Two Year Experience with a Neonatal Simulation Boot Camp

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Introduction

Transitioning from residency to fellowship can be a challenging time. With residency work hour restrictions and changes in staffing demands, pediatric residents are finding fewer opportunities to learn procedural skills. As incoming fellows, those in neonatology are quickly placed in situations where emergent or unexpected events require quick responses and procedural competency. Procedural boot camps have been piloted across the country, and have been found to be successful in improving skills and confidence in transitional periods.

In order to ameliorate anxiety as well as encourage skill development, we developed a procedural boot camp for the incoming year neonatology fellows in the Harvard Neonatal-Perinatal Medicine Fellowship with the SIMPeds Network Team at Boston Children’s Hospital.

Objectives

1. To provide standardized procedural instruction that allows best practices to be taught and reinforced
2. To increase confidence/competence at performing procedures

Methods

Following a needs assessment, the boot camp curriculum was designed to provide formalized didactics on advanced procedures as well as supervised, hands-on simulation-based education utilizing skill stations. We started by introducing the basic concepts of simulation. The fellows were then shown a series of power points detailing each procedure, including the indications, contraindications, equipment required, procedural technique, and potential complications.

Procedures included needle thoracentesis, chest tube placement (Turkel and Argyle), pericardiocentesis, intravenous cannulation, and synchronized cardioversion and defibrillation. Airway skills had been addressed during a separate NRP certification course. In the second year of the boot camp, videos of the procedures were also included.

After the didactics were concluded, the incoming fellows were divided between different simulation stations run by neonatal attendings, neonatal nurse practitioners, or senior fellows. The simulation stations were set up in conjunction with the BCH SIMPeds Network Team with high fidelity task trainers. We limited each station to no more than 2 first year fellows per station, with 1-2 instructors per station. Validated procedure checklists were used to assess individual competence after initial hands on individualized teaching was completed.

Evaluation of the program was conducted through the use of anonymous pre-and post-boot camp surveys with self-reported competence on any given procedure. The surveys were graded on a 4-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree).

Results

In response to being asked if they felt competent with a specific procedure, overall participants reported an increase in self-reported competence for all targeted skills, with average scores improving pre-to-post-boot camp from between 0.8 to 1.5 points. However, on average participants still did not feel comfortable with performing an emergent pericardiocentesis post-boot camp.

Attitudes towards experience with simulation were also assessed, and participants overwhelmingly felt that the boot camp obtained its objectives and that simulation was an effective way to learn these skills.

Conclusions

Overall, the boot camp for incoming neonatology fellows served to increase procedural confidence with targeted procedures prior to them entering their clinical rotations. Our experience showed active participation and engagement of the neonatal fellows with the high fidelity simulation, with high levels of satisfaction with the program. Though we ultimately hope for the boot camp to increase procedural success, we were limited in our ability to track long-term outcomes. Going forward, the goal is to expand this experience, as well as to develop a curriculum for competency throughout fellowship that focuses on high risk, low volume procedures. Hands on learning continues to be a priority, with the goal of a developing a safer clinical environment.

References