Pediatric Resident Critical Care Didactic and Simulation Curriculum

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Problem Identification

All pediatric residents are required to rotate through the Pediatric Intensive Care Unit (PICU). Despite this, there is not currently a standard set of educational goals and objectives for our residents. Research shows that simulation and small group didactic are highly effective ways in which to provide information to the adult learner. Simulation is also standard in PICUs throughout residency programs and is an expectation for those who chose to come to Janet Weis Children's Hospital. True pediatric emergency and code situations are rare but are skills that residents are required by ACGME to have. Providing small group didactics and simulations is a safe and effective way to practice these skills that luckily happen very infrequently in pediatrics.

General Needs Assessment

Our residents have expressed on their yearly ACGME Pediatric Residency Annual Program Evaluation that they feel they are lacking in pediatric critical care simulation and in critical care knowledge that is necessary to be a good overall pediatrician. There have been changes in the faculty and staffing in the PICU leaving a lapse in simulation education.

Targeted Needs Assessment

Residents were anonymously surveyed via SurveyMonkey regarding their expectations and goals for a PICU simulation program. 14 responses were received noting:

1. Do you think we should have a simulation curriculum in the PICU? Yes-100%
2. How comfortable do you feel beginning a resuscitation for a septic patient?- 57% were either somewhat uncomfortable or very uncomfortable.
3. How comfortable do you feel having a difficult conversation with a family?- 71% were very uncomfortable or somewhat uncomfortable. Only 29% were somewhat comfortable or very comfortable.
4. How comfortable do you feel running a code? 93% were either somewhat uncomfortable or very uncomfortable.
5. How comfortable do you feel providing bag mask ventilation to a patient? 43% were somewhat uncomfortable.

Additional discussion was had with the PICU Attending's who felt that didactics and simulations on the topics of shock, cardiac arrest, traumatic brain injury, and respiratory failure would be of the most benefit to the residents. In addition, a session focusing on difficult patient conversations was also included.

Goals and Objectives

Goals:
Create a Pediatric Critical Care didactic and simulation program that is based on ACGME milestones and ABP content requirements for Pediatric Residents.

Objectives:

- Improve resident comfort in recognizing and treating:
  - Shock
  - Traumatic Brain Injury
  - Respiratory failure
  - Cardiac Arrest
- Improve resident skills in
  - Acting as code leader
  - Bag mask ventilation
  - Peripheral IV placement
  - Interosseous line placement
  - Endotracheal intubation
- Improve resident comfort in having difficult conversations with families.

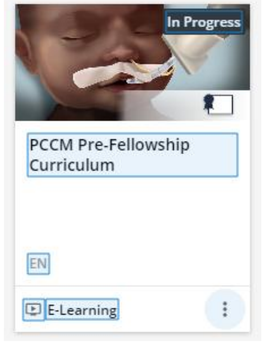
Evaluation Plan

The pediatric residents were surveyed regarding their comfort in caring for patients with respiratory failure, shock, traumatic brain injury, cardiac arrest, and difficult patient conversation prior to engaging in the curriculum. Residents will again receive a survey following the completion of the sessions to evaluate for increased comfort regarding these pediatric patient populations.

Additional Resources for Pediatric Residents

Residents on their Pediatric ICU month will also be provided with the link to OpenPediatrics Pediatric Resident Pre-fellowship PICU curriculum as an additional resource to use outside of the scheduled sessions. This resource provides additional video didactics as well as several interactive simulators for resident education and clarification.

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Educational Strategies

We will utilize simulation and small group interactive didactics to provide resident education. These will take place once a week as a required 30-minute session during their PICU block with all other pediatric residents and rotating medical students on other services being welcome to join if available. The hope is that all residents will be able to go through the curriculum at least once during their three-year residency.
All residents will be encouraged to create a free login for the online resource OpenPediatrics prior to the session to help guide didactic learning. Every other week, training will consist of either a didactic or a simulation. These will be led by a PICU faculty member.

Simulation and Didactic sessions:
1. Respiratory failure
2. Shock
3. TBI
4. Cardiac arrest
5. Difficult patient conversations



Equipment:
1. Pediatric Sim mannequin
2. Intubation mannequin
3. Peripheral IV trainer
4. Intraosseous line trainer
5. Airway supplies- including low flow nasal cannula, high flow nasal cannula, ambu-bag, intubation supplies

Feedback and Assessment

Following completion of the first 10-week session a post survey will be sent to the residents who attended asking the same questions as the initial survey to reassess comfort. In addition, the survey will also assess for any additional areas they would like to include in the curriculum
The PICU faculty will also be surveyed to assess for any changes required in the didactics, the simulations, the supplies or the overall topics.

References

1. OpenPediatrics. Retrieved April 24, 2023, from https://learn.openpediatrics.org/learn/course/3621/pccm-pre-fellowship-curriculum
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4. Frey-Vogel A, Rogers A, Sparger K, Mehta R, Mirchandani-Shah D, Mangold K, Mitchell D, Wood A. Taking the Pulse on Pediatric Simulation: A National Survey of Pediatric Residency Programs' Simulation Practices and Challenges. Pediatr Emerg Care. 2021 Dec 1;37(12):e1303-e1307.