Improving Pediatric Care Through (IMPACT) Simulation

Abby Basalely MD, Meghan Craven MD, Erin Hanft MD
Pediatric Chief Residents
Cohen Children’s Medical Center
Northwell Health

APPD “Show Your Best”
April 5, 2017
Background

• Accurate assessment, triage, and care of the decompensating patient are skills residents necessary for residents to learn during training

• Acquisition of these skills is limited by the infrequency of pediatric cardiopulmonary arrest on medical/surgical units

• Educational interventions rely on simulation based training

• Limitations of simulation based training include:
  • A focus on critical care environments
  • Conduction at off-site centers
  • Sporadic implementation without frequent reinforcement
Codes at CCMC

Codes Called at CCMC

2014

8 Codes Called

2 Required BVM

0 Required CPR

2015

5 Codes Called

2 Required BVM

1 Required CPR

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Providers Who Administered Bag Valve Mask Ventilation or CPR in a Code on the Floor
Objectives

• Utilize weekly, low fidelity, in-situ simulation to:
  – Increase knowledge of the location of key resuscitative equipment
  – Enhance resident comfort utilizing BVM ventilation
  – Improve institutional preparedness for decompensating patients
  – Address performance gaps commonly observed in reviews of critical events in pediatric inpatient units
Project Design

• Instituted weekly multidisciplinary simulations on three medical/surgical units

• Collected baseline data via pre-intervention surveys to assess residents’:
  • Knowledge of location of resuscitative equipment
  • Experience administering BVM ventilation and CPR
  • Comfort assembling and using BVM ventilation
• Performed 5 minute simulations with the residents and nurses at the bedside utilizing low fidelity mannequins and unit emergency equipment

• Scenarios centered on patients pre-identified by the residents as “at risk” of decompensation
Project Design

- Chief led debrief focused on:
  - Escalation triggers
  - Effective communication
  - Location of resuscitative equipment
  - BVM techniques
  - Compressions with CPR feedback devices

- Outcomes assessed with post-intervention surveys completed after at least 4 cycles of simulation.
Knowledge of Location of Resuscitative Equipment Pre- and Post-Intervention

![Bar Chart]

- Code Cart Location:
  - Pre-Intervention: 73%
  - Post-Intervention: 94%
  - p = 0.004

- Defibrillator Location:
  - Pre-Intervention: 45%
  - Post-Intervention: 91%
  - p < 0.001
Comfort Setting up and Performing BVM Pre-and Post-Intervention

![Bar chart showing comfort setting up and performing BVM pre-and post-intervention with p < 0.001 for both categories.](chart.png)
Discussion

• IMPACT Simulation is a unique intervention.

  1. High Frequency
     • Weekly, interdisciplinary exercise incorporated into the resident inpatient curriculum
     • Each session built on previous simulations

  2. In-Situ Simulation
     • Familiarizes staff with their environment and location of key resuscitative equipment
     • Addresses system latencies to improve preparation for acute resuscitative care

• Intervention is brief, low cost & easily reproducible
Conclusions

• Weekly **low fidelity high frequency** in-situ simulation improves nursing and resident situational awareness and knowledge of equipment location

• Practitioners’ report increased comfort setting up and performing BVM ventilation
Future Directions

• Develop a evening curriculum
• Determine if intervention translates into improvements in real-time code management
• Evaluate caregivers’ perception of simulation based on their child
Thank you!

• APPD selection Committee
• Our Mentors:
  - Sandeep Gangadharan, MD
  - Dipti Mirchandani, MD
• Our Program Directors
  – Stephen Barone, MD
  – Nancy Palumbo, MD