



# Opioid prescription guideline is important to enhanced recovery after thoracic surgery protocol

John Kit Chung Tam<sup>1,2^</sup>

<sup>1</sup>Department of Surgery, Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore; <sup>2</sup>Department of Cardiac, Thoracic, and Vascular Surgery, National University Heart Centre Singapore, Singapore, Singapore

*Correspondence to:* John Kit Chung Tam, MD, FRCSC. Department of Cardiac, Thoracic, and Vascular Surgery, National University Heart Centre Singapore, Singapore, Singapore; Department of Surgery, Yong Loo Lin School of Medicine, National University of Singapore, Level 8, 1E Kent Ridge Rd., NUHS Tower Block, Singapore 119228, Singapore. Email: surjtkc@nus.edu.sg.

*Comment on:* Mondoñedo JR, Brescia AA, Clark MJ, *et al.* Evidence-based opioid prescribing guidelines after lung resection: a prospective, multicenter analysis. *J Thorac Dis* 2023;15:3285-94.

**Keywords:** Opioid; enhanced recovery; thoracic surgery; enhanced recovery after surgery (ERAS); enhanced recovery after thoracic surgery (ERATS)

Submitted Aug 02, 2023. Accepted for publication Aug 25, 2023. Published online Sep 06, 2023.

doi: 10.21037/jtd-23-1208

**View this article at:** <https://dx.doi.org/10.21037/jtd-23-1208>

The opioid epidemic has resulted in significant socioeconomic cost to individuals and families (1). While opioid analgesics can bring substantial relief to those who experience severe pain, at the same time they can cause significant side effects and have the potential to induce dependency (2). There has been a concerted effort to control and reduce the use of opioids in the surgical setting to counter these undesirable effects, and many investigative efforts have borne fruit in tailoring pain management regimens that minimize and optimize the use of opioid use in the peri-operative context (3).

In a recent issue of the *Journal of Thoracic Disease*, Mondoñedo *et al.* (4) reported the development of evidence-based opioid prescribing guidelines after lung resection using a prospective, multicenter analysis. Patients were identified across 11 participant centers in the state of Michigan, USA. Patient reported outcomes were analysed from opioid-use survey at 1-month follow-up after lung cancer operation from January 2020 to March 2021. There were a 65% questionnaire response rate with 204 responders. The primary outcome was quantity of opioid used after discharge; secondary outcomes included quantity of opioid prescribed at discharge and patient-reported pain scores. Opioid prescribing recommendations were

then developed by the authors by analysing these patient-reported outcomes, in-hospital data prior to discharge, and clinical data such as surgical approach, operation performed, and postoperative length of stay.

Close to half of the patients (51.2%) described having moderate pain during the first week after surgery. In total, 43.7% of patients reported using no opioid after discharge. Patient-reported opioid use was  $8.2 \pm 13.0$  pills after discharge, significantly fewer than the  $20.5 \pm 13.1$  pills prescribed at discharge ( $P < 0.001$ ). Of those who used opioid, one-third (33.8%) used it for less than 1 week after discharge, and more than two-thirds of patients (69.8%) stopped using within 2 weeks after discharge. 10.8% of patients continued to use opioids for more than 4 weeks.

The study found that surgical approach made a difference to opioid use after discharge. A higher proportion of open thoracotomy patients used 11 to 20 pills compared to 1 to 10 pills for minimally invasive surgery (MIS) patients ( $P = 0.007$ ). Patients who were not taking opioids in-hospital on the day prior to discharge used significantly fewer pills after discharge ( $4.4 \pm 8.1$  vs.  $11.7 \pm 14.9$ ), and were nearly three times more likely not to take opioids after discharge (62.7% vs. 22.6%).

Based on these results, the authors generated a list of

<sup>^</sup> ORCID: 0000-0002-6269-3653.

opioid prescribing recommendations after lung resection. Patients were prescribed around the clock acetaminophen for 72 hours post-discharge. A prescription size of 0–5 pills of oxycodone (5 mg each) was recommended for patients not using opioids on the day prior to discharge, and 0–15 pills for patients after MIS or 0–20 pills for patients after thoracotomy. Opioid education brochures were given to patients at discharge, and clinic reassessment was recommended prior to prescribing opioid refill.

Pain management after thoracic surgery has been a hot area of investigation in the literature. Certain surgical techniques have been associated with low postoperative pain scores may be beneficial in pain reduction (5). In this study, although a higher proportion of open thoracotomy patients used 11–20 pills compared to less than 10 pills for MIS patients, there was no difference in the number of pills used between MIS and open thoracotomy patients ( $8.2 \pm 13.2$  vs.  $8.0 \pm 11.1$  pills, respectively;  $P=0.84$ ), and patients undergoing robot-assisted operations used the fewest opioids ( $5.2 \pm 9.7$  pills,  $P=0.004$ ). There are somewhat conflicting evidence in the literature on whether robotic-assisted lung resection was associated with increased opioid use (6). There are also many studies which showed that video-assisted thoracic surgery (VATS) is associated with less postoperative pain compared to thoracotomy (7). Which operative technique may result in reduced pain and opioid usage is an important area that warrants further study.

Multi-modal analgesic strategy is crucial to optimize post-surgical pain management (8,9). There are a multitude of analgesia options available, each with its own strength, safety, side-effect profile, and duration of action. Agents with stronger pain-killing action generally also results in higher risk of experiencing significant side effects. The agents of choice and dosage should be customized and tailored to the magnitude of pain experienced by that patient, which is not static at a constant level but may vary with time and activity level. The best pain management regimen is one that is safe, short-acting, and optimally eliminate the pain without inducing significant systemic or local side effects to normal bodily functions such as breathing, bowel motion, or early mobilization. Thus a balancing act is required to optimize the use of opioid and non-opioid analgesics, and this strategy is best incorporated into a comprehensive enhanced recovery after thoracic surgery (ERATS) program (8).

A comprehensive multi-modal pain management strategy uses a combination of non-opioid and opioid analgesia and approaches pain reduction across the continuum

of preoperative education and setting expectation, to intraoperative lowering of opioid usage through regional and local anesthesia techniques (9), to optimal postoperative analgesia protocols and pathways, to outpatient counselling and prescription practices upon discharge from hospitalization. Each of these components are inter-linked and are integral to overall patient comfort and satisfaction, optimal pain control and maximal reduction of opioid use. This is evident by the results in this study which showed that patients who were not taking opioids in-hospital on the day prior to discharge (32.4%) used significantly fewer number of opioid pills, and had a higher proportion requiring no opioids after discharge. This signifies that better pain control in the inpatient setting have a direct effect on improving pain management and reducing opioid usage in the post-discharge home setting. This clearly underscores the importance of optimizing pain management in every step of the way along the patient journey.

All thoracic surgeons should adopt surgical techniques and peri-operative strategies that would reduce pain and opioid use. These include minimally invasive thoracic surgical techniques, incorporation of non-opioid analgesics into a multi-modal pain management protocol, use of locoregional analgesia such as intercostal nerve block or erector spinae block, careful tailoring and titration of the amount of analgesics required adjusting to amount of pain experienced, and early reduction and cessation of opioid prescribed as soon as possible. Excessive opioid prescription is not only unnecessary and wasteful but also encourages over consumption which may promote dependency. This study should encourage thoracic surgeons to introspect and reflect on their own individual prescription practices, and to adopt opioid prescription guidelines that are directly suitable to the patient population within their local context. The evidence-based opioid prescription guidelines after lung resection by Mondoñedo *et al.* (4) can serve as a useful starting point to this quality improvement process and may hopefully lead to better opioid prescription practices by all thoracic surgeons. Opioid prescription practice guidelines should be incorporated into all ERATS protocols (10-12).

### Acknowledgments

*Funding:* None.

### Footnote

*Provenance and Peer Review:* This article was commissioned

by the editorial office, *Journal of Thoracic Disease*. The article did not undergo external peer review.

**Conflicts of Interest:** The author has completed the ICMJE uniform disclosure form (available at <https://jtd.amegroups.com/article/view/10.21037/jtd-23-1208/coif>). The author has no conflicts of interest to declare.

**Ethical Statement:** The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**Open Access Statement:** This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

## References

- Levinsky NC, Byrne MM, Hanseman DJ, et al. Opioid Dependence After Lung Cancer Resection: Institutional Analysis of State Prescription Drug Database. *World J Surg* 2021;45:887-96.
- Brescia AA, Harrington CA, Mazurek AA, et al. Factors Associated With New Persistent Opioid Usage After Lung Resection. *Ann Thorac Surg* 2019;107:363-8.
- Qiu Y, Lu X, Liu Y, et al. Efficacy of the intraoperative opioid-sparing anesthesia on quality of patients' recovery in video-assisted thoracoscopic surgery: a randomized trial. *J Thorac Dis* 2022;14:2544-55.
- Mondoñedo JR, Brescia AA, Clark MJ, et al. Evidence-based opioid prescribing guidelines after lung resection: a prospective, multicenter analysis. *J Thorac Dis* 2023;15:3285-94.
- Tam JK, Lim KS. Total muscle-sparing uniportal video-assisted thoracoscopic surgery lobectomy. *Ann Thorac Surg* 2013;96:1982-6.
- Duclos G, Charvet A, Resseguier N, et al. Postoperative morphine consumption and anaesthetic management of patients undergoing video-assisted or robotic-assisted lung resection: a prospective, propensity score-matched study. *J Thorac Dis* 2018;10:3558-67.
- Bendixen M, Jørgensen OD, Kronborg C, et al. Postoperative pain and quality of life after lobectomy via video-assisted thoracoscopic surgery or anterolateral thoracotomy for early stage lung cancer: a randomised controlled trial. *Lancet Oncol* 2016;17:836-44.
- Tam JKC. A balancing act-the role of opioid-sparing anesthesia in enhancing recovery after thoracic surgery. *J Thorac Dis* 2022;14:3122-4.
- Tan JW, Mohamed JS, Tam JKC. Incorporation of an intercostal catheter into a multimodal analgesic strategy for uniportal video-assisted thoracoscopic surgery: a feasibility study. *J Cardiothorac Surg* 2021;16:210.
- Zorrilla-Vaca A, Rice D, Brown JK, et al. Sustained reduction of discharge opioid prescriptions in an enhanced recovery after thoracic surgery program: A multilevel generalized linear model. *Surgery* 2022;171:504-10.
- Turner KM, Delman AM, Griffith A, et al. The Impact of Enhanced Recovery After Surgery on Persistent Opioid Use Following Pulmonary Resection. *Ann Thorac Surg* 2023;115:249-55.
- Kodia K, Stephens-McDonnough JA, Alnajar A, et al. Implementation of an enhanced recovery after thoracic surgery care pathway for thoracotomy patients-achieving better pain control with less (schedule II) opioid utilization. *J Thorac Dis* 2021;13:3948-59.

**Cite this article as:** Tam JKC. Opioid prescription guideline is important to enhanced recovery after thoracic surgery protocol. *J Thorac Dis* 2023;15(10):5275-5277. doi: 10.21037/jtd-23-1208