

Impact Of Multimodal Interventions On Opioid Discharge Prescriptions After Surgery In A Metropolitan Hospital

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Introduction

Opioids are commonly used and are effective in managing acute post-operative pain. Many studies have shown wide variation and excessive dosage of discharge opioid prescriptions (DOP) after surgery; and its contribution to persistent opioid use, opioid diversion and death. Therefore, strategies that prevent the overprescribing of DOP are crucial in reducing future harm.

- Frankston Hospital (FH) June 2018 audit: 39% of opioid-naïve patients prescribed 20 tablets of oxycodone 5mg after using ≤5mg of oxycodone 24 hours prior to discharge (DC).
- Interviews with 21 FH doctors in 2020 were conducted to gain an in-depth understanding of factors affecting opioid prescribing post-operatively.
- Acute Pain Services, Department of Surgery and Pharmacy, and Opioid Stewardship Subcommittee developed multimodal interventions aimed at improving DOP.

Aim:

To quantify the effectiveness of multimodal interventions in reducing discharge opioid prescriptions for opioid-naïve patients underwent minor or day general surgical procedures.

Methods

Retrospective, single-centred audit evaluated the impact of multimodal interventions on opioid prescriptions implemented on 01/10/2020.

Multimodal interventions:

- CLINICAL PRACTICE GUIDELINE** Provide guidance on the prescription of discharge medications for opioid-naïve patients who underwent minor or day general surgical procedures.
- CERNER POWERPLAN** Built-in clinical decision support function on Electronic Medical Records (EMR) to assist with the selection of different discharge medications.
- ORIENTATION EDUCATION** For Junior Medical Officers (JMOs) at the start of their 12-weeks clinical rotation to introduce CPG and Cerner PowerPlan.

Data collection:

- Lists of patients received DOP from 13/1/20 to 22/3/20 (pre-intervention (PRE)) and 11/1/21 to 21/3/21 (post-intervention (POST)) were generated from EMR.
- Inclusion criteria included all patients aged ≥18 years, opioid-naïve and underwent a minor general surgical procedure.
- Data was manually extracted from EMR.
- All opioid amounts were converted to oral morphine milligram equivalent (OMME) for analysis.

Primary outcome was the median OMME per prescription on DC for PRE and POST.

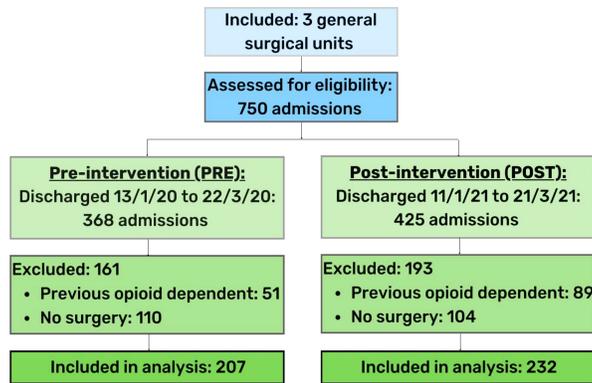
Secondary outcomes included the proportions of patients:

- Prescribed appropriate opioid quantities as per CPG recommendations based on inpatient opioid used 24 hours preceding DC.
- Prescribed slow-released (SR) opioids.
- Prescribed paracetamol and/or non-steroidal anti-inflammatory drugs (NSAIDs).
- Received a post-operative plan in their DC summary.

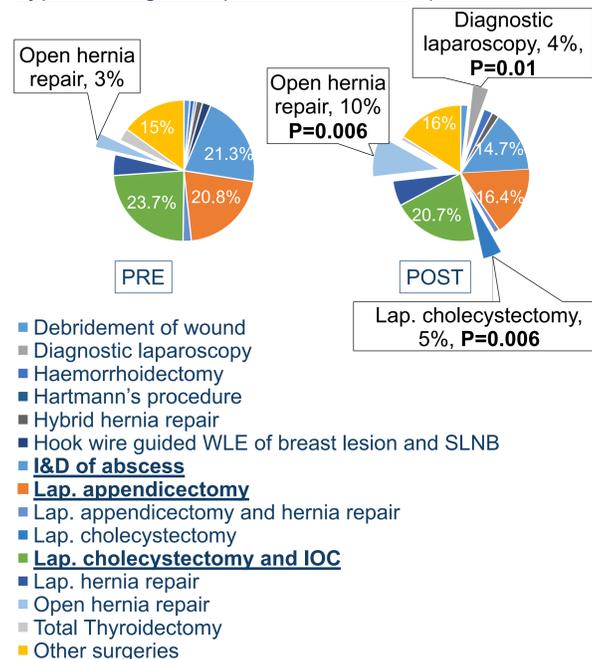
Results

Data collected over 12 weeks for each study period (PRE and POST) which coincided with JMOs clinical rotation.

The two cohorts were similar regarding gender, age and length of stay.



Type of surgeries performed in comparison:



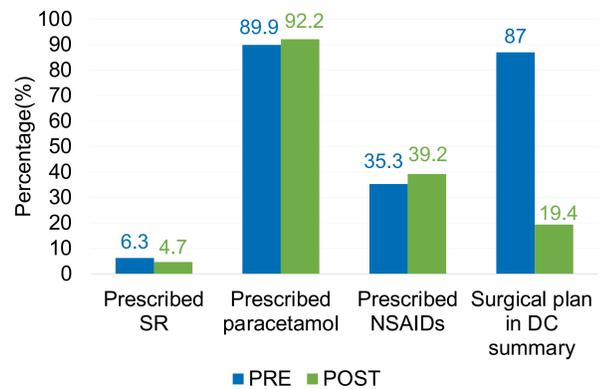
PAST MEDICAL HISTORY	PRE	POST
No medical history, n (%)	64 (31)	62 (27)
Anxiety, n (%)	25 (12)	10 (4) P=0.03
Asthma, n (%)	22 (11)	27 (12)
Atrial Fibrillation, n (%)	7 (3)	6 (3)
Cancer, n (%)	10 (5)	8 (4)
COPD, n (%)	4 (1)	2 (1)
Depression, n (%)	28 (14)	20 (9)
Diabetes Mellitus, n (%)	21 (10)	24 (10)
GORD/reflux/heartburn, n (%)	29 (14)	35 (15)
Hypercholesterolaemia, n (%)	19 (9)	18 (8)
Hypertension, n (%)	47 (23)	34 (15) P=0.03
IHD, n (%)	6 (3)	6 (3)
OSA, n (%)	10 (5)	5 (2)
TIA/Stroke, n (%)	4 (1)	4 (2)

POST median OMME per prescription was halved compared to PRE, P<0.0003):



Post-intervention, the proportion of patients prescribed appropriate quantity of opioid as per CPG recommendations was significantly increased (PRE, 31.9%; POST, 37.5%; P=0.02) and the proportion of over-prescribed DOP decreased by 13% (P=0.02).

Comparison of pre- and post-intervention outcomes:



OMED use 24-hours preceding discharge and OMED prescribed on discharge were found to be positively correlated; and marginally higher in POST (r(205)=.3045, P<.0001) compared to PRE (r(230)=.3467, P<.0001).

Discussion

- Our study reduced the median OMME per prescription by 50% post-intervention, suggesting that these multimodal interventions are effective at reducing post-operative DOP in opioid-naïve patients who underwent minor general surgical procedures.
- The variability and overprescribing of opioid prescriptions have become significant contributors to current opioid epidemic as more opioids are available for potential misuse and addiction. Similar to our study, Chiu *et al.* demonstrated a 50% reduction in DOP after the introduction of resident education, default opioid pills count on EMR and guidelines card, without resulting in increased opioid refills post discharge¹. Therefore, incorporating JMOs education and guideline to promote appropriate opioid prescribing are effective measures that could improve JMOs behaviours and prescribing patterns.
- Surgery is known to be anxiety-provoking and the increased anticipatory anxiety has been found to predict higher pain scores post-operatively. The proportion of patients with a history of anxiety was significantly less in POST. Thus, this difference may have affected our results. Moreover, our study was not equipped to answer the unintended consequences of reduced OMME at discharge on patients' satisfaction, post-discharge pain management and complications. Therefore, prospective studies with pre-operative patient counselling, a robust evaluation of surgical type and post-discharge opioid requirements will be beneficial to ensure patients' clinical outcomes are not compromised.

Conclusion

Multimodal interventions can assist JMOs in determining the most appropriate quantity for DOP based on 24-hour inpatient use and thus, reduce the opioid burden. Further studies may evaluate the ongoing impact of these interventions and their sustainability.

References

1. Chiu, A. S., Healy, J. M., DeWane, M. P., Longo, W. E., & Yoo, P. S. (2018). Trainees as Agents of Change in the Opioid Epidemic: Optimizing the Opioid Prescription Practices of Surgical Residents. *Journal of surgical education, 75*(1), 65–71. <https://doi.org/10.1016/j.jsurg.2017.06.020>