

Monitoring QTc in Pediatric Patients Who Receive Low Dose IV Haloperidol in the PACU for Post-operative Nausea and Vomiting (PONV)

Primary Investigator: Crystal Stroh MSN RN CPN

Boston Children's Hospital PACU, Boston, Massachusetts

Co-Investigators: Cathleen Tressy-Murphy RN CPAN CAPA, Samantha Stanley MSN RN, Kelly Connolly MSN RN, Richard Blum MD, Mark E. Alexander MD, Binhminh Nguyen PharmD, Kayleigh Hausser MPH, Debra Lajoie JD PhD MSN RN

Introduction: Current pediatric PACU practice administering low dose IV haloperidol for post-operative nausea and vomiting (PONV) unresponsive to other interventions for specific pediatric populations varies by anesthesia team.

Identification of the problem: Anecdotally, low dose haloperidol had been used safely in pediatric PACUs. Formulary recommendations for intensive monitoring were based on higher dose haloperidol used for the treatment of psychosis and the potential for QTc prolongation.

QI question/Purpose of the study: To clarify the magnitude of both QT prolongation and therapeutic benefit for PONV in pediatric PACU patients given low dose haloperidol. Those data would inform potential changes to the hospital formulary to differentiate guidelines for low dose IV haloperidol in the PACU from higher dose haloperidol used for psychiatric intervention.

Methods: An interdisciplinary QI project was developed to provide evidence to support proposed changes in the formulary. Data were collected over a six month period including pre- and post-haloperidol administration QTc and BARS scores. Descriptive statistics were used to analyze this data.

Outcomes/Results: During the project period, pre therapy QTc was 430 ± 43 msec (range 480-355) with heart rates of 82 ± 16 . Two patients had dosing deferred because of clinical QTc ≥ 480 (N=29). Post treatment QTc readings had an average increase of 2 ± 22 msec, with 1 ECG exceeding the QTc cutoff of <490 only on post hoc review. Post-hoc cardiology review measured comparable or shorter QT measurements in 17 (59%) patients, and only 1 had a clinically relevant increase in QTc (3%). Average BARS scores dropped from 7 to 1. No further vomiting occurred in 80% of patients who received IV haloperidol for PONV not responsive to other medications.

Discussion: It is critical for nurses to question and evaluate practice using evidence based guidelines and quality improvement methodology.

Conclusion: Low dose IV haloperidol is effective at limiting PONV and has a low incidence of QT prolongation. The high monitoring environment of a pediatric PACU suggests that it can be used safely in that setting for select populations.

Implications for perianesthesia nurses and future research: This work resulted in developing evidence based changes to the formulary that are consistent with clinical practice. Further research is needed to determine if low-dose haloperidol can be administered safely for a younger population.