Paediatrics

Version 5

Clinical Indicator User Manual

Endorsed by:

The Royal Australasian College of Physicians

The Australian Council on Healthcare Standards

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The data collected with this User Manual are to be reported and submitted to ACHS using the ACHS Performance Indicator Reporting Tool (PIRT ONLINE) at https://apps.achs.org.au/PIRT/Login.aspx.

The Paediatrics Working Party is led by Dr Simon Fraser

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Participating Colleges, Societies and Associations

Royal Australasian College of Physicians, Paediatrics and Child Health Division
http://www.racp.edu.au/page/chapter-of-community-child-health/

Australian College of Children and Young People's Nurses http://www.accypn.org.au/

Woman's and Children's Healthcare Australasia http://www.wcha.asn.au/

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FOREWORD

The specialty of Paediatrics covers the critical time period of human development from four weeks of age (by definition, the period from birth to four weeks is known as the neonatal period and is covered elsewhere) to adulthood (18 years of age). There have been significant advances in paediatric care in the 20th and 21st centuries with an incredibly low mortality rate after the neonatal period in developed countries such as Australia (infant mortality rate approximately 4 per 1,000 live births and childhood mortality rate less than a tenth of this) and an increasing provision of paediatric care in the ambulatory (outside hospital) setting.

Nonetheless, some infants, children and adolescents still require admission to hospital and the focus in safety and quality in paediatric healthcare has shifted to improving morbidity of care whilst maintaining an extremely low mortality rate. Although the first edition of ACHS Paediatric Clinical Indicators (CIs) were released in the late 90s and have had a number of iterations since, in late 2011, it was agreed that a new Paediatric indicator set was required. In 2012, a large multidisciplinary group reviewed the existing Paediatric (including ICU) indicators and workshopped many others. These were narrowed down to 37 indicators in terms of applicability to contemporary Paediatrics and following further consultation within the group, the final 18 CIs were agreed upon.

The ability to provide successful basic paediatric resuscitation to the sick infant, child or adolescent is predicated upon, not only the basic training of paediatric resuscitation skills but, at an organisational level, ensuring that health professionals at the coalface remain up-to-date and current with respect to this competency. The first two indicators in this set will assist organisations in measuring and benchmarking this key performance indicator. The provision of safe and appropriate care to infants, children and adolescents requires management by health professionals in dedicated ward areas where patients of similar age ranges can be nursed together, wherever possible, away from adult patients. Paediatric patients have special and specific medical and nursing needs and the concentration of paediatric patients in specific paediatric ward areas helps to facilitate the provision of such care by directed training and maintenance of appropriately skilled staff.

Despite the best efforts of highly dedicated and trained healthcare professionals, because of the complexity of health care and the specifics of dealing with medications on a “by weight” basis where the margin of error is small, medication errors do unfortunately occur in the paediatric setting. Measuring and comparing these incidents is one approach to reducing paediatric medication errors.

Adverse events are not limited to medication errors and it is envisaged that by measuring all paediatric adverse events for patients managed within and outside dedicated paediatric wards will allow comparison and demonstration of the benefits of managing infants, children and adolescents in dedicated ward areas. This set of indicators (version 5) covers these areas.

The ongoing management of the paediatric asthmatic is very much dependent upon the provision of advice as to what to do at home to reduce morbidity that leads to repeated presentation to hospital. It is expected that upon discharge, all asthmatics should have an up-to-date asthma action plan.

The clinical handover of care following surgery requires clear and timely postoperative notes. A full physical examination is a requirement and evidence of detailed admission for inpatient care and forms the basis of comparison for changes during the subsequent hours and days. Similarly the completion of a discharge summary is an important record of a child’s stay and the means of communicating ongoing requirements following discharge. These are covered in Area 3 of this manual.

Patients requiring intensive care constitute the sickest of paediatric patients and the effectiveness of recovery and the appropriateness of discharge from an intensive care unit can be measured by readmission rates following discharge. Good clinical handover following discharge from an intensive care unit should reduce subsequent adverse events (covered in Area 4).

The final Area relates to paediatric anaesthesia. Children should not fast for more than six (6) hours prior to anaesthesia because of the high metabolic rate of the paediatric population. Yet conversely, adverse events or delays in paediatric surgery because of poor compliance with fasting can prolong length of stay in a vulnerable patient group. The presence of a parent during the induction phase of anaesthesia can assist with a smooth transition to readiness for surgery.

Dr Simon Fraser

Chair, Paediatrics Working Party

Royal Australasian College of Physicians

STRATIFICATION VARIABLES

The ACHS, in collaboration with relevant professional colleges, associations and specialty societies, has developed the following stratification variables to enable 'like' organisations to be grouped for the purpose of comparison.

Three levels of comparison are available:

- An individual organisation's data results compared to **ALL** organisations that submit data for a particular indicator
- Each individual organisation's data results compared to all other organisations submitting data within the same sector, that is, public or private
- Within the Australasian Clinical Indicator Report (published annually), data is compared by state and on a metropolitan / non-metro basis. This historical data is accessible from the ACHS website: http://www.achs.org.au/publications-resources/australasian-clinical-indicator-report/
- An individual organisation's data results compared to other organisations classified according to defined stratification variables for the indicator set. The criteria used to stratify an indicator set are based on the factors that the working party believes may impact on how different HCOs perform.

Organisations interested to see their data stratified against additional variables, should contact POS (pos@achs.org.au) to request the additional reports.

Paediatric stratification variables

All organisations are stratified into public / private categories and the number of paediatric separations in each **six month data collection period:**

- 1–499 separations
- 500–1,999 separations
- 2,000–3,999 separations
- 4,000–6,999 separations
- ≥ 7,000 separations

COMMONLY USED DEFINITIONS

Paediatric patient: a patient whose age is 17 years and 364 days or less.

Registered nurse: a member of the nursing staff registered with the Australian Health Practitioner Regulation Agency (AHPRA)**.**

Medical practitioner: a clinician who is registered by the Australian Health Practitioner Regulation Agency (AHPRA) as a 'medical practitioner'.

Adverse events: unexpected incidents that adversely affect the patient during their hospital stay. These should be recorded on an Incident Report (or equivalent).

Intensive Care Unit (ICU) is a specially staffed, and equipped, separate and self-contained section of a hospital for the management of patients with life threatening or a potentially life threatening condition. Refer to College of Intensive Care Medicine **IC-01 Minimum Standards for Intensive Care Units**

PAED AREA 1: Appropriateness

Rationale

The appropriate care of paediatric patients is an important measure of quality in acute care settings. To effectively care and provide better patient outcomes for this specific population, medical practitioners and registered nurses should have up-to-date paediatric CPR qualifications and paediatric patients should be located in paediatric wards / areas.

(See Background for more information)

Reporting period

1 January – 30 June 1 July – 31 December

Inclusions

- As per numerator and denominator.

Exclusions

- Nil

Data cleaning rules

- The ***denominator*** figures for **CIs 1.3, 2.1, 2.2 and 2.3** should be the **SAME**, as they share the same definition.

Definitions of terms

For the purpose of CIs 1.1 and 1.2:

Basic life support (BLS) is defined as the preservation or restoration of life by the establishment of and/or the maintenance of airway, breathing and circulation, and related emergency care.*

* Australian Resuscitation Council. Guideline 11.1 – Introduction to advanced life support (2010). Access from: http://www.resus.org.au/policy/guidelines/section_11/guideline-11-1dec10.pdf on 27 August 2013.

Indicator(s) within this Area

CI 1.1: Registered nurses with paediatric basic life support qualifications

Numerator	Number of registered nurses caring for paediatric patients that have up-to-date paediatric basic life support qualifications, during the 6 month reporting period.					
Denominator	Number of registered nurses caring for paediatric patients, during the 6 month reporting period.					
Desirable rate:	High	☑	Low	☐	Not specified	☐
Indicator type:	Structure	☑	Process	☐	Outcome	☐

CI 1.2: Medical practitioners with paediatric basic life support qualifications

Numerator	Number of medical practitioners caring for paediatric patients that have up-to-date paediatric basic life support qualifications, during the 6 month reporting period.					
Denominator	Number of medical practitioners caring for paediatric patients, during the 6 month reporting period.					
Desirable rate:	High	☑	Low	☐	Not specified	☐
Indicator type:	Structure	☑	Process	☐	Outcome	☐

CI 1.3: Paediatric patients admitted to a paediatric ward/area

Numerator	Number of paediatric patients admitted to a dedicated paediatric ward/area, during the 6 month reporting period.					
Denominator	Number of paediatric patient admissions, during the 6 month reporting period.					
Desirable rate:	High	☑	Low	☐	Not specified	☐
Indicator type:	Structure	☐	Process	☑	Outcome	☐

Background

Poor neurological outcomes following the sudden cardiac arrest of paediatric patients are a major concern during hospitalisation.[1] However, the timely delivery of high quality cardiopulmonary resuscitation (CPR) has been proven to substantially improve patient outcomes.[1,2] Some of the major issues reported in regards to healthcare professionals administering CPR on the paediatric population are inadequate chest compression depth, over ventilation and long interruptions in the CPR process.[1] As medical practitioners and registered nurses are the first to respond in these sudden cardiac arrest cases outside of the intensive care unit, it is essential that these clinicians are adequately trained to immediately participate in CPR, and not have to wait for a more experienced resuscitator.[1,2] For this CPR intervention to be effective, it is imperative that health professionals undergo regular basic life support training to keep their qualifications and skills up to date.[1]

Another key element of providing appropriate care to the paediatric population is placing them in paediatric specific wards/areas.[3] The 2005 Association for the Wellbeing of Children in Healthcare (AWCH) report indicated that children need to be accommodated in spaces separate from the adult population to ensure their safety and specific needs.

Some of the challenges in caring for the paediatric population include their limited communication skills, varied developmental stages and differences in epidemiology and treatment approaches when compared to the adult population.[4] Unfortunately some hospitals do not have a dedicated paediatric ward/s. During high activity, paediatric wards may be full and overflowing, yet patients still need to be accommodated. In these circumstances, the NSW Health Policy Directive, *Children and Adolescents - Guidelines for Care in Acute Care Settings* states that, “each patient should be individually evaluated and a

decision made as to where the child should be hospitalised in order to achieve the best clinical outcome".[5]

References

1. Sutton R, Niles D, Meaney P et al. "Booster" training: evaluation of instructor-led bedside cardiopulmonary resuscitation skill training and automated corrective feedback to improve cardiopulmonary resuscitation compliance of Pediatric Basic Life Support providers during simulated cardiac arrest. Pediatr Crit Care Med 2011; 12(3): e116-121.
2. Hunt E, Patel S, Vera K et al. Survey of pediatric resident experiences with resuscitation training and attendance at actual cardiopulmonary arrests. Pediatr Crit Care Med 2009; 10(1): 96-105.
3. Association for the Welfare of Child Health (AWCH). The psychosocial care of children and their families in hospital: national survey report Westmead NSW; AWCH; 2005.
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PAED AREA 2: Adverse events

Rationale

Medication errors are prevalent in paediatric patients due to their variations in physical size and physiological capacities, which causes difficulties in determining paediatric dosages. These medication errors can result in adverse events depending on the magnitude of the medication error and the timeliness of the response of the ward staff.

(See Background for more information)

Reporting period

1 January – 30 June 1 July – 31 December

Inclusions

- As per numerator and denominator.

Exclusions

- Nil

Data cleaning rules

- The ***denominator*** figures for **CIs 1.3, 2.1, 2.2 and 2.3** should be **SAME**, as they share the same definition.

Definitions of terms

For the purpose of CI 2.2:

A ward/area that **is not** specifically dedicated to paediatric patients is defined as an area of the hospital in which ≥ 90% patients are 18 years of age or older. This includes being outside the ward for imaging or rehabilitation.

Indicator(s) within this Area

CI 2.1: Medication errors

Numerator	Number of adverse medication incidents involving paediatric patients where the incorrect dose of medication was administered, during the 6 month reporting period.		
Denominator	Number of paediatric patient admissions, during the 6 month reporting period.		
Desirable rate:	High ☐	Low ☑	Not specified ☐
Indicator type:	Structure ☐	Process ☐	Outcome ☑

CI 2.2: Adverse events when not in a paediatric ward/area

Numerator	Number of adverse events involving paediatric patients that occur in a ward/area that **is not** specifically dedicated to paediatric patients, during the 6 month reporting period.					
Denominator	Number of paediatric patient admissions, during the 6 month reporting period.					
Desirable rate:	High	☐	Low	☑	Not specified	☐
Indicator type:	Structure	☐	Process	☐	Outcome	☑

CI 2.3: Adverse events in a paediatric ward/area

Numerator	Number of adverse events involving paediatric patients that occur in a ward/area that **is** specifically dedicated to paediatric patients, during the 6 month reporting period.					
Denominator	Number of paediatric patient admissions, during the 6 month reporting period.					
Desirable rate:	High	☐	Low	☑	Not specified	☐
Indicator type:	Structure	☐	Process	☐	Outcome	☑

Background

Medication errors are defined as “any preventable event, which may lead to inappropriate medication use or patient harm, while the medication is in the control of the healthcare professional or patient”.[1] These errors can occur at various stages of medical administration such as prescription, transcription, compounding, dispensing or distribution of the medication.[1,2] Medication errors are responsible for a large proportion of adverse events that occur when treating the paediatric population.[2]

The opportunity for medication errors in paediatric patients seems to be higher due to the availability of fewer licensed drugs tested specifically in children and a lack of appropriate drug dosages/medication strengths when compared to the adult population.[3] Paediatric dosages need to be calculated based on many variables such as age, weight, body surface area and health status of the patient.[3,4] Thus, the inter-patient variations in the dilution of drugs may limit the determination of safe dosages for paediatric patients.[3] The recalculation of medication doses may also be required considering that children are in a constant state of growth, which can impact on how the medication is absorbed, distributed and metabolised.[2,3,5] The limited internal reserves, communication skills and feedback capability of paediatric patients are other factors that can result in a greater incidence of medication errors when compared to treating adults.[3]

To minimise the impact of medication errors it has been suggested that the ‘five rights’ of medical administration are followed: “the right drug, for the right patient, at the right time, in the right dosage, by the right route”.[2] More education, training and awareness programs implemented within a healthcare setting are recommended to limit adverse events arising from incorrectly reading drug labels, inaccurate measurement of the volume of medications, contaminating parenteral drugs and misinterpreting prescriptions.[3,4]

Adverse events such as cardiac arrest or death are serious clinical outcomes that can be the result of an error in the medicine administration process.[1,6] It has been found that the timely intervention by a ward staff member can reduce the incidence of these adverse events through the ongoing monitoring of deteriorating patients.[6] Advances in Rapid Response Systems (RRS) have determined markers of clinical instability of patients requiring evaluation and treatment that should be flagged to a medical professional to improve the patient’s outcome. Appropriate follow-up will minimise the occurrence of these adverse events.[7]

References

1. Davey A, Britland A and Naylor R. Decreasing paediatric prescribing errors in a district general hospital. *Qual Saf Health Care* 2008; 17(2): 146-149.
2. Mcdonnell C. Opioid medication errors in pediatric practice: four years' experience of voluntary safety reporting. *Pain Research & Management* 2011; 16(2): 93-98.
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6. Tibballs J and Kinney S. Reduction of hospital mortality and of preventable cardiac arrest and death on introduction of a pediatric medical emergency team. *Pediatr Crit Care Med* 2009; 10(3): 306-312.
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PAED AREA 3: Documentation

Rationale

Effective communication through completed documentation is essential for physicians to provide the most safe and effective care for their patients. This process may reduce the incidence of adverse outcomes resulting in fewer visits to the emergency department and further hospitalisation.

(See Background for more information)

Reporting period

1 January – 30 June 1 July – 31 December

Inclusions

- As per numerator and denominator.

Exclusions

- Nil

Data cleaning rules

- The ***denominator*** figures for **CIs 3.3 and 3.4** should be the **SAME**, as they share the same definition.
- For the purpose of **CIs 3.3 and 3.4**, take note of the consecutive 7-day time period that you have collected the data and record this in the part period section of PIRT when submitting data.

Sampling

For the purpose of CIs 3.3 and 3.4 only: use a 7 day consecutive time period in May for 1st half data collection and a 7 day consecutive time period in November for 2nd half data collection.

Definitions of terms

For the purpose of CI 3.5:

Medical discharge summary is defined as a clinical report prepared by a doctor or other health professional at the conclusion of a hospital stay or series of treatments. It outlines the patient's chief complaint, the diagnostic findings, the therapy administered and the patient's response to it, and recommendations on discharge.[1]

[1] Harris P, Nagy S and Vardaxis N (eds). *Mosby's Dictionary of Medicine, Nursing & Health Professions.* Sydney NSW; Elsevier; 2010.

Indicator(s) within this Area

CI 3.1: Completed asthma action plan - paediatrics

Numerator	Number of paediatric patient separations with a primary diagnosis of asthma who are discharged with a completed asthma action plan, during the 6 month reporting period.					
Denominator	Number of paediatric patient separations with a primary diagnosis of asthma, during the 6 month reporting period.					
Desirable rate:	High	☑	Low	☐	Not specified	☐
Indicator type:	Structure	☐	Process	☑	Outcome	☐

CI 3.2: Paediatric surgery post-procedural report

Numerator	Number of paediatric patients where the post-procedural instructions are documented on the Surgeon's/Operation Report, during the 6 month reporting period.					
Denominator	Number of paediatric patient surgical separations, during the 6 month reporting period.					
Desirable rate:	High	☑	Low	☐	Not specified	☐
Indicator type:	Structure	☐	Process	☑	Outcome	☐

CI 3.3: Physical assessment completed by medical practitioner and documented

Numerator	Number of paediatric patients with a completed documented physical assessment conducted by a medical practitioner within **4 hours** of admission, over a consecutive 7-day period in May or November.					
Denominator	Number of paediatric patient admissions, over a consecutive 7-day period in May or November.					
Desirable rate:	High	☑	Low	☐	Not specified	☐
Indicator type:	Structure	☐	Process	☑	Outcome	☐

CI 3.4: Physical assessment completed by registered nurse and documented

Numerator	Number of paediatric patients with a completed documented physical assessment conducted by a registered nurse within **4 hours** of admission, over a consecutive 7-day period in May or November.					
Denominator	Number of paediatric patient admissions, over a consecutive 7-day period in May or November.					
Desirable rate:	High	☑	Low	☐	Not specified	☐
Indicator type:	Structure	☐	Process	☑	Outcome	☐

CI 3.5: Medical discharge summary completed – paediatrics

Numerator	Number of paediatric patients with a completed **medical discharge summary** in their medical record, within the time specified in your healthcare organisation's guidelines, during the 6 month reporting period.					
Denominator	Number of paediatric patient separations, during the 6 month reporting period.					
Desirable rate:	High	☑	Low	☐	Not specified	☐
Indicator type:	Structure	☐	Process	☑	Outcome	☐

Background

Physicians must communicate effectively with their patients and other health professionals in order to provide optimal medical care and outcomes for their paediatric patients.[1,2] There are two main avenues for communication between health professionals, which involve talking directly with one another and more notably through patient discharge summaries.[2,3] Unfortunately, these patient discharge summaries are commonly incomplete and unavailable to the primary healthcare provider at the time of the paediatric patient's first follow-up visit.[2] It is evident that inaccurate and incomplete documentation may require more regulation to ensure that discharge summaries are timely and available to provide higher quality and efficient health care following hospitalisation.[4,5] Thus, one of the key elements outlined in Australia's Health Care Reforms is the continuity of care between hospitals and the community care sector.[5]

One of the high risk areas during patient discharge surrounds miscommunication in regard to the continuation / discontinuation of medications.[5,6] As a result, the Society of Hospital Pharmacists of Australia's (SHPA) Standards of Practice for the provision of medication reconciliation require that "when a patient is transferred to another episode of care, the transferring health professional should supply comprehensive, complete and accurate information to the health care provider responsible for continuing the consumer's medication management".[6]

Another key area in documentation involves asthma action plans. These play a significant role in the early intervention of exacerbations which may occur once a patient is discharged from the hospital.[7] It is imperative that paediatric patients have a completed asthma action plan at the time of discharge to ensure self-guided management of their chronic condition.[7,8] This may subsequently reduce the number of visits to the emergency department, rescue courses of oral steroids and hospitalisations.[7]

It is believed that some of the adverse events and medical errors which occur post-discharge are the result of this lack of communication between inpatient and outpatient settings.[2] Incomplete documentation needs to be addressed to ensure the transfer of this vital medical information to provide safe and effective continuity of care.[2,3]

Other notable limitations in hard copy reporting that are commonly flagged are ambiguous and incomplete data, illegible handwriting and data fragmentation.[9] This had led to electronic medical record systems being implemented to provide greater accuracy, availability and readability for physicians to make the best clinical decisions when treating their patients.[9] The development of OpenSDE, which is a generic structured data entry system has enhanced the recording of valuable data such as patient history and physical examination findings.[9]

References

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6. Gilbert A, Patel B, Morrow M *et al.* Providing community-based health practitioners with timely and accurate discharge medicines information. *BMC Health Serv Res* 2012; 12: 453.
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9. Roukema J, Los R, Bleeker S *et al.* Paper versus computer: feasibility of an electronic medical record in general pediatrics. *Pediatrics* 2006; 117(1): 15-21.

PAED AREA 4: Paediatric ICU

Rationale

Unplanned returns to a paediatric intensive care unit (PICU) may reflect less than optimal management of the paediatric patient. This can be attributed to premature discharge as a consequence of inadequate resources or miscommunication between healthcare professionals during clinical handover.

(See Background for more information)

Reporting period

1 January – 30 June 1 July – 31 December

Inclusions

- As per numerator and denominator.

Exclusions

- Nil

Data cleaning rules

- The ***denominator*** figures for **CIs 4.2, 4.3 and 4.4** should be the **SAME**, as they share the same definition.

Definition of terms

For the purpose of CI 4.1:

An **unplanned return** is defined as an unplanned re-entry to the PICU.

For the purpose of CI 4.2, 4.3 and 4.4:

Clinical handover is defined as the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis.[1]

For the purpose of CI 4.4:

Another area refers to transferring a patient to another healthcare organisation, or when handing over to a non-registered nurse or medical practitioner (which is covered in CI 4.2 and 4.3 respectively) such as x-ray, ambulance crew, allied health professionals.

[1] Australian Commission on Safety and Quality in Health Care (ACSQHC). *National Safety and Quality Health Service Standards* Sydney NSW; ACSQHC. Accessed from www.safetyandquality.gov.au/our-work/accreditation/nsqhss/Cached on 26 July 2013.

Indicator(s) within this Area

CI 4.1: Unplanned return to PICU

Numerator	Number of **unplanned returns** to the paediatric intensive care unit (PICU) during the same admission, during the 6 month reporting period.					
Denominator	Number of paediatric admissions to the paediatric intensive care unit (PICU), during the 6 month reporting period.					
Desirable rate:	High	☐	Low	☑	Not specified	☐
Indicator type:	Structure	☐	Process	☐	Outcome	☑

CI 4.2: Adverse events - PICU clinical handover between registered nurses

Numerator	Number of paediatric intensive care unit (PICU) patients that had an **adverse event** relating to **clinical handover from registered nurse to registered nurse**, during the 6 month reporting period.					
Denominator	Number of paediatric intensive care unit (PICU) patients that underwent **clinical handover,** during the 6 month reporting period.					
Desirable rate:	High	☐	Low	☑	Not specified	☐
Indicator type:	Structure	☐	Process	☐	Outcome	☑

CI 4.3: Adverse events - PICU clinical handover between medical practitioners

Numerator	Number of paediatric intensive care unit (PICU) patients that had an **adverse event** relating to **clinical handover from medical practitioner to medical practitioner**, during the 6 month reporting period.					
Denominator	Number of paediatric intensive care unit (PICU) patients that underwent **clinical handover,** during the 6 month reporting period.					
Desirable rate:	High	☐	Low	☑	Not specified	☐
Indicator type:	Structure	☐	Process	☐	Outcome	☑

CI 4.4: Adverse events - PICU clinical handover to another area

Numerator	Number of paediatric intensive care unit (PICU) patients that had an **adverse event** relating to **clinical handover to another area**, during the 6 month reporting period.					
Denominator	Number of paediatric intensive care unit (PICU) patients that underwent **clinical handover,** during the 6 month reporting period.					
Desirable rate:	High	☐	Low	☑	Not specified	☐
Indicator type:	Structure	☐	Process	☐	Outcome	☑

Background

It is evident that the needs of paediatric patients in intensive care environments require special attention due to the severity of their illness, complexity of treatment and their unique physiological responses to medication when compared to adults.[1,2] Researchers believe that the quality and efficiency of this care can be measured by looking at clinical indicators such as the number of unplanned returns to the paediatric intensive care unit (PICU), length of stay (LoS) and mortality rates.[3] More reporting and research surrounding these clinical indicators and PICU treatment may provide insight into how these rates can be reduced and potentially prevented in the future to improve the critical care of paediatric patients.[4,5,6]

Substantial advances in medicine over the last few years have seen many invasive medical procedures undertaken within the PICU.[7] Thus, effective communication during clinical handover between health professionals involved in the treatment of the patients within the PICU is essential to provide better patient outcomes.[7] Clinical handover should also involve an integrated system which looks at appropriate triage and destination guidelines, whereby the paediatric patient is allocated the most appropriate level of care in a timely manner and the risk of adverse events is minimised.[1]

High intensity and highly stressful work environments such as the PICU can make staff more vulnerable to medical errors, which can result in adverse events.[8] Commonly reported adverse events that involve clinical handover include miscommunication between healthcare providers, discrepancies in the interpretation of diagnostic studies and medication dosing errors.[8]

To minimise these adverse events, it is suggested that the 'healthcare sterile cockpit' model derived from the Federal Aviation Administration (1981) be adopted. This concept prohibits non-essential tasks and communications such as telephone calls and pagers during treatment in intensive care settings.[2,8] This has been found to be successful in removing distractions and improving efficiency during critical stages of flights such as take-off and landings.[2] The measurement and adoption of quality improvement measures in PICUs is ever evolving, thus collecting key clinical indicators will ensure that processes are streamlined and patients receive better treatment with improved clinical outcomes.[5,8]

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PAED AREA 5: Paediatric anaesthesia

Rationale

Fasting prior to the induction of anaesthesia is recommended to minimise the occurrence of residual gastric volume and acidity prior to surgery. Non-adherence to the fasting guidelines has been found to result in perioperative respiratory adverse events. Therefore, parents/guardians should ensure that they comply with the recommended guidelines and report if they have not adhered to them. They may also wish to be present to reassure the child during the induction of anaesthesia.

(See Background for more information)

Reporting period

1 January – 30 June 1 July – 31 December

Inclusions

- As per numerator and denominator.

Exclusions

- Nil

Data cleaning rules

- The ***denominator*** figures for **CIs 5.1, 5.2 and 5.3** should be the **SAME**, as they share the same definition.

Indicator(s) within this Area

CI 5.1: Paediatric patients who fast 6 hours prior to anaesthesia

Numerator	Number of paediatric patients who fast for more than 6 hours prior to induction of anaesthesia, during the 6 month reporting period.					
Denominator	Number of paediatric patients undergoing surgery who were administered general anaesthesia, during the 6 month reporting period.					
Desirable rate:	High	☑	Low	☐	Not specified	☐
Indicator type:	Structure	☐	Process	☑	Outcome	☐

CI 5.2: Adverse event due to non-adherence to paediatric fasting guidelines

Numerator	Number of adverse events involving paediatric patients due to non-adherence to fasting guidelines, during the 6 month reporting period.					
Denominator	Number of paediatric patients undergoing surgery who were administered general anaesthesia, during the 6 month reporting period.					
Desirable rate:	High	☐	Low	☑	Not specified	☐
Indicator type:	Structure	☐	Process	☐	Outcome	☑

CI 5.3: Parent/guardian present at induction of anaesthesia

Numerator	Number of paediatric patients where their parent/s or guardian was present at the time of induction of anaesthesia, during the 6 month reporting period.					
Denominator	Number of paediatric patients undergoing surgery who were administered general anaesthesia, during the 6 month reporting period.					
Desirable rate:	High	☐	Low	☐	Not specified	☑
Indicator type:	Structure	☐	Process	☑	Outcome	☐

Background

The protective reflexes that prevent the residual gastric volume from reaching the lungs are inhibited during general anaesthesia.[1,2] Therefore, guidelines in paediatric anaesthesia recommend that patients undergo a preoperative fast of six hours to minimise the regurgitation and aspiration of gastric contents prior to surgery.[1] Recent developments in this field of research have resulted in more relaxed fasting guidelines for the paediatric population compared to the previous 'nil by mouth from midnight' standard fasting guideline for all patients undergoing anaesthesia.[2] This reduces the risk of dehydration and hypoglycaemia for paediatric patients prior to surgery.[3]

A Cochrane review of trials concluded that drinking clear fluids up to a few hours before induction of anaesthesia does not increase the risk of inadvertent inhalation of stomach contents.[2] More recent guidelines published by the American Society of Anaesthesiologists (ASA) recommended a six-hour fast from non-human milk or infant formula for neonates and infants, but a less conservative fast from breast milk of four hours preoperatively.[2] This recommendation is also supported by the American Royal College of Nursing and the Canadian Anaesthesiologists' Society.[2]

There has been a noticeable decline in morbidity and mortality rates following the induction of anaesthesia over the last 50 years.[4,5] Yet, adverse events resulting from paediatric anaesthesia still occur despite the development of fasting guidelines. Many factors surrounding the paediatric patient's medical history, anaesthesia management or surgical procedure can raise the risk of these events.[5]

One of the most feared complications of anaesthesia is the pulmonary aspiration of gastric contents.[6] Although this adverse event is rare it is thought that adherence to fasting guidelines and more stringent identification of patient risk are pivotal to safe anaesthetic practice.[5,6] Conducting clinical research on the paediatric population can be challenging, but is needed to provide efficacious fasting guidelines that minimise the risk of adverse events whilst providing the greatest comfort for the patient prior to surgery.[3,7]

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APPENDICES

APPENDIX 1: ICD-10-AM Codes applicable to the Paediatrics indicator set

PAED AREA 1: Appropriateness

No ICD-10-AM codes identified.

PAED AREA 2: Adverse events

No ICD-10-AM codes identified.

PAED AREA 3: Documentation

CI	Codes that may assist data collection:	For consideration:
3.1	J45.X asthma and J46 Status asthmatics or acute severe asthma	• Please note viral wheeze patients sent home on asthma treatment plans may not be coded to asthma unless diagnosed as “asthma”. These patients would be coded as wheeze R06.2 and B34.9 viral disease

PAED AREA 4: Paediatric ICU

No ICD-10-AM codes identified.

PAED AREA 5: Paediatric anaesthesia

CI	Codes that may assist data collection:	For consideration:
5.2	T88.* Complications of anaesthesia Y83* Surgical procedure Y92.22 Health service area	

APPENDIX 2: NSQHS Standards / EQuIPNational and these clinical indicators

The use of clinical indicators by healthcare organisations supports quality oversight and provides a foundation for quality improvement within the organisation and its departments.

The monitoring of clinical indicators and an organisation's response to the data remain an important option for presenting evidence to demonstrate performance against criteria in the NSQHS Standards and EQuIPNational.

Actions from EQuIPNational (including NSQHS Standards, where applicable) that may be evidenced with these Paediatrics CIs are outlined in the appendix.

STANDARD 1. GOVERNANCE FOR SAFETY AND QUALITY IN HEALTH SERVICE ORGANISATIONS **Incident and Complaints Management**	
Action 1.4.4 Competency-based training is provided to the clinical workforce to improve safety and quality	Relevant indicators from this CI set: **PAED CI 1.1:** Registered Nurses with paediatric basic life support **PAED CI 1.2:** Medical Practitioners with paediatric basic life support

STANDARD 4. MEDICATION SAFETY **Governance and systems for medication safety**	
Action 4.5.2 Quality improvement activities are undertaken to reduce the risk of patient harm and increase the quality and effectiveness of medicines use	Relevant indicators from this CI set: **PAED CI 2.1** Medication errors

STANDARD 6. CLINICAL HANDOVER **Clinical Handover Process**	
Action 6.4.1 Regular reporting, investigating and monitoring of clinical handover incidents is in place **Action 6.4.2** Action is taken to reduce the risk of adverse clinical handover incidents	Relevant indicators from this CI set: **PAED CI 4.2** Adverse events - PICU clinical handover between registered nurses **PAED CI 4.3** Adverse events - PICU clinical handover between medical practitioners **PAED CI 4.4** PICU clinical handover to another area

STANDARD 9. RECOGNISING AND RESPONDING TO CLINICAL DETERIORATION IN ACUTE HEALTH CARE **Responding to Clinical Deterioration**	
Action 9.6.1 The clinical workforce is trained and proficient in basic life support	Relevant indicators from this CI set: **PAED CI 1.1:** Registered Nurses with paediatric basic life support **PAED CI 1.2:** Medical Practitioners with paediatric basic life support

STANDARD 11. Service Delivery **Criterion 4: Appropriate and Effective Care**	
Action 11.5.1 The organisation ensures appropriate and effective care through: - processes used to assess the appropriateness of care - an evaluation of the appropriateness of services provided the involvement of clinicians, managers and consumers / patients in the evaluation of care and services.	Relevant indicators from this CI set: **PAED CI 1.1:** Registered Nurses with paediatric basic life support **PAED CI 1.2:** Medical Practitioners with paediatric basic life support **PAED CI 3.1:** Completed asthma action plan – paediatrics **PAED CI 3.2:** Paediatric surgery post procedural report **PAED CI 3.3:** Physical assessment completed by medical practitioner and documented **PAED CI 3.4:** Physical assessment completed by registered nurse and documented **PAED CI 3.5:** Medical discharge summary completed – paediatrics **PAED CI 4.1** Unexpected return to PICU **PAED CI 4.2** Adverse events - PICU clinical handover between registered nurses **PAED CI 4.3** Adverse events - PICU clinical handover between medical practitioners **PAED CI 4.4** PICU clinical handover to another area **PAED CI 5.1** Paediatric patients who fast 6 hours prior to anaesthesia **PAED CI 5.2** Adverse event due to non-adherence to paediatric fasting guidelines **PAED CI 5.3** Parent/guardian present at induction of anaesthesia
Action 11.5.2 Policy / guidelines are implemented that address the appropriateness of the setting in which care is provided including when consumers / patients are accommodated	Relevant indicators from this CI set: **PAED CI 1.1:** Registered Nurses with paediatric basic life support **PAED CI 1.2:** Medical Practitioners with paediatric basic life support **PAED CI 1.3** Paediatric patients admitted to a paediatric ward/area **PAED CI 2.1** Medication errors **PAED CI 2.2** Adverse events when not in a paediatric ward/area **PAED CI 2.3** Adverse events in a paediatric ward/area **PAED CI 3.1:** Completed asthma action plan – paediatrics **PAED CI 3.2:** Paediatric surgery post procedural report **PAED CI 3.3:** Physical assessment completed by medical practitioner and documented

	PAED CI 3.4: Physical assessment completed by registered nurse and documented **PAED CI 3.5:** Medical discharge summary completed – paediatrics **PAED CI 4.1** Unexpected return to PICU **PAED CI 4.2** Adverse events - PICU clinical handover between registered nurses **PAED CI 4.3** Adverse events - PICU clinical handover between medical practitioners **PAED CI 4.4** Adverse events - PICU clinical handover to another area

STANDARD 12. Provision of Care **Criterion 5: Assessment and Care Planning**	
Action 12.2.1 The assessment process is evaluated to ensure that it includes: - timely assessment with consumer / patient and, where appropriate, carer participation - regular assessment of the consumer / patient need for pain / symptom management - provision of information to the consumer / patient on their health status.	Relevant indicators from this CI set: **PAED CI 3.1:** Completed asthma action plan – paediatrics **PAED CI 3.2:** Paediatric surgery post procedural report **PAED CI 3.3:** Physical assessment completed by medical practitioner and documented **PAED CI 3.4:** Physical assessment completed by registered nurse and documented **PAED CI 3.5:** Medical discharge summary completed – paediatrics

STANDARD 12. Provision of Care **Criterion 3: Appropriate and Effective Care**	
Action 12.8.1 Discharge / transfer information is discussed with the consumer / patient and a written discharge summary and/or discharge instructions are provided. **Action 12.8.3** Results of investigations follow the consumer / patient through the referral system.	Relevant indicators from this CI set: **PAED CI 3.1:** Completed asthma action plan – paediatrics **PAED CI 3.2:** Paediatric surgery post procedural report **PAED CI 3.3:** Physical assessment completed by medical practitioner and documented **PAED CI 3.4:** Physical assessment completed by registered nurse and documented **PAED CI 3.5:** Medical discharge summary completed – paediatrics

APPENDIX 3: Changes to manual from previous version

The Working Party for the Paediatrics Clinical Indicator set, Version 4 convened 16 February 2012, and following a series of consultations, the revised set of Paediatric Clinical Indicators, version 5, was completed.

The 13 CIs in version 4 of this set were organised into five areas:
1. Paediatric - General
2. Paediatric - Asthma
3. Utilisation of patient assessment systems
4. Access and exit block to the ICU
5. Intensive care patient management

In version 5, indicators have been re-structured into five revised areas. Working Party members decided to update existing areas so that they were current, relevant and collectable.

The major changes to the ACHS Paediatrics Clinical Indicator set version 4 are:

PAED AREA 1: Paediatric - General **–** *Deleted*
The Working Party felt these CIs were too difficult to collect, and that other measures are now in place to collect information on immunisation uptake.

PAED AREA 2: Paediatric - Asthma **–** *Deleted*
The Working Party felt that with the decline in numbers and that the CIs are contextually deprived on its own by not having numbers of ED presentations beside this, the Working Party deleted this section to focus on areas more relevant to the specialty. This CI will be reworded and placed in **PAED AREA 3:** Documentation.

PAED AREA 3: Utilisation of patient assessment systems, **PAED AREA 4:** Access and exit block to the ICU, **PAED AREA 5:** Intensive Care Patient Management are now brought together under **PAED AREA 4:** Paediatric ICU.

Version 5 Paediatrics set

PAED AREA 1: Appropriateness – *New*
CI 1.1: Registered nurses with paediatric basic life support qualifications
CI 1.2: Medical practitioners with paediatric basic life support qualifications
CI 1.3: Paediatric patients admitted to a paediatric ward/area
Based on a literature search, the Working Party decided that it is essential that medical practitioners and registered nurses in paediatrics have up-to-date CPR qualifications and that paediatric patients be placed in age-appropriate wards/areas to provide appropriate care with better patient outcomes for this specific population.

PAED AREA 2: Adverse Events – *New*
CI 2.1: Medication errors
CI 2.2: Adverse events when not in a paediatric ward/area
CI 2.3: Adverse events in a paediatric ward/area
The Working Party found that medication errors are prevalent in paediatric patients due to their variations in physical size and physiological capacities, which causes difficulties in determining paediatric dosages. Literature suggests that there is a higher chance of an adverse event if the patient was not bedded in an age appropriate area.

PAED AREA 3: Documentation – *Revised and four CIs added*
CI 3.1: Completed asthma action plan – paediatrics
CI 3.2: Paediatric surgery post-procedural report
CI 3.3: Physical assessment completed by medical practitioner and documented
CI 3.4: Physical assessment completed by registered nurse and documented
CI 3.5: Medical discharge summary completed – paediatrics
The Working Party reworded CI 3.1 on asthma so the data would be easier to collect, and added four CIs that are relevant to current practice.

PAED AREA 4: Paediatric ICU –*One indicator revised, and three CIs added*
CI 4.1: Unplanned return to PICU
CI 4.2: Adverse events - PICU clinical handover between registered nurses
CI 4.3: Adverse events - PICU clinical handover between medical practitioners
CI 4.4: Adverse events - PICU clinical handover to another area
The Working Party reworded CI 4.1 to make data collection clear and concise. The three other CIs were included after a literature review demonstrated that the quality of clinical handover is important in preventing adverse events.

PAED AREA 5: Paediatric anaesthesia – *New*
CI 5.1: Paediatric patients who fast 6 hours prior to anaesthesia
CI 5.2: Adverse event due to non-adherence to paediatric fasting guidelines
CI 5.3: Parent/guardian present at induction of anaesthesia
Although pulmonary aspiration is rare, with increasingly relaxed fasting guidelines for the paediatric population, the Working Party thought that adherence to fasting guidelines and more stringent identification of patient risk are pivotal to safe anaesthetic practice and the literature review supported this.

The Australian Council on Healthcare Standards