A Multi-patient Simulation Based Program to Train Emergency Medicine Residents in the Rapid Ultrasound for SHock (RUSH) Exam

Cleveland Clinic

Simulation and Advanced Skills Center (SASC)

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Simulation Showcase 2024

Background

Point-of-care ultrasound (POCUS) is commonly used as a rapid diagnostic tool to assess hemodynamically unstable patients.

The Rapid Ultrasound for Shock and Hypotension (RUSH) exam is a protocol that helps Emergency Medicine (EM) physicians use a systematic approach to determine POCUS findings consistent with shock.

Objectives

Develop a simulation curriculum for EM residents on the RUSH exam with 3 goals:

1. **Evaluate EM resident knowledge of RUSH**
2. **Improve learner's POCUS image acquisition**
3. **Assess comfort utilizing the RUSH exam to determine type of shock**

Methods

Curriculum consisted of a 10-minute didactic on RUSH exam and shock followed by three 30-minute case-based simulations developed by EM and joint EM/critical care faculty.

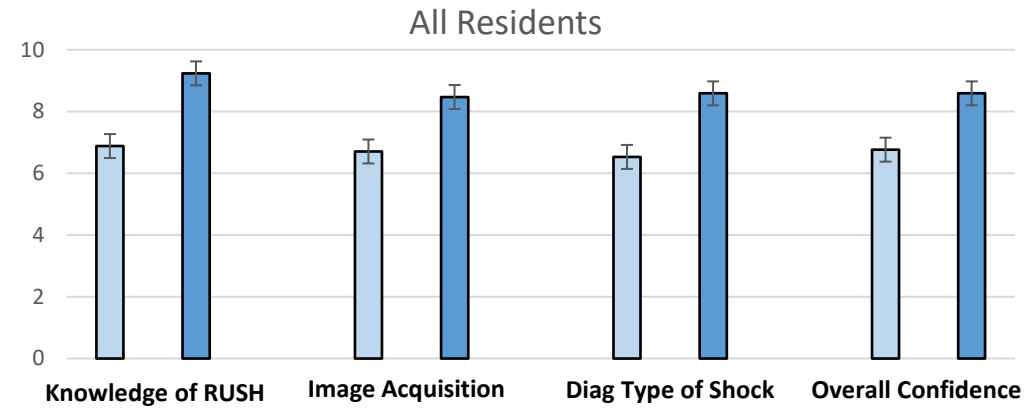
- **Hypovolemic**
- **Cardiogenic**
- **Obstructive**

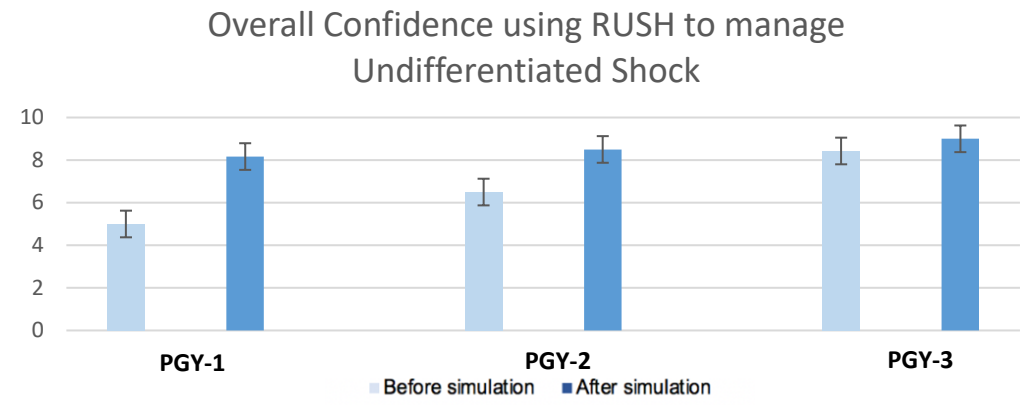
EM residents participated in the 1-hour session. Residents rotated through 3 undifferentiated shock scenarios and were asked to perform the RUSH to determine type of shock.

Surveys were administered to learners before and after completion of the training to assess confidence.

Results

- **17 residents participated in this simulation session with a maximum of 3 learners per case.**
- **35% were Post graduate year (PGY) 1, 24% were PGY2, and 41% were PGY3.**
- **Survey elements were rated on a 10-point Likert scale.**
- **After completing the training, learners reported**
  - **increased confidence pre- and post-course in knowledge of the RUSH exam (6.88 to 9.24), t(17)=4.45, p<0.05**
  - **increased confidence in POCUS image acquisition, (6.71± 1.99; 8.47± 0.98), t(17)=5.33, p<0.05**
  - **increased confidence in diagnosing type of shock using RUSH protocol (6.53± 2.55; 8.58± 0.91), t(17)= 4.59, p<0.05**
- **Overall, there was an increase in overall confidence utilizing POCUS to help manage undifferentiated shock (6.76±2.12; 8.59±1.14), t(17) =5.40, p<0.05**
- **While all groups had significant improvement, the PGY1 and PGY2 classes demonstrated the greatest confidence increase by participating in this simulation curriculum**





Conclusions

PGY1 and PGY2 resident learners had the greatest improvement in confidence utilizing this simulation curriculum which may demonstrate that performing this simulation during the early part of residency training may be most beneficial to EM trainees.

Our results support a simulation case-based learning experience for POCUS training on image acquisition and interpretation utilizing the RUSH protocol to determine the type of shock in a hemodynamic unstable patient with success in resident learners.

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