

The UNCRC and the Constitution grant children the right to privacy in respect of themselves as individuals, in their family and home, in institutions and in all forms of correspondence and communication. Respecting privacy is fundamental to respecting the dignity of the child.

It implies that health-care providers have both an obligation and an opportunity to:

- respect the child's body and his or her privacy, taking into account all contextual factors (culture, religion, gender, age, ability) and the consent provisions of the Children's Act;
- conduct consultations and treatments in an environment that respects the child's privacy and confidentiality;
- respect the confidentiality of children and adolescents to seek medical assistance and seek their consent before sharing private and/or confidential information with others (including parents and other health professionals);
- understand and apply the current laws around confidentiality and privacy;
- develop and promote explicit policies concerning access to confidential information, and ensure the child or adolescent is aware of these policies; and
- inform children when this confidentially needs to be breached (for example, when reporting abuse and neglect).

CONSENT UNDER THE CHILDREN'S ACT

WHEN DOES A CHILD HAVE THE CAPACITY TO CONSENT?

The old Child Care Act set the age of consent for medical treatment (which at that time included HIV testing and contraceptives) at 14 years. Children could consent to surgery on their own only if they were 18. The Children's Act lowers the age requirement of consent for these services to 12 years and introduces the additional requirement of a maturity assessment to determine the child's capacity to consent.

The sections below summarises the provisions that govern children's consent to medical treatment, surgical operations, HIV testing, disclosing their HIV positive status and accessing contraceptives.

CONSENT TO MEDICAL TREATMENT AND SURGICAL OPERATIONS

Section 129 of the Children's Act states that a child may consent to his or her own **medical treatment** or to the medical treatment of his or her child if:

- the child is over the age of 12 years; and
- the child is of sufficient maturity and has the **mental capacity to understand the benefits, risks, social and other implications of the treatment.**

A child may consent to the performance of a **surgical operation** on him or her, or on his or her child if:

- the child is over the age of 12 years; and
- the child is of sufficient maturity and has the mental capacity to understand the benefits, risks, social and other implications of the surgical operation; and
- the child is duly **assisted by his or her parent or guardian.**

As in previous legislation, there is no definition of 'medical treatment' or 'surgical operation' in the Act. Treatment would refer to non-invasive and innocuous procedures, and include vaccinations and psychological treatment. A 'surgical operation' generally refers to invasive surgical interventions.

HIV TESTING

A child may be tested for HIV if testing is in the best interests of the child and consent is given by the child or the child's parent or caregiver. According to the Department of Health's HIV Counselling and Testing (HCT) Policy Guidelines,

an HIV test will be in the best interests of the neonate, infant or child if it is clear that the test will provide access to the continuum of care and promote a child's physical and emotional welfare.

The Act sets out the following rules regarding the child's capacity to consent to an HIV test:

- if the child is over 12 years, then the child can give consent without his or her parent's knowledge; and
- if the child is under 12 years and sufficiently mature enough to understand the benefits, risks and social implications of the test, then the child can consent him- or herself.
- if the child is under 12 and is not mature enough, then the parent or caregiver must give consent on the child's behalf.

WHAT HAPPENS WHEN THE CHILD LACKS THE CAPACITY TO CONSENT?

Where a child is too young or lacks the capacity to consent, the Children's Act gives the decision-making power to others (for example the parent or caregiver) in order to protect the child from the burden of making difficult decisions. However, children who lack capacity still have the right to participate and have their views considered.

The Children's Act and the National Health Act respect the rights of *all* child patients to participate in decisions affecting their health and well-being and to have their views and opinions considered and respected. However, this right to participate doesn't always extend to a right to make decisions. The prescribed age and maturity requirements draw a line between children who are entitled to participate and those who can also make the ultimate decision (give or refuse consent).

a) *Who can consent to medical treatment?*

The Act provides clear guidance on who else is authorised to consent when the child lacks the capacity to consent. When the child cannot consent to medical treatment, the parent, guardian or caregiver is authorised to give the necessary consent.

Where the parents of the child receiving treatment are under 18 years old, the parents must be subject to the same maturity test as they would for their own treatment. If the child parent does not pass this test, then the parent, guardian or caregiver of the child parent must consent to the treatment of the younger child.

b) *Who consents to surgery?*

The same conditions apply as for medical treatment, **except that caregivers cannot consent for surgery.**

HOW DO WE ASSESS CHILDREN'S CAPACITY TO CONSENT?

As mentioned, a child's capacities are highly dependent on the child's life experiences. For example, young children who have experienced major surgery or frequent medical interventions may have a profound understanding of life or death and how decisions will affect them. While a 5-year-old child may lack the competence to decide which is the best hospital for an operation, he or she can indicate if and why he or she feels comfortable at the hospital, and provide suggestions to improve his or her stay.

When children are given appropriate support, adequate information and opportunities to express themselves meaningfully (through pictures, poems, drama, photographs, as well as more conventional discussions, interviews and group work), all children can participate in clarifying and resolving issues that are important to them.

Health professionals need to listen to children, provide appropriate information and give them time to articulate their concerns, so that children can develop the confidence and ability to contribute effectively to their own health care. These are critical prerequisites or foundations for informed consent, but how exactly are health professionals supposed to assess children's capacity to consent?

Deciding on whether a child is mature enough to give consent requires that the child has full knowledge of the procedure and understands the nature of the risk of the treatment or surgery (including the social or other consequences of the treatment or surgery). Different types of treatment require different levels of understanding and responsibility. For example, a 12-year-old child may be mature enough to understand the risks and benefits of receiving a cast for a fractured arm, but the same child may not be mature enough to understand the risks and benefits of undertaking long-term treatment for a chronic illness such as tuberculosis.

In the case of medical treatment where the health professional concludes that a 12-year or older child is not mature enough to give consent, the health professional must seek consent from the parent, guardian or caregiver. In the case of surgery where the health professional concludes that a 12-year or older child is not mature enough to give consent, the health professional must seek consent from the parent or guardian.

WHO MUST ASSESS IF THE CHILD HAS SUFFICIENT MATURITY AND MENTAL CAPACITY?

Currently, some health facilities allow receptionists and administrators to complete the consent forms. However, explaining the nature of the operation and assessing the maturity of a child and whether the child has the mental capacity to understand the risks, benefits, social and other implications of the operation is a task that should only be done by people with the necessary skills and training.

WHAT HAPPENS WHEN A CHILD REFUSES TO GIVE CONSENT?

a) If a child has the capacity to consent:

Children who meet the necessary age and maturity requirements are required to give consent to treatment, surgery, HIV testing and the disclosure of their HIV-positive status. This means that children cannot be subjected to these procedures against their will.

A child who has the capacity to consent is also entitled to refuse treatment or surgery.

If a child unreasonably refuses to give consent, then the Minister of Social Development or the courts (not the parent, caregiver or guardian) must be approached to overrule the child's refusal. The court can also issue a treatment order for the child (section 156(1)(i)).

b) If the child does not have the capacity to consent:

If a child 12 or older is mentally ill and the health professional assesses him or her not to have the mental capacity to consent or refuse treatment (due to mental illness), then the parents, guardian or caregiver must make the decision on his or her behalf. (See the Mental Health Care Act for additional requirements for involuntary admissions into mental health care facilities.)

Nothing prevents the child from asserting his or her autonomy and exercising his or her constitutional rights to physical integrity (the right to make decisions about one's body). This can be done by a child (or his or her representative) approaching a court to prevent a parent, guardian or caregiver or anyone else from subjecting him/her to medical procedures.

However, a health provider who acts on the instruction (consent) of a parent is acting within the law, even if the child (who lacks capacity to consent) is against the decision.

WHAT HAPPENS WHEN PARENTS, GUARDIANS OR CAREGIVERS REFUSE TO GIVE CONSENT?

If the child lacks capacity to consent, then the parent, caregiver or guardian must consent on his or her behalf. Such a parent, caregiver or guardian can also refuse to give consent.

However, medical treatment and surgery cannot be refused solely based on religious or other beliefs. There must also be a medically accepted alternative to the proposed treatment or surgery. If a parent, caregiver or guardian unreasonably refuses to give consent to treatment, surgery, HIV testing or the disclosure of a child's HIV-positive status, then the Minister of Social Development or the courts can be approached to overrule that person's refusal and to consent on the child's behalf.

WHO CAN CONSENT TO TREATMENT OR SURGERY IN A MEDICAL EMERGENCY?

The superintendent or person in charge of the hospital (in the absence of the superintendent) can consent to treatment or surgery for a child in a medical emergency. This refers to a situation where:

- treatment or surgery is needed to save the child's life or prevent serious physical injury or disability; and
- it is so urgent there is not enough time to obtain the necessary consent from the person who is authorised to consent.

Both requirements must be met in order to comply with the Children's Act.

WHAT IS AN EMERGENCY?

The superintendent of a hospital or person in charge of the hospital can only consent in emergencies if the operation is necessary to preserve the child's life and it is so urgent that it cannot be deferred (postponed) for the purpose of obtaining parental or other consent.

Necessity + urgency = emergency

On the question of urgency, the issue of 'deferment' or postponement is essential to determine if the superintendent or person in charge of the hospital can give consent. Three scenarios can be distinguished:

- If the parents or guardians are unavailable or cannot be traced and the surgery is so urgent that it cannot be delayed in order to acquire parental consent or ministerial consent, then the superintendent or person in charge of the hospital can give consent.
- If a parent or guardian is present at the hospital and they refuse to consent to the surgery, but the surgery is so urgent that it cannot be postponed in order to obtain

Ministerial or court ordered consent to override the refusal, then the superintendent or person in charge of the hospital can give the necessary consent

- If a parent or guardian is present and they refuse to consent to the surgery, but the surgery is not so urgent that it cannot be delayed for a few days so as to get ministerial or court ordered consent to override the refusal, then the superintendent of the hospital or person in charge cannot give the consent. In such a case the Minister or the courts have to be approached in order to get the necessary consent before the health practitioner can go ahead with the surgery.

THE OBLIGATION TO REPORT ABUSE AND NEGLECT

The obligations to report abuse and neglect are set out in section 110 of the Children's Act, which addresses the questions raised below.

WHO MUST REPORT?

Any correctional official, dentist, homeopath, immigration official, labour inspector, legal practitioner, medical practitioner, midwife, minister of religion, nurse, occupational therapist, physiotherapist, psychologist, religious leader, social service professional, social worker, speech therapist, teacher, traditional health practitioner, traditional leader or member of staff or volunteer worker at a partial care facility, drop-in centre or child and youth care centre who: on reasonable grounds concludes that a child has been abused in a manner causing physical injury, sexually abused or deliberately neglected, must report that conclusion in the prescribed form to a designated child protection organisation, the provincial department of social development or a police official.

WHAT MUST YOU REPORT?

If you are one of the professionals listed in section 110, you must report:

- physical abuse causing injury;
- sexual abuse; and
- deliberate neglect.

Section 28 of the Prevention of and Treatment for Substance Abuse Act states that the reporting requirements in section 110 of the Children's Act apply to children abusing substances or affected by substance abuse.

WHAT ARE THE SIGNS OF ABUSE AND NEGLECT?

Emotional and behavioural signs of physical, psychological or sexual abuse include: *'aggression; physical withdrawal when approached by adults; anxiety; irritability; persistent fear of familiar people or situations; sadness; suicidal actions or behaviour; self-mutilation; obsessive behaviour; neglect of personal hygiene; age of child demonstrating socially inappropriate sexual behaviour or knowledge; active or passive bullying; unwillingness or fearfulness to undress or wearing layers of clothing'*.

Developmental signs of physical, psychological or sexual abuse include: *'failure to thrive; failure to meet physical and psychological developmental norms; withdrawal; stuttering; unwillingness to partake in group activities; clumsiness; lack of coordination or orientation or observable thriving of children away from their home environment'*.

Signs of deliberate neglect include:

- *'underweight; reddish scanty hair; sores around the mouth; slight water retention on the palm or in the legs; extended or slightly hardened abdomen; thin and dry skin; dark pigmentation of skin, especially on extremities; abnormally thin muscles; developmental delay; lack of fatty tissue; disorientation; intellectual disability; irritability; lethargy, withdrawal, bedsores and contractures'*;
- *'a disclosure of abuse or deliberate neglect by the child '*; or
- *'a statement relating to a pattern or history of abuse or deliberate neglect from a witness relating to the abuse of the child '*.

In deciding whether a child has been abused or neglected, the Act requires that these signs or indicators be considered in the *'total context of the child's situation'*. This means that the focus should not fall on only one factor or indicator.

WHERE MUST YOU REPORT?

Once a conclusion is reached that there was abuse or deliberate neglect, it must be reported to one of three agencies: a designated child protection organisation, the provincial Department of Social Development or a police official.

WHAT FORMS MUST THE HEALTH PROFESSIONAL COMPLETE?

Form 22 is used to report a case of abuse or neglect to an appropriate authority to trigger a child protection investigation by a designated social worker. The form should be completed by the health professional. The J88 is used as evidence in the criminal investigation.

Appendix B: Example Template for Development of Clinical Guidance

1. Title
2. Summary Algorithm Overview of how to approach the diagnosis & emergency management. Can be one comprehensive flowchart or split into important aspects. The details given in section 8 (e.g. refer to 'see section 8.1')
3. Introduction Outline important aspects e.g. definitions, age-groups, high risk criteria, causes etc. <i>[NOTE: This guidance will often be used by junior doctors and non-paediatric/non-sub-specialty Medical Officers and EC specialists, therefore aim explanations and information for this level of user]</i>
4. Clinical presentation Chief features of history and presentation patterns 'Red Flags' highlight particularly worrying history features &/or severe/life threatening symptoms
5. Examination Chief findings on examination 'Red Flags' highlight particularly worrying examination features &/or severe/life threatening signs. The detailed assessment may have to be curtailed if there are signs of instability or imminent collapse.
6. Differential Diagnosis <i>[List in bullet point format – with key distinguishing features]</i>
7. Investigations (if any) - investigations are sometimes done as a matter of routine – but are not always indicated by evidence and/or expert opinion. Please highlight & advise against as appropriate. <ul style="list-style-type: none"> 7.1. Bedside 7.2. Laboratory 7.3. Imaging 7.4. Added tables/charts with normal/abnormal values (if any) <i>[NOTE: explain the rationale and circumstances under which the investigation is indicated or may be useful. Brief description of how to interpret the results – with reference to normal values]</i>
8. Management – the non-specialist needs guidance on <ul style="list-style-type: none"> 8.1. Immediate actions: a) non-drug treatment; b) drug treatment 8.2. Next actions based on reassessment & response to treatment given in 8.1– specifically what to do if child's condition: <ul style="list-style-type: none"> 8.2.1. Improves e.g. prescribe further doses *hourly, review every **hours, admit paediatrics etc. 8.2.2. No change e.g. repeat dose of Z, aim for O₂ sat/BP/HR of ***, call paediatric team etc.

<p>8.2.3. Worsens e.g. add in X, trial Y, start ZZ infusion, call referral centre /ICU/Anaesthetist etc.</p> <p>8.3. Key points on the ongoing care if a child stays in the EC after the initial stabilization e.g. what observations should be done; what signs or symptoms should be looked for; what are the ongoing dangers in these first few hours after presentation etc.</p> <p>8.4. Added tables/dose/monitoring charts (if any)</p>
<p>9. Referral criteria (L1,2,3) depending on condition: improves, remains the same, worsens <i>[Specify referral criteria where possible. And if possible any: relevant referral pathways; telephone numbers, days/times/locations of specialized clinics, forms etc.]</i></p>
<p>10. Discharge criteria/checklist <i>[Specify discharge criteria where possible. Specify discharge medication (dosage, duration).]</i></p>
<p>11. Follow-up: acute and long-term <i>[Set out follow up guidance]</i></p>
<p>12. Advice for caregivers / patient and parent information <i>[Including preventive measures]</i></p>
<p>13. Appendices: Added tables/dose charts/stationary/forms if available</p>
<p>14. References</p>
<p>15. Author(s)</p>
<p>16. Acknowledgements</p>
<p>17. Review This guideline was created in [month/year] is due for review in [month/year]</p>
<p>18. Methodology Where possible, appropriate evidence has been sought and appraised using standard appraisal methods. High quality evidence is not always available to inform recommendations. Best Practice guidance relied on the consensus of senior physicians and invited experts.</p>
<p>19. Disclaimer This guideline cannot cover all possible scenarios and situations. The ultimate responsibility for the interpretation and application of this guideline, the use of current information and the child's overall care resides with the treating clinician.</p>

Appendix C: Staffing Calculation Models

EXAMPLES OF NURSE STAFFING MODELS

RATIO

- **1 nurse: 3 patients but not exceeding 1.25 patients per nurse per hour**

'Therefore be it resolved that AAEM asserts that, as a guideline for comprehensive, moderate acuity emergency departments, the minimum emergency nurse-to-patient staffing ratio should be 1:3 or based on the rate of patient influx such that the rate of 1.25 patients per nurse per hour is not exceeded. In addition, dedicated triage and charge nurses are necessary in higher volume departments.'

Reference:

American Academy of Emergency Medicine. *Position Statement on Emergency Nurse-to-Patient ED Staffing Ratios*. Available at <http://www.aaem.org/em-resources/position-statements/workforce/ed-staffing-ratios> (last accessed 18th November 2014)

FORMULA

Figure 7: Nurse Staffing for EC Formula from Emergency Nurses Association

1. First, calculate the total amount of nursing time in minutes by acuity level.
 - Take the number of patients by acuity level multiplied by the average nursing time in minutes by acuity level multiplied by the average length of stay in minutes by acuity level = total amount of nursing time in minutes by acuity level.
2. Then, calculate the total number of full-time equivalents (FTEs) needed to provide patient care.
 - Take the total amount of nursing time in minutes (for all acuity levels), divide by 60 minutes (i.e. 1 hour), then divide by 2080 hours (i.e. 1 FTE), then multiply by the non-patient care time adjustment factor (*approximately 1.34 but will vary depending on the amount of benefit and education time at each facility) = the total number of FTEs needed to provide patient care.
3. Then, calculate the number of non-registered nurse (RN) full-time equivalent positions required for patient care. Take the total number of FTEs needed to provide patient care, multiply by the percentage of interventions
 - That can be delegated to a non-RN (0.14) = number of non-RN FTEs required for patient care.
4. Finally, calculate the number of RN FTEs required for patient care.
 - Take the total number of FTEs needed to provide patient care minus the number of non-RN full-time equivalent positions required for patient care = number of RN FTEs required for patient care.

References:

Ray CE, Jagim M, Agnew J, McKay J, Sheehy S. 'ENA's new guidelines for determining emergency department nurse staffing.' *J Emerg Nurs*. (2003) 29(3): 245-253. See more at: http://www.nursingcenter.com/Inc/journalarticle?Article_ID=532283#P107

Emergency Nurses Association (2003) *ENA Guidelines for Emergency Department Nurse Staffing*. Des Plaines, Ill: Emergency Nurses Association. See more at: http://www.nursingcenter.com/Inc/journalarticle?Article_ID=532283#P110

EXAMPLES OF DOCTOR STAFFING MODELS

RATIOS

- **2.5 patients per physician per hour.**

Reference:

Croskerry, P, Cosby, K S (2009) *Patient Safety in Emergency Medicine*. Lippincott Williams and Wilkins, p 42.

- **1.8-2.8 patients per physician per hour.**

Reference:

American College of Emergency Physicians. *Staffing an ED Appropriately and Efficiently*. Available at <http://www.acep.org/Clinical--Practice-Management/Staffing-an-ED-Appropriately-and-Efficiently> (last accessed 18th November 2014)

FORMULA

WCG: Health Regional Hospital Medical Staffing Model (2010)

Percentage of working hours spent on clinical duties:

Medical Officer (MO)	0.8 of 56 hours per week
Registrars	0.6 of 56 hours per week
Specialists	0.64 of 56 hours per week

Average time per patient:

	Intensity		
	Low	Moderate	High
Minutes/patient ¹	15	40	50 ²

Percentage of patients in each acuity category by level of care:

Level	Intensity (% total attendees)		
	Low	Moderate	High

¹ The time indicated here reflects the total time spent on patients, including the combined time to manage patients as well as re-evaluations.

² Some red patients are not salvageable, and aggressive resuscitations and interventions would not be performed.

Primary	35	30	35
District	35	30	35
Regional	25	30	45
Central	5	40	55

EXAMPLE OF MODEL APPLICATION: WORKLOAD 130 PATIENTS/DAY

	Intensity		
	Low	Moderate	High
Patients/day	33	39	58
Minutes/patient	15	40	50
Total time (minutes)	990	1560	2900

The table above requires a total of 4955 minutes of doctor time/day.

➤ **Specialists**

To function effectively, specialists cannot work singlehanded. A minimum of three specialists are required to run an EC, and four if 24-hour on-call cover is required (which should be the target).

56 hours x 60 minutes x 0.64 care factor = 2150 minutes/week

Or:

- 307 minutes/day (for 7 week day)
- 3 specialists = 921 minutes/day

➤ **Registrars**

56 hours x 60 minutes x 0.6 care factor = 2016 minutes/week

Or:

- 288 minutes/day
- 3 registrars = 864 minutes/day

➤ **Medical Officers**

Three specialists and three registrars provide 1785 minutes of patient care each day; therefore, a further 3170 minutes are required from medical officers (MOs).

56 hours x 60 minutes x 0.8 care factor = 2688 minutes/week

Or:

- 384 minutes/day
- 3170/384 = 8.26 MO/day

Or:

- ~ 4.1 ~ 4 or 5 MO per 12-hour shift

As above, no patient-matching has been assumed, although the overall staff numbers remain the same. To allow for annual leave, a factor of 1.14 applies.

➤ **Total Staffing**

3 specialists; 3 registrars; 8.2 MOs for 24 hours day.

With leave factored in: 3.5 specialists; 3.5 registrars; 9.35 MOs 24 hours day.

Appendix D–H: Paediatric Equipment Lists

APPENDIX D: PAEDIATRIC RESUSCITATION TROLLEY EQUIPMENT

AIRWAY	SIZING	ADDITIONAL INFORMATION
Laryngoscope	Macintosh (curved) blades 0-4	
	Miller (straight) blades 0-4	
Endotracheal Tubes	2.5-8 cuffed and uncuffed	
KY Jelly		
Introducer/stylet	Adult and paediatric (2mm/3.5mm)	
Bougie	Adult and paediatric (5 Ch/10 Ch)	
Securing Strapping/tape		
MCagills forceps	Adult and Paediatric	
Bag-Valve Mask Device	Adult +- 1000ml	
	Infant 500 ml	
	Neonatal 250ml	Only for neonates(< 1/12)
Face Mask for BVM	Round – 00/0/1/2 Anatomical range of sizes	
Oropharyngeal Airway	000,00, 0,1, 2, 3, 4,5 and 6	Tongue depressor
Laryngeal Mask Airway	0/1/1.5/2/2.5/3/4/5	
Suction Catheter	5F, 6F, 7F, 8F, 10F, 12F	
Yankauer catheter tip	paediatric and adult	size Mini 15 FG Midi 18 FG
OXYGEN DELIVERY DEVICES		
Nasal prongs	neonate/child/adult	Max flow: < 1 year 1l/min – 24-40% 1 year 2 l/min – 24-30%
Simple Oxygen mask	infant, child and adult	Non-venturi, delivers 35-50%
Venturi mask	28%/35-40%/60% infant, child and adult	28%/35-40%/50%
Non rebreather mask/	infant, child and adult	60-90%
ASTHMA		
Nebulizer mask	infant, child and adult	
Spacer for MDI delivery	appropriate size for device and patient	
IV ACCESS and SUPPLIES		
Intravenous Cannulae	14G to 24 G	26G for Neonate only
Strapping/securing for IV		Alcohol swabs
Fluid administration set	suitable for infusion pump used/60 dropper/blood administration	
Volume control device	150 ml/50ml	e.g. Buretrol

Rate control device		Ed Dial-a-flow
IO needles	<i>(in order of preference)</i> 1. Mechanical device, e.g. EZY-IO drill or Bone Injection Gun 2. Custom made IO needle, e.g. Cooke needle 3. BM aspiration needle (e.g. JamShedi) 4. LP needle 18G x 1.5' (SHORT) pink 5. If nothing else available use plain 21G needle	
Needles	15-25G	
Syringes	1,2,5,10,20, 50 ml	
Insulin Syringe	0.5ml, 1ml	
Extension sets	T-piece/Y connector – flexible/short/lightweight	
	Short Set 75cm - for infusions such as inotropes	
	Long Set 150cm - for infusions such as inotropes	
3-way tap		
OTHER		
Scissors		
Stethoscope		
Blood Tubes	Xmatch/haem/chem/blood culture	
Weight/height estimation tool	Broselow/Pawper	
Universal precautions	Gloves/goggles/mask/gown	
Electrodes	Neonate, paediatric and adult	
Medications and Fluids	As per Medication and Fluids Chapter	
ANCILLARY EQUIPMENT/SUPPLIES TO RESUS TROLLEY		
Monitors	Oxygen Saturation Heart Rate Blood Pressure ECG tracing Respiratory Rate (Capnography)	Probes infant/child/adult Cuffs for all ages Electrodes adult/child Probes/leads
Oxygen	Wall-mounted (humidified) Portable cylinder	
Suction units	With tubing	
Defibrillator	With paediatric paddles, gel	

APPENDIX E: EMERGENCY CENTRE GENERAL EQUIPMENT FOR PAEDIATRICS

KEY: Asterisked items (*) are for Level 3 only

EQUIPMENT	DETAILS
GENERAL	
Scales	Baby Scale/Standing/Sitting Scale
Weight estimation devices:	Formula/Broselow/Pawper weight
Pain assessment scale include non-verbal	
Eye Chart {Snellen}	
X-Ray Viewing box/screen for PACS	
Wall clocks:	Reception, Triage, Treatment room and Resuscitation
Resuscitation Stretcher with cots sides	
Trolleys for setting procedure	
Fridge with thermometer reading	for medication
PERSONAL PROTECTIVE GEAR	
Goggles eye protection	
Gloves:	All sizes sterile and unsterile
Aprons	
Surgical Masks and N95 Mask	
DIAGNOSTIC	
Diagnostic set: otoscope/fundoscope	with different sizes ear pieces
Scissors	
L P: needles	22G X 1.5 and Inch and 22G X 3.5
Laboratory Blood Tubes	(neonate and adult)
Blood Cross Match Tubes	
Microbiology specimen containers	
Doppler with vascular probe	*
WARMING DEVICES	
Space blanket	
Fluid warmer	
Blood warmer	*
Warming device one or more of following, e.g. <ul style="list-style-type: none"> • Incubator open or closed • Warming device (e.g. Bair Hugger/Warm Touch/Mistral air warmer) 	NOT overhead heaters (burn risk)
AIRWAY	
CPAP Machine	with different sizes CPAP Prong
Oxygen High flow machine	with prongs sizes neonates/infant/paediatric

Oxygen flow meter	with appropriate connector
Suction unit wall and portable	with appropriate suction tubing
DIFFICULT AIRWAY: Laryngeal Mask Airway sizes 1-5 Needle Cricothyriodotomy equipment Surgical Airway Kits/Sets	
Paediatric Ventilator/Tubes/Connectors/Filters/Humidifiers	
Surgical airway sets	
Tracheostomy Tubes sizes: Neonates 3-6 Paediatric 3 -6	
ETT Tubes sizes 2,5-8,5 cuffed and uncuffed	
IV/FLUID/DRUG ADMINISTRATION	
Needles all sizes	G25/26; G23; G22; G21; G20 and G15
Butterfly sizes	22G to 25G/26G
IV catheters	16G to 24G
IO needles	As per resus cart
Syringes sizes	1ml, 2ml, 5ml, 10ml, 20ml, 50ml and 50 ml catheter tip.
Intravenous line giving set	NB Suitable for specific infusion pumps
Three way Tap	
Infusion controller:	Infusion pump/syringe driver/controller
Arm boards	
CVP packs	
Venous cut-down pack and supplies	
NASOGASTRIC SUPPLIES	
Nasogastric tubes	Feeding tubes: 5/8/10/12 FrG (fluid only) Levin stomach tubes 10/12/14/16 (permit lavage)
Enteral feeding pump or flow controller (for administration of ORS via NGT)	Or in line flow control device (e.g. Dialaflow) used <i>backwards</i>
Enteral giving set connector (pump specific)	E.g. Applix/Fresenius
Feeding bottles	200ml/250ml with hangers
MONITORS and DEFIBRILLATOR	
Monitor – multifunction or individual for: Temperature – probes – skin/rectal (paediatric) O2 saturation - neonatal/infant/child/adult probes Heart Rate ECG trace – electrodes neonatal and paediatric Respiratory Rate Blood Pressure - leads and cuffs with neonatal, infant, child adult cuffs Capnography – probes/leads	
ECG Machine	with paper/ink/electrodes/gel
Defibrillator	with paediatric paddles and pacing capability/gel
Thermometer	axillary, tympanic
Thermometer low reading	
Glucometer and strips	
Hb Meter and stris	

MISC CONSUMABLES	
Lubricating Gels:	KY/remicaine and defibrillator
Orange sticks	
Cotton wool and Swabs	
Tongue depressor spatula	
Foley's catheter sizes	6F, 8F, 10F, 12F and 14 F
Nose plugs all sizes	(4.5/8 cm) (or BIPP/ribbon gauze
Strapping:	Elastoplast, Zinc Oxide, Micro-pore
TRAUMA/SURGICAL EQUIPMENT and DRESSINGS	
Suture packs	
Suture material: nylon, non-absorbable chromic 1/2 -0/4-0	
Steri-streps	
Skin Glue	
Surgical Blades	
Stitch cutter	
Bandages/Dressing selection	
Burn dressing selection	
Ring/wire cutter	
Intercostal drain set – ICD pack	Thoracic catheter sizes 8 -14 Fr Tubing Under water drain bottles
Incision and drainage packs	
Thoracotomy pack/Tray	
TRAUMA IMMOBILISATION	
Cervical collars – hard	sizes infant , child and adult
Head blocks/rolls to mobilize head	
Spine board	
Extremity splints various	
Femoral Thomas splints	various sizes
Fracture immobilization apparatus:	ortho-wool plaster of paris/fiberglass POP saw/scissor/splitters
Collar and cuff [or strip cotton]	
Tubigrip body bandage	
Crutches various sizes	
SPECIALIST: Halter neck traction * Pelvigrip [pelvic #] *	[torticollis]
MISC PACKS AND SETS	
New-born Kit	Umbilical clamps, Umbilical vein catheters 3,5 and 5 Bulb syringe Towels
Gastro kit – ORS/NG rehydration set	

Rape Kit	
----------	--

Gloves S/M/L	each																																		
Aprons	20																																		
Goggles	3																																		
SIGNATURE																																			

APPENDIX G: EXAMPLE OF DEFIBRILLATOR CHECK-LIST

DATES → → →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Plugged and Switched on																															
Paddles Adult and Paediatric Present																															
Good contact Indicator																															
Basic Checks Done																															
Signed ECG Paper stripped																															
Electrodes Present																															
ECG LEADS																															
ECG GEL																															
External Pacing pads																															
Paper ECG + Extra																															
Signature																															

APPENDIX H: DIARRHOEA SEASON PAEDIATRIC EQUIPMENT LIST

Consumables required for rehydration of children with gastroenteritis in hospitals

EQUIPMENT

- Shock:
 - Dextrostix or Glucometer
 - Size 21 intravenous cannulae
 - 18 gauge Intraosseous needles
 - IV-giving sets
 - IV in-line or other infusion controller
 - Oxygen tubing and nasal catheter of prongs
- Intravenous rehydration:
 - Size 21 intravenous cannulae
 - IV-giving sets
 - IV in-line or other controller
- Nasogastric rehydration:
 - Size 8 NG tubes
 - Drip-feeding sets (Applix, Fresenius)
 - 200ml or 250 ml feeding bottles and hangers
 - Enteral infusion pumps (in larger hospitals)

Infusion controller machines for IV or enteral feeds are optional as in-line controllers can be used with the IV-giving sets for IV rehydration, or the Applix tubing for NG rehydration. Set up drip with ORS (Sorol) 200ml, Applix Fresenius-giving set, and IV in-line controller (put in backwards and attached to NG tube with the Fresenius connector).

PHARMACEUTICALS

- Oral rehydration solution
- Normal saline 200ml vacolitres
- ½ Darrow's Dextrose 200ml vacolitres
- Dextrose solution for intravenous use
- Ceftriaxone IVI injection
- Zinc acetate miscible tablets
- Potassium chloride oral solution
- Vitamin A capsules

Appendix I-M: Paediatric EC Medication Lists

Key: * refers to refrigerated drugs; ** refers to scheduled drugs kept locked.

APPENDIX I: RESUSCITATION MEDICATION

Immediately available in resuscitation area (most kept in trolley but scheduled drugs in locked drug cupboard, and some items* stored in fridge)**

DRUG	ADMIN	STRENGTH	COMMENT
Adenosine	IV	6mg/2ml	
Adrenaline	IV/IM	1:1000 1mg/ml	
Amiodarone	IV	150mg/3ml	
Antihistamine (e.g. promethazine)	IV	(Promethazine: 25mg/ml; 50mg/2ml)	
Atropine	IV	0,5mg/ml; 1 mg/ml	
Calcium gluconate	IV	10% 10ml	
Dexamethasone	IV	4mg/ml	IV solution can be given orally for croup
Dextrose 50%		50% 20ml; 50ml	
Diazepam **	IV	10mg/2ml	
Furosemide	IV	250mg/25ml 20mg/2ml	
Glucagon *	IV/SC/IM	1mg/ml prefill syringe	Not available all levels
Oral Glucose Gel			Not dispensed - stores
Hydrocortisone	IV	100mg	
Insulin (Rapid Acting)*	IV/SC	100units/ml	
Lignocaine	IV	10% 5ml	
Lorazepam*/**	IV	4mg/ml	
Magnesium sulphate	IV	50% 2ml	
Naloxone	IV	0,4mg/ml	
Potassium chloride	IV	15% 10ml	

Sodium bicarbonate 8.5%	IV	8,5% 50ml 4.2% 10ml	(4.2% solution for neonates)
Water AND Saline for dilution		5ml/10ml/20ml	
NEBULIZATION			
Salbutamol Inhalation solution	Neb	5mg/ml 20ml	
Salbutamol MDI	MDI	100µg/inhalation	
Fenoterol solution	Neb	0.1%	
Ipratropium bromide	Neb	0,25mg/ml 2ml	
Ipratropium bromide MDI	MDI	0,04mg/inhalation	(On code but not available all levels)
DRUGS FOR RAPID SEQUENCE INTUBATION (RSI)			
Etomidate **	IV	20mg/10ml	
Ketamine **	IV/IM	10mg/ml 20ml	
		100mg/ml 10ml	
MUSCLE RELAXANTS:			
Suxamethonium*	IV	100mg/2ml	
Atracurium/Cisatracurium	IV	Atrac 10mg/ml 2,5/5ml Cis 2 mg/ml 2,5/5/10ml	
Rocuronium	IV	50mg/5ml	

APPENDIX J: EMERGENCY, POST-RESUSCITATION AND STABILISATION DRUGS

Available for rapid access in EC. * refers to refrigerated drugs; ** refers to scheduled drugs kept locked. HOSP = Drugs which likely will be kept only at Level 3/Tertiary Facilities

GENERAL			
Dopamine	IV	200mg/5ml	
Dobutamine	IV	250mg/20ml	
Digoxin	IV	0.25 mg/ml 2ml	
Haloperidol **	IV	5mg/ml/20mg/2ml	
Mannitol	IV	25% 50ml	
Metoclopramide	IV	10mg/2ml	
Midazolam**	IV	15mg/3ml/5mg/5ml	
Nifedipine	Oral	5mg	
Heparin	IV	1000U/ml	
Potassium chloride solution	Oral	50mg/ml	
Amlodipine	Oral	5 mg ; 10 mg	Await HT protocol input
Labetalol	Tab/IV	10mg/100mg/2ml	Await HT protocol input
Alprostadil ('Prostin') ** (HOSP)	IV	500ug/1ml	Secondary/tertiary and PFS
Prednisone	po	5mg tablet	
ANTI-CONVULSANTS			
Phenobarbital**	IV	200mg/ml	Section 21
Phenytoin	IV	250mg/5ml	
ANTIDOTES			
Activated charcoal	po	25g	
N-Acetylcysteine	IV	200mg/ml	SECTION 21
Pyridoxine (Vitamin B6)	po	25mg	(for INH toxicity)
Desferoxime ** (HOSP)	IV	500mg	
Vitamin K (phytomenadione)	IV/IM	10mg/ml 2mg/0,2ml	

Biperidin	IV	5mg/ml	
Polyethylene glycol (HOSP)	po	various	
Obidoxime (HOSP)	IV	250mg/ml	
Methylene Blue (HOSP)	IV	100mg/10ml	SECTION 21
Penicillamine (HOSP)	oral	300mg	SECTION 21
ANTIVENOM/VACCINE/IMMUNOGLOBULIN			
Snake antivenom	depending on local incidence		
Scorpion antivenom			
Spider antivenom			
Rabies vaccine/immunoglobulin			
Tetanus vaccine/immunoglobulin			
EMERGENCY ANTIBIOTICS (range depends on local incidence)			
Acyclovir (HOSP)	IV	500mg (250mg)	
Ampicillin	IV	250mg/500mg	
Amikacin (HOSP)	IV	100mg/250mg	
Ceftriaxone	IV	250mg/500mg/1g	
Cefotaxime	IV	500mg/1g	
Cloxacillin	IV	250mg/500mg	
Co-trimoxazole (HOSP)	IV	480mg/5ml	
Gancyclovir (HOSP)	IV	500mg	
Gentamycin	IV	20mg/2ml/80mg/2ml	
Metronidazole	IV	500mg/100ml	
Penicillin Benzathine	IV	1.2MU	
Penicillin Benzyl	IV	5MU	
Antimalarials			As appropriate locally
Artesunate	IV	60mg	Section 21
Quinine	Oral/IV	300mg; 300mg/ml	

APPENDIX K: IV FLUIDS FOR CHILDREN

IV FLUIDS		
0.9% NaCl	50/100/200/1 000 ml	
0.45% NaCl	1000ml	
5% Dextrose	50/100/200/1 000 ml	
Half Darrow's and Dextrose 5%	200ml	
Neonatalyte (+ glucose 10%)	200ml	
Rehydration solution (0.45% N/S + 5% dextrose)	1 000ml	
Ringers Lactate	200ml/1 000ml	
Head Injury Fluid (HOSP)	200ml	
Emergency Blood	per local demands	Blood fridge

APPENDIX L: ANALGESIA AND SEDATION FOR CHILDREN

Must be available in the EC

ANALGESIA			
Topical anaesthetic	local	cream	Ametop is an alternative Need occlusive dressing too
Ibuprofen		Syrup tablet	100mg/5ml 200mg
Diclofenac		Tab	25mg/50mg
Ketamine**		IV	10mg/ml/100mg/ml Schedule 5
Morphine**		IV	10mg/ml/15mg/ml Schedule 6
Nitrous Oxide			supply/abuse issues
Paracetamol		Syrup Tab Suppository IV	120mg/5ml 50ml/100ml 500mg 125mg/250mg 500mg/50ml 1000mg/100ml IV not at all levels (HOSP)
Tilidine (valoron)**		oral drops	50mg/0,5ml 10ml Schedule 6
SEDATION			
Midazolam		IV	15mg/3ml ; 5mg/5ml
Sucrose		(syrup bp)	(neonatal analgesia)

APPENDIX M: ROUTINE DRUGS FOR TREATMENT IN EC AND FOR CHILDREN DISCHARGED FROM C (TTO)

Note: In some cases these are not emergency drugs, but rather carry over-supplies for the convenience of after-hours discharge until the pharmacy is accessible (e.g. asthma MDI, anti-epileptics). Others are routine medications that will be available in any EC, in addition to those in Lists I-III.

ANALGESICS			
Ibuprofen	Oral susp Tablet	100mg/5ml ; 200mg	
Diclofenac			
Paracetamol	Oral susp Tablet	120mg/5ml 50/100ml 500mg	
ANTIBIOTICS (range depends on local incidence)			
Acyclovir	Tab	200mg	
Amoxil	Oral susp Capsule	125mg/5ml; 250mg/5ml 250mg; 500mg	
Cephalexin	Oral susp	125mg/5ml	
Ciprofloxacin	Tab	250/500 mg	Only for meningitis prophylaxis/dysentery older children
Co-amoxycyclavulanate	Oral susp Tab	125mg+/5ml; 250mg+/5ml 250 + 125 mg	
Co-trimoxazole	Oral susp Tablet	40/200/5ml 80/400 mg	
Doxycycline	Capsule	100mg	Older child only!
Erythromycin	Oral susp Capsule	125mg/5ml 250mg	
Flucloxacillin	Capsule	250mg	Supply issues – alternative cephalexin
Metronidazole	Oral susp Tab	200mg/5ml 200mg	
Nystacid oral suspension		100 000IU/ml	
Nalidixic	Susp Tab	250mg/5ml 500 mg	
Penicillin	Oral susp	125mg/5ml 250mg/5ml	
Anthelmintics	As per local requirements		
Antiparasitics (ectoparasites)	As per local requirements		
Antimalarials	As per local requirements		
Antiretrovirals	As per local requirements		
Post – exposure prophylaxis			
TB medication	As per local requirements		
Emergency contraception			(PEP for sexual

			assault)
Anti-inflammatory/analgesic – Paracetamol/ibuprofen/diclophenac			
Antiemetic (cyclizine)	As per local requirements		> 6 yrs only
Antiepileptics	As per local requirements		
Antihistamine	As per local requirements		
Chlorpheniramine		2mg/5ml	
Bowel evacuants/laxatives	As per local requirements		
Asthma MDIs (b-dilator and steroid)	As per local requirements		
Furosemide/spirinolactone			
Oral Rehydration Solution			
Prednisone Prednisolone	Tab/syrup	5mg 15mg/5ml	
ENT/EYE			
Chloramphenicol	Ointment	1% 3.5g	
Oxymetazoline	Nasal drops	10ml	
Saline	Nasal drops	10ml	
Fluorescein*	drops	2% x 0.5ml	
Tetracaine/oxybuprocaine	drops	10mg/ml	
MISC			
Heparin			
Warfarin			
Proton pump inhibitors			
Zinc sulphate	oral	20 mg	
Oral rehydration salts (ORS) sachets			
Potassium	oral solution/tabs		
Vitamin Co syrup	susp		
EXTERNALS			
Antiseptic solutions: Iodine solution Chlorhexidine solution			
Ointments including: eczema cream, hydrocortisone			
Burnshield/occlusive dressing			STORES
Plastic wrap e.g. Gladwrap or Clingfilm		For wrapping burns or premature babies born in EC - to prevent evaporative losses	
Jelonet			STORES
KY Gel			
Lignocaine for local infiltration		1% / 2% 20ml	
Skin Glue			
Silver Nitrate sticks			
Silver Sulphadiazine (Flamazine)			

Appendices N-R: EMS Standards

APPENDIX N: PRE-HOSPITAL STAFF COURSE DURATION STAFFING CAPABILITIES

Qualification	Course duration	Paediatric capabilities
Basic Ambulance Assistant (BLS)	6 weeks of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	CPR and choking, O ₂ administration, BVM ventilation, vital signs recording including HGT, suctioning, oral dextrose, Entonox, activated charcoal administration, use of an Automated External Defibrillator (AED), spinal immobilisation
Ambulance Emergency Assistant (ILS)	15 weeks of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	As for BLS plus: needle cricothyroidotomy, needle thoracentesis, peripheral IV access (8 years and older) and fluid administration, manual defibrillation, nebulisation with B ₂ agonists and anticholinergics, pulse oximetry, IV dextrose, declaration of death, non ICU neonatal/paediatric transfers
Emergency Care Technician (ALS)	2 years of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	As for ILS plus: supraglottic airway inspection (LMA), ETCO ₂ , peripheral IV access (1 year and older) including external jugular, intra-osseous insertion, umbilical vein cannulation, limited ALS drug administration, non-intubated neonatal/paediatric transfers
Critical Care Assistants (CCA) (ALS) & National Diploma in EMC (ALS)	10 months (CCA) or 3 years (National Diploma in EMC) of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	As for ECT plus: orotracheal intubation, femoral cannulation, surgical cricothyroidotomy, mechanical ventilation, drug infusions, vagal manoeuvres, cardioversion, pacing, neonatal/paediatric ICU transfers, use of syringe drivers, central line management, ALS drug administration
Degree in EMC (ALS)	4 years of lectures, tutorials and skills training as well as experiential shifts on emergency vehicles	As for CCA/NDip plus: rapid sequence induction and fibrinolysis

APPENDIX O: PAEDIATRIC MEDICATIONS FOR ALS EMS PRACTITIONERS

PRE-HOSPITAL PAEDIATRIC MEDICATIONS FOR METRO EMS PARAMEDICS				
#	NAME	STRENGTH	FORMULATION	INDICATIONS
1	Activated Charcoal	50g	Oral	Overdose
2	Adenosine	6mg/2ml	IV	Supraventricular tachycardia
3	Adrenaline	1mg/1ml	IV/IM	Cardiac arrest IV/Catastrophic asthma IM/anaphylaxis IM
4	Amiodarone	150mg/3ml	IV	Vfib/Stable ventricular tachycardia/Polymorphic Vtach
5	Atropine	1mg/1ml	IV	Symptomatic bradycardia/Organophosphate poisoning
6	Salbutamol Solution (20ml)	5mg/ml	Nebulized	Asthma/Hyperkalaemia
7	Salbutamol UDV	2.5mg/2.5ml	Nebulized	Asthma/Hyperkalaemia
8	Salbutamol	500mcg/1ML	IV	Asthma/Premature or obstructed labour
10	Calcium Chloride	1g/10ml	IV	Hyperkalaemia/Ca channel blocker toxicity
12	Hydrocortisone (Solu-cortef)	100mg/2ml	IV	Asthma/Anaphylaxis
13	Prednisolone	5mg	Oral	Asthma/Anaphylaxis
14	Methylprednisolone (Solu-Medrol)	125mg/2ml	IV	Asthma/Anaphylaxis
15	Dextrose 50% Sachet	25g/50ml	IV	Hypoglycaemia
16	Oral Glucose	50g	Oral	Hypoglycaemia
17	Diazepam	10mg/2ml	IV	Convulsions
18	Entonox	52%	Oral	Pain
19	Flumazenil	0.5mg/5ml	IV	Reversal of CNS sedation
20	Furosemide	20mg/2ml	IV	Acute pulmonary oedema
21	Glucagon	1mg	IMI	Hypoglycaemia/Severe anaphylaxis/Symptomatic bradycardia
22	Isorsorbide Dinitrate	5mg	SL	ACS/Acute pulmonary oedema
23	Nitrolingual Spray (preferred)	0.4mg/spray	SL	ACS/Acute pulmonary oedema
24	Ipratropium Bromide	0.5mg/2ml	Nebulized	Asthma
25	Lignocaine 2%	100mg/5ml	IV	Ventricular arrhythmias
26	Lorazepam	4mg/1ml	IV	Convulsions
27	Magnesium Sulphate	1g/2ml	IV	Polymorphic Vtach/Severe asthma/Pre-eclampsia
28	Morphine	10mg/1ml	IV	Sever pain
29	Naloxone	04mg/1ml	IV	Reversal of Respiratory depression due to acute opiate use
30	Promethazine	25mg/1ml	IV/IM	Acute anaphylaxis
31	Sodium Bicarbonate 8.5% Sachet	50ml	IV	Hyperkalaemia/TCA overdose/?crush syndrome
32	Sodium Bicarbonate 4% Sachet (Paediatric)	50ml	IV	Hyperkalaemia/TCA overdose/?crush syndrome
33	Thiamine	100mg/2ml	IM	Wernicke-Korsakoff syndrome
DRUGS FOR PROCEDURAL SEDATION, ANALGESIA AND RAPID SEQUENCE INDUCTION				
34	Etomidate	2mg/ml in 10ml	IVI	Induction agent
35	Ketamine	20mg/ml in 20ml	IVI	Induction agent, sedation and analgesia
36	Suxamethonium	50mg/ml in 2ml	IVI	Depolarizing muscle relaxant
37	Rocuronium	10mg/ml in 2ml	IVI	Non-depolarizing muscle relaxant
38	Vecuronium	1mg/ml	IVI	Non-depolarizing muscle relaxant
39	Midazolam	15mg/3ml	IV/IM/nasal/rectal	Sedation/Hypnotic/Anti-convulsant

APPENDIX P: AMBULANCE EQUIPMENT LIST FOR PAEDIATRIC EMERGENCY CARE

The following list is divided into equipment for basic life support (BLS), advanced life support (ALS) ambulances and the dedicated Paediatric Flying Squad ambulance. ALS ambulances must have all of the equipment on the required BLS list as well as equipment on the required ALS list. This list represents recommendations for equipment and supplies that will facilitate optimal paediatric patient care in the pre-hospital setting.

EQUIPMENT FOR BASIC/INTERMEDIATE LIFE SUPPORT (BLS) VEHICLES

➤ **Ventilation and Airway Equipment**

- Portable suction apparatus with wide-bore tubing
- Portable oxygen, capable of metered flow with adequate tubing
- Fixed oxygen supply equipment with variable flow regulator
- Hand-operated, self-expanding Bag-valve mask reservoir (manual resuscitator) in adult (1600 ml), paediatric (450ml), and neonatal (200 ml) sizes, with correct size masks for neonate/infant/child/adult

➤ **Monitoring and Defibrillation**

- Automated external defibrillator (AED) or monitor/defibrillator (ILS only) with electrodes and defibrillation gel. The AED and cardiac monitor/defibrillator should have paediatric capabilities, including child sized pads and cables
- Pulse oximeter with paediatric and adult probes

➤ **Immobilisation Devices**

- Rigid cervical collars for children ages 2 years or older; child and adult sizes (small, medium, large, and other available sizes)
- Head immobilisation device
- Lower extremity (femur) traction devices
- Trauma board
- Kendrick Extrication Device (KED)
- Scoop stretcher
- Short and long Kramer wire splints
- Immobilisation straps/spider harness
- Paediatric lower extremity (femur) traction device

➤ **Disposables (BLS/ALS)**

- Paediatric non-rebreather, Venturi, nasal cannulas and nebulizer masks
- Oropharyngeal airways (size 00 – 3)
- Rigid pharyngeal curved suction catheter
- Flexible adult and paediatric (French 6, 8, 10, 12) suction catheters.
- Intravenous cannulas (14 -22)
- Adhesive securing tape
- Administration sets – 10 drop, 20 drop and 60 drop
- Intravenous fluids (Ringers Lactate 1000ml/NaCl 200ml)

- Gloves
- Masks (surgical and N95)
- Syringes (5ml/10ml/20ml)
- Hypodermic needles (black/green)
- Cling film
- Space blankets
- Bandages (elasticised crepe roller bandages)
- Gauze dressings (100mm x 100mm and 100mm x 200mm)
- Webcols
- Maternity packs
- Burnshield
- Needle cricothyroidotomy equipment
- Regurgitation bag

➤ **Personal issue (BLS/ILS)**

- Jump bag
- Scissors
- Pupil torch
- Stethoscope
- Sphygmomanometer with paediatric cuffs
- Thermometer (hypothermic)
- Glucometer (with AccuChek sticks)

EQUIPMENT FOR ADVANCED LIFE SUPPORT (ALS) VEHICLES

The same as for BLS/ILS vehicles, plus the following:

- Cardiac monitor/defibrillator with pacing and paediatric defibrillation capabilities.
- Monitoring device capable of measuring the following paediatric vital signs:
 - Blood pressure
 - ECG
 - Oxygen saturation (SPO₂)
 - End tidal CO₂ capnography (ETCO₂)
- Infant ventilator (time/pressure cycled ventilator for neonates and infants up to 20kg) with Gabler rail fitting
- Adult/child ventilator (time/volume cycled ventilator for older children) with Gabler rail fitting
- Syringe Driver (with 50 ml syringes)
- Infusion pump
- Transport incubator with temperature monitor and battery pack

➤ **Disposables (ALS)**

The same as for ILS/BLS, plus the following:

- ET tubes (2.5 – 8 cuffed and uncuffed)
- Introducers
- Alternative advanced airway devices i.e. Laryngeal Mask (LMA) with appropriate sizes: 1, 1.5, 2, 2.5, 3 (4 and 5 are for small and large adults).
- LMAs

- Oesophageal detection device
- Securing tape/commercial device
- 3 way stop cocks
- IO needles
- Flow rate controller
- Buretrol
- Extension tubing
- Mucosal atomizer device
- Scalpel blades

➤ **Personal issue (ALS)**

The same as for BLS/ILS, plus the following:

- Jump bag with drug bag
- Laryngoscope with all necessary sized paediatric and neonatal blades
- Magill's forceps (infant/child/adult)
- Hand-operated, self-expanding bag-valve mask reservoir (manual resuscitator) in adult (1600 ml), paediatric (450ml) and neonatal (200 ml) sizes with correct size masks for neonate/infant/child/adult
- Paediatric dosing card and weight estimation tape
- Surgical Airway Kit
- Positive end-expiratory pressure valve (PEEP)

EQUIPMENT FOR THE PAEDIATRIC FLYING SQUAD VEHICLES

Equipment is as for standard Advanced Life support vehicle, plus the following:

- Paediatric commercial immobilisation device
- Temperature measuring device (electronic thermometer)
- Vital signs monitor able to measure neonatal ETCO₂
- CPAP ventilation unit with necessary accessories
- EZ-IO Infusion System with intraosseous needle set
- Transport incubator with temperature monitor and battery pack (permanently on board)

APPENDIX Q: PAEDIATRIC FLYING SQUAD CALLOUT PATHWAY

PGWC POLICY

Paediatric Flying Squad Criteria		Policy no:
Compiled by: Paediatrics and Emergency Medicine. Contributors: Prof Tony Westwood; Dr Louis Heyns; Dr Louise Cooke; Dr Baljit Cheema; Dr Kirsten Cohen; Dr Hein Lamprecht; Dr Melanie Stander; Michael Lee (EMS)		Review in 6 mnths
Approved by:		
Contact Persons: Dr Saadiq Kariem		Date: October 2013
Target group	Hospital Managers Quality Assurance Directorate EMS PHC Facilities Emergency Centres	
Policy requirements	Facilities and organisations required to implement policy: All Central, Regional and District Hospitals in Metro and Rural WC All PHC (CHCs and Clinics) facilities in WCEMS	
Policy Purpose	To ensure delivery to definitive treatment safely, timeously, efficiently, equitably and effectively for ill and critically ill children in line with patient-centred values.	
Definition of critically ill child	<p>ALL CHILDREN considered CRITICALLY ILL including:</p> <ul style="list-style-type: none"> • All intubated patients • Recurrent or persistent shock including <ul style="list-style-type: none"> ○ Meningococcal disease/purpuric rash ○ All with intra-osseous lines ○ Anaphylaxis • Hypoxia/cyanosis even when on supplemental oxygen • Very severe airway obstruction/respiratory distress • Recurrent apnoea • Depressed level of consciousness GCS<12/15 • All Red Cases who are still critically ill/unstable after initial resuscitation efforts • Polytrauma • Burns: >15% partial thickness and/or >5% full thickness and/or facial/inhalation burns 	
Delineated Pathway to Definitive Care	<p>All children meeting the CRITICALLY ILL criteria to be transferred directly to Tertiary Level Paediatric Hospital with ICU facilities</p> <ul style="list-style-type: none"> • Referring or receiving Dr/Sr may activate • If possible call ahead to receiving tertiary level hospital doctor TO INFORM OF PATIENT'S CONDITION and emergency management advice <ul style="list-style-type: none"> ○ Tygerberg Emergency Centre: 021 938 6378 ○ Tygerberg ICU: 021 938 6057 ○ Red Cross Emergency Centre: 021 658 5075 ○ Red Cross ICU: 021 658 5103 • It is the responsibility of the receiving facility to source a bed • Call Metro 021 937 0300 and ask for transfer with THE 	

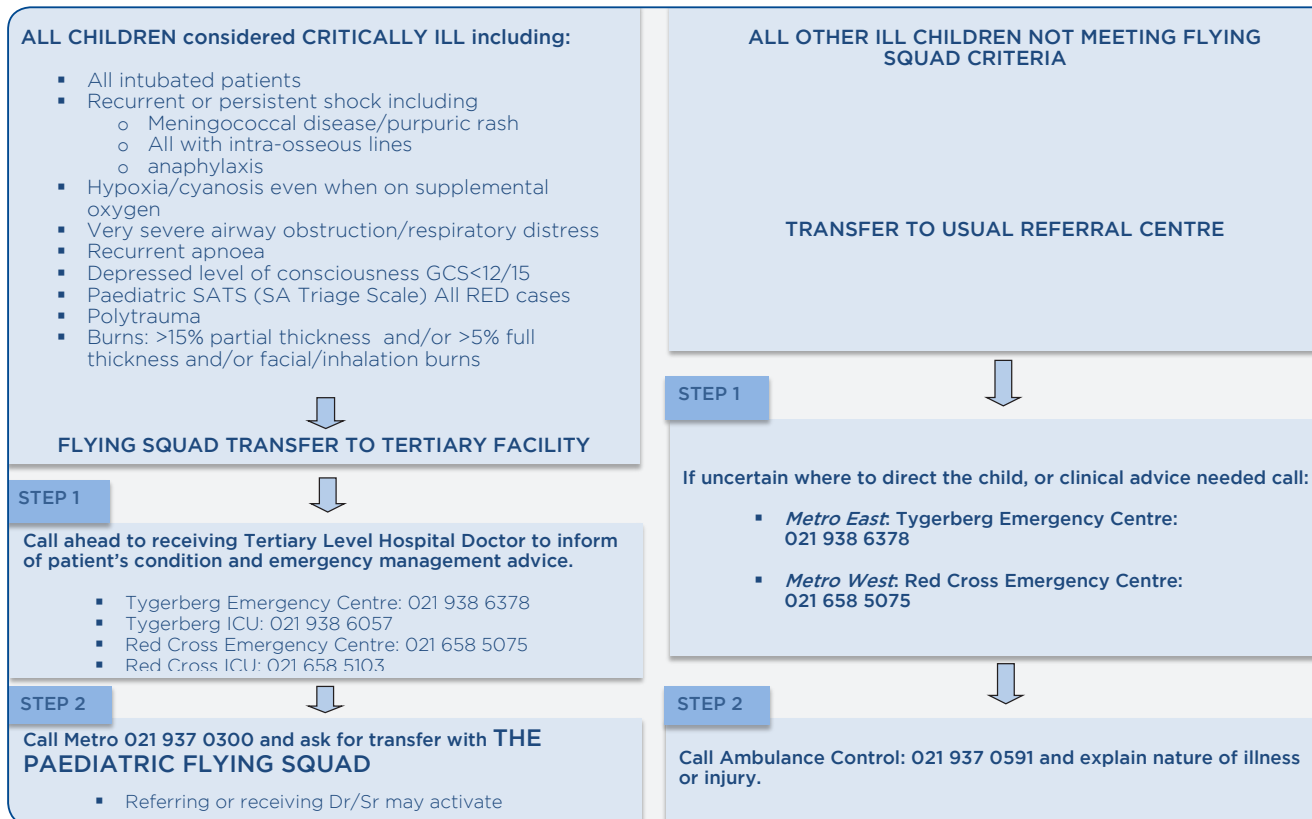
	PAEDIATRIC FLYING SQUAD
Communication	See attached Poster [overleaf] for display at all facilities and EMS vehicles Circular



BETTER TOGETHER.

PAEDIATRIC EMERGENCY TRANSFER

CALLOUT PATHWAY



APPENDIX R: DEMIST HANDOVER PROCEDURE



Emergency Medical Services
CONTINUOUS QUALITY IMPROVEMENT
WESTERN CAPE



PATIENT HANDOVER PROCEDURE:
To Medical Facilities or Emergency Care Practitioners

Handover of a Trauma Patient	Handover of a Medical Patient
De – Details of Patient / Demographics	De – Details of Patient / Demographics
M – Mechanism of Injury / Medical History	M – Medical History
I - Injuries Sustained	I – Chief / Presenting complaint and associated symptoms
S – Signs as recorded	S – Signs as recorded
T – Treatment and Times	T – Treatment and Times