Simulating LAST to Improve Peri-anesthesia Nursing Knowledge

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Dept Name: Hospital Pre/Post, Holding Room, PACU

Significance of the Problem

LAST = Local Anesthesia System Toxicity
Life-threatening complication occurring after local anesthetic

Rare - approximately 1/1000 patients

Signs and symptoms:
- Neurologic
- Cardiac
- Death

Early recognition and intervention for LAST can be life saving!

Clinical Question

Education with simulation + access to resources for LAST vs. No formal education or resources

Search Strategy & Evidence Synthesis

Search key words on CINHAL, PubMed
- LAST
- Local Anesthesia Systemic Toxicity
- Simulation

Searched American Society of Regional Anesthesia and Pain Medicine (ASRA)
- LAST checklist and treatment
- ASRA recommends quick access to treatment and using a checklist
- Early recognition and quick intervention improves patient morbidity and mortality
- Change is needed in peri-anesthesia to make LAST education mandatory with access to resources and treatment

ASRA: American Society of Regional Anesthesia and Pain Medicine

Practice Change

Step 1: Assembled Team

- Manager
- Clinical Practice Specialist
- Simulation Site Specialist
- Bedside Nurses
- Anesthesiologist
- Pharmacy Director

Step 2: Distributed Resources to all affected units (see Fig. 1)

- ASRA LAST Checklist & Guideline for Treatments
- Pharmacy supplied treatment (lipid emulsion)

Step 3: LAST Knowledge Test

Given during annual competencies (See Fig. 3)

Step 4: Developed & Presented Pre-Simulation Education

- High-fidelity Simulation & Debriefing
  - Nurses were required to participate
  - Anesthesiologists were invited to participate

Step 5: High-Fidelity Simulation & Debriefing

- During Step 5 simulation training, a PACU nurse who had just finished the training identified LAST early in a patient. The patient received treatment and potentially severe harm was avoided.

In pre-op, a patient experienced a seizure after a nerve block. The nurse identified LAST. The patient received lipid treatment with improvement but was not diagnosed with LAST.

Results

Figure 4. Means (standard error) for a) knowledge and b) comfort were both significantly higher after LAST education. We tested significance using one-tailed paired t-tests. Mean knowledge increased from 58(1.5) to 94(1.0) and mean comfort increased from 4.8(0.43) to 8.4(0.23).

Figure 3. LAST Knowledge-based test with comfort scale

Conclusions

- Nurses’ knowledge and ability to treat LAST was greatly improved by the practice change, which improves patient outcomes
- Nurses have recognized and treated symptoms of LAST with lipids → patients symptoms reduced and resolved
- Nurses in participating units feel that “simulation helped reinforce the education, and it will be easier to remember, and it was a cool way to learn.”

Limitations

- Single-site hospital peri-anesthesia department
- Challenges with how and when to maintaining knowledge
- Operating Room (OR) staff and anesthesia not included in education and simulation
- There is no diagnosis for LAST and there is resistance to diagnosing LAST even when patients are treated for it = challenging to collect data on how well the education program has worked and how many patients helped.

Implications for Practice

- Annual competency in place to maintain knowledge
- New peri-anesthesia nurses receive education (presentation) during onboarding
- More projects are needed to determine success of maintaining education and if OR team and anesthesia should be included in mandatory education

References


Acknowledgements

Special thanks to Akram Abdou MD, Judith Brown-Scott PharmD. cd.; Ann Marie Cook, RN, CAPA; Jennifer Murphy, RN-BC; Jennifer Olszowka, RN, CAPA; Debra Golien, RN, CAPA; Grace Greco, RN, CAPA; Allison Boone, Site Simulation Specialist, Meagan Cleary, PhD, BSN, RN