Local Anesthetic Systemic Toxicity: A DNP Project

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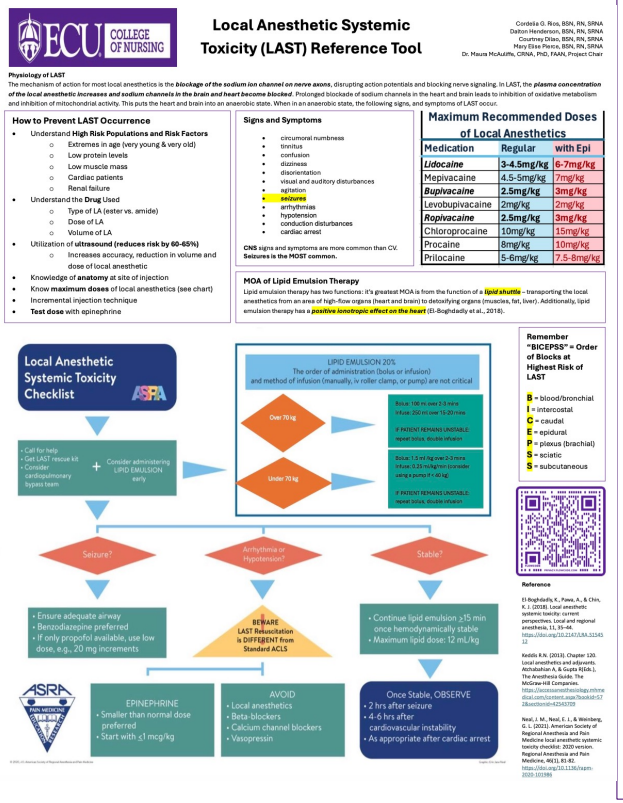
INTRODUCTION

- LAST = rare complication from inadvertent absorption of local anesthetics in the vasculature
- Incidence: ~2 per 1,000 nerve blocks.[3]
- Use of ultrasound and incremental dosing with frequent aspiration reduces incidence.[1]
- Use of a test dose that includes epinephrine can aid in early identification
- Signs & symptoms of LAST: circumoral numbness, tinnitus, confusion, dizziness, disorientation, and drowsiness → agitation, loss of consciousness, and seizures → cardiovascular collapse.[1]
- DNP Project Purpose: Create a quick reference guide (QRG) and assess CRNA perception of its adequacy which addresses a project site need



RESULTS

Figure 1

CRNAs support of implementing QRG at their facility (n=4)

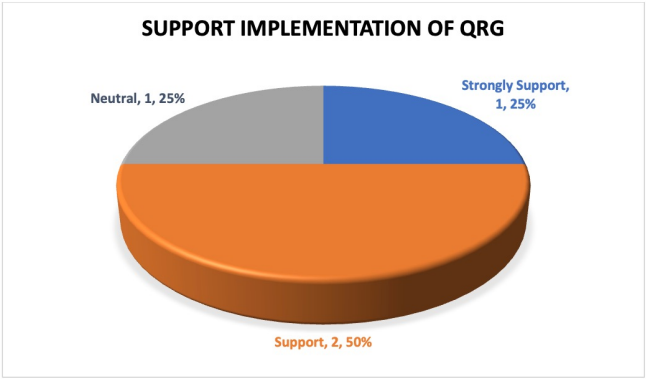
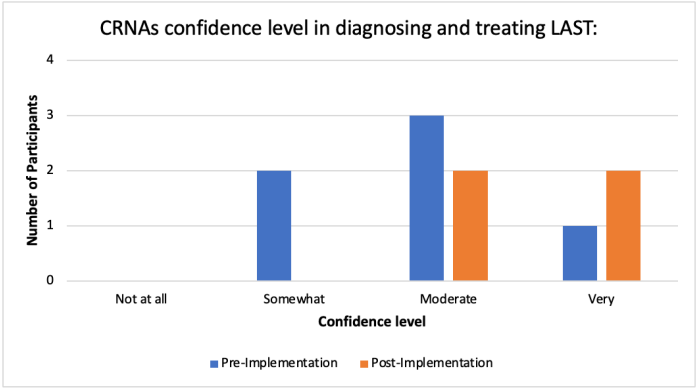


Figure 2

CRNA confidence level in diagnosing and treating LAST (pre-implementation n=6, post-implementation n=4)



METHODS

- One Plan Do Study Act (PDSA) cycle[2]
- Literature search and synthesis performed
- Evidence-based practice QRG developed PowerPoint presentation with voiceover
- Two-week implementation phase
- Pre- and Post-implementation survey design with Qualtrics
- Data analyzed and visuals created with Excel

DISCUSSION

- Pre-implementation survey participants = 6
- Post-implementation survey participants = 4
- Improved perception of LAST, its prevention, diagnosis and treatment
- Confidence level shifted
- Enhanced familiarity with drugs to avoid during LAST
- Furthered perception of mechanism of action of lipid emulsion therapy (LET)
- Despite a smaller sample size for post-implementation comparison, there is demonstrated support for QRG implementation

CONCLUSIONS

- Overall:
  - Three of four recommend implementation of QRG
  - QRG is an effective and inexpensive tool
- Limitations:
  - most participants locums staff
  - small sample size
  - author physically present and one of the two project sites
  - short implementation time frame
- Future studies:
  - directly conversing and implementing with participants
  - increasing project implementation duration
  - larger sample size
- Sustainability:
  - QRG is an effective and inexpensive tool

REFERENCES

1. Gitman, M., Fettiplace, M. R., Weinberg, G. L., Neal, J. M., & Barrington, M. J. (2019). Local anesthetic systemic toxicity: A narrative literature review and clinical update on prevention, diagnosis, and management. Plastic and Reconstructive Surgery (1963), 144(3), 783-795. https://10.1097/PRS.0000000000005989
2. Langley, G. L., Moen, R., Nolan, K. M., Nolan T. W., Norman C. L., Provost, L. P. (2009). The *Improvement Guide: A Practical Approach to Enhancing Organizational Performance* (2nd edition). Jossey-Bass Publishers.
3. Macfarlane, A. J. R., Gitman, M., Bornstein, K. J., El-Boghdadly, K., &Weinberg, G. (2021). Updates in our understanding of local anaesthetic systemic toxicity: A narrative review. Anaesthesia, 76, 27-39. https://doi.org/10.1111/anae.15282