

## Capstone for Impact 2020

**Project title:** Identifying and Preventing Local Anesthetic Systemic Toxicity

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**Branch:** Procedures based care

**Path of excellence:** Patient safety, quality improvement, and complex systems

**Summary:** After witnessing local anesthetic systemic toxicity (LAST), a potentially fatal complication of local anesthetic administration, while shadowing in the operating room, I was interested in this as a safety and quality improvement problem. Although I found that LAST is relatively uncommon both nation-wide and at Michigan Medicine, in talking to faculty and residents, I found there are still many ways that the risk of this complication can be further reduced, all of which I outlined in a report to be presented at the University of Michigan Department of Anesthesiology Quality Improvement monthly meeting with the hopes of improving systems to prevent LAST.

**Methodology:** I referenced current peer-reviewed research on LAST to construct a full background of this problem nation-wide. To better understand the problem at the Michigan Medicine, I consulted the CAS group, who helped me by running a query of the Centricity database to estimate the prevalence of LAST. Additionally, I consulted current anesthesia residents and faculty to understand their perspective on the problem. I found that there are many technical ways to reduce the risk of LAST, all of which seem to be common practice at Michigan Medicine. I also found major barriers to preventing LAST which result from the perioperative workflow. Multiple different teams administer local anesthetic in multiple different settings at different times on the day of surgery, which results in difficulties with communication between teams. I then distilled my findings and recommendations into a concise report.

**Results:** Although LAST appears to be uncommon both nationally and at Michigan Medicine, because it is a potentially fatal complication of local anesthetic administration, every precaution should be taken in order to prevent it. At Michigan Medicine I found the barriers to further prevention are relating to work flow, and can be improved with changes to booking cases, changes to the EMR, as well as a dedicated time during the pre-incision time-out to discuss local anesthetic maximum dosage.

**Reflection/Impact Statement:** Upon reflection, although I was under the impression that I was selecting a topic that was a larger problem in terms of the number of people affected, LAST is still a serious and preventable problem. In my research and conversations with providers I have found that there are still many improvements that can be made in terms of prevention and

patient safety in regards to LAST and believe those outlined in my review have the potential to even further reduce the incidence and risk at Michigan Medicine. I did learn that garnering interest and buy-in from other parties is more difficult if the problem is perceived to be relatively small in terms of the numbers of individuals affected.