Bridging the Gap: Enhancing Pediatric Code Blue Response Through In-Situ Simulation Training

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Background

- Despite off-site simulation laboratory training, documentation of acquired knowledge and skills to bedside clinical practice post training remains limited
- Teaching American Heart Association (AHA) code blue recommendations usually happens in a simulated environment
- Identified a gap in competency meeting AHA pediatric code blue recommendations for:
  - Time to first shock
  - Time to first dose epinephrine
  - Time to Intraosseous vascular device (IO) placement
- Leaders considered the use of in-situ code blue training as a complement to off-site training to increase nurse confidence and competence
- **Purpose**: Evaluate the efficacy of adding monthly in-situ mock code blue simulations after completing off-site training to improve meeting AHA pediatric code blue recommendations.

Methods

Practice setting: Pediatric medical-surgical and intensive care units at a large Midwest academic medical center with 60 pediatric registered nurses (RN)

1. Six unanticipated monthly in-situ simulation events scheduled to occur before and after simulation center training
2. RN staff working at the time of the in-situ events participated
3. All pediatric and pediatric ICU RNs completed pediatric code blue training in simulation center (See QR Code for content)
4. Video data from each in-situ event were reviewed to assess:
   - Time to interventions
   - Time to first shock
   - Time to first dose epinephrine
   - Time to IO placement
   - Simulation Team Assessment Tool (STAT) scores
     - Basic assessment skills
     - Airway/breathing and circulation (ABC)
     - Team functioning

4. RN participants evaluated self-perceived confidence performing code blue skills and roles before and after the six months training process using author developed survey

QR Code

Poster, Simulation center content, STAT tool, pediatric code blue checklist, references, and presenter contact information

Adding **in-situ mock codes** to simulations leads to improvement in **confidence performing** pediatric code blue skills

Figure 1: Timing improvements pre and post code blue training class

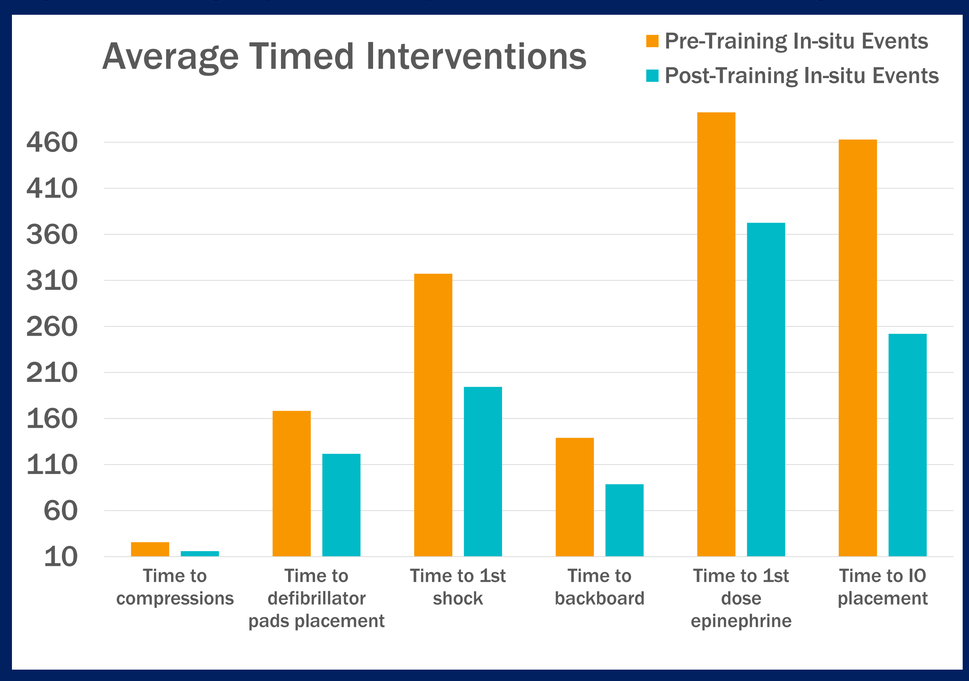


Figure 2: Pre and post training average STAT scores for team management

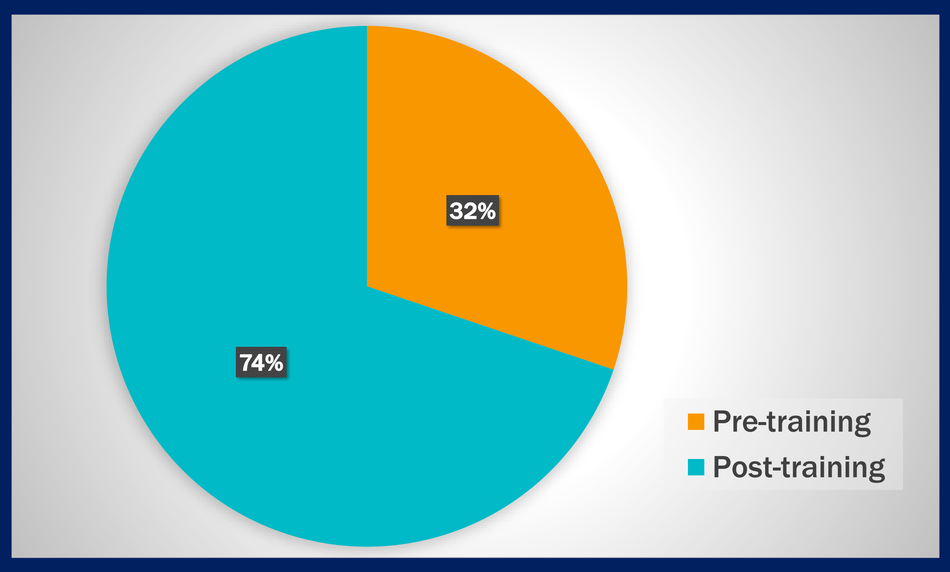
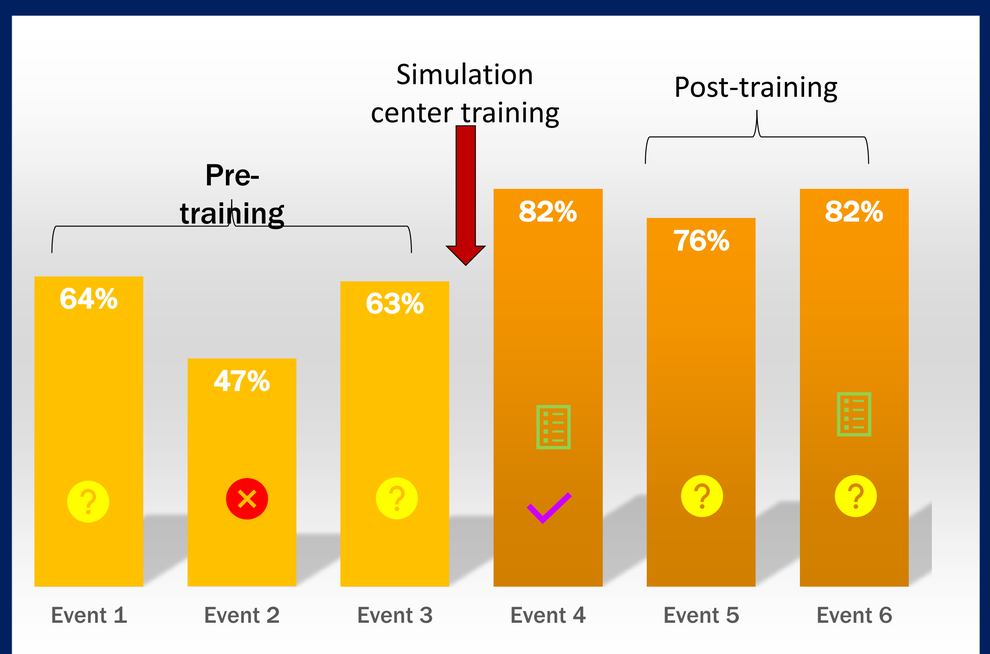


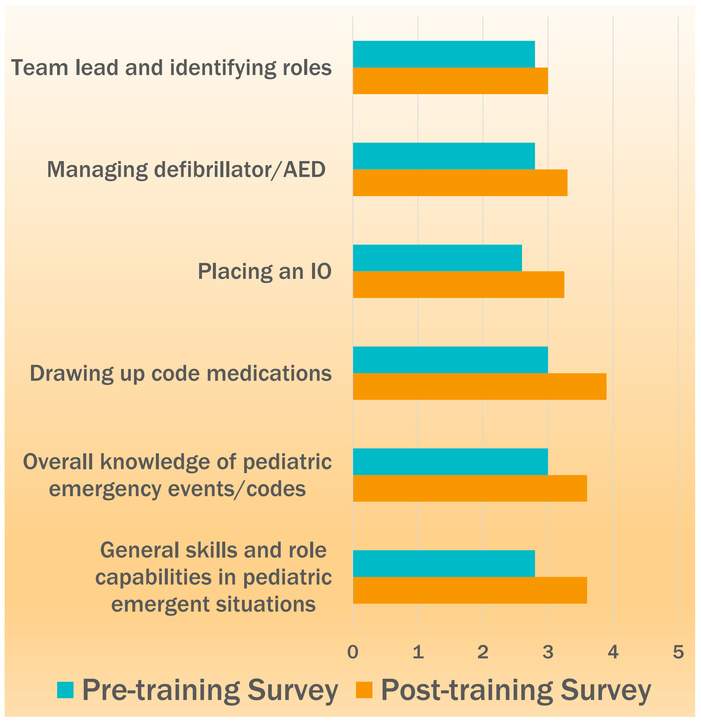
Figure 3: Pre and post training average total STAT scores



Results

- Average of 6 RNs participated in each in-situ simulation with 100% RNs completing simulation center training
- Time to first shock, first dose epinephrine, and IO placement showed of 1-2 minutes improvement from pre to post 6 months of training (Figure 1)
- Team management STAT scores increased two-fold (Figure 2)
- 10% improvement in total STAT score for post-training events compared to pre-training for basic assessment and ABC interventions (Figure 3)
- Improvement in RN perceived confidence for various code blue skills and general knowledge (Figure 4)

Figure 4: Comparison of RN self-perceived confidence levels before and after trainings completed



Note. Scored on 5-point Likert-type scale with 0= no confidence to 5= very confident

Conclusions

- Combining annual simulation center-based training courses and monthly in-situ mock code simulations have high impact transferring to competent bedside practice
- Assigning the code lead role and using the code blue checklist as a cognitive aid are both critical for timely interventions and effective team functioning in the first few minutes of a code
- To improve simulation experience, will add interprofessional participation to future code blue simulation center training to include respiratory therapists, pharmacists, and physicians
- Limitations of in-situ training included
  - staffing/census variability
  - simulator/equipment availability
  - differences in participant experience levels
- Pediatric in-situ mock code blue events have spread to Pediatric clinics and Pediatric Burn Unit within Health System

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