JFICMI

National Standards for Paediatric Critical Care Services 2018

Joint Faculty of Intensive Care Medicine of Ireland (JFICMI)

In association with

The Intensive Care Society of Ireland (ICSI)

And

The Paediatric Critical Care National Standards Working Group

Version 2.0

Authors (Working Group):

Cathy Mc Mahon, Consultant Paediatric Intensivist [1]

Martina Healy, Consultant Paediatric Intensivist[1]

Suzanne Crowe, Consultant Paediatric Intensivist [1]

Dermot Doherty, Consultant Paediatric Intensivist [1,2]

Cathy Gibbons, Consultant Paediatric Intensivist [2]

Caroline Kelly, Assistant Director of Nursing[1]

Charlotte O Dwyer, Assistant Director of Nursing [2]

Lorraine O Reilly, Clinical Nurse Manager [1]

Eileen O' Toole, Clinical Nurse Manager [2]

[1] Paediatric Intensive Care Unit, Our Lady's Children's Hospital, Crumlin

[2] Paediatric Intensive Care Unit, Children's University Hospital, Temple Street

Table of Contents

1. Introduction

This document reflects that critically ill children and their families have specific medical, nursing, emotional and technical needs that are best provided within a specialised Paediatric Critical Care Unit (PCCU). Paediatric Critical Care services look after these infants and children whose conditions are life threatening and require constant close monitoring and support from equipment and medication to restore and maintain normal body function. This specialised care is provided in specialist areas (Paediatric Critical Care Units PCCU's) or Paediatric High Dependency Units (PHDU's) that have high levels of trained staff, monitoring and equipment.

This updated document describes the National Standards for Paediatric Critical Care Services in Ireland. These standards will serve as a benchmark against which Paediatric Critical Care Services should measure themselves.

This standards document has a number of new key components:

- National agreement on basic level of Paediatric Critical Care Levels 1- 3S
- Agreement at Regional Hospital level (Model 4R) re Regional High Dependency Care
- Paediatric Critical Care Hospital Models Delivery Framework.

2. Definition and Scope of Practice

The Paediatric Critical Care unit (PCCU) is a specialised facility within the Children's Hospital charged with the care of infants and children which is staffed by a specialist team and is designated to provide an increased level of detailed clinical observation, invasive monitoring, focused interventions and technical support to facilitate the care of critically ill paediatric patients over an indefinite period of time.

A PCCU will care for patients that are typically aged between birth and up until their sixteenth birthday, diagnosed with life-threatening potentially recoverable conditions, post-operative patients who may benefit from close nursing or technical support, and children with chronic complex medical co-morbidities which exceed the capabilities of other clinical care areas within the hospital. Between the ages of 16 and 18, new patients may be admitted to a paediatric service where there is a clinical indication that they should be treated in a paediatric setting. It is also widely recognised that end of life care, including potential organ donation and family bereavement counselling, are skills integral to the care of critically ill child and are facilitated within the PCCU.

The PCCU Team is comprised of paediatric trained medical, nursing and allied professionals; (such as clinical engineering, physiotherapists, dieticians, pharmacists, speech and language, occupational therapy, social workers and psychologists) who are certified in, and / or have received recognised specialised training particular to their profession in the care of critically ill infants and children. These individuals should deliver care within a PCCU that conforms to agreed guidelines and standards particular to their professional regulatory bodies.

2.1 Current situation re Paediatric Critical Care Medicine in the Republic Of Ireland:

Currently approximately 1600 children in the Republic Of Ireland ROI are admitted each year requiring critical care. (Ref PICANet). There are 2 Paediatric Critical Care Units (PCCU's) in the 2 Supra-Regional Children's Hospitals ROI. However, up to 30% of all surgery carried out on children in Ireland takes place in designated General, Local, Major or Regional Hospitals (1). A recent audit carried out to estimate the number of children requiring basic or urgent medical critical care management outside of the 2 children's hospitals clearly outlines the large numbers of children treated at ward and HDU level by paediatricians in the general model setting. We set out to agree and produce a guide to the service and standards required

in order to deliver acceptable levels of care throughout Ireland whether the child is in a Supra Regional, Regional or Local Hospital. Up to now there had been no clear national agreed classification of Regional, Major or Local Hospital services with regard to Paediatrics.

We have used agreed current adult Hospital classification (1) to produce an agreed Paediatric Critical Care Hospital Model Delivery Framework document (2) for the first time. This document clearly sets out the services which must be available locally for a general hospital to care for children either surgically or medically and who are, or have the potential to become, critically ill.

We have also agreed in conjunction with Paediatric Medicine, Adult Critical Care and Anaesthesia the recommendations for safe and effective care for children in Local, Regional and Supra Regional Hospital models. This includes agreed local policies on training, staffing and treatment criterion in children requiring HDU care treated locally. The two Paediatric Critical Care Units -Our Lady's Children's Hospital Crumlin, OLCHC and the Temple Street Children's University Hospital, TSCUH have a total of 32 beds between the two sites (with 34 PCCU beds at full capacity when staffed) with over 1600 admissions per year. Both units are capable of delivering Level 3 and 3S care. The PCCU can be accessed via the National Paediatric Critical Care Network number 1800 ACCEPT (1890 222378) and **www.picu.ie**. Any neonate, infant or child who is critically unwell or has the potential to become critically unwell can access PCCU via this number. This will in turn lead to the location of an appropriate PCCU bed and advice in resuscitation, stabilisation and transfer of the critically ill child to that appropriate facility. This number and advice is available 24 hours a day, 7 days a week. Transfer of critically ill neonates up to 6 weeks of age is also available in ROI. This is a 24/7 service carried out by the National Neonatal Transport Service (NNTP) and greater than 50% of neonatal transports are to PCCU.

There are also a cohort of children who are cared for in Regional Hospitals classified as Paediatric Regional High Dependency Units (PRHDU's) or in General Critical Care Units. We do not currently have concise data on numbers of critically ill children cared for in either General Critical Care or Paediatric HDU outside of Dublin. With the investment and rolling out of Intensive Care National Audit and Research Centre (ICNARC) in Adult Critical Care Medicine (ACCM) we intend to capture all data of children in Adult Critical Care Units.

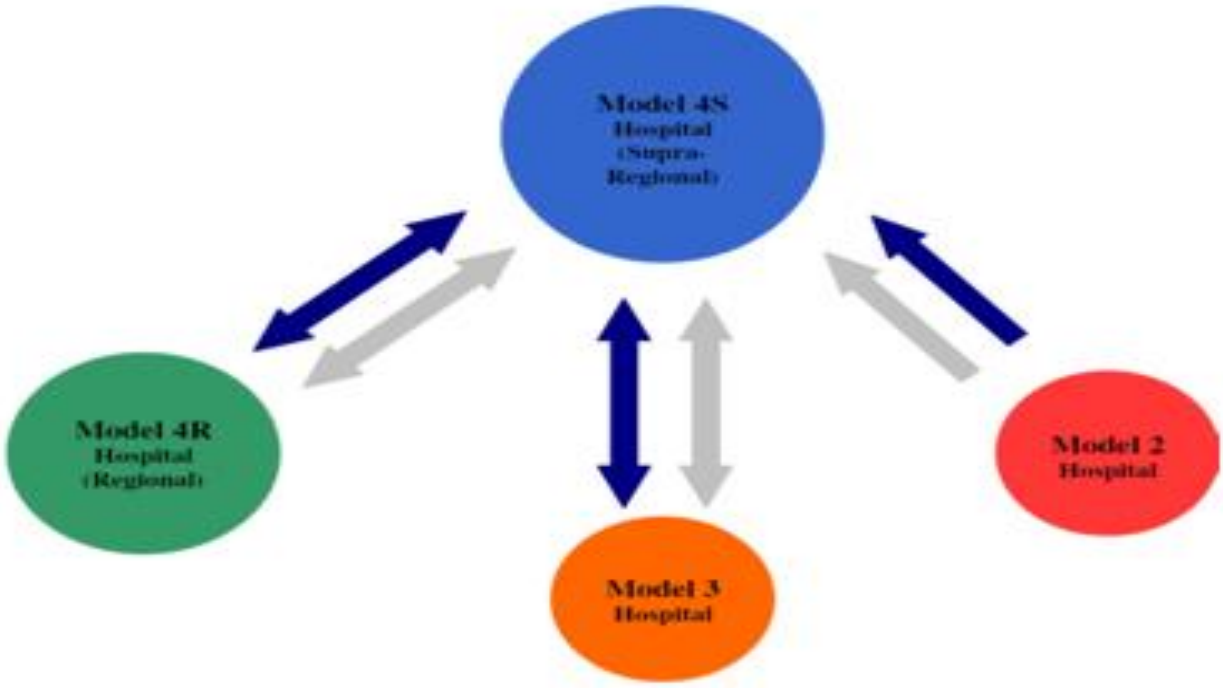
2.2 *Paediatric Critical Care Hospital Models Delivery Framework & Alignment of Paediatrics with reference to PCCM to Local and Regional Hospitals.*

Paediatric Critical Care Hospital Models Delivery Framework **The framework complies with The Joint Faculty of Intensive Care Medicine of Ireland and The Intensive Care Society of Ireland** ***National Standards for Paediatric Critical Care Services***									
Hospital Model (*Report of the National Acute Medicine Programme* 2010)	**'Hanly' Report** (*Report of the National Task Force on Medical Staffing* 2003)	**ED**	**Paed Inpatient Ward** ***Level 0**	**Paed Inpatient Obs Unit** ***Level 1**	**Adult Anaes ICM** **Level 2 (HDU)** **Level 3 (ICU)**	**Paed Anaes.** **Paed Medicine** **Paed Surgery**	**Paed HDU** ***Level 1** **Level 1 (RHDU)** **R***	**Paed CCU** ***Level 2,** ***Level 3,** ***Level 3s (PICU)**	**Paediatric Retrieval** ****PICU.ie** **Referral**
Model 2 Hospital	**'Local'** Hospital	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Model 3 Hospital	**'Major'** Hospital'	✓	✓	✓	✓	**X**	✓Level 1	**X**	**X**
Model 4R Hospital **(Regional)**	**Regional or University** Hospital	✓	✓	✓	✓	✓**R**	✓Level 1 RHDU ***	**X**	**X**
Model 4S (Supra-Regional)	**Children's** Hospitals	✓	✓	✓	✓	✓**S**	✓**S**	✓	✓

Joint Faculty of Intensive Care Medicine Levels of Critical Care:* ***Level 0* *hospital ward clinical management*

Level 1 *higher level of observation* ***Level 1 HDU*** *active management up to and including continuation of non-invasive ventilation where established.* ***Regional High Dependency Unit – (RHDU)*** *Regional HDU care is described as a requirement for close observation, monitoring or any intervention that cannot be delivered at ward level but does not require treatment or admission to PCCU.* ***Level 2*** *active management by critical care team to treat and support critically ill patients with primarily single organ failure (e.g. those requiring acute non-invasive ventilation or greater)* ***Level 3*** *active management by the critical care team to treat and support those with two or more organ failures* ***Level 3S*** *Level three with regional/national service.***www.PICU.ie* ***Bridge phone: 1890 222 378; Table Legend: ED = Emergency Department*** ***See chapter on Level 1 RHDU; Anaes. = Anaesthesia; Paed = Paediatric; CCS = Critical Care Service; HDU = High Dependency Unit*** *The local Anaesthesia/ICM Consultant makes the clinical decision to transfer as needed, as appropriate.*

Model of Care for Paediatric Critical Care



- Hub paediatric critical care services (JFICMI Levels 1, 2, 3, 3S) based at OLCHC and CUHTS prior to completion of the NCH.
- Regional hospitals. Level 0 and 1 care. On-site adult critical care service facilitates stabilisation, referral and transport for children needing ≥ Level 2 care.
- Major hospitals. Level 0 and 1 care. On site adult critical care service facilitates stabilisation, referral and transport for those needing ≥ Level 2 care.
- Local hospitals. No in-patient care. Ambulance by-pass.
- Referral to PICU via single call no: 1890 222 378
  Retrieval and/or repatriation by Irish Paediatric Acute Transport Service (IPATS)
- Referral to PICU via single call no: 1890 222 378
  Transfer and/or repatriation by local team and National Ambulance Service (NAS)

3. Levels of Paediatric Critical Care

3.1 Level 1

High Dependency Care requiring nurse to patient ratio 0.5:1.

Close monitoring and observation is required, but not acute mechanical ventilation. Patients who require basic respiratory/circulatory/neurological or renal support whose needs cannot be met on the acute ward and require the input of the critical care team.

3.2 Regional HDU Level 1

In addition to providing enhanced observation and basic system supports, Regional Level 1 HDUs, due to the availability of subspecialty expertise, may continue to care for those requiring more complex care such as a continuation of long-term ventilation via tracheostomy or non-invasively. A consensus to care for such patients locally should be reached on a case by case basis following early communication with the lead centre.

3.3 Level 2

Critical Care requiring nurse to patient ratio of 1:1.

The child requiring continuous nursing supervision who is receiving advanced respiratory support (complex NIV or invasive ventilation). Level 2 also pertains to the unstable non intubated child e.g. the haemodynamically unstable patient requiring invasive cardiovascular monitoring, frequent fluid challenges and vasoactive drug infusions.

3.4 Level 3

Critical Care requiring nurse to patient ratio of 1:1.

The critically ill child with two organ failures or greater, requiring intensive supervision, who needs additional complex therapeutic procedures. For example patients requiring respiratory support, patients with multiple organ failure requiring vasoactive and inotropic medications and post-operative patients requiring ventilation and vasoactive medications e.g. major abdominal surgery, paediatric scoliosis surgery.

3.5 Level 3S

Critical Care requiring a nurse to patient ratio of 2:1.

The critically ill child requiring the most intensive therapeutic interventions e.g. Paediatric Neuro - Critical Care, Paediatric ECLS, Paediatric Cardio – Thoracic Care, Paediatric, Renal Replacement Therapy. These criteria may change with advances in technology.

4. Standards for Level 1 Regional HDU

4.1 Conditions appropriate for treatment in a level 1 PCCU (RHDU) in a model 4R (Regional) Hospital

Broadly any child requiring close observation, monitoring or intervention that cannot be delivered in a normal ward environment, but at the same time does not require admission to an intensive care unit, should be admitted to the level 1 PCCU This could include, but is not limited to:

- Upper airway obstruction requiring nebulised adrenaline on two occasions within a six hour period
- Apnoea - recurrent
- Respiratory distress requiring nasal high flow oxygen therapy
- Respiratory distress requiring non-invasive ventilation such as CPAP, if available locally
- Severe asthma requiring continuous nebulisers and/or IV bronchodilators
- Diabetic ketoacidosis requiring continuous insulin infusion
- Supraventricular tachycardia responding to medical treatment, such as IV adenosine
- Reduced conscious level (GCS 8- 12) requiring hourly (or more frequent) GCS monitoring
- A child with upper airway obstruction requiring a nasopharyngeal airway
- A child established on long-term ventilation via a tracheostomy presenting with an acute illness but is not requiring significant escalation in their respiratory support.
- Poor perfusion requiring >40 mls/kg volume boluses
- Significant derangement of fluid or electrolytes (e.g. severe hypernatremia) requiring frequent monitoring and adjustment of fluid therapy
- Status epilepticus requiring treatment with two or more anticonvulsants to stop the seizure
- Post-operative care of a child deemed to require close observation and more intensive nursing care and/or pain management
- Post-operative observation of a child after elective tonsillectomy / adeno-tonsillectomy stratified as severe obstructive sleep apnoea on pre-operative oximetry and/or sleep study

Indications for transfer to a Level 3S PCCU

Broadly, any child requiring treatment beyond what can be provided safely in the level 1 RHDU should be discussed with the National PCCU Number and in general be transferred urgently to a PCCU. The PCCU can be accessed via the National Paediatric Critical Care Network number 1800 ACCEPT (1890 222378) and **www.picu.ie**. However, in the event of a child becoming ill unexpectedly there may also be occasions when a very short period of intensive care is required and this may not necessitate transfer to PCCU. This will be based on the clinical judgement of the team caring for the child possibly in conjunction with input from the PCCU. This is acceptable provided there is a suitable facility within the hospital e.g. General Critical Care, there are staff with appropriate competencies and the episode will only last a few hours.

This could include, but is not limited to:

- A child requiring intubation and ventilation
- Reduced conscious level (GCS ≤ 8)
- A child established on long-term ventilation via tracheostomy requiring an escalation in ventilator support
- Circulatory failure not improving despite ≥60mls/kg volume boluses resuscitation
- Circularly failure requiring vasoactive infusion
- Temporary external pacing
- Cardiac arrhythmia with cardiovascular instability, unresponsive to medical intervention, such SVT unresponsive to repeated dosed of IV adenosine
- Cardiopulmonary resuscitation in last 24 hrs
- Failure of two or more systems requiring support
- Acute renal failure requiring dialysis or hemofiltration
- Requirement for invasive arterial monitoring
- Requirement for central venous pressure (CVP) monitoring
- Requirement for intracranial pressure monitoring / External ventricular drain
- Requirement for exchange transfusion
- Requirement for intravenous thrombolysis
- Fulminant liver failure
- Requirement for plasma filtration

4.2 Structure & Minimum Requirements

1. The Medical Director of RHDU, and the Medical Director of the General Critical Care Service should specify the population and agree local protocols for the service in conjunction with the Level 3s PCCU along with any inclusions/exclusions in terms of age and conditions of children to be admitted.

2. The Medical Director will provide overall management and leadership of the unit and will ensure compliance with best practice.

3. Appropriate design that provides adequate space for delivery of patient care, parental accommodation, clinical supplies storage, pharmacy, equipment preparation and storage, clinical staff (on-call) accommodation, administration, education and research.

4. A self-contained area with easy access to Theatre, Emergency Department and Radiology.

5. Ambulance access.

6. A patient point of care testing laboratory within the unit, for measuring time-sensitive commonly requested biochemical and haematological assays such as blood gas analysis, glucose, lactate and electrolytes.

7. There should be appropriate quantity and quality of medical equipment (including single use disposable equipment) which cater to the specific needs of the critically ill infants, children and adolescents.

8. Drugs and equipment checks should be carried out on a regular basis in line with hospital policy and vendor specifications, supplemented by any formally agreed recommendation in line with best international practice.

9. There should be agreed arrangement on the servicing and maintaining of all life sustaining equipment on a 24 hour on call basis where appropriate.

4.3 Access to other Specialities

1. The Paediatric High Dependency Unit will provide a collaborative multidisciplinary care model in line with the Paediatric Critical Care Hospital Model Delivery Framework.

4.4 Clinical Governance

1. Data collection on all referrals to PHDU, and their eventual destination and clinical outcome.

2. Compilation of an annual report summarising activity, quality assurance initiatives and clinical outcomes with identified action plans required to meet expected standards.

3. Morbidity and Mortality process.

4. Critical incident and process-of-care review and reporting structure.

4.5 Medical Staffing

1. There should be a nominated/elected Clinical Lead for PCCU services in Ireland who can liaise with the RHDUs when necessary.

2. There should be a nominated Medical Director of the RHDU.

3. All children in the level 1 RHDU will be under the care of a named consultant paediatrician.

4. A unit running a level 1 RHDU must have 24 x 7 access to a consultant paediatrician on-call who can attend the unit within 20 minutes.

5. Whilst the day-to-day management of children within level 1 RHDU will be led by Paediatricians, a vital role will continue to be played by Anaesthetists and General/Adult Intensivists in multi-disciplinary teams if deterioration occurs. Their experience and knowledge is critical to the overall management of the critically ill child including assessment, resuscitation, stabilisation and safe transfer. They will continue to provide expert acute airway management including intubation and invasive ventilation as part of acute stabilisation should a child require transfer to PCCU. This may entail short term admission to a general ICU prior to transfer. Together with the PCCU receiving team and the transport team they can provide advice and support to paediatricians in optimising care of the critically ill child within the model 4R (Regional) hospital level 1 PCCU.

6. All medical staff working on the unit are not expected to undertake additional training but should aim to use CPD opportunities to maintain and enhance their knowledge and skills relevant to PCCU, such as completing a recognised paediatric

resuscitation course, for example PLS or APLS (ALSG, 2016) or have completed an in-house education and training programme covering similar learning outcomes.

5. CPD of relevance to work on the unit should be undertaken in compliance with the Medical Practitioners Act 2007. Continuing Professional Development (CPD) for nurses, trainees and consultants working in RHDU will need to include a focus on appropriate PCCU updates and other learning opportunities with standards set, and validated, by the National 3s PCCU.

6. A unit running a level 1 PCCU/RHDU must have 24 x 7 paediatric NCHD in-house cover at registrar level.

7. The registrar must have successfully completed their membership exams (MRCPI Paeds / MRCPCH), or equivalent, or have gained adequate clinical experience while currently sitting their exams.

8. The registrar must have up-to-date advanced resuscitation training (APLS).

4.6 Nursing Staffing

1. There should be a minimum of one nurse on every shift, who is directly involved with caring for the critically ill child, who has successfully completed a validated/accredited education and training programme in critical care and has Paediatric experience.

2. All staff should have up to date Paediatric Basic Life Support (BLS) training. There should be a minimum of one nurse on every shift who is directly involved with caring for the critically ill child, who must have completed a recognised paediatric resuscitation course, for example PLS or APLS (ALSG, 2016) or have completed an in-house education and training programme covering similar learning outcomes.

3. As per current PCCM National Standards the recommended nurse: patient ratio for level 1 PCCUs should be 0.5: 1. In Regional HDU this could be influenced by a number of factors, including patient diagnosis and complexity, severity of illness (PEWS score), and nursing skill-mix and seniority.

4.7 Support Service and Staffing

1. Pharmacy, physiotherapy, dietetic, speech and language, occupational therapy, medical social work and spiritual/pastoral care with competences in the care of the ill child, should have sessional support allocated to the unit when required.

2. Clinical engineering support for maintenance of equipment.

3. Administrative and clerical support staff, including secretarial, audit and medical informatics, should be adequate for the number of beds and the level of care provided.

4. Health care assistants should be designated specifically and readily available at all times to the RHDU. They should be familiar with the process of care in RHDU and of sufficient skills and experience to facilitate the rapid and safe turnover of care areas, supplies and equipment.

4.8 Guidelines, Policies and Procedures

1. Admission & Discharge criteria.

2. Major Incident, Mass Casualty or Epidemic planning.

3. Critical Incident Management.

4. Surge Capacity and Admission Prioritization.

5. Anti-microbial and infection control.

6. Standard Operating Procedures for Hi Flow Humidified Nasal Oxygen Delivery and Non Invasive ventilation.

9. Contingency plans regarding the Physical Plant for: fire, chemical accident, electrical plant failure, and medical gas failure and unit evacuation.

10. Violence or Threatening behaviour toward patients and staff.

11. Children First Guidelines with regard to child protection.

4.9 Services for the Critically Ill Child and their Family

1. Child friendly environment.

2. Parental access to the child.

3. Information for parents on their child's condition and care plan with regular updates.

4. Parents should be supplied with information about the unit, visiting arrangements and unit routine.

5. Support Services for parents: including kitchen, lactation room, lounge, overnight and washing facilities.

6. Paediatric medical social work support.

7. Interpreters.

8. Bereavement support.

9. Patient Advocacy Support.

10. Psychological support.

11. Pastoral Support.

Support of this initiative involves recognising that effective delivery of high dependency care to children in model 4R (Regional) hospitals in Ireland will reduce the burden on PCCUs in Dublin and at the same time allow delivery of care closer to the child's home. This is not achievable without investment in staff and equipment in model 4R (Regional) Hospitals, and significant up-skilling of staff. This is achievable provided the staff and resources are concentrated in a limited number of sites – it would not be deliverable across all in-patient sites.

5. Standards for Level 2, 3, 3S PCCU

5.1 Structure

1. The Hospital Board, Health Service Executive and the Medical Director of PCCU, specify the population for the service and any inclusions/exclusions in terms of age and conditions of children to be admitted.

2. The Medical Director will provide overall management and leadership of the unit and ensure compliance with best practice.

3. The Medical Director of PCCU should have clearly defined administrative time, to enable them to manage the Unit and engage with hospital management in determining the best use of critical care resources.

5.2 Minimum Requirements

1. Appropriate design that provides adequate space for delivery of patient care, parental accommodation, clinical supplies storage, pharmacy, equipment preparation and storage, clinical staff (on-call) accommodation, administration, education and research.

2. A self-contained area with easy access to Theatre, Emergency Department and Radiology.

3. Ambulance and / or helicopter access.

4. Design and building specifications as per HBN 57, HBN 23 and SARI 2008.

5. A patient point of care testing laboratory, within the unit, for measuring time – sensitive commonly requested biochemical and haematological assays such as blood gas analysis, glucose, lactate and electrolytes.

6. There should be appropriate quantity and quality of medical equipment (including single use disposable equipment) which cater to the specific needs of the critically ill infants, children and adolescents.

7. Drugs and equipment checks should be carried out on a regular basis in line with hospital policy and vendor specifications, supplemented by any formally agreed recommendation in line with best international practice.

8. There should be agreed arrangement on the servicing and maintaining of all life-sustaining equipment on a 24 hour on call basis where appropriate.

5.3 Access to other Specialities

1. The Paediatric Critical Care service will provide a collaborative multidisciplinary care model, where the care of the patients within the unit will be provided by a range of clinical specialists including but not limited to; intensivists, anaesthetists, cardiologists, cardiothoracic surgeons, nephrologists and respiratory physicians. Staff from theses clinical specialities work alongside clinical nurse specialists, health and social care professionals and administration staff to provide critical care services.

2. Co – location with Paediatric Anaesthesia, Paediatric Surgery, Orthopaedic, ENT/ Airway and Radiology.

3. Co- location with or emergency advice and/or ability to transfer patients to a unit with Cardiology, Cardio – Thoracic Surgery, Neurosurgery, Haematology and Respiratory Medicine.

3. Next day access to Nephrology, Neurology, Metabolic Medicine, Endocrinology and Major Trauma e.g. maxillo-facial and plastic surgery.

4. Access as required to Infectious Diseases/Microbiology, Immunology, Urology, Gastroenterology and Genetic Medicine.

5.4 Clinical Governance

1. Data collection on all referrals to PCCU, including patients who are not admitted and their eventual destination and clinical outcome.

2. Publication of key outcome and performance indices, such as standardised mortality ratio, nosocomial infection rate and discharges between 22.00hrs and 0659hrs.

3. If possible average occupancy on the unit should not exceed 85%. Average occupancy exceeding this for two consecutive months should be escalated to Hospital Management and reviewed.

4. Submission of required dataset to the Paediatric Intensive Care Audit Network (e.g. PICANet) within three months of discharge from the unit.

5. Compilation of an annual report summarising activity, quality assurance initiatives and clinical outcomes with identified action plans required to meet expected standards.

6. Morbidity and Mortality process.

7. Critical incident and process-of-care review and reporting structure.

5.5 Medical Staffing

1. There should be a nominated/elected Clinical Lead for PCCU services in Ireland who in conjunction with the Medical Director of the Unit is responsible for ensuring training, protocols, policies, guidelines and audit are in place.

2. Paediatric Critical Care Consultants appointed should have registration as a specialist in the Specialist Division of the Register of Medical Practitioners maintained by the Medical Council in Ireland in the speciality of Intensive Care,

Paediatric Anaesthesia, Anaesthesia, Paediatrics, Emergency Medicine or Paediatric Surgery and two years post specialist training in a recognised paediatric critical care medicine training programme.

3. A Consultant with a Special Interest in Paediatric Critical Care (Consultant whose majority sessions are in e.g. Anaesthesia) should have 2 years post graduate training in an accredited PCCU programme. Much of the care in PCCU is currently provided by Consultants in Anaesthesia whose training and experience in PCCU was achieved prior to such accreditation being widespread, and upon whose continued practice the patient care and speciality remains dependent.

3. All Paediatric Critical Care consultants should have regular day-time commitments on the Paediatric Critical Care Unit.

4. All medical staff working on the unit should have training in Advanced Paediatric Life Support.

5. CPD of relevance to work on the unit should be undertaken in compliance with The Medical Practitioners Act 2007.

6. We recommend that there should be at least one consultant available to the unit for every 10-12 beds in daytime hours and a minimum of one consultant to 25 beds afterhours, provided all beds are on one site/level. We should aim to strive for this in the shortest time possible within the present financial restraints.

7. During normal working hours (dependent on size of unit, case mix and ward round patterns), one medical trainee should not normally be allocated more than five/six patients.

8. For every eight PCCU beds, aim to have at least one senior trainee available to the unit outside normal working hours. This doctor should not have responsibilities elsewhere.

9. Although rotas may vary depending on Unit size, number of consultants, number of junior staff, length of shifts etc. The rotas of lead consultants should be organised so as to maximise continuity of patient care. It is desirable to provide for blocks of Critical Care Unit time for each consultant of at least 3-4 days at a time rather than changing on a daily basis.

10. The Clinical Lead should be supported by consultants with lead responsibility for:
    a. Clinical audit
    b. Research
    c. Quality Assurance
    d. Medical Education
    e. Organ Donation
    f. Care of children requiring long-term ventilatory support.
    g. Care of children requiring renal replacement therapy and apheresis therapy.
    h. Care of children requiring Extra Corporeal Life Support.
    i. Paediatric Retrieval Service.

5.6 Nursing Staffing

1. Role of the PCCU nurse:

    PCCU nursing represents a specific body of knowledge that can be achieved through education, training, guidance, and supervision. Programmes such as the PCCU Foundation and Post– Graduate programme in PCCU facilitate nursing competence from Novice to Competent.

2. Recommendations on CNM3:

- Be registered on the Nursing and Midwifery Board of Ireland Register as an RGN and/orRCN
- With 5 years post registration experience in PCCU including proven management experience.
- Management qualification essential.

3. Recommendations on Clinical Nurse Manager II shift leader:

- Registered on the Nursing and Midwifery Board of Ireland Register as an RGN/ RCN
- RCN or RGN
- Minimum 5 years in PICU
- Degree desirable or working towards
- Post graduate diploma/Higher diploma in PCCU Critical care nursing

4. Recommendations on Clinical Nurse Facilitator:

- Be registered on the Nursing and Midwifery Board of Ireland Register as an RGN and/orRCN
- Minimum 5 years in PICU
- Degree desirable (or working toward a Post graduate diploma/Higher diploma in PICU Critical care nursing
- Teaching and Assessing desirable

5. Recommendations on Advanced Nurse Practitioner:

- Be registered on the Nursing and Midwifery Board of Ireland Register as an RGN/ RCN with 7 years post registration experience, 5 of which must be in paediatric critical care services.
- Be eligible to undertake a Master's Degree (or higher) in Nursing or a Master's Degree, which is relevant, or applicable, to the advanced field of practice. The Master's programme must be at Level 9 on the National Framework of Qualifications (Quality & Qualifications Ireland), or equivalent. Educational preparation must include at least three modular components pertaining to the relevant area of advanced practice, in addition to clinical practicum.

6. Specific Nursing staffing levels as per section 3.0 – Levels of Critical Care - Each PCCU bed should be supported by 5.5WTE staff nurses.

7. Recommendations for Nursing Qualifications for Critical Care Programme.

Entry requirements. The following are entry requirements for the Graduate Diploma Nursing (Paediatric Critical Care Nursing). All applicants must be:

- Registered with Nursing and Midwifery Board of Ireland (NMBI) as RCN, RCN/RGN with
- A minimum of two years' experience in Paediatric Critical Care.

- Employed in PCCU for the duration of the programme and working a minimum of 78 hours per month.
- Have a primary degree in nursing or a related subject, or hold an equivalent level 8 qualification. Accreditation of Prior Experimental Learning (APEL):

Applicants who do not possess an academic award at level 8 or higher may apply on the basis of Accreditation of Prior Experimental Learning (APEL). Students will be asked to furnish a portfolio of evidence demonstrating their ability to undertake the programmes. For further information on this route of entry see www.UCD.ie/nmhs/APEL.pdf

Provide evidence of support from employer to undertake programme.

Possess IT skills.

5.7 Support Service and Staffing

1. Pharmacy, physiotherapy, dietetic, speech and language, occupational therapy, medical social work and spiritual/pastoral care with competences in the care of the critically ill child, should have daily sessional support allocated to the unit.

2. Clinical engineering support with daily sessional commitment to PCCU and after hours on call commitment.

3. Administrative and clerical support staff, including secretarial, audit and medical informatics, should be adequate for the number of beds and the level of care provided.

4. Health care assistants should be designated specifically and readily available at all times to the PCCU. They should be familiar with the process of care in PCCU and of sufficient skills and experience to facilitate the rapid and safe turnover of care areas, supplies and equipment.

5.8 Guidelines, Policies and Procedures

1. Admission & Discharge criteria.
2. Major Incident, Mass Casualty or Epidemic planning.
3. Critical Incident Management.
4. Surge Capacity and Admission Prioritization.

5. Guidance Framework for Health Service Providers on the education and training requirements for non PCCU nurses to support the provision of intensive care in the event of a major surge in Critical Care activity.

6. Standard Operating Procedures for PCCU interventions including but not exclusive of: mechanical ventilation (including HFOV), sedation, nutrition, renal-replacement therapies and /or extra-corporeal filtration therapies, HFOV and ECMO.

7. Anti-microbial and infection control.

8. Death and Organ Donation.

9. Contingency plans regarding the Physical Plant for: fire, chemical accident, electrical plant failure, and medical gas failure and unit evacuation.

10. Violence or Threatening behaviour toward patients and staff.

11. Children First Guidelines with regard to child protection.

5.9 Services for the Critically Ill Child and their Family

1. Child friendly environment.

2. Parental access to the child.

3. Information for parents on their child's condition and care plan with regular updates.

4. Parents should be supplied with information about the unit, visiting arrangements and unit routine.

5. Support Services for parents: including kitchen, lactation room, lounge, overnight and washing facilities.

6. Paediatric medical social work support.

7. Interpreters.

8. Bereavement support.

9. Patient Advocacy Support.

10. Psychological support.

11. Pastoral Support.

6. Summary

The objective of the Standards is to ensure safe and effective care and ensure quality of care in Paediatric Critical Care Units in line with best practice, both National and International. They have been drawn from, in as far as possible, published guidance, which can be seen in the bibliography. It is acknowledged that the standards will not be met in their entirety but they are intended as a benchmark towards which services should be working and which are achievable in due course.

7. References

1. Model of Care for Paediatric Critical Care Services 2017
2. DNV Consortium –"Right Place, Right Place, Right Time"; Advise on the Development of Paediatric Critical Care Facilities and Services in the Dublin Childrens' Hospitals between Now and the Completion of the National Paediatric Hospital, July 2008.
3. The Paediatric Intensive Care Society – Standards for the Care of Critically Ill Children, 4th Edition 2010 & 2015.
4. National Standards for Paediatric Critical Care Services. Joint Faculty of Intensive Care Medicine 2012
5. National Standards for Adult Critical Care Services. Joint Faculty of Intensive Care Medicine 2011.
6. HBN 57 – Facilities for Critical Care. Published by NHS estates.
7. HBN 23 – Hospital accommodation for children and young people. Published by NHS estates.
8. IC-1. Minimum Standards for Intensive Care Units. Revised 2003. College of Intensive Care Medicine of Australia and New Zealand.
9. Infection Prevention and Control Building Guidelines for Acute Hospitals in Ireland. Strategy for the Control of Antimicrobial Resistance in Ireland (SARI). 2008. Published by HSE Health Protection Surveillance Centre.