

## Two Year Experience with a Neonatal Boot Camp

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## Abstract

**Context:** 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<sup>1</sup>. As incoming fellows, those in neonatology are quickly placed in situations where emergent or unexpected events require quick responses and procedural competency<sup>2</sup>. Procedural boot camps have been piloted across the country, and have been found to be successful in improving skills and confidence in transitional periods<sup>3,4</sup>. In order to ameliorate anxiety as well as encourage skill development, we developed a procedural boot camp for the incoming 1<sup>st</sup> year neonatology fellows in the Harvard Neonatal-Perinatal Medicine Fellowship with the SIMPeds Network Team at Boston Children's Hospital. Our goal over the past 2 years was to provide the incoming fellows with standardized procedural instruction that allows best practices to be taught and reinforced.

**Description:** The boot camp curriculum was designed to provide formalized didactics as well as simulation-based education utilizing skill stations. Basic concepts of simulation were presented, followed by didactics on indications, contraindications, equipment, procedural technique, and potential complications of each procedure. Procedures included needle thoracentesis, chest tube placement, pericardiocentesis, intraosseous cannulation, and synchronized cardioversion. The fellows were then divided between different simulation stations using high fidelity task trainers, with no more than two per station. Procedure checklists were used to assess individual competence after initial hands-on individualized teaching was completed.

**Observation/Evaluation:** 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). Overall, participants demonstrated 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. Their attitudes towards and experience with simulation was also assessed, and students overwhelmingly felt that the boot camp obtained its objectives and that simulation was an effective way to teach these skills. Comments focused on requests for additional skill stations including umbilical lines, peripheral arterial lines, and advanced airway practice.

**Discussion:** Overall, the boot camp for incoming neonatology fellows served to increase procedural confidence. Our experience showed high levels of satisfaction with the program and

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active participation and engagement with the high fidelity simulation. 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, with the ultimate hope of a developing a safer clinical environment.

<sup>1</sup>Taylor Sawyer and Megan Gray. "Procedural training and assessment of competency utilizing simulation". Seminars in Perinatology, 2016

<sup>2</sup>Donnon, T et al. "Effects of Postgraduate Medical Education "Boot Camps" on Clinical Skills, Knowledge, and Confidence: A Meta-analysis". Journal of Graduate Medical Education, December 2014

<sup>3</sup>Burns, R et al. "A Brief Boot Camp for 4<sup>th</sup>-Year Medical Students Entering into Pediatric and Family Medicine Residencies". Cureus 8(2): e488. DOI 10.7759/cureus.488

<sup>4</sup>Parent, R et al. "Early, Intermediate, and Late Effects of a Surgical Skills "Boot Camp" on an Objective Structured Assessment of Technical Skills: A Randomized Controlled Study". J Am Coll Surg 2010;210:984–989

