

PEM Pandemic Pivot: A Hybrid Approach to Pediatric Emergency Medicine Training in Thailand Allows for COVID-era Flexibility.

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Introduction: The COVID-19 pandemic poses challenges in maintaining global medical education partnerships, with travel restrictions and infection control concerns forcing program adaptation. The Pediatric Emergency Medicine Specialty Training and Accelerated Review (PEM-STAR) program is one such international collaboration which addresses education and training gaps in emergency care for children within Thailand. As an assessment of PEM-STAR's ability to deliver consistent outcomes despite COVID-19 constraints, we compared program results for Cohort #1 (2018-2019, pre-pandemic) and Cohort #2 (2019-2021, spanning pandemic).

Method: Oregon Health & Science University and Bangkok Dusit Medical Services implemented the PEM-STAR tandem physician-nurse curriculum in 2018. The cornerstone of the year-long course is a set of 22 PEM-specific topic modules, incorporating remote-accessible voiceover slide lectures, quizzes, and scholarly references to teach pediatric emergency medicine essentials. Content is reviewed via monthly teleconferences. Baseline and final assessments include written knowledge tests and high-fidelity simulation cases led by physician-nurse teams. Cohort #1 simulations were performed with evaluators in-situ using critical action checklists and validated teamwork assessment tools. Due to COVID-19 restrictions, Cohort #2 final assessments were hybrid; students completed Thailand-based simulations while Oregon leaders assessed and debriefed teams via videoconference.

Results: Written exam scores for pre-pandemic Cohort#1 improved from 48.6% (95%CI 40.30-56.9) to 92.0% (95%CI 88.1-95.9) (p< 0.001). Cohort #2, during the pandemic, had scores improve similarly from 48.5% (95%CI 40.1-56.9) to 96.4% (95%CI 94.8-98.0) (p< 0.001). One-hundred percent of physician-nurse teams from both Cohort #1 and Cohort #2 achieved the program's established passing score on final simulation testing: performing >85% of critical action items and scoring > 85% on the teamwork tool.

Conclusion: The PEM-STAR design, with its emphasis on videoconferencing, web-based content, and asynchronous learning, required minimal modifications to maintain satisfactory knowledge and skill acquisition during the pandemic. Educational partnerships emphasizing these features have distinct sustainability advantages in times of global disorder.

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A Full-Scale Exercise for Preparedness for Uncertain and Novel Chemical Hazards with Pediatric Casualties: Project PUNCH

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Introduction: In 2022, the Harvard/Beth Israel Deaconess Disaster Medicine Fellowship conducted a full-scale exercise (FSX) with the dual mission of 1) training Disaster Medicine Fellows (DMFs) in exercise design, planning, and execution, and 2) expanding local first responder experience with pediatric casualties in a mixed-method terrorist attack.

Method: Project PUNCH (Preparedness for Uncertain and Novel Chemical Hazards) was planned in two stages. A tabletop exercise in the form of a facilitated discussion was conducted in March 2022 with stakeholders from Fire, Emergency Medical Services (EMS), and the Massachusetts HazMat Team. A FSX simulating a combined blast and chemical attack on a family gathering was held in June 2022 at Anna Maria College in Paxton, MA.

Results: Fire, EMS, HazMat, LifeFlight, local Police, MA State Police, a local Medical Reserve Corps, and over 40 volunteer victims including 16 pediatric volunteers participated in the FSX. The FSX was a two-hour exercise with a simulated explosion and a secondary drone-deployed dummy-opioid aerosol release. This was the first FSX for the Paxton Region since the coronavirus pandemic began. Planning was conducted by the DMFs between January and June 2022 with the aid of Fellowship faculty and local stakeholders following Homeland Security Exercise and Evaluation Program guidelines. Local and Fellowship leadership with Pediatric expertise were engaged to plan pediatric specific considerations, precautions and safety measures. COVID precaution guidelines were followed. These efforts are detailed in the forthcoming field report. Educational guides for toxidromes and triage and resuscitation of pediatric victims were distributed to first responders.

Conclusion: The end outcome was a FSX that trained DMFs in exercise design, planning, and execution, and increased experience of local first responders with the concepts of asymmetric terrorist attacks and comfort with pediatric disaster victims. Multi-agency disaster drills remain an important training tool for preparedness and response to mass casualty events.

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