

Qualitative Study Exploring Implementation of a Point-of-Care Competency-Based Lumbar Puncture Program Across Institutions

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The authors declare that they have no conflict of interest.

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ABSTRACT

OBJECTIVE: To explore the factors that facilitated or hindered successful implementation of a multi-centered infant lumbar puncture (LP) competency-based education program that required interns to demonstrate skills readiness on a task trainer before performing their first clinical LP.

METHODS: In 2013, investigators conducted a qualitative study utilizing semistructured interviews and focus groups of site directors (SDs) from the International Network for Simulation-Based Pediatric Innovation, Research, and Education (INSPIRE) who were responsible for implementing the LP competency-based education program. Transcripts were analyzed using grounded theory to identify and verify emergent themes and subthemes.

RESULTS: Thematic saturation was attained after interviewing 19 SDs in 12 interviews and 3 focus groups. The most significant strategies and barriers were organized into 4 main themes: 1) alignment of different visions to obtain buy-in, 2) balance between providing education versus patient care, 3) acceptance

of novel teaching paradigms, and 4) communication logistics. The ability to overcome barriers was influenced by institutional culture on trainee education, patient safety and research; the level of relational coordination between different groups of stakeholders; and the ability of SDs to identify and diversify entrepreneurial strategies.

CONCLUSIONS: INSPIRE SDs reveal the challenges of implementing a network-wide competency-based educational initiative that determines interns' readiness to perform LPs in clinical settings. Strategizing to align the common goals of graduate medical training, patient care and research instructs clinician educators and leaders on how to successfully change educational culture in academic medicine.

KEYWORDS: competency-based education; educational framework; graduate medical education; lumbar puncture; procedural readiness

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WHAT'S NEW

We present a change model that highlights the importance of aligning patient care, education and research goals to successfully implement point-of-care competency assessments across residency programs. This model may help clinical educators sustain educational initiatives in graduate medical education.

IN GRADUATE MEDICAL education, teaching procedures via “see one, do one, teach one,” whereby interns may be deemed “competent” for independent practice after one or a few supervised observations without standardized assessment, is insufficient for learners and patients.¹ With

the focus on patient safety and trainee entrustment to perform clinical duties, better approaches are needed to verify procedural competency.^{2–4} Using in situ simulation to assess procedural readiness at the point of clinical care is one potential tool.³

The Accreditation Council for Graduate Medical Education (ACGME) requires that pediatric and emergency medicine residents achieve competency in performing infant lumbar punctures (LPs).^{5,6} However, house staff have limited opportunities to perform LPs,^{7,8} and first-time success rates are as low as 34%.⁹

The International Network for Simulation-Based Pediatric Innovation, Research, and Education (INSPIRE; <http://inspiresim.com>) developed simulation-based training for

interns, comprised of standardized coached practice with an instructor, followed by just-in-time training (JITT) to refresh LP skills before a clinical encounter.¹⁰ In a single-centered study, interns who trained using simulation had greater success in performing their first LP than interns who did not have additional practice.¹¹ INSPIRE implemented a competency-based program in which supervisors assessed interns on a mannequin just before performing their first clinical LP (Fig. 1).¹² Interns assessed as competent performed the LP, while interns deemed not ready were precluded from doing the procedure and remediated.

The INSPIRE LP program was implemented in 33 institutions. Implementation of workplace competency assessments (CAs) presented challenges. Some sites were more successful than others in developing strategies to operationalize the program. Programmatic impact was difficult to interpret because of variation in compliance with CAs among sites.

To better understand how sites may need to change educational culture to implement point-of-care CAs, we conducted this study to investigate and describe the factors that affected nationwide implementation of the INSPIRE LP program. We aimed to: 1) explore barriers to implementation, 2) explore strategies that site directors (SDs) used to overcome these barriers, and 3) uncover factors that facilitated successful implementation.

METHODS

STUDY APPROVAL AND INTERVIEW GUIDE

The institutional review board at the University of Rochester approved this study. JRP, RD, and RM created an interview guide to explore factors that facilitated or hindered implementation of the LP program (Online Appendix). Burke and Litwin's framework on organizational change, which has been used to help businesses transform organizational structure and culture, was used to aid development of questions that pertained to curricular change.¹³ This framework has also been adapted for organizational change in an academic institution.¹⁴

During development, the interview guide was revised iteratively by a multi-institutional team of qualitative and educational research experts. We conducted 2 pilot interviews with faculty familiar with the LP program, and then revised questions on the basis of feedback. The resulting interview guide included open-ended questions to encourage detailed discussion regarding SD experiences implementing the program (Online Appendix).¹⁵

PARTICIPANTS AND DATA COLLECTION

During the 2012–2013 academic year, JRP and RD recruited SDs from 33 institutions involved in the LP program for study participation. To facilitate in-person engagement at meetings well-attended by INSPIRE SDs,

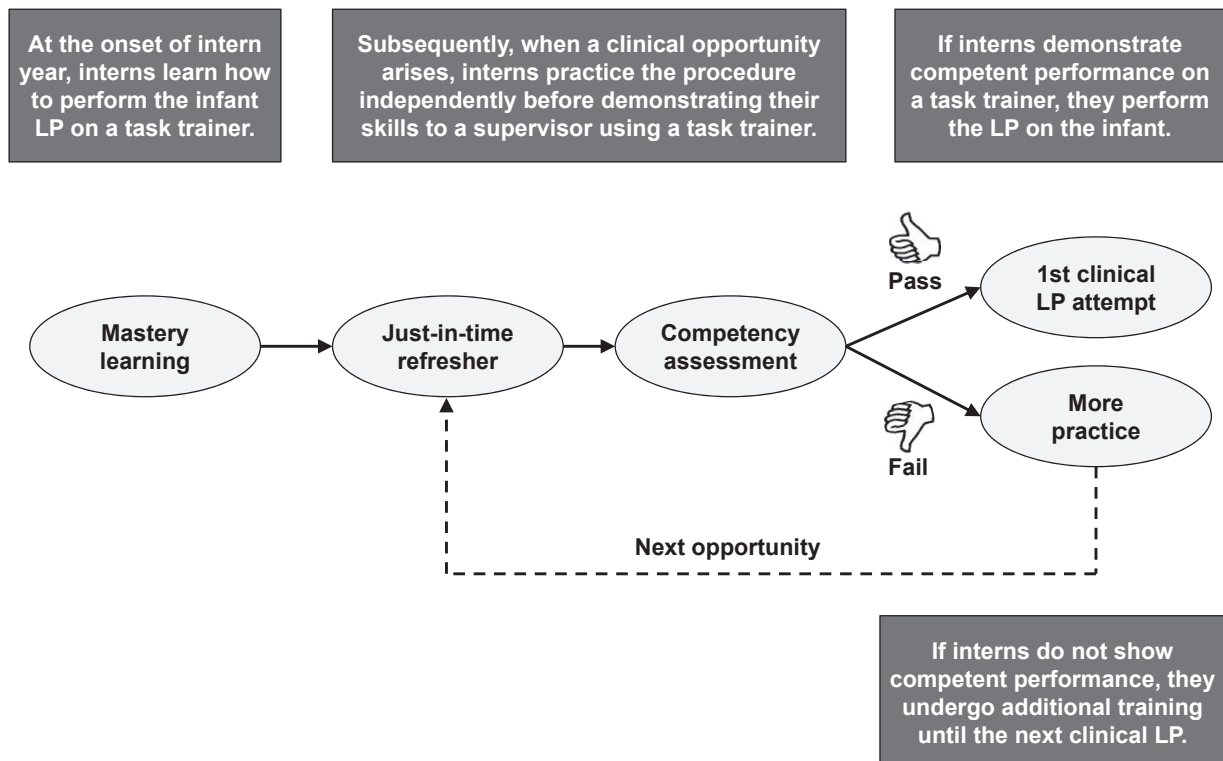


Figure 1. The INSPIRE Infant LP Competency-Based Education Program teaches and evaluates interns on their infant LP procedural skills using simulation before their first clinical opportunity to perform the procedure. When starting an internship, trainees individually complete didactic education and coach deliberate practice with an instructor on an LP task trainer until they achieve a predefined performance standard (mastery learning). Subsequently, when they have their first clinical opportunity, interns practice the skill on an LP task trainer (just-in-time training [JITT]). Afterward, supervisors evaluate their performance on the task trainer using an assessment checklist (competency assessment). If interns demonstrate competent performance, they proceed to perform the clinical procedure with supervision. If interns fail to demonstrate competency, they undergo additional training until the next clinical opportunity arises.

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