Submission Form Deadline: November 9, 2015

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**Solution Title:** Using Mock Codes to Improve Performance in Pediatric Cardiopulmonary Arrests

**Focus Area:** (please check all that apply)
- [x] Communication  
- [ ] Competency Assessment  
- [ ] Core Measure  
- [ ] Crisis Prevention  
- [ ] Culture  
- [ ] Diversity  
- [x] Education  
- [ ] Emergency Department  
- [ ] Environment  
- [ ] Event Reporting  
- [ ] Falls  
- [ ] Hand Hygiene  
- [ ] Infection Prevention  
- [ ] Information Technology  
- [ ] ICU  
- [ ] Laboratory  
- [ ] Labor & Delivery  
- [ ] Lean Operations  
- [ ] Medical Equipment  
- [ ] Medication Safety  
- [ ] Patient Assessment  
- [ ] Patient Involvement  
- [ ] Pediatrics  
- [ ] Pressure Ulcer  
- [ ] Process Redesign  
- [ ] Surgical Services  
- [ ] Teamwork  
- [ ] Workforce  
- [x] Other (please specify)  
- [ ] Mock Code Performance

**Please indicate your interest in the following:**
- [x] Yes, the Maryland Patient Safety Center has permission to publish this Solution and place it on its public website.  
- [ ] We are interested in displaying a storyboard and participating in lunchtime presentations. (storyboards will be displayed on easels, and cannot be larger than 3 ft wide x 4 ft tall.)

Please complete the Submission and Application Form, including related tools and resources as attachments, and send to: lcatsos@marylandpatientsafety.org by November 9, 2015.

If you are unable to insert information, have any questions, or need further information, please contact: lcatsos@marylandpatientsafety.org
Organization: Sinai Hospital of Baltimore

Solution Title: Using Mock Codes to Improve Performance in Pediatric Cardiopulmonary Arrests

Focus Area: Education, Communication, Pediatrics

Program/Project Description, Including Goals: Following discharge, pediatric patients with an in-hospital cardiopulmonary arrest, only have a 27% survival rate; and 34% of those who do survive will have neurological deficits post arrest (Van Voorhis & Willis, 2009). The initial actions of the staff who are first responders to a pediatric code situation are critical. Delays in providing the basic ABC’s (airway, breathing, circulation) lead to poorer outcomes. Since these arrests happen less often in children than in adults, medical professionals tend to have limited experience and comfort providing resuscitation efforts. Fear of not knowing what to do, where and how to use equipment, breakdowns in communication, and the complexity of calculating medication doses are common safety risks that all can lead to poorer outcomes. While BLS and PALS have two year renewal requirements, pediatric healthcare providers are more likely to have skills deteriorate four months after taking these classes.

Pediatric code simulation (mock code) has been shown to decrease fear and anxiety, improve communication between physicians and nurses and increase the knowledge and familiarity with pediatric resuscitation guidelines (Hunt, Walker, Shaffner, Miler, & Pronovost, 2008). There is a direct correlation between survival rates (increased by 50%) and more frequent code simulations (Andreatta, Saxton, Thompson & Annich, 2010). Both physician and nursing staff have expressed lack of exposure and practice, increased anxiety levels, and decreased confidence during resuscitation. Literature demonstrates that anxiety can contribute to breakdown in communication, delays in delivering lifesaving interventions and medication errors.

Problem: A survey of the staff, attending physicians, and direct care nurses identified skills, knowledge, and confidence issues. An evidence-based approach was used to improve knowledge/competence, confidence, and communication during a pediatric code.

Goal: To improve (90%) staff comfort, knowledge/ competence and confidence during a pediatric code.

Project Question: In a pediatric population, does a simulation process improve staff comfort knowledge/ competence and confidence when participating in a pediatric code?

Measure: (1) Observation of staff comfort/ knowledge/ competence and confidence when participating in a pediatric code and (2) increase in perception of comfort, knowledge, competence, and confidence.

- Baseline data: March 2013 survey data presented below.
Process: Using evidence and a P-D-S-A framework, the strategies were to:
- Review evidence-based findings via scholarly articles related to pediatric resuscitation simulation exercises.
- **Survey:** The committee first conducted a survey, using Survey Monkey, to determine staffs comfort levels, knowledge/competence and confidence related to pediatric codes.
- **Survey Questions:** The survey consisted of 9 questions. Four addressed comfort, 4 addressed knowledge/competence, and 1 question addressed confidence. The survey was distributed to nurses, physicians/residents, and respiratory therapists.
- **Scenario Development:** Based on the survey results, develop scenarios that incorporated common pediatric emergencies.
- **Conduct Mock Codes:** Scheduled dates and times of when these mock codes would be conducted, who would facilitate then and who would evaluate the scenarios.
  - A committee was formed to plan how to establish and institute mock codes within the Children’s Hospital.
  - This committee consisted of direct care nurses, the Clinical Nurse Specialist, the Nurse Educator, Pediatric Attending Physician, Pediatric/PICU Nurse Manager and Clinical Leaders from both the pediatric inpatient floor and the Pediatric Intensive Care Unit.
  - The mock codes occurred twice a month over a one year period.

**Solution:** The solution is described as follows:
- The mock codes began with a pre-brief that told a brief scenario of the situation. The scenarios had a set length of time with expected actions to be implemented.
- Ground Rules were established, such as participants were to go through all the motions (draw fluids, find medications, obtain vital signs) unless it is clear that it is going to take too long and veer the group off of the overall learning objective. Nurses would be at the bedside first and physician/residents were called in shortly after.
- There was a debriefing held after the mock code for participants to express what they felt was done right and where improvement was needed.
- There was a mock code observer handout used to guide the debriefing. The debriefing was always conducted in a constructive manner, enhancing a positive learning environment.

**Measurable Outcomes:** As per the post implementation data below, there was increased knowledge and skill in several aspects of a pediatric code. 1) Forty-six percent of participants compared to 61% said that pediatric codes were less frightening; 2) sixty-nine percent of participants compared to 82% said they needed more experience; 3) sixty-one percent of participants compared to 82% said that they needed more knowledge; 4)sixty-five percent of participants compared to 68% said they needed more confidence; 5) ninety-six percent of participants compared to 82% reported that there was increased comfort using a bag valve mask during an emergency; 6) eighty-nine percent of participants compared to 71% reported that they knew how to use the Broselow tape.
**Sustainability:** Several other tools have been instituted to help decrease anxiety and improve staff performance during a code situation. These include an “Equipment Play Day” in which emergency equipment is set up and an open code cart is available for staff to examine. Staff can also calculate and draw up resuscitation medications. There has also been a “Respiratory Play Day” in which intubation equipment, chest tubes, oxygen delivery devices, and arterial blood gas case studies were available for staff review. This allowed for learning in a relaxed environment.
Mock codes have been added to the nurses’ annual competencies. The mock codes are held twice a month to ensure all staff can participate.

**Role of Collaboration and Leadership:** This is a multidisciplinary process that includes direct care nurses, nursing leadership, physicians, and respiratory therapy. The entire group is engaged to create a process that supports the multidisciplinary team to communicate more effectively and become competent with skills in a stressful situation.

**Innovation:** Changing the culture to one that is truly interdisciplinary is often verbalized but not implemented. Establishing interprofessional education improves skills, ensures that all disciplines are hearing the same information, and improves communication. The enhanced communication promotes patient safety.

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