



*The Association of Anaesthetists
of Great Britain & Ireland*

Care of the critically ill child in Irish Hospitals

Recommendations of the Faculty of Paediatrics, RCPI
and the
Irish Standing Committee, Association of Anaesthetists
of Great Britain and Ireland

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Introduction

Recent health controversies regarding delivery of infants outside maternity units, combined with areas of difficulty in caring for critically ill older children in general hospitals, have prompted the Standing Committee of the Association of Anaesthetists of Great Britain and Ireland and the Faculty of Paediatrics, R.C.P.I. to study some aspects of paediatric care in general hospitals, both with and without paediatric and/or maternity units. Many general anaesthetists are worried that expectations might be too great of the service they can provide to critically ill children and on the other hand general paediatricians do not have the skills and ongoing experience to deal with critically ill ventilated children requiring intensive care. All anaesthetists nowadays have a paediatric module in their training, but because of lack of ongoing experience, many anaesthetists worry about having lost their paediatric intensivists skills.

This problem in relation to the management of the critically ill child outside a paediatric hospital is not exclusive to the Republic of Ireland, and we are aware that this debate is also occurring elsewhere.

This document discusses the following issues:

1. Neonatal resuscitation in hospitals that have no paediatric service.
2. Neonatal resuscitation in hospitals that have a paediatric service.
3. Care of the critically ill child in hospitals without a paediatric service.
4. Care of the critically ill child in general hospitals with a paediatric service.
5. Inter-hospital transfer-current practice.
6. Proposal for a National Paediatric Retrieval Service.
7. Summary

1. Neonatal resuscitation in hospitals that have no paediatric service

There are currently approximately eleven acute general hospital sites outside Dublin providing acute medical services that do not have paediatric cover. These sites are: Navan, Dundalk, Monaghan, Naas, Nenagh, Mallow, Bantry, Ennis, Roscommon, Tullamore and Cashel. It is not an uncommon occurrence for these units to be required to manage a newborn infant either as a result of the mother presenting in precipitate labour and delivering on-site or when the infant is born outside the hospital and is brought in by a parent or ambulance services. In most cases such infants will require basic support such as feeding and temperature control. On occasions however these infants, as a result of prematurity or other problems, may require more significant interventions such as airway management and IV fluids. The absence of paediatric staff at these sites means that all initial support will be provided by general adult clinicians and nurses. All possible steps should be taken to minimise obstetric and neonatal attendances at these units; however it is important that each of the non-paediatric units have agreed protocols to guide staff when such attendances do occur and that they are equipped to provide a basic level of neonatal resuscitation and care.

It is sub-optimal for doctors or nurses to be required to manage clinical problems in which they are not trained or in which they do not have recent and continuing experience. In that context it is acknowledged that all assistance provided by medical and nursing staff is in accordance with the principle of providing limited emergency medical care. Practitioners are simply required to do their best given the circumstances. It should also be acknowledged that the generally thin layers of staffing in the non-obstetric / non-paediatric units around the country mean that it is possible that in a given situation no anaesthetist will be available to attend an obstetric / neonatal case because they are occupied with another emergency.

The group makes the following recommendations on this issue:

1.1 Minimising Risk

- Each Health Board with responsibility for any acute medical hospital unit without an obstetric / paediatric department should make every effort to ensure maximum public awareness of which hospital sites do and which do not provide these services. A special effort needs to be made to ensure that members of the refugee / asylum seeking population understand that if they have a pregnancy-related problem, they should proceed to the nearest designated maternity unit.
- Each hospital site without obstetric / paediatric services should have clear signage at the entrance detailing the hospital sites within the region where these services are provided.
- All ambulance, General Practitioner and Doc on-call services should be given clear instructions that all acute obstetric and paediatric referrals should be directed to the appropriate hospital.

1.2 Communication needs

- Communication failure is probably the most common contribution to negative outcomes in these situations. It is incumbent on hospital management and clinicians to ensure that clear, prescriptive communication pathways have been thought through in each unit so that the non-expert has rapid access to advice from an obstetrician and/or paediatrician when an incident arises. Dedicated communication infrastructure may be needed such as dedicated bleep systems but each unit should address its own individual needs in this area.

1.3 Equipment & facility needs

- All non-paediatric sites should have the basic equipment required for neonatal resuscitation and stabilisation readily available for use.

- All non-paediatric sites should have a designated facility where neonatal equipment is located and where short-term emergency neonatal care can be delivered.
- Hospital management should ensure that there is adequate training of staff in neonatal resuscitation and maintenance of the necessary equipment in all non-paediatric sites. This is best facilitated by the local paediatric unit.

1.4 Guideline for management of newborn infants and imminent deliveries presenting to a non-paediatric unit

- If the infant is active and well, transport of the mother and infant to the appropriate obstetric / paediatric unit should be arranged. Management of the infant can be discussed with the on-call consultant paediatrician prior to transfer.
- If the infant is significantly premature or is unwell, the on-call consultant anaesthetist, if available, should attend to assist with the management of the baby.
- Ongoing management of a sick infant and transport arrangements should be organised in consultation with the on-call consultant paediatrician in the nearby unit.
- Ideally transport of a sick neonate should be conducted by paediatric staff. In the absence of a national neonatal transport service that is always dependably available, there should be a capacity to provide dependable neonatal support at short notice from within each region. At present staffing levels, it may not always be possible for paediatric personnel to attend such a delivery outside their own hospital. Responsibility for resourcing such a service remains with the Health Boards.
- If a woman presents in an advanced stage of labour and delivery is judged to be imminent, she should be moved immediately to the designated area within the hospital where she can deliver her baby and neonatal care can be provided.

- If neonatal resuscitation is required over and above normal supportive care, the on-call consultant anaesthetist, if available, should attend to assist in the resuscitation. A consultant anaesthetist should have the support of his consultant clinical colleagues from other disciplines if he/she is unavailable or considers it necessary.
- The on-call consultant obstetrician and paediatrician in the nearby unit should be informed as soon as possible and they will guide further management of the mother and baby.

2. Neonatal resuscitation in hospitals that have a paediatric service

Neonatal resuscitation is the responsibility of the paediatric service, which will ensure adequate availability of trained personnel at all times. A number of paediatric units are not adequately staffed to provide on-site middle-grade (registrar) cover each night. This is not a satisfactory situation. All paediatric units should be in a position to ensure the on-site presence throughout the 24 hours of at least one staff member capable of performing full neonatal resuscitation.

The anaesthetist's responsibility during a Caesarean section is towards the care of the mother.

There will be occasions however when paediatric staff may require the support of anaesthetic colleagues with resuscitation of the infant. If a consultant anaesthetist and an NCHD anaesthetist are present, and if the mother is stable, the consultant anaesthetist may assist in the neonatal resuscitation if so requested, provided that the consultant paediatrician has been called to attend.

All paediatric personnel attending any delivery in the labour ward or theatre must have completed the American Academy of Paediatrics neonatal resuscitation programme. This should be updated at the end of every 2-year period.

In the situation where a non-consultant doctor has not yet completed the course (e.g. at the beginning of January and July, when staff change jobs), he/she should only attend the labour ward or theatre while accompanied by another member of staff with up-to-date neonatal resuscitation qualifications.

3. Care of the critically ill child in hospitals without a paediatric service

There are currently approximately eleven acute general hospital sites outside Dublin providing acute medical services that do not have paediatric cover. It is not uncommon for these sites to be required to manage a critically ill child either as a result of a traumatic injury or an acute medical condition. Every effort should be made to minimise the frequency of these attendances but when they do occur, it is important that there are clear, concise and workable guidelines for clinical management.

3.1 Minimising Risk

- There should be consensus among all units in a region regarding the age criteria for a paediatric patient.
- Each Health Board with responsibility for any acute medical hospital unit without a paediatric service should take robust steps to ensure maximum public awareness of which hospital sites do and which do not provide these services.
- Members of the refugee / asylum seeker population may need to have a special educational effort to ensure their understanding that if their child is acutely unwell, they should proceed to the nearest designated paediatric unit.
- Each hospital site without a paediatric service should have clear signage at the entrance detailing the hospital sites within the region where these services are provided.
- PALS / APLS training should be available to front-line staff in non-paediatric hospitals. It is recommended that a PALS trained staff member should be on duty at all times.
- The ambulance service should be given clear instructions that all ill children should be taken to the nearest hospital with a paediatric service. The ambulance service should only take an

ill child to a non-paediatric hospital site in extreme circumstances such as a child requiring active cardio-pulmonary resuscitation or with an upper airway obstruction.

- General Practitioner / Doc on-call services should be given clear instructions that all acute paediatric referrals should be directed to the appropriate site.

3.2 Who is in charge?

Children with injuries / surgical problems and children with acute medical emergencies (e.g. status epilepticus, acute severe asthma, meningococcal sepsis or DKA) should continue to be placed under the care of the adult clinicians prior to transfer, as happens at present. In units with an A&E consultant on-site, it may be agreed locally that he/she should take primary responsibility for critically ill children. Where there is anaesthetic involvement care should be jointly anaesthetic with the admitting clinician. The admitting clinician and / or anaesthetist should consult directly with the paediatric consultant in the receiving hospital prior to transfer.

The consultant paediatrician assumes clinical responsibility when the child arrives in the receiving hospital.

3.3 Paediatric clinical guidelines

It is the responsibility of each non-paediatric hospital unit to have available a set of paediatric guidelines covering the management of the common paediatric emergencies. These guidelines should be facilitated by the paediatricians and other relevant consultant specialists in the region.

3.4 Paediatric resuscitation trolleys

Each non-paediatric hospital unit should have a formal paediatric resuscitation trolley set up in the A&E department. The use of the Broselow tape system is strongly recommended for the management of the child in the A&E setting.

3.5 Paediatric drug formulary

The '*Medicines for Children*' textbook published by the Royal College of Paediatrics and Child Health is now widely accepted as the standard paediatric formulary in Ireland. A copy of this publication should be available in all non-paediatric A&E departments with new editions replacing old as they are published. APLS / PALS manuals should also be available.

4. Care of the critically ill child in hospitals with a paediatric service

Children are admitted to the hospital under the care of a paediatrician (medical problems) or surgeon (surgical problems or trauma). If they are deemed to be critically ill, the admitting consultant (paediatrician or surgeon) may consult with the anaesthetic consultant about admission to ICU or ventilated transfer to another centre as they deem appropriate. Management in ICU should be jointly anaesthetic and paediatric (or surgical). Some hospitals have high dependency areas on the paediatric unit and it may be appropriate to maintain ventilated children in this setting with appropriately trained nurses.

The group recognises the dilemma faced by general anaesthetists who feel they are working outside their usual area of practice when dealing with critically ill children. The best local expertise should be used in the management of these children. The anaesthetist is generally the most skilled person available to deal with intubation and ventilation of children outside the neonatal period.

The decision about when to transfer the child to a paediatric intensive care unit is made jointly by the local hospital clinicians and the paediatric intensivist. Local hospitals should seek telephone advice from the tertiary paediatric centre.

When the decision is made to admit a child to an adult ICU, the child's care should be shared by the admitting consultant and the consultant anaesthetist. If for any reason the child cannot be immediately transferred to a tertiary unit, ongoing telephone advice from the paediatric intensivist should be readily available.

There are some situations when, after consultation with the tertiary unit, a critically ill child may not be transferred out, such as:

- When there is no paediatric intensive care bed available in the tertiary centre.

- When the child is too ill to transfer.
- When the outcome is deemed to be very poor, or when brain-stem death has occurred.

Nursing care of the critically ill child requires ICU and paediatric nursing expertise. Ideally the nurse managing this child should have paediatric ICU training. However in situations where this is not available, nursing may be provided by the joint management of an ICU nurse and a paediatric nurse. It is the responsibility of hospital management to ensure the availability of appropriately trained nursing staff to meet the needs of critically ill children.

Suitable ventilation, monitoring and disposable equipment should be available both in A&E and in the ICU.

Training: In spite of the fact that all anaesthetists undergo a paediatric module during training, the group recognises that loss of paediatric skills is an issue.

The group believes that all paediatricians in training should undergo a paediatric intensive care module of 3 to 6 months duration.

Paediatric Advanced Life Support (or APLS) training with regular updates should be mandatory for all staff who may be involved with critically ill children.

5. Transfer of children from non-specialised general hospitals to paediatric hospitals

- The current situation in Ireland

Children being treated in general hospitals with paediatric departments may need to be referred to a specialist paediatric unit for investigation and/or treatment. The manner in which such transfer is carried out will depend on the severity of the child's condition; this broadly corresponds to whether the child is being treated in a paediatric ward or in the hospital's Intensive Care Unit.

Where the condition of the child is neither severe nor life threatening, it is usual practice for the transfer to take place by ambulance and the child to be accompanied by a paediatric doctor and/or nurse. Where the condition is serious and has already warranted admission to the ICU common current practice is for the ICU anaesthetic staff to accompany the patient. This arrangement has the obvious benefit that specialised interventions such as mechanical ventilation are supervised by the trained staff.

It is increasingly becoming practice that a member of the paediatric team also accompanies such critically ill patients. Whilst the specialist interventions are quite properly the remit of the ICU doctor (almost always anaesthesia staff), the underlying condition may well be more familiar to paediatricians.

It is apparent that this joint approach, while carrying obvious benefits for the paediatric patient, is not the universally adopted practice. This Group recommends a joint paediatric/anaesthetic approach.

6. Proposal for a national paediatric retrieval service

Amongst consultants working in paediatrics and in anaesthesia there is consensus that for critically ill children, who need transfer to tertiary units, a 'paediatric retrieval system' is required. This has been demonstrated to provide optimal, specialised PITU facilities during an especially hazardous phase of the child's management. This service exists for newborns up to the age of 6 weeks of age (neonatal transport service) and for adults (MICAS – mobile intensive care ambulance service). Children are currently denied this service.

The need for a nationwide paediatric retrieval service has been well accepted internationally and this document should be viewed as a strong recommendation for the implementation of such a service, available 24 hours a day and 7 days a week.

The transport team should consist of members as determined by the Paediatric hospital.

The transport team requires access to road ambulance and occasionally helicopter. The provision, staffing and day-to-day management of the service should be in the control of the paediatric receiving hospitals.

7. Summary

The group recognises that care of critically ill infants and children outside a paediatric hospital is a problematic area for hospital management, nurses, clinicians, paediatricians and general anaesthetists.

Mothers in labour should be encouraged to attend hospitals with an on-site obstetric and paediatric service, and to bypass hospitals which do not have these services. The health authorities should put in place signage and communication lines to ensure that this happens.

When, in spite of the above, a newborn baby or woman in advanced labour present to a hospital without paediatric or obstetric departments, and if there is a need for more resuscitation of the infant than standard supportive care, the consultant anaesthetist or his delegate, and any other consultants deemed necessary, should assist in the resuscitation of the infant.

Paediatricians and anaesthetists in general hospitals, when presented with the problem of a critically ill child, should arrange for jointly conducted safe and rapid transfer of the child to a paediatric ICU as quickly as possible.

There is a need for national 7-day / 24-hour neonatal and paediatric retrieval services. These services should be managed centrally by the neonatal intensive care services of tertiary maternity hospitals for critically ill neonates and the paediatric intensive care services of tertiary paediatric hospitals, to ensure prompt and safe transfer of critically ill children and newborns.

Until these retrieval services become available, a joint anaesthetic/paediatric team should transfer critically ill children with advice from the receiving unit. All staff that may be involved with critically ill children should be trained in paediatric advanced life support.

Notes:



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