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Featured Article

# Remote-Controlled Distance Simulation Assessing Neonatal Provider Competence: A Feasibility Testing

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## KEYWORDS

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remote-control;  
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## Abstract

**Background:** Measures of competence during education and training of the health care workforce are in place, but how can ongoing competence be assessed, especially those who live and work outside metropolitan areas?

Pediatrix Medical Group and the University of Texas at Arlington College of Nursing formed a collaboration to develop a comprehensive program of testing that will be designed to eventually provide standardized and validated assessment of neonatal advanced practitioners by creating simulation opportunities using high-fidelity simulators for education across a distance, that is, remote-controlled distance simulation (RCDS).

The purpose of this paper is to report the determination of the feasibility testing of training participants using a high-fidelity manikin-based simulator at a clinical site that was being controlled by an operator located at the distant control site. This article seeks to describe the collaboration between the University of Texas at Arlington College of Nursing and Pediatrix Medical Group that enabled the pilot testing of RCDS.

**Method:** SimBaby™, the patient monitor, and SimView™, a high-definition audio and/or visual capture and playback system, were set up at a large metropolitan children's hospital. At the control site, there were two laptops, one of which was used for remote access of SimBaby's™ laptop and the other to control SimView™ remotely. A remote access desktop program enabled the operator access to and the ability to control SimBaby's™ software on the laptop at the clinical site. The scenario scene was set in a delivery room, where a post-term infant had been delivered through thick meconium-stained amniotic fluid. The baby developed respiratory distress and ultimately, a pneumothorax.

**Results:** The feasibility of training participants at a clinical site with a simulator that was being controlled by an operator at a remote distant control site was demonstrated. Minor challenges with the technology occurred but did not interfere with the participants' ability to perform during the simulation.

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**Conclusion:** RCDS may offer several advantages for health care provider employers, especially those with multiple locations where physical competency validation with high-fidelity manikins may be difficult or impossible.

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### Key Points

- Remote controlled distance simulation (RCDS) is possible with today's technology.
- RCDS was accepted by practicing professional NNPs.
- RCDS may be an opportunity to assess competencies.

Assessment of health care provider (HCP) competency is essential in the maintenance and continued goal of safe patient care; therefore, assessing the performance of each provider is imperative (Bose, Oliveras, & Edson, 2001; Kak, Burkhalter, & Cooper, 2001). Although HCPs must display minimal competency during their educational pro-

gram or upon graduation from an academic program, some but not all, health care organizations require written evidence of "job- or skill-specific competencies" at the time of hire or on a continual basis (Kak et al., 2001, p. 4). After initial training and performance evaluations, how do we assure HCPs remain competent?

Collaborative efforts between the clinical and academic sectors can provide a unique opportunity to maximize utilization of resources for both entities. Universities may be able to utilize high-fidelity manikin-based simulators to meet lifelong HCP learning needs in the clinical setting. A collaboration has been established between the University of Texas at Arlington College of Nursing and Pediatrix Medical Group with the goal to provide competency-based educational needs of Neonatal Nurse Practitioners (NNPs). This innovative relationship has resulted in both parties utilizing resources in a more effective and efficient way. Two of the elements of this partnership that make it unique center on the fact that the simulation will occur remotely and that it will be done as a result of an academic and/or clinical partnership. The strengths and resources of both partners ensure overcoming challenges that would be difficult without the relationship. Another strength of the project is the focus on postgraduate competence in requisite NNP skills. To date, most simulation research in nursing has been done with undergraduate and graduate nursing students.

Distance simulation, as it applies to this testing, is defined as the administration of a clinical simulated scenario using high-fidelity manikins and their associated computers with

the participants located somewhere distant to the operator, who controls the manikins remotely. Although there have been a few reports of distance simulation (Ikeyama, Shimizu, & Ohta, 2012; Treloar, Hawayek, Montgomery, & Russell, 2001; von Lubitz et al, 2003, 2004), this article is unique in that it describes the development and successful deployment of a program that will permit employers to assess competencies among NNPs who live and work outside of metropolitan areas where simulation centers tend to be located. The approach permits the assessment to occur in the HCP's workplace. Using the employees' workplace with which they are familiar and comfortable may permit a more accurate assessment of the NNPs' knowledge and skills. Additionally, the cost and time required to travel would be eliminated for the employee and the employer (Ikeyama et al., 2012).

Remote-controlled distance simulation (RCDS) may offer several additional advantages for HCP employers, especially those with multiple locations where physical competency validation with high-fidelity manikins may be difficult or impossible. An additional benefit of RCDS is that it may decrease the number of personnel that need to be trained in scenario development, validation, and running of high-fidelity manikins. According to a survey done at a conference of experienced simulation users by Anderson, Bond, Holmes, and Cason (2012), only about a half of users felt proficient at writing a scenario, whereas even less felt comfortable programming simulated scenarios. Having fewer designated simulation staff may decrease frustration, as well as the associated personnel costs associated with simulation. It has also been noted that to have a fruitful simulation program, quality facilitators must be utilized (Ikeyama et al., 2012; Savoldelli et al., 2006).

## Approach

The Vice President (VP) for Advanced Practitioners at Pediatrix Medical Group recognized the potential benefit of using high-fidelity manikin-based simulators to establish and maintain a record employed by the group of competency for over 800 Advanced Practice Registered Nurses (APRNs),

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