Paediatric Intensive Care Audit Network

1.1 Programme name	Paediatric Intensive Care Audit Network
1.2 Abbreviation	PICANet
1.3 HQIP commissioned	Yes
1.4 Programme unique identifier	HQIP114
1.5 Lead organisation	University of Leeds
	University of Leicester
1.6 Programme homepage	https://www.picanet.org.uk/

1.7 Programme summary

The Paediatric Intensive Care Audit Network (PICANet) is an international clinical audit of paediatric intensive care (PIC) activity in the UK and Republic of Ireland (ROI). Established in 2001, with the aim of providing a secure and confidential, high quality clinical database of PIC activity, PICANet is now part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP) and recognised as the definitive source for PIC data in the UK and ROI.

PICANet collects data from designated NHS and private Paediatric Intensive Care Units (PICUs) providing paediatric level 3 critical care and Specialist Paediatric Critical Care Transport Services. Level 3 care denotes invasive and non-invasive means of aiding vital organ functions through the aid of clinical interventions that require close monitoring and 1:1 care.

Data is collected on patient demographics; referral, transport and admission details; diagnosis; interventions received and outcomes. Customised data collections are sometimes carried out which collect additional clinical data items specific to an area of care or in response to local or national policy requirements.

Data collected from PICUs and Specialist Transport Services is used to support service evaluation, clinical audit and research.

Service evaluation objectives: To generate data to define the supply, demand and outcomes for current PIC services and the patient population using the service. This supports healthcare planning, quantifies resource requirements and provides contextual information to facilitate the review of the audit data at both national and individual PICU level.

Audit objectives: To improve the quality of care provided to patients as part of PIC services by measuring the quality of care and outcomes against pre-determined standards, benchmarking against other care teams and taking specific actions to improve quality of care.

Research objectives: The PICANet research database aims to supports high quality research in the areas of paediatric intensive care, specific conditions affecting children and young people accessing paediatric intensive care services, epidemiology of critical illness, and public health. Following a rigorous data

request process, and providing the appropriate research ethics approvals and legal bases for data processing and sharing are in place, baseline data can be provided for research studies and clinical trials to extend the available knowledge with a view to ultimately providing benefits to patients.

2.1 Organogram https://www.picanet.org.uk/organisational-structure/

2.2 Organisations involved in delivering the programme

Delivery of the Programme

Delivery of the programme is managed as a collaboration between the University of Leeds and the University of Leicester. The University of Leeds are responsible for the secure hosting of the PICANet Web database and take a lead on governance arrangements, managing data requests and analysis of the Admissions dataset. The University of Leicester provide clinical input to the team, are responsible for performing unit and transport team validation and take a lead on analysis of the Referral, Transport and Staffing data.

Governance / Steering of the Programme

Intensive Care National Audit and Research Centre (ICNARC) *https://www.icnarc.org/*

The Intensive Care National Audit and Research Centre (ICNARC) run national clinical audits of the quality of care within adult intensive care units. ICNARC is represented on the PICANet Steering Group.

Paediatric Intensive Care Society (PICS) *http://picsociety.uk/*

The Paediatric Intensive Care Society (PICS) is the main professional society representing the UK paediatric intensive care community. PICANet works closely with PICS and audits practice against a number of PICS standards. The PICS President and PICS Study Group Chair are members of the PICANet Steering Group.

NHS England (Commissioners) *https://www.england.nhs.uk/*

NHS England commissions paediatric critical care within England and also commissions the National Clinical Audit and Patient Outcomes Programme (NCAPOP) via HQIP. NHS England is represented on the PICANet Steering Group.

Funders

Healthcare Quality Improvement Partnership (HQIP)

PICANet is commissioned for care providers within England by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit & Patient Outcomes Programme (NCAPOP). HQIP is represented on the Steering Group. www.hqip.org.uk

National Office of Clinical Audit (NOCA)

PICANet is commissioned for care providers within Ireland by the National Office of Clinical Audit (NOCA). www.noca.ie

The Royal Belfast Hospital for Sick Children

PICANet is commissioned for care providers within Northern Ireland by The Royal Belfast Hospital for Sick Children. The Royal Belfast Hospital for Sick Children are

represented on the Steering Group and Clinical Advisory Group.
www.belfasttrust.hscni.net/hospitals/ChildrensHospital.htm

Welsh Health Specialised Services Committee

PICANet is commissioned for care providers within Wales by the Welsh Health
Specialised Services Committee. www.whssc.wales.nhs.uk/home

NHS Lothian/National Service Division NHS Scotland

PICANet is commissioned for care providers within Scotland by NHS
Lothian/National Service Division NHS Scotland.

HCA Healthcare

PICANet is commissioned for a number of private care providers within England
by HCA Healthcare. www.hcahealthcare.co.uk

2.3 Governance arrangements

The PICANet Team consists of the Principal Investigators (PIs) and staff from the
Universities of Leeds (PI: Feltbower) and Leicester (PI: Draper). This team meets
monthly to review progress against the timelines and contract deliverables, to
consider any actual or potential barriers to satisfactory progress and to agree the
work programme in the long and short term.

The entire project is overseen and guided by the PICANet Steering Group. The
Steering Group oversees the wider governance of the project, providing advice
and guidance on policy and operation to ensure that PICANet provides a sound
evidence-base for service evaluation, audit and research in paediatric intensive
care. The Steering Group has representatives from a broad range of organisations
with an interest in PIC and includes lay representation, the Paediatric Critical Care
Society, and the Royal Colleges of Paediatrics and Child Health, Anaesthetists
and Nursing. A full membership list is available on the PICANet website
(https://www.picanet.org.uk/people/steering-group/).

In addition to these formal management structures, PICANet is overseen by a
Clinical Advisory Group (CAG), whose members represent the paediatric intensive
care teams that submit data to PICANet. The CAG has the following functions: to
provide practical clinical advice to the PICANet team; to act as a forum in which
PICU staff can raise practical operational issues about data entry, transmission
and validation; to contribute to discussions about the long term strategic
development of PICANet; to identify important audit and research questions that
the PICANet database could address; and to review the results and interpretation
of analyses from a clinical perspective. It also acts as the natural forum for the co-
ordination of multi-centre clinical research studies and reviews requests for
access to PICANet data to ensure feasibility, prevent duplication of service
evaluation, audit or research activity and to encourage collaboration. The CAG
has a representative on the Steering Group to give feedback from a clinical
perspective. A full membership list is available on the PICANet website
(https://www.picanet.org.uk/people/clinical-advisory-group/)

2.4 Stakeholder engagement

All stakeholders were originally involved in designing the programme and defining
the aims and objectives.

Clinicians, nurses and audit staff are involved in collecting data and via the
Clinical Advisory Group who help to select quality metrics and contribute to the
data analysis and interpretation.

Patients and carers are involved via the Parent and Families Group and also via representation on the Steering Group defining aims and objectives for the programme.

2.5 Conflict of interest policy

The *Process for declaring interests and dealing with conflicts of interest* has been developed and will be published on the PICANet website shortly. The PICANet Steering Group and Clinical Advisory Group *Declaration of Interests registers* are available on request as per indicated in section 1.4 of the document.

3.1 Quality improvement goals

Improving the accuracy of mortality risk adjustment such that outliers can be identified robustly.

Highlighting that nurse managers should investigate the use of non-registered health care staff to support qualified nurses in delivering clinical care, learning from units where this has already been established to facilitate appropriate staffing levels.

Encouraging Specialist Paediatric Critical Care Transport Services teams to review their retrieval mobilisations times to understand the reasons for delays in cases where the 30 minute NHS England target is not achieved.

Taking steps to address clarity of definition and quality of reporting of unplanned extubations with a view to reassess suitability of unplanned extubations as a candidate for outlier analysis and associated QI activity to reduce the level of variation in unplanned extubation rates.

Understanding reasons for variation in emergency readmission rates within 48 hours.

3.3 Methods for stimulating quality improvement

Workshops; Action plan template

3.4 Quality improvement supplemental information

PICANet supports participants in quality improvement by:

- Providing key QI recommendations for action within the summary report
- Hosting Annual Meetings to discuss the audit's key recommendations
- Providing online reporting facilities in real-time
- Supporting local audits with customisable local audit facilities
- Circulating RSPRT plots on a quarterly basis to encourage real time monitoring of mortality
- Providing guidance on interpretation of funnel plots and RSPRT plots

🔳 Paediatric Intensive Care Audit Network

Programme name	Paediatric Intensive Care Audit Network
Workstream name (if applicable)	Not applicable
HQIP commissioned	Yes
Included in current NHS Quality Accounts	Yes
1.1 Geographical coverage	England
1.3 Healthcare setting	NHS secondary care; Non-NHS funded healthcare; NHS-funded care delivered by independent provider
1.4 Inclusion and exclusion criteria	Data is submitted into the secure web-based application database called PICANet Web by Paediatric Intensive Care Units and Paediatric Intensive Care Transport Services for all children and young people accepted for referral, transported or admitted to designated paediatric intensive care units (PICUs) providing paediatric level 3 critical care (as defined by the Royal College of Paediatrics and Child Health).
1.5 Methods of data submission	Online e.g. webtool or portal; Extract from electronic patient system
1.7 Data flow diagram	The PICANet data flows for England, Wales and Scotland are available on the PICANet website: https://www.picanet.org.uk/wp- content/uploads/sites/25/2021/02/PICANet-Data- Flow_v6.0_England_Wales_Scotland.pdf
1.8 Data quality & analysis plan	The PICANet database has inbuilt data validations which reduce the burden of data checking for organisations, e.g. immediate highlighting of missing / inconsistent data.

The PICANet clinical validation team work with organisations to answer validation queries via 4-6 weekly validation reports for organisations flagging data quality issues.

Plus the following are in place:

- Data quality checks prior to analysis to identify duplicate records and inconsistencies.
- Validation of addresses and postcodes.
- Annual review of low matches on patient ID assignment.
- NHS number validation using the Modulus 11 algorithm.

1.9 Outlier policy	The *PICANet Outlier Policy* is published on the PICANet website: https://www.picanet.org.uk/wp-content/uploads/sites/25/2019/05/PICANet_Outlier_Policy_v1.0_20190503.pdf

2.1 Outcome measures

The audit provides comparative performance data for Paediatric Intensive Care Units (PICUs) and Specialist Paediatric Critical Care Transport Services. Each hospital has its performance measured against: - Other units / transports teams across the UK and Republic of Ireland - Paediatric Critical Care Standards - NHS England Specialised Services Quality Dashboard targets Some summary data is presented at a National level.

The current outcome metrics are:

- In-PICU risk adjusted mortality

Evidence base: The risk adjustment model used to determine risk-adjusted mortality (Paediatric Index of Mortality version 3) has been externally validated (DOI: 10.1097/PCC.0b013e31829760cf).

Measures quality indicator PIC01 from the NHS England *Paediatric Intensive care (PICU) Quality Dashboard 2021/2022.*

- Emergency re-admissions within 48 hours

Evidence base: Clinical consensus within PICANet Clinical Advisory Group and Steering Group and designed to measure quality indicator PIC04 from the NHS England *Paediatric Intensive care (PICU) Quality Dashboard 2021/2022.*

2.2 Process measures

The current process metric is:

- Retrieval mobilisation times

Evidence base: Clinical consensus within PICANet Clinical Advisory Group and Steering Group and designed to measure quality indicator PIC14i from the NHS England *Paediatric Intensive care (PICU) Quality Dashboard 2021/2022* which recommends that, for emergency retrievals, the team departs the transport base within 30 minutes from the time the referral is accepted for retrieval.

2.3 Organisational measures

The current organisation metric is:

- PICU nurse staffing establishment data: Number of nurses providing clinical care per bed

Evidence base: PCCS Quality Standard L3-207

Paediatric Critical Care Society, *PCCS Quality Standards for the care of Critically Ill or Injured Children* (6th Edition). 2021.

2.4 Patient reported outcome measures

Patient reported outcome measures are not included in the audit.

2.5 Patient reported experience measures

Patient reported experience measures are not included in the audit.

2.6 Source of evidence for measures

Other; Professional society

3.1 Results visualisation	Interactive online portal (run charts available); Annual report; Static data files
3.2 Levels of reporting	National; Trust or Health Board; Clinical commissioning group (CCG); Regional network; Hospital
3.3 Timeliness of results feedback	Within 24 hours; Within 3 months; Within 1 month; Within 1 year
Dataset #1 name	Core dataset (admission)
Dataset #1 type	Clinical audit - continuous
Dataset #1 items collected (n)	133
Dataset #1 items from existing national datasets (n)	0
Dataset #1 use of existing national datasets	Paediatric critical care minimum dataset (PCCMDS)
Dataset #1 specification	The PICANet Admission Dataset Definitions Manual is available on the PICANet website: https://www.picanet.org.uk/wp- content/uploads/sites/25/2020/11/PICANet-Web-Admission-Dataset-Manual- v5.4_-Nov-2020.pdf
Dataset #2 name	Core dataset (referral)
Dataset #2 type	Clinical audit - continuous
Dataset #2 items collected (n)	17
Dataset #2 items from existing national datasets (n)	0
Dataset #2 specification	The PICANet Referral & Transport Dataset Definitions Manual is available on the PICANet website: https://www.picanet.org.uk/wp- content/uploads/sites/25/2020/11/PICANet-Web-Referral-Transport-Dataset- Manual-v2.2-FINAL_Nov-2020.pdf
Dataset #3 name	Core dataset (transport)
Dataset #3 type	Clinical audit - continuous
Dataset #3 items collected (n)	184
Dataset #3 items from	0

existing national datasets (n)	
Dataset #3 specification	The PICANet Referral & Transport Dataset Definitions Manual is available on the PICANet website: https://www.picanet.org.uk/wp- content/uploads/sites/25/2020/11/PICANet-Web-Referral-Transport-Dataset- Manual-v2.2-FINAL_Nov-2020.pdf
Dataset #4 name	Customised data collections (multiple custom collections accounted for, some collected on an opt in basis)
Dataset #4 type	Clinical audit - continuous
Dataset #4 items collected (n)	200
Dataset #4 items from existing national datasets (n)	0
Dataset #4 use of existing national datasets	Paediatric critical care minimum dataset (PCCMDS)
Dataset #4 specification	Customised data collections collect additional data beyond the PICANet core dataset for the purposes of audit. Current customised collections are listed here with links to their data definitions manuals which are available on the PICANet website: • COVID-19 customised data collection: https://www.picanet.org.uk/wp-content/uploads/sites/25/2020/05/PICANet-COVID-19-Data-Definitions-Manual-v1.1_2020.05.pdf The following custom audits are collected at a PICU level opt in basis: • Renal Dataset: https://www.picanet.org.uk/wp-content/uploads/sites/25/2018/05/PICANet-Renal-Dataset-Definitions-v2.0.pdf • Renal Daily Interventions: https://www.picanet.org.uk/wp-content/uploads/sites/25/2018/06/PICANET-Renal-Daily-Data-Definitions-Manual-v2.0.pdf