

## **Nursing Education Research Conference 2020**

### **When to Sim? Increasing Knowledge Gains for Procedural Skills Training in Nurse Anesthesia Education**

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#### **Purpose:**

The simulation of clinical decision-making practice is called for by the Institute of Medicine - Robert Wood Johnson Foundation report on *The Future of Nursing*. Due to the great cost of simulation, the educators wanted to determine if, and when, this pedagogy would enrich the student's learning and skill set. Ultrasound assessment of gastric content (UAGC) is a novel educational topic in nurse anesthesia education. The current paucity of information afforded a unique opportunity to examine the influences of varying pedagogies on a nurse anesthesia resident's (NAR's) decision-making processes without the confounding factor of previous exposure. The researchers postulated that the addition of simulation to the introduction of a novel topic in anesthesia practice may improve diagnostic acumen and performance.

#### **Methods:**

This quasi-experimental pilot study pre-lecture, post-lecture, post-simulation tests in an interrupted time series with repeated applications. Prior to any specific instruction about gastric ultrasonography, NARs indicated (a) their estimates of the volume of gastric contents depicted in 8 ultrasound images, and (b) their confidence in the accuracy of their estimates. Two weeks later, the residents attended a lecture using similar, but not identical images, detailing the process and criteria for decision-making during UAGC. Immediately following lecture, the NARs were tested on the original set of images in a different random order. The following week, the NARs were exposed to ten hours of ultrasonography practice with one hour devoted specifically to UAGC. One month after the first exposure, the NARs were tested one last time and recorded their volume estimates and confidence ratings using the original set of images in a different random order.

#### **Results:**

The pre-test showed approximately chance accuracy rates with minimal associated confidence (mean accuracy score of  $M = 3.08$  out of 8). Post-lecture, residents showed a statistically significant improvement in accuracy (mean accuracy score of  $M = 5.03$  out of 8;  $t(108) = 15.04$ ,  $p < .001$ ). Although less important than accuracy, NARs' *confidence* in their assessments also increased. Post-simulation, residents showed additional statistically significant improvement and further elevation of confidence (mean accuracy score of  $M = 5.36/8$ ,  $t(105) = 2.148$ ,  $p < .04$ ). Pedagogically, the value of assessing whether one's confidence corresponds to one's accuracy cannot be overstated.

#### **Conclusion:**

The researchers concluded that educators should continue to explore the benefits of simulation at every phase of nurse anesthesia education. The substantial gains in

accuracy and confidence with gastric ultrasonography could foreshadow similar gains in other elements of practice, especially those where confidence may exceed accuracy. Prior exposure or knowledge base may not be necessary to see improvement in decision-making processes when a multi-pedagogical method is used. Simulation provided additional knowledge gains and diagnostic ability for nurse anesthesia residents during the introduction of a novel educational topic in gastric ultrasonography.

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**Title:**

When to Sim? Increasing Knowledge Gains for Procedural Skills Training in Nurse Anesthesia Education

**Keywords:**

Clinical decision-making practice, Gastric ultrasonography and Timing of simulation-based education

**Abstract Summary:**

This research study examined the influences of varying pedagogies on a nurse anesthesia resident's decision-making processes without the confounding factor of previous exposure to the diagnostic skill.

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