

Unintended Consequences: Rising ondansetron use following the implementation of a rapid recovery protocol for pediatric spine fusion

Daniel O'Neill, MD^{1,3}, Jonathan Tan, MD-MPH^{1,3}, John Flynn, MD^{2,3}, Wudbhav Sankar, MD^{2,3}, Wallis Muhly, MD^{1,3}
¹Department of Anesthesiology & Critical Care, ²Division of Orthopedic Surgery, ³Children's Hospital of Philadelphia



Introduction

We recently reported on the implementation of a rapid recovery pathway (RRP) following posterior spine fusion for adolescent idiopathic scoliosis (AIS)¹ using quality improvement (QI) methodology.

RRP Focus:

- multimodal pain management
- early mobilization and standardized recovery protocols

Successful outcomes:

- Improved pain management
- Reduced length of stay

Surprising finding:

- Anecdotal reports of increased post-operative nausea and vomiting (PONV)
- PONV not considered in initial analysis

Question:

- Is there data related to PONV to see if supporting evidence for observation?

Methods

- Extracted data on ondansetron use by postoperative day (POD) using the qlikview data tracking tool developed in our QI project
- Ondansetron use considered as binary outcome (yes/no)
- Patients grouped in quarterly intervals from January 2011 - August 2017
- P-chart graphic to display % of patients receiving ondansetron by POD
- Baseline ondansetron use set using pre-RRP implementation data (1/1/11 thru 12/31/12).

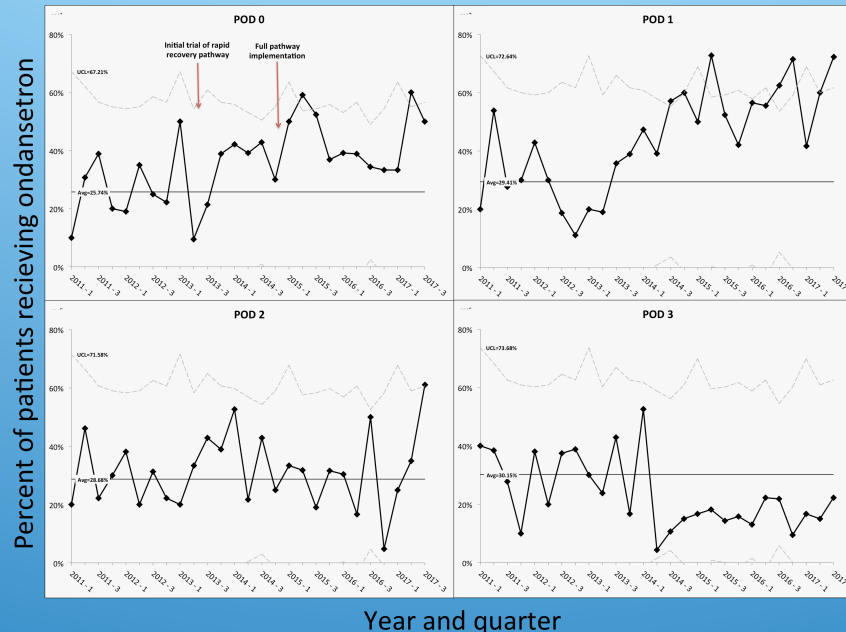


Figure 1. P-charts showing % of patients receiving ondansetron with control limits (3 SD) for POD 0 to 3.

Results

Increased POD 0 and 1 ondansetron after initiation of RRP (Fig 1)

Ondansetron use (%) by cohort (historical control vs. RRP):

- POD 0 – 26% vs 43%*
- POD 1 – 29% vs 59%*
- POD 2 – 29% vs 32%
- POD 3 – 30% vs 16%

*Special cause variation confirmed with 2 and 4 points above the upper confidence interval for POD 0 and 1 following pathway implementation.

Discussion

- Implementation of QI initiatives can have profound impact patient outcomes
- Vigilance and continual review of clinical impact is vital
- Improvements in one outcome/goal can precipitate adverse outcomes

Our concern:

- Increased ondansetron use suggests patients may experience more POV and/or PONV when managed with the RRP

Next Steps

Better understand the extent and severity of nausea/emesis in this population

Inquiry:

- Administer qualitative patient survey on POD 0 and 1 on Acute Pain Service rounds

Action:

- Trial conservative diet advancement strategy to ensure absence of symptoms before allowing PO ad lib
- Consider introducing a preoperative anti-emetic agent to protocol

By systematically refining our recovery pathway we hope to further improve the experience and outcomes for our spine fusion patients.

References:

- Muhly WT, Sankar WN, Ryan K, et al. Rapid Recovery Pathway After Spinal Fusion for Idiopathic Scoliosis. *Pediatrics*. 2016;137(4).