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

**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**

**Step 5: High-Fidelity Simulation & Debriefing**
- Nurses were required to participate
- Anesthesiologists were invited to participate

**Results**

Figure 1. ASRA checklist for treating LAST pictured with lipid emulsion used for treatment.

**Step 6: LAST Knowledge Test (see Fig. 3)**
Given on the unit after completing the simulation

**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.**

**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**


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