High Dependency Care for Children - Time to Move On

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A focus on the critically ill child pathway beyond the Paediatric Intensive Care Unit

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Association of Paediatric Anaesthetists
British Association of General Paediatricians
Faculty of Intensive Care Medicine
Intensive Care Society
NHS England representatives
Paediatric Intensive Care Society
Royal College of Anaesthetists
Royal College of Nursing
Royal College of Paediatrics and Child Health
WellChild

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‘High Dependency Care for Children – Time to Move on’

A focus on the critically ill child pathway beyond the paediatric intensive care unit

* A set of recommendations to improve the care of the critically ill child in England

* Drawn up by a multidisciplinary working group including:
  - Royal College of Paediatrics and Child Health
  - Paediatric Intensive Care Society
  - Royal College of Anaesthetists
  - Association of Paediatric Anaesthetists
  - Royal College of Nursing
  - Intensive Care Society
  - British Association of General Paediatricians
  - WellChild and NHS England representatives

‘Paediatric High Dependency Care – Time to Move on’ : Contents

- Background – making a case for change
- Classification of Paediatric Critical Care and Paediatric Critical Care Units (PCCUs)
- Paediatric critical care Operational Delivery Networks (ODNs) and configuration of critical care services across a network
- Clinical Pathways and progression between critical care levels
- Transportation
- Workforce considerations
  - Nursing staff considerations
  - Medical staff considerations
  - Maintaining competence and skills / Continuing Professional Development (CPD)
- Setting standards and defining quality
- Measurement of activity and outcomes
- Audit and governance arrangements
- Commissioning arrangements and designation of critical care units
- References
- Working Group membership

'Paediatric High Dependency Care – Time to Move on' : Background

- 1997: "Framework for the Future" related to PICU
  - Recognition of effective delivery of HD care reducing burden on PICUs & closer to home
- 2001: "High Dependency Care for Children" DoH Expert Advisory Group
  - Defined different types of care & where best delivered
  - Specific recommendations on leadership, staffing, training, & audit
- Barriers to Progress since 2001:
  - Lack of consensus on definitions
  - Different commissioning and funding approaches
  - No ring-fenced additional income
  - Focus on PICU rather than on whole pathway of critical illness

‘Paediatric High Dependency Care – Time to Move on’ : Why now?

- New commissioning arrangements incl. service specifications
- Networks seen as vital for high quality care in coming years
- Safe & Sustainable paediatric cardiac and neurosurgery networks will require appropriate critical care networks
- Establishment of minimum dataset & HRGs for paediatric critical care
- Recognition of need to reconfigure acute services in near future with fewer in-patient services (“Facing the Future”)
- Development of transport services providing regional support
- Improved collaborative working between acute specialities

‘Paediatric High Dependency Care – Time to Move on’ : Key Points of Note (1)

- Classification of Paediatric Critical Care change of terminology
- Levels of care - move away from High Dependency Care (HDC) & Paediatric Intensive Care (PIC) to:
  - Level 1 = Basic Critical Care
  - Level 2 = Intermediate Critical Care
  - Level 3 = Advanced Critical Care
- Basic and Intermediate Critical Care capturing activity that would previously be described as High Dependency Care.
- Each centre (DGH) will be designated a Level 1, Level 2 or Level 3 Unit. (*)

‘Paediatric High Dependency Care – Time to Move on’ : Classification of Children’s Critical Care Units

- Each hospital to be designated / described as having a Level 1, Level 2 or Level 3 critical care unit (CCU).
- Level 1
  - CCU will exist in every hospital admitting children and will deliver basic critical care if required.
- Level 2
  - CCU will be able to deliver both basic and intermediate critical care and is unlikely to be present in every hospital with in-patient paediatrics.
- Level 3
  - CCU (a PICU) will be able to deliver basic, intermediate and advanced critical care.

‘Paediatric High Dependency Care – Time to Move on’ : Levels of Children’s Critical Care

PICS Framework document	HRG Band–for funding	Level of Critical Care	HRG Definition
PIC Level 1	1	**Level 1**	**HDU Level 1** - Basic Critical Care – including monitoring, O2 by mask, no invasive ventilation
	2	**Level 2**	**HDU Level 2** - Intermediate Critical Care – including CPAP, BiPAP by mask
PIC Level 2	3	**Level 3**	**PIC Level 1** - Advanced Critical Care (level 1) – non-complicated ventilation, inotropes – single system failure
PIC Level 3	4		**PIC Level 2** - Advanced Critical Care (level 2) – unstable invasive ventilation, with 2+ system failure
	5		**PIC Level 3** - Advanced Critical Care (level 3) - unstable invasive ventilation, with multi organ failure
PIC Level 4	6		**PIC Level 4** - Advanced Critical Care (level 4) - unstable invasive ventilation, with multi organ failure, with additional complications e.g haemofiltration
	7		**PIC Level 5** - Advanced Critical Care (level 5) – ECMO, VAD & other highly complex procedures

Level 1 Paediatric Critical Care Unit - Interventions

- Oxygen therapy + pulse oximetry + Electrocardiogram (ECG) monitoring (includes 'high flow' nasal oxygen therapy).
- Arrhythmia requiring IV anti-arrhythmic
- Diabetic Ketoacidosis requiring continuous infusion of insulin
- Severe Asthma requiring IV bronchodilator therapy
- Reduced conscious level (Glasgow Coma Score (GCS) 12 or below) AND hourly (or more frequent) GCS monitoring
- Upper airway obstruction requiring nebulised adrenaline
- Child with apnoeas

Level 2 Paediatric Critical Care Unit - Interventions

- Any Level 1 intervention where there is a failure to respond to treatment as expected or the requirement for intervention is expected to persist for > 24 hours
- Status epilepticus requiring treatment with continuous intravenous (IV) infusion (e.g. midazolam)
- Nasopharyngeal airway
- Long term ventilation via a tracheostomy or mask
- Arterial line / Central venous pressure monitoring
- Epidural
- Care of tracheostomy (first 7 days of admission)
- Acute non-invasive ventilation, including Continuous Positive Airway Pressure (CPAP)
- >80 mls/kg fluid bolus in 24 hours
- Inotropic / vasopressor treatment

Level 2 Paediatric Critical Care Unit Interventions

SPECIALIST HD UNITS

- Acute cardiac pacing
- IV thrombolysis
- Acute renal replacement therapy (Continuous Veno-Venous hemofiltration (CVVH) or Hemofiltration (HF) HD or Peritoneal Dialysis (PD)
- Intracranial pressure (ICP) monitoring or Extra Ventricular Drain (EVD)

‘Paediatric High Dependency Care – Time to Move on’ : Key Points of Note (2)

- The Paediatric Critical Care Minimum Care Dataset (PCCMDS) will be used to define Basic and Intermediate CC and better reflect the clinical pathways.
- The current system of seven critical care Healthcare Resource Groups (HRGs) will remain
- Training & competency requirements for nursing & medical staff - consistent with the distinction between basic and intermediate CC, with higher expectations for Level 2 units.
- Network Lead Centre - responsibilities must include monitoring of adherence to standards, including staffing levels and training/competencies, as part of an Operational Delivery Network (ODN).

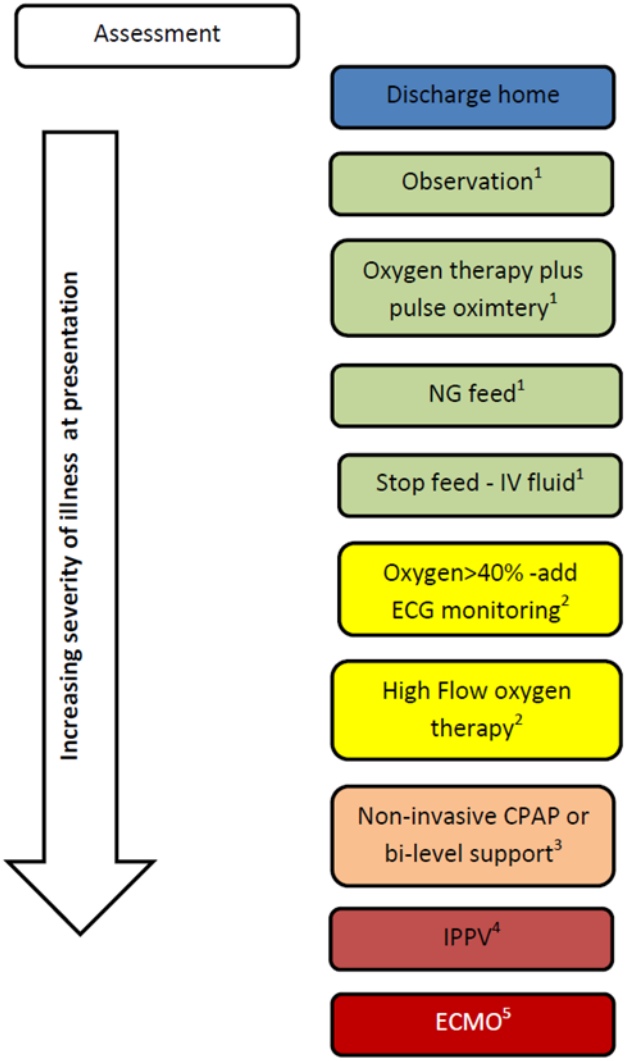
‘Paediatric High Dependency Care – Time to Move on’ : Key Points of Note (3)

- Networks (Operational Delivery Networks)
  - Each network should co-ordinate the collection of CC activity across all hospitals in the network (Basic, Intermediate, Advanced).
  - The governance responsibility for the delivery of safe, high quality CC services across the network will lie with the host organisation of the PCC network (PCCN), in partnership with the individual service providers.
- Audit
  - Auditing of the service should include all CC activity that occurs within the PCCN. Networks will be responsible for ensuring this happens.
  - On a national scale the goal should be to expand the scope of PICANet to collect CC activity occurring outside of PICUs

‘Paediatric High Dependency Care – Time to Move on’ : Key Points of Note (4)

- Clinical Pathways
  - Need for clear guidelines & agreed clinical pathways to ensure equity of access to CC
  - Trigger points for discussing cases with transport services
  - Single standardised PEWS & consistent observation policy across the network
- Transport
  - Paediatric critical care transport services - responsible for providing advice and support to their critical care network, including transfer of children between units

Bronchiolitis pathway



[1] Interventions performed in all hospitals admitting children. They are additive in sequence.

[2] Level 1 Basic Critical Care (basic HDU) interventions. Can be performed in an HDU designated to undertake basic critical care level 1 (or in a level 2 unit or PICU).

[3] Level 2 Basic Critical Care (advanced HDU) interventions. Can only be performed in an HDU designated to undertake basic critical care level 2 (or in a PICU)

[4] PICU only - after stabilisation at DGH.

[5] Currently only performed at specialist centres.

PAEDIATRIC OBSERVATION CHART: 0 - 12 MONTHS

ADDRESSOGRAPH LABEL

Name: .....

Date of Birth: .....

Hospital No: .....

Ward / Hospital: .....

Ward Area:

.....

.....

Date: .....

PAEDIATRIC EARLY WARNING (PEW) SCORE – ACTION / RESPONSE / ESCALATION

Score 0 - 4	Score 5 - 9	Score 10 - 12	Score 13 - 19
• SBAR report the PEWS to the RN overseeing the child's care, or the nurse-in-charge. • Review & consider increasing the observation monitoring plan with the above personnel. • If concerned about the child, SBAR report the situation to the Outreach Nurse – Bleep 2968, requesting advice.	• SBAR report the PEWS to the nurse-in-charge and agree a management plan. • Consider increasing the frequency of observations. • Repeat the PEWS within 30 mins. • If no improvement within 30 mins, SBAR report the PEWS to the Outreach Nurse, requesting additional advice.	• SBAR report the PEWS to the nurse-in-charge & agree a management plan • Increase the frequency of the observations. Repeat PEWS within 30 mins. • SBAR report the PEWS to the Outreach Nurse requesting a pt review – Bleep 2968. • Inform the patient's own medical team / Registrar.	• Immediately SBAR report the PEWS to the nurse-in-charge • Immediately SBAR report the PEWS to the Outreach Nurse and the child's own medical team/Registrar, requesting attendance & review within 15 minutes. • If no response or attendance call PICU extension 28377, requesting an urgent patient review, or consider dialling 2222.

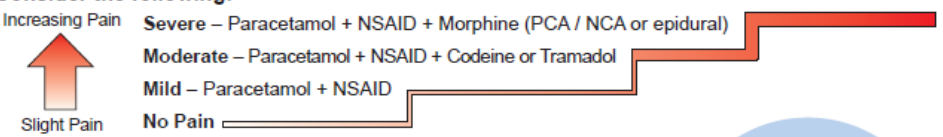
PEW SCORE ≥ 20 = EMERGENCY or LIFE THREATENING SITUATIONS → CALL 2222

S Situation	The patient's name Your name and designation The ward/department you are calling from		
B Background	Brief medical history Background admission diagnosis Treatment to date Have drug chart at hand Fluid balance		
A Assessment	AIRWAY	Patient talking Noises (gurgling, wheeze snoring) Visible foreign body	
	BREATHING	Difficulty breathing Respiratory rate Accessory muscles used	Sp02 Respiratory noises
	CIRCULATION	Pulse Skin Colour	Capillary Refill Time Blood Pressure
	DISABILITY	Alert / Voice / Pain / Unresponsive (AVPU) Pupils (equal / reacting) Blood Glucose	
	EXPOSURE	Swelling Bleeding (wounds/drains)	Rash Temperature
R Recommendation / Readback	What have you done for the patient? State if you think the patient needs: • Treatment review (within 1 to 2 hours) • Urgent review (within 15 minutes) • Emergency (within 5 minutes) Ask the clinician what (s)he would like you to do before arrival e.g: bloods & ECG review		

PAEDIATRIC PAIN MANAGEMENT

ANALGESIA

Consider the following:



In cases of increasing or severe pain, please contact any of the Pain Service Team through switchboard:

- Clinical Nurse Specialist - Paediatric Pain - Bleep No 3974
- Consultant Paediatric Anaesthetist – Paediatric Pain - Bleep No. .....
- SpR Paediatric Anaesthesia - Bleep No. .....

Remember to reassess pain regularly:

Has the severity of pain changed?
What action is needed?
Document findings, actions and re-evaluate

Support Information / Guidelines

Pain Service Website, BRHC Intranet.

Monitoring

Whilst on Patient Controlled Analgesia (PCA), IV Morphine or an epidural, monitor BP, pulse, respiratory rate, sedation and pain scores:

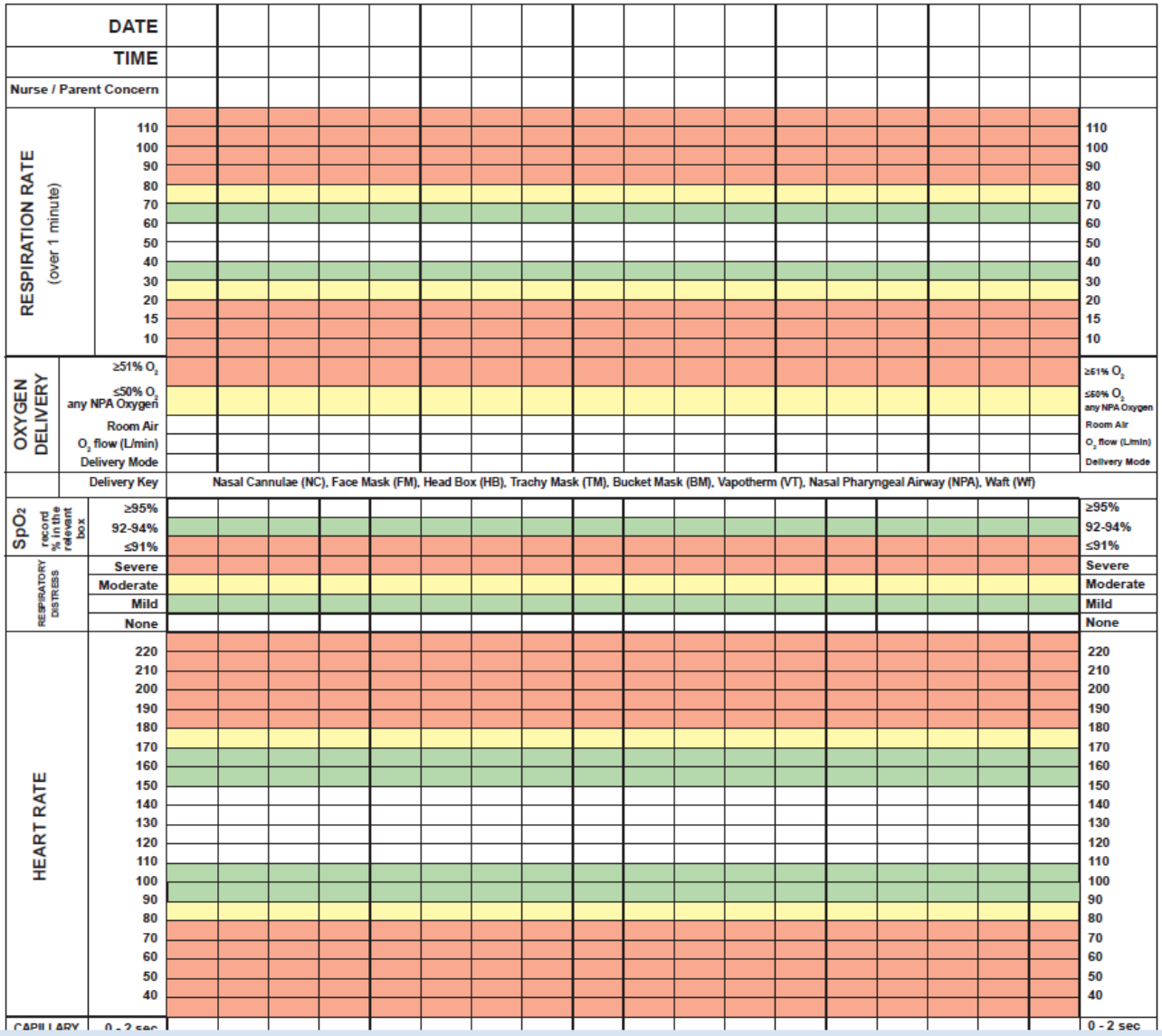
- ¼ hourly for first hour
- ½ hourly for second hour
- then hourly for 24 hours – following this please refer to the 'paediatric acute pain service guidelines'

Date | Blood | Date | SIGNIF | Time | Date | Additic e.g. resp

BRISTOL ROYAL HOSPITAL FOR CHILDREN

0 - 12 months

University Hospitals Bristol NHS
NHS Foundation Trust



Observation Monitoring Plan 1

Frequency of Obs	
Print Name	
Signature	
Date / Time	

Observation Monitoring Plan 2

Frequency of Obs	
Print Name	
Signature		
Date / Time	

Modifications to Physiological Parameters:

		Drs Initials / Print Name	Date / Time
Resp. Rate	to		
SpO2	to		
Heart Rate	to		
Blood Pressure			
Temp.	to		
AVPU			

Any parameter that is outside of the above modifications should have a PEW score of '4' recorded

Guide to Respiratory Distress

Mild	Nasal flaring Subcostal recession
	Head bobbing Intercostal recession

‘Paediatric High Dependency Care – Time to Move on’ : Medical Workforce

- Paediatric trainee recommendations:
  - Level 1 unit: 24/7 middle grade cover by ST4+ (Level 1 RCPCH competencies) plus up-to-date APLS/EPLS
  - Level 2 unit: 24/7 middle grade cover by ST6+ (Level 2 RCPCH competencies) plus up-to-date APLS/EPLS
  - Alternative models include ANPs, specialty doctors, doctors who have completed 6 months full-time PICU, or 24/7 paediatric consultant rota
  - Assessment and monitoring level of cover provided for each unit rests with lead trust of ODN (?by 2018)
  - Separate section in RCPCH competency framework for acute illness and care of the critically ill child

‘Paediatric High Dependency Care – Time to Move on’ : Medical Workforce

- Paediatric consultant recommendations:
  - Level 1 unit: No significant additional training needed
  - Level 2 unit: Undertaken relevant training in critical care with enhanced competencies (Framework – Appendix 7), i.e. 6 months in PICU and 6 months in hospital with level 2 unit
  - Goal for training to be achieved during run-through, also to be available post-CCT e.g. complete 6 month PICU post
  - For all new appointments to Level 2 from 2018?
  - Existing consultants in Level 2 units no additional training but to enhance knowledge & skills through CPD
- Roles for anaesthesia consultants in Level 2 units but must meet same general principles, standards & competencies

A framework of competence for a Special Study Module in Paediatric Critical Care

April 2014

Version 1

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CONTENTS

‘Paediatric High Dependency Care – Time to Move on’ : Medical Workforce

- Maintaining competence & skills / CPD:
  - Responsibility of individuals to keep up-to-date and refresh knowledge & skills of paediatric critical care as part of CPD, planned as part of PDP during appraisal
  - Networks need to ensure suitable educational & training opportunities
  - Anaesthesia, ICU and emergency teams are part of critical care pathway, so also need support for education & training as per paediatric consultants

‘Paediatric High Dependency Care – Time to Move on’ : Nursing Workforce

- Nursing Workforce:
  - Appropriate training competencies for staff working in Level 1 or Level 2 units
  - Skills set at higher level for working in Level 2 unit
  - At least 1 nurse per shift with appropriate critical care training
  - Nurse new to critical care should have minimum of 75 hours supervised practice to gain essential skills required
  - All nurses need up-to-date paediatric BLS training
  - At least 1 nurse per shift with paediatric ALS training
  - Need to update and refresh knowledge & skills as part of CPD
  - Need for critical care nurse educator to support the network

‘High Dependency Care for Children - Time to Move on’ : Nursing Workforce

Appendix 4

- **Children’s Critical Care Passport**

Critical Care Skills for Children’s Nurses working in Level 1 and Level 2 Paediatric Critical Care Units

Appendix 5

- **Critical Care Programme** for Nurses Caring for Children in Level 1 and Level 2 Paediatric Critical Care Units (Advised Content)

‘High Dependency Care for Children - Time to Move on’

- **Children’s Critical Care Passport**

Critical Care Skills for Children’s Nurses working in Level 1 and Level 2 Paediatric Critical Care Units

Level of competency . Competency framework to be decided by the Network

Airway and Breathing	LEVEL 1 UNIT			LEVEL 2 UNIT		
Clinical Skill	Level to be achieved	Sign – Learner & Mentor / Supervisor	Date	Level to be achieved	Sign – Learner & Mentor / Supervisor	Date
• Completed local Paediatric Early Warning System/tool (PEWS/T) & escalation policy training	√			√		
• Use & interpret of paediatric early warning score / tool (PEWS/T)	√			√		
• Respond to sick child through the use of a local communication tool for escalation, e.g. SBAR	√			√		
• Accurately assess and recognise changes in child' s clinical condition	√			√		
Assessment & Management of Airway & Breathing:						
• Noise / Grunting	√			√		
• Vocalising	√			√		
• Breathing rate	√			√		
• Effort of breathing	√			√		
• Efficacy of breathing	√			√		
• Chest movement	√			√		
• Auscultation	√			√		
• SpO_2 interpretation	√			√		

Airway and Breathing	LEVEL 1 UNIT			LEVEL 2 UNIT		
Clinical Skill	Level to be achieved	Sign – Learner & Mentor / Supervisor	Date	Level to be achieved	Sign – Learner & Mentor / Supervisor	Date
• Discuss need for minimal handling and distress avoidance	√			√		
• Identify changes in condition associated with nebulised adrenaline	√			√		
Care of child with nasopharyngeal (NP) airway						
• Prepare equipment	n/a			√		
• Indicate the child likely to benefit from a NP Airway	n/a			√		
• Effectively size and insert of NP airway	n/a			√		
• Perform suction	n/a			√		
• Provide skin and nostril care	n/a			√		
• Effectively position the child	n/a			√		
Suctioning						
• Effectively perform oral suction	√			√		
• Use of appropriately sized yankauer suction catheter	√			√		
• Effectively perform nasopharyngeal (NP) suction	√			√		

‘High Dependency Care for Children - Time to Move on’ : Standards & quality

- Recommendations from report to refine PICS Standards
- Development of service specification and quality dashboard
- Close working with commissioners needed to achieve these
- All critical care activity across the network should be audited
  - Possible involvement of PICANet (? For level 2 only)
- Need for robust governance structure and performance monitoring – role of ODN lead trust and Local Area Team
- Network annual report & annual meeting – share performance& discuss network strategic development
- Individual trusts’ responsibility to meet required service specification, submission of data to quality dashboard & primary governance responsihilty

‘High Dependency Care for Children – Time to Move on’

Any Questions ?