

# PICU Nurse Practitioner Education Program Evaluation and Improvement

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## Problem Identification & Purpose

- Pediatric Nurse Practitioners (PNPs) represent a growing and vital part of the healthcare workforce, especially in the pediatric intensive care unit (PICU)<sup>2,3,6</sup>
- The PNP role in the PICU is inconsistent across institutions and there is a paucity of literature on PICU NP program development<sup>1,4,7</sup>
- We aimed to describe the current state of our PICU NP program and develop and implement a program improvement plan

## Targeted Needs Assessment

- **Setting:** 40-bed quaternary academic PICU, December 2021
- **Participants:** PICU NPs (n = 18, 100% response rate)
- **Results:**
  - 83% extremely or somewhat dissatisfied with NP Education
  - Perceived lack of division support and value for NPs
  - Low utilization of simulation lab time
  - NP interest in learning and receiving formative feedback
  - Preferred educational approach: NP-specific, informal, clinically-relevant education, integrated into the workflow of clinical service

## Goals & Objectives

- **Goal:** Develop a medical knowledge curriculum that would increase PICU NP confidence and competence in the care critically-ill children.
- **Objectives:**
  - Increased satisfaction with education and division investment in the NP program
  - Increased perceived knowledge and application of knowledge to clinical practice
  - Increased confidence in critical situations

## Educational Strategies

- Clinically-integrated small group didactics
  - Teaching is facilitated by pediatric critical care medicine (PCCM) faculty and fellows for 30 minutes twice weekly (Saturday/Sunday and Tuesday) prior to rounds
  - Topics identified using the American Board of Pediatrics content outlines for pediatric residency and PCCM fellowship.
  - 4-5 topics are suggested monthly, additional topics based on the pathophysiology present in the patients in the PICU
- Resource repository
- Medical knowledge Self-Assessment and Annual Goals and Objectives Survey

|  | Pre-implementation<br>(n = 18) | Post-implementation<br>(n =13) |        |
|--|--------------------------------|--------------------------------|--------|
| Satisfaction with educational curriculum |                                |                                | <0.001 |
| Extremely or somewhat satisfied          | 0 (0)                          | 9 (69)                         |        |
| Neither satisfied or dissatisfied        | 3 (17)                         | 2 (15)                         |        |
| Extremely or somewhat dissatisfied       | 15 (83)                        | 2 (15)                         |        |

| Educational Topics  |   |  |
|---|---|--|
| <b>Neurology</b><br>Seizure<br>Altered mental status/coma evaluation<br>Stroke/Intracranial Hemorrhage<br>Traumatic Brain Injury<br>Intracranial Hypertension<br>Hypoxic brain injury<br>Neuroautoregulation/neuroprotection<br>Neuromuscular disorders<br>Sedation and Analgesia<br>Delirium   | <b>Hematology/Oncology</b><br>Coagulopathy<br>Cytopenias<br>Transfusion medicine<br>Tumor Lysis Syndrome<br>Mediastinal Mass<br>Stem cell transplant complications<br>Chemotherapy toxicities<br>Sickle Cell Disease  | <b>Cardiovascular</b><br>Principles of oxygen delivery<br>Cardiopulmonary interactions<br>Arrhythmia<br>Shock<br>Cardiac arrest and post-arrest management<br>Hypertension<br>ECMO<br><br><b>GI/Liver/Nutrition</b><br>Acute liver failure<br>GI Hemorrhage<br>Nutrition and TPN<br>Pancreatitis |
| <b>Respiratory</b><br>Disorders of Gas Exchange<br>Invasive Mechanical Ventilation (Conventional)<br>High Frequency Mechanical Ventilation<br>Noninvasive Mechanical Ventilation<br>Respiratory clearance modalities<br>Acute respiratory distress syndrome (ARDS)<br>Upper Airway obstruction<br>Asthma/Bronchospasm<br>Pulmonary Hypertension | <b>Inflammatory, Immunologic and ID</b><br>Sepsis<br>Autoimmune disease<br>Immunodeficiency<br>Antibiotic selection and mechanisms<br><br><b>Endocrinology/Metabolism</b><br>Adrenal insufficiency<br>Diabetes insipidus<br>Diabetic Ketoacidosis<br>Hyperglycemic hyperosmolar syndrome<br>Hypoglycemia<br>Inborn Errors of Metabolism | <b>Kidney Disease, Fluid and Electrolytes</b><br>Acute kidney injury<br>Renal replacement therapy<br>Fluid overload<br>Electrolyte derangements<br>Sodium and water homeostasis<br><br><b>Other</b><br>Toxicology<br>Ethics, end of life care<br>Procedures                                      |

## Conclusions and Future Directions

- NPs are valuable members of the PICU team who are invested in their own education
- Regularly scheduled, clinically-integrated and NP-targeted education sessions are feasible and effective for engagement and ongoing education
- This program can and will adapt to the expanding knowledge and expertise of the NP group over time
- Improved NP/MD relationships



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