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Improving Practice After the Transition from Paper to Electronic Documentation Through Adherence to Perioperative Quality Assurance Metrics

AUTHORS

Wong, Cynthia¹; Mayson, Kelly¹

¹ *Anesthesia Department, Vancouver General Hospital, Vancouver, Canada*

INTRODUCTION

A new electronic medical record (EMR) was introduced to our hospital late in 2022. As anesthesiologists become more familiar with its utilization, it is important to have an understanding of our documentation practices using the EMR to ensure that we are complying with best practice standards. A retrospective review had previously been completed in 2017, when there was paper charting.¹

The aim is to improve anesthetic practice in the department by assessing documentation in anesthesia records and our adherence to perioperative quality assurance metrics 6 weeks after the transition from paper to EMR. Common areas of weakness in the department will be highlighted and relayed to the department for practice improvement, with the aim of spurring self-reflection and improvement among the anesthesiologist. Using the data from the 2017 audit, an initial PDSA cycle, and a future audit after education intervention should aid in the creation an “anesthesia report card”.

METHODS

6 weeks post launch on the EMR (December 18-December 31), anesthetic records during day time hours (7am-7pm) were reviewed. Results were be compared to the previous audit regarding paper documentation and ASPIRE quality metrics from 2017.¹

Exclusion criteria included those undergoing cardiac surgery, lung transplants, ASA physical status 5/6 patients, and surgeries < 15 minutes.

As per the American Society of Anesthesiologists (ASA), “it is expected that documentation will include the ASA basic monitoring, including blood pressure, heart rate, ventilation every 5 minutes, and ECG rhythm documentation and temperature documentation.”² The chart review assessed that these have been recorded, as well as documentation of intake/output, positioning, and airway or regional procedures.

Patient records were also be reviewed for adherence to the following ASPIRE/MPOG quality metrics³:

BP – aim to avoid sustained low MAP <55 for >20min.

NMB (neuromuscular block) monitoring – TOF measured after last dose of NMB and before extubation. Exclusion for those not receiving NDNMB and those with planned ventilation in the immediate post-operative period

NMB reversal – appropriate NMB reversal given and documented for patients who received non-depolarizing NMB before extubation

Antibiotics given, or documented not indicated, and re-dosed appropriately

RESULTS

286 anesthetic records were reviewed within this two week period. The results revealed that some areas like BP, HR, and low MAP avoidance were well documented, with 100% compliance. In contrast, temperature was documented in 68.9% of cases, NMB monitoring documented in 57.0%, with reversal in 81.6%. Antibiotics were given in 82.5% of cases, with 64.3% of those re-dosed appropriately. 36.0% documented both the intake and output accurately; while fluid intake must be completed to finalize the record, often a component of output such as estimated blood loss would be missing. 88.9% documented an airway or regional procedure when applicable. 90.5% documented positioning.

DISCUSSION

The results reveal weaknesses in documentation similar to the 2017 audit in 3 main areas: temperature, NMB, and antibiotic re-dosing, however there is improvement since the transition to EMR.¹ Unfamiliarity with specific documentation on the EMR, missing autonomic document in components in “macros”, and time pressure were the main contributing factors. Department education regarding these documentation weaknesses is planned, with the potential for improvements such as reminders within the EMR, or “macro” adjustments. A 3rd PDSA cycle is planned after the education intervention and modifications within the EMR.

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PROSPR: A Peri-operative Opioid Stewardship Program of Research

AUTHORS

Mc Donnell, C¹; Caldeira-Kulbakas M¹; Al-Mandhari M¹; Nair S¹; Satgunarajah S¹; Wengle L²; Camp M²; Howard A²; Bordman W³

¹ Department of Anesthesia & Pain Medicine, Hospital for Sick Children, University of Toronto, Toronto, Canada.

² Department of Orthopedic Surgery, Hospital for Sick Children, University of Toronto, Toronto, Canada.

³ Hospital Commercial Pharmacy Manager, Hospital for Sick Children, University of Toronto, Toronto, Canada.

INTRODUCTION

From January 2016 to June 2018, more than 9,000 Canadians died from alleged opioid-related harm. In 2018, 1 in 8 Canadians were prescribed opioids¹. A population-based study reported 7% of opioid-related deaths in Ontario were associated with prescriptions belonging to family or friends². Health Quality Ontario published a report identifying the number of opioid-prescriptions following surgery were second only to dentist office visits³. Recent Canadian population-based cohort study identified surgical opioid-prescribing at hospital discharge as a specific focus for intervention⁴, however, Canadian research & guidelines pertaining to discharge opioid-prescribing remains limited to adult populations. Pediatric opioid prescribing at surgical discharge lacks evidence-based, standardized protocols that decrease excessive opioid prescribing while ensuring children do not experience unmanaged pain at home. Following our own preliminary work⁵, we designed & implemented electronic standardized discharge protocols for patients undergoing supra-condylar fracture repair (SCF) that encouraged regular acetaminophen and ibuprofen as first-line analgesics and restricted morphine prescribing (A) to 8-doses max. (0.2 mg/kg), (B) then further restricted to 4-doses max., to decrease heterogeneity in clinical practice and decrease excess opioid-prescribing while at the same time increasing unused-drug returns, all without compromising pediatric home pain management.

METHODS

Per IHI Model for Improvement, our SMART-AIM (Hypothesis) was: "By end of 2022 [24 months], using two-phase structure, we will decrease opioid mg-amounts (MME) prescribed at SCF discharge by 50%, and decrease by 50% unused MME in the community at 3-week follow up".

To analyze impact of EHR-implementation of opioid discharge order-sets [2021:Phase 1], and introduction of part-refill scripts [2022:Phase 2], we identified the following measures to track and analyze both phases:

*Outcome:

[MME & MME⁻¹kg prescribed & dispensed; percentage reduction unused MME remaining in the home] To be delivered (tbd) by order-sets

*Process:

[Enrollment, orderset-compliance, simple-analgesic use, MME disposed/returned at 3-week follow-up]. TBD by family-handouts, surgeon orientation video and reminders, fracture-clinic reminder calls to families

*Balancing:

[Untreated pain, extra morphine requests/scripts]. TBD by post-op follow-up with families @ Day 5 and 21.

Iterative tests of change evaluated implementation through multiple PDSA [Plan-Do-Study-Act] cycles. SPC charts (Figure) were used to display data, demonstrate sustainable meaningful impact on outcome-process measures, and evaluate special-cause variation (SCV). SPC charts analyze process performance by plotting data points, control limits and a center line: a process is in control when common cause variation is present, SCV is absent and statistical properties do not vary over time. Other rules of analysis ([Shewhart Rules](#)) are applied automatically by [QIMACROS](#) which we employ locally for QI data analysis and reporting.

RESULTS

Our preliminary work⁵ from 2019-2020 reported 8672 morphine MME prescribed to 110 prospectively recruited consecutive surgical patients: 67% of prescribed opioids went unused, and, 78% of those remained in the home 1-month later.

SCF QI Project Phases 1 & 2 [2021 & 2022]:

Outcome

1. Mean MME/kg prescribed: Decrease from 3.6 to 1.9[2021], further decrease from 1.9 to 1.1[2022] – 70% TOTAL DECREASE
2. Percentage reduction in unused MME in the home 3-weeks post discharge: 83% MME dispensed in preliminary data went unconsumed/unreturned; compared to 50% in 2021 (2551 of 5095MME), and 52% in 2022 (720 of 1512MME)

Process

1. Enrollment Rate: Overall = 78%, [70% 2021, 85% 2022]
2. Order-set compliance: Increased from monthly mean of 38%[2020] to 84%[2021]
3. 88% use of acetaminophen, 85% ibuprofen, respectively: however, ~ 60% of use was not administered regularly as instructed
4. MME safely-disposed or returned at 3-week follow-up: Increase from 17% of total dispensed [2020] to 80% [2021-22]

Balancing

ZERO untreated pain declared
ZERO requests for extra opioid scripts

DISCUSSION

Since 2020, PROSPR program iteratively decreased opioid prescribing at surgical discharge post SCF repair by 70%.

Subanalysis demonstrates Gartland Type 2 fractures consume minimal opioids and never

refill opioid scripts; we removed opioids from discharge prescribing post Type 2 repair. We effected a significant increase in the amounts of unused opioid safely removed from the community by [A] prescribing less, [B] creating reminders and mechanisms to 'bring-back' unused drug for safe disposal.

For every SCF repair, 30MME is no longer exposed to the community, totalling 7.5 GRAMS Morphine each year for just one procedure.

Currently expanding processes to address other surgeries (cleft-palate, dental, tonsillectomies).

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