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Pediatrics Critical Care/Emergency Care: what Information Must a Good Strategy Contain?

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Abstract

This write up on critical care and emergency care of children: What must a good strategy contain? Surrounds issues of what a critical care package should be even in resource poor settings. Pediatric critical care consists of identification of children at risk of dying or having adverse outcomes, and in need of intensive monitoring and provision of appropriate interventions. Emergency care is defined by the World Health Organization (WHO) as care for the acutely ill and injured delivered by frontline providers who manage medical, surgical, and obstetric emergencies, relying on early recognition and resuscitation.

In developing countries, majority of mortalities occur due to infectious diseases which are treatable and have potential for full recovery if appropriate definitive care as well as intensive care is given to those who come critically ill. In Cameroon, maternal, child and adolescent related diseases account for 18.3% of the burden of disease and 14.4% of deaths. Some of these deaths could be prevented if there are adequate pediatric critical care facilities to handle the critically ill children. However, pediatric critical care services are largely unavailable in most developing countries. The objectives of this seminar are to describe the nursing strategies used in the critical and emergency care of children, outline parent's expectations of the critical care/ emergency care of their children by nurses and lastly to describe healthcare managers' responsibilities in critical care/emergency care of children. It has been observed that nursing strategies include monitoring, assessment, vital sign monitoring, ventilator management, medication administration, intravenous insertion and infusion, central line care, catheters care, maintenance of a running record of the patient's status, performance of cardiopulmonary resuscitation and other lifesaving techniques. Parent's expectations include guidance, reassurance and timely and comprehensive information on the progress and prognosis of critically ill children. Open visitation policy and involvement in their child's care, while healthcare managers' responsibilities were found to be ensuring adequate skill and knowledge among emergency services providers, and availability of pediatric critical care medications, equipment, and supplies. The results can be used to implement good critical care strategies and hence better care outcomes.

Keywords: Critical care; Emergency care; Children; Good strategy

Introduction

Paediatric critical care consists of identification of children at risk of dying or having adverse outcomes, and in need of intensive monitoring and provision of appropriate interventions. It is a high technology discipline requiring equipment for cardiorespiratory monitoring and support such as mechanical ventilators and high flow oxygen as well as circulatory support medications [1]. Emergency care is defined by the World Health Organization (WHO) as care for the acutely ill and injured delivered by frontline providers who manage medical, surgical, and obstetric emergencies, relying on early recognition and resuscitation [2-5].

There is a great burden of critically ill children in developing countries where paediatric critical care is still in its early stages. The actual burden of critically ill children is necessary for healthcare planning however, in Nigeria as in most African countries including Cameroon, the magnitude is unknown [1].

In developing countries, majority of mortalities occur due to infectious diseases which are treatable and have potential for full recovery if appropriate definitive care as well as intensive care is given to those who come critically ill [6-7]. In Cameroon, maternal, child and adolescent related diseases account for 18.3% of the burden of disease and 14.4% of deaths [8]. Some of these deaths could be prevented if there are adequate paeditric critical care facilities to handle the critically ill children. However, paediatric critical care services are largely unavailable in most developing countries [9].

The development of effective pediatric emergency and critical care services in resource-limited countries can substantially reduce global mortality in children less than 5 years [10]. It is on this backdrop that this seminar is written so as identify good strategies that can be used for the management of critically ill children.

The materials used to write this seminar was gotten from Google search of websites and online text books on critical care, and online published articles on paediatric critical and emergency care.

The Objectives were:

To describe the nursing strategies used in the critical and emergency care of children, outline parent's expectations of the critical care/emergency care of their children by nurses, and describe health care managers' responsibilities in critical care/ emergency care of children.

The role of the nurse in the pediatric critical care setting is multifaceted [11]. As can be seen below.

Nurse's Strategies

Cri ical care

Critical care nurses have a great deal of one-on-one contact with the patients and are often the main source of information for the family members [3].

Responsibilities include monitoring, assessment, vital sign monitoring, ventilatory management, medication administration, intravenous insertion and infusion, central line care, catheters care, maintenance of a running record of the patient's status, performance of cardiopulmonary resuscitation and other lifesaving techniques (Table 1).

Often, the nurse performs invasive and painful procedures that she fears may be futile: dressing changes, wound irrigation, debridement, venipunctures, gastric tube insertions, catheterizations, turning, positioning, and restraining patients.

Therefore, the expert ICU nurse must continually evaluate the effectiveness of interventions to achieve realistic goals of care [3].

Emergency care

Triage: It is a major strategy that is used by nurses in emergency situations. It is the process of rapidly screening sick children soon after their arrival in hospital, in order to identify: Those with emergency signs require immediate emergency treatment [12].

Table 1: Steps in emergency triage assessment and treatment.

Steps	Emergency signs	Emergency Actions	Rational
Step 1	**Airway** - obstructed or absent breathing - severe respiratory distress - central cyanosis	-Assess airway AB -Manage airway; look, listen, and feel for breathing. -Inspect mouth and remove foreign body if present. -Clear secretions from throat. -Position child comfortably.	Airway assessment will help to find out life threatening injuries and conditions, such as obstructed airway, severe respiratory distress, and consequently lifesaving interventions to relief obstruction, restore breathing and to avert death will be instituted.
Step 2	**Circulation** - signs of shock - Signs of severe dehydration - severe bleeding	-Assess circulation for shock (C). -Give bolus fluids. -Blood smear, -Insert IV line and begin giving fluids rapidly. -Stop the bleeding -compress the wound.	Assessment is done to identify need for oxygen and fluid replacement Fluids are used to treat shock by infusing fluids such as crystalloids to increase cardiac output and supply the systemic oxygen request. Blood is transfused to replace blood lost and treat anaemia. Wound compression stops further blood loss, by pushing the artery against a bone with your hand or guaze.

Step 3	Disability-coma unconscious, or convulsions	-Quickly determine if child is unconscious or convulsing, or in coma. (D) -Give IV glucose Anticonvulsants. e.g., diazepam rectally. -Position child -stabilize neck first	Determining the level of consciousness will help in initiating immediate emergency treatment in order to avert death. Glucose and anticonvulsants are given to treat hypoglycaemia and convulsions. This will prevent further injury and enhance comfort if head or neck trauma.

Nurse's views

Recent policy changes allow families to be present 24/7 with their child. These changes have both benefits and challenges for nurses in the complex PICU environment [13].

Nurses think that it's good for the families to be there all the time, so the child can hear their voices, talk to them, but it does make it more difficult for the nurses [13].

Having families constantly at the bedside give nurses more opportunities to build relationships and trust and to include families in their child's care.

The constant family presence allow nurses to know families better, including their background, understanding of their child's condition, and their preferences to care. It also creates more opportunities to attend to the family's needs as well as their child's [13].

Challenges of having the family at the bedside on a 24 hours basis could be "distracting" and "exhausting," especially when families asked a lot of question when the nurse was in the middle of providing hands-on care to a critically ill child [14].

Child's outcome of care in the ICU/Ed

The effect of nursing care on patient outcomes is well established as depicted in table 2 below [15].

Table 2: Child's outcomes, views and expectations of nurses/parent's guardians.

Critical care/emergency care outcome	Views of nurses &parents/guardians	Expectations
Post-intensive care and in-hospital stay (Re-admission into paediatric ward) / discharge.	-May provide insights into the quality of intensive care rehabilitation, the timeliness and appropriateness of intensive care discharge, the quality of care on the wards and of end-of-life care decision making. -Patient transfers from the intensive ICU to a medical or surgical hospital ward are likely of particularly high risk; the large 'voltage' drops in available resources; lack of standardisation in patient transfer processes and in written and/or electronic tools to facilitate an optimal transfer process.	- Patients should be prepared for discharge using a semi-structured checklist - ICU nurses should provide a comprehensive information booklet and write a personalised summary of the medical treatment and the patient's experiences during admission. -During transfers of patient care, crucial information on patient conditions, tests undertaken and treatments received should be transferred between providers, for effective care planning to be continued by receiving providers. - Outpatient clinic consultations should be provided to promote the patient's physical recovery and - a case manager to support the patient's self-management.
Post intensive care syndrome (PICS) ("new or worsening impairments in physical, cognitive, or mental health status arising	Patients in the ICU are exposed to various live-saving interventions such as mechanical ventilation, endotracheal intubation and chest tube insertion, central	Measures to reduce non-essential monitoring in the ICU prior to discharge.

after critical illness and persisting beyond acute care hospitalization.	venous and arterial catheterization, and intensive drug administration which become stressors predisposing to PICS.	
Death	Years of experience are significantly associated with deaths.	A composition of highly and experienced personnel should be in place to achieve optimal patient outcome.
	New knowledge is being generated that relates to patient factors to death, complications, resource utilization and failure to rescue for congenital heart surgical patients.	

Parent's Expectations, Satisfaction and Dissatisfaction with Paediatric Critical and Emergency

Being aware of expectations and general and specific levels of satisfaction of patients or guardians with medical service is essential to establish patient-centered care and policies at healthcare facilities [16].

Parent's expectations

Table 3 below shows specific expectations of parents/ guardians.

Table 3: Critical care, parental expectations and reasons for their expectations.

Aspect of critical care	Expectation	Reasons for the expectations
Guidance to parents/guardians	Parents require guidance from healthcare providers, especially in high tech and potentially frightening environment.	This is in order to effectively provide care for their children, and also avoid feelings of frustration, hopelessness and powerlessness.
Receiving psychosocial support	Reassurance about the care provided. Parents expect health care providers to be optimistic, use encouraging words and maintain a smiling face.	Reassurance provides emotional care to parents in order to manage emotional stress and other difficult situations.
Receiving information	Timely and comprehensive information on the progress and prognosis of critically ill children.	This will decrease some of the distress from misinformation, help in managing stress and coping, and also decrease conflicts.
Flexible visiting policy	Parents in a study preferred an open visitation policy.	-This encourages presence of family members who provide vital information about the patient. -Their presence increases communication and the continuity of care, ensures a greater level of accountability demanded form the healthcare providers and increase in comfort and moral for both patient and parents and lastly more positive outcomes.
Child care processes	Parents' involvement in their children's care	This reduces anxiety and allows parents to feel supported and empowered, enhancing their coping mechanisms. According to [8], involvement of parents in their child's care increases their understanding of their child's physical and emotional needs and prepares them for the
		caretaking role when the child is discharged.

Factors contributing to parents/guardians' satisfaction with care

Parents' satisfaction with care may be influenced by the following factors:

- Child's health condition and its impact on family functioning
- Child's emotional condition, clinical stage of the disease
- Preparing parents for continuing nursing care in home environment [4].
- A recent study suggested that "timeliness of care", "empathy", "technical competence", "information dispensation" and "pain management" were the five most important elements in patient satisfaction [16-17].
- Caring behaviours and attitude of staff, respect for patients and relatives, provision of health information and education [18-19].
- Parental education; parents with lower education were more satisfied with services according to a study. Perhaps lower parental education is associated with lower awareness of the child's and parental rights, the lack of knowledge about the developmental specificity, and consequently less expectations about the nursing team, though controversial [20-21].

Factors contributing to parents/guardian's dissatisfaction with care

The following factors contribute to parents' dissatisfaction with care:

- Not involving parents in the care of their children. According to Heermann, Wilson & Wilhelm, mothers of premature and critically ill neonates became frustrated if nurses did not allow them to play an active role of partnering and caring for their infants [22].
- Poor relationships with nursing staff. Mothers reported in a study that their stress was related to the incomplete and inconsistent information they received from the nurses concerning their premature infants' care [23].
- Additionally, parents get upset when nurses only focused on the infant's needs rather than including their needs as well.

Health care managers' responsibilities

The healthcare managers have a number of responsibilities such as:

- Ensuring adequate skill and knowledge among fellow ED or EMS providers.
- Overseeing pediatric care quality improvement initiatives
- Ensuring the availability of pediatric medications, equipment, and supplies [13].
- Maintaining a relationship with the state/regional emergency services (EMS) for Children infrastructure
- Establishing and maintaining offline and online pediatric EMS protocols
- Ensuring systems for safe discharge of children, including advice to families on when and where to access further care if necessary.
- Liaising with hospitals to improve pediatric readiness of emergency departments [13].

Expectations of healthcare managers

The clinical expectations range from procurement of equipment to staffing, ward management and advanced monitoring. (Table 4 below)

Table 4: Health care managers' expectations.

Aspect of care	Expectation	Reasons for the expectations
Procurement/ care of equipment	All equipment must conform to the relevant safety standards, and must be regularly serviced and maintained according to the manufacturer's guidance.	This is done to ensure continuity of any critical care and equipment functioning.
Staff training.	-All staff must be appropriately trained in and competent and familiar with the use of equipment and critical care/emergency nursing skills. Induction programme when starting work in an ICU/ED	Training of staff leads to development of professional knowledge and interpersonal skills required to achieve these competencies.
Ward management of equipment	A designated equipment clinical lead for ICU & ED with responsibilities of	

	assessment, procurement, use and replacement of equipment.	-An equipment clinical lead will: -Ensure accountability -Help staff know who to contact in case of equipment maintenance and use -Enable treatment provision in an appropriate timescale.
Advanced monitoring techniques.	-Provision of appropriately trained staff on diagnostic electroencephalography, cardiac output monitors intracranial pressure /other invasive neuromonitoring.	-Trained staff will adequately interpret the results in a timely manner and deal with likely complications of their use where appropriate.
Blood gas analysis and glucose/ketone analysis.	Immediate access to point of care on a 24/7 basis must be provided.	This will ensure timely interventions.

CONCLUSION

It can be concluded that:

Nursing care of critically ill children require the maintenance of high nurse-family communication. The quality of care in ICU has been shown to be affected by many factors including inadequate nursing staff, much nursing records, long waiting time, and lack of specialised nurses [23].

The engagements of parents in the care of their hospitalized child, sharing information to parents, providing support and proximity of parents to their critically ill children are important needs of parents caring for critically ill children and hence a good nursing strategy [17].

Lastly, sound nursing leadership will influence how high-quality, safe and effective intensive and emergency care services delivered. Nurse leaders are well placed to take charge of factors known to affect outcomes, which include teamwork, inter-professional communication, standardised care processes and process compliance [13].

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