

Local Anesthetic Educational Methods: An Executive Summary

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- **Main Points:**

- There was a need for continuing education among the post-anesthesia care unit (PACU) nursing staff on local anesthetics and local anesthetic systemic toxicity (LAST)
- Using the health system email and SMS texting proved to be the most efficient ways to provide information to the PACU staff
- Computer-based learning was the only educational method used that achieved the goal of increasing pre- and post-test scores by 20%

Background

In the health system where the project was conducted, an increasing number of peripheral nerve blocks (PNB) have been performed for surgical patients over the past 5-7 years. With this increase in PNBs being performed, the PACU nursing staff played an increasing role in assisting with PNBs, allowing for a dedicated provider whose sole responsibility is to monitor the patient for adverse effects of PNB administration. Though their role has become an integral part of the surgical process, no formal continuing education was being offered to the PACU nursing staff involving local anesthetics and local anesthetic systemic toxicity (LAST). This created an opportunity to fill this educational gap by developing a project aimed at creating a meaningful and lasting educational plan for teaching PACU staff nurses about local anesthetics and LAST.

Purpose

The objective of the project was to see a 20% increase in post-test scores. Once identified, the most effective method was used to develop yearly competencies for all health system PACU nurses. The Doctor of Nursing Practice (DNP) project used computer-based learning (CBL), in-person simulation, and mini-lectures to determine the most effective way to introduce local anesthetic and LAST education to PACU nurses.

Methodology

Project implementation was conducted over 13 weeks, with a new educational modality introduced every four weeks. An introduction and pre-tests were given the first week of implementation. After that, the educational modalities were released with their corresponding post-test in the following order: CBL, in-person simulation of a LAST emergency, and mini-lectures to reinforce noted weak areas from the first two post-tests.

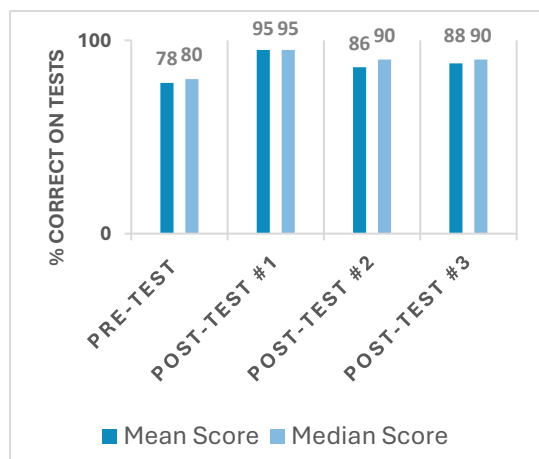
22 total PACU registered nurses (RN) were eligible to participate in the study; convenience sampling was used because the PACU staff was already established before beginning project implementation. 18 RNs participated in the pre-test and the first post-test, 11 participants in the second post-test, and 6 participants in the third and final post-test. The Knowledge-To-Action learning model was used as the project's preferred learning theory. Pre- and post-test scores were used to determine the most effective educational method. The project's main objective was a 20% increase in post-test scores compared to the pre-test. Once the test scores

were collected, they were compared using the mean and median to determine the most effective educational method.

Analysis and Results

Mean and median scores were used to analyze the results. These numbers are the averages of all the scores and the middle number when all scores are listed (Calder & Patel, 2025). All mean and median scores were compared to find the most effective educational method for PACU staff nurse education. Post-test scores were increased for all instructional methods used in the study. Figure 1-1 compares the mean and median scores on all delivered post-tests. The CBL was the only method that achieved the objective of a 20% increase in post-test scores when compared to the pre-test scores. CBL showed a 21.7% increase from pre- to post-test mean score and an 18.6% increase from the pre-to post-test scores. In-person simulation mean scores increased by 10.2%, and median scores increased by 12.5%. Finally, the mini lectures had a 12.8% increase in mean scores and a 12.5% increase in median scores.

Figure 1-1 Pre- and Post-Test Scores



Strengths and Limitations

One of the major strengths of this project came from the amazing support and buy-in the health system's nursing leadership exhibited. They were eager to implement the project's components into the yearly education of all health system PACU nurses, even before the project formally began. Another strength of the project was that the weekly "drop-ins" helped with staff enthusiasm. These random drop-ins by the DNP student helped foster a relationship and accountability with the staff, encouraging not only participation but engagement in the project's outcomes and overall success.

On the other hand, a few limitations did exist. The first limitation noted was the small sample size. There were only 18 participants at the project's highest participation point. No staff mailboxes also limited communication with and information distribution to staff—this required modifications throughout the project's implementation.

Implications and Conclusions

In conclusion, this project resulted in the development of a new yearly competency for PACU staff on local anesthetics and LAST. It established a framework for educating staff nurses throughout the health system that encompasses a variety of learning styles. It reinforced CBL as the most effective method for introducing new material to staff nurses. Finally, and equally important, the project introduced a new way to disseminate staff information using text

messaging to communicate with those who do not regularly check their health system email.

References

Calder, R.A. & Patel, J.J. (2025). Statistical thinking in medicine, Part 5: Descriptive statistics and quantifying “unusual”. *Wisconsin Medical Journal*, 124(2). 192–195.