

Quality Story 1

Implementation of Propofol as a Deep Sedation Agent

Goal: Our institution identified that patients who are deeply sedated using pentobarbital are at increased risk for prolonged length of recovery and emergence delirium. We endeavored to improve these outcomes without increasing complication rates by using a different agent for deep sedation in our patients.

Metric: 1. Length of recovery 2. Incidence of emergence delirium 3. Overall complication rates

Plan: We hypothesized that administering propofol as a deep sedative would result in shorter length of recovery and lower incidence of emergency delirium due to propofol's short half-life and antiemetic properties. In partnership with Sedation and Anesthesia services, an implementation plan and criteria for inclusion were created. Inclusion criteria for deep sedation with propofol were patients who met criteria for deep sedation with pentobarbital, required non-painful procedures or imaging AND were over the age of 2 years. A credentialing process was created for all physicians performing deep sedation with propofol. Each physician was required to: complete 10 days of training in airway management and advanced airway placement under the direction of an anesthesiologist, successfully manage a simulation scenario involving airway rescue, and complete 50 deep sedations using propofol. Education relative to propofol and its administration was provided to nursing staff in the form of written instruction and hands-on simulation. Prior to implementing use of propofol for deep sedation for any patients, a multi-disciplinary group conducted simulated scenarios of sedation induction, patient transport, and emergence in order to identify safety concerns and process challenges to streamline the workflow and develop standardized guidelines.

Results: Use of propofol as a deep sedative results in shorter recovery times in comparison to deep sedation with pentobarbital. The mean length of time from end of deep sedation with propofol to discharge from the hospital was 75 minutes with a median recovery time of 72.5 minutes. By comparison, the mean amount of time from end of deep sedation with pentobarbital to discharge from the hospital was 104 minutes with a median recovery time of 109 minutes. This difference is statistically significant with greater than 95% confidence. The comparison did not account for total amounts of each sedative agent delivered.

Incidence of emergency delirium is lower in patients who are deeply sedated with propofol in comparison to pentobarbital. Emergence behavior occurred in 0.27% of patients sedated with pentobarbital and occurred in only 0.09% of patients sedated with propofol.

Overall, complication rates between the two groups are not significantly different. Incidences of airway-related complications were reported slightly more frequently with propofol sedation, however, the percentage of aborted or incomplete studies related to sedation complications were similar to the pentobarbital group.

Lessons Learned: Propofol can be used as a safe alternative sedative agent and may result in overall shorter recovery times for patients. It is imperative to have a standardized process and formal training for all providers who will be involved any kind of deep sedation. Simulation is a valuable tool to prepare for adverse events and create a safe and streamlined work flow. Partnership between sedation and anesthesia services can enhance collaboration, knowledge sharing and safety.