**Pediatric QI forum – Safety recommendations for indwelling neurosurgical devices**

**Collaborators:**

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**Intent/category:**

(yes) Published material

(yes) Ongoing project

(yes) Seeking collaboration

**Problem:** There is an **i**ncreasing development and implantation of indwelling neuromodulatory devices with varied safety recommendations. It is difficult for providers to remain updated on the electrocautery and magnetic resonance imaging (MRI) recommendations for all devices, which represents an opportunity for improvement in patient safety.

**Question:** Can we improve caregivers understanding of safety regulations regarding indwelling neurosurgical devices?

**Context:** Prior to the project, our institution (high-volume tertiary free-standing pediatric hospital) had an unacceptably high delay of first start cases due to concerns regarding indwelling neurosurgical devices.

**Description of Quality Improvement Activity:**

A manufacturer search was performed for monopolar electrocautery and MRI safety recommendations for the following devices: shunt valves, Medtronic SynchroMed™ II pump, Cyberonics Vagus Nerve Stimulator, Medtronic Intellis™ spinal cord stimulator, Deep Brain Stimulators, and NeuroPace® Responsive Neurostimulator System®. We developed a questionnaire covering these devices to operating room and neurology treating practitioners, followed by an educational compendium, and a post-test for 50 care providers.

**Resources/Skills needed:** No extra resources; quality improvement requires time and dedicated study.

**Results (if available):** For the overall cohort, there was a poor performance on the pretest (mean 39%, SD 19%) but significant improvement on the post-test (mean 71%, SD 16%), p<0.0001. Physicians had a poor pretest performance (mean 51%, SD 21%) but improved on the post-test (mean 73%, SD 12%), p= 0.0007. Similar findings were noted for ancillary practitioners with a pretest mean of 33% (SD 14%) and post-test mean of 71% (SD 17%), p=0.001. Ancillary practitioners had the greatest percent mean score difference (38%, SD 23%) as compared to physicians (22%, SD 17%), p=0.017. The educational compendium collocating manufacturer recommendations was placed in the operating room for easy reference; a revised Vagus Nerve Stimulator interrogation protocol decreased case-start delays due to VNS by 39%.

 **Tips for others:** Keep a copy of the OR compendium in the operative suite for neurosurgery, and encourage buy-in from nurse leaders.