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Anaesthesia & Critical Care Medicine Journal
ISSN: 2577-4301

Editorial on Multimodal Analgesia

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Editorial

Volume 11 Issue 1

Received Date: March 25, 2026

Published Date: May 20, 2026

DOI: 10.23880/accmj-16000255

Keywords

Acetaminophen; Ketamine; Dexmedetomidine

Introduction

Multimodal therapy or Multimodal analgesia is widely used in the operating room to decrease opioid related adverse effects postoperatively. Many may use it, but not all, multimodal analgesia should become a standard of care because of the synergistic and opioid sparing effects. Multimodal therapy is comprised of, but not limited to, administering agents such as Acetaminophen, NSAIDs, Ketamine, and Dexmedetomidine, along with Ondansetron, Magnesium, and Dexamethasone, for the management of postoperative nausea, vomiting, and pain. Not only does it benefit our patients, but it also reduces hospital length of stay, enhances recovery time, improves patient satisfaction, and lowers complication rates.

Patients with obesity are more prone to experiencing opioid-related adverse events. Very common amongst obese patients is a high prevalence of obstructive sleep apnea, which increases the risk for hypoxia, apnea, and overall respiratory depression. In obese patients, there is also a decrease in functional residual capacity, lung compliance, and an increase in airway resistance, an increase in adipose tissue, and a larger volume of distribution. Medications like opioids will worsen the respiratory drive and accumulate in the bodies, worsening adverse effects postoperatively. Multimodal is proven to be useful in this circumstance, thus decreasing the use of opioids. A study was conducted to demonstrate that multimodal analgesia reduced opioid related adverse events, with vomiting being reduced from 27.8 to 7.4%, urinary retention from 4.4 to 1.5 %, respiratory depression from 3.3 to 1.5 %, and pruritus from 2.2 to 1.5 %, Post operative pain scores after 12 hours were reduced as well [1].

Standardizing multimodal analgesia across the operating room has many benefits for the hospital and the patients. Having multimodal analgesia standardized would help reduce variability in care, be cost-effective, and improve team collaboration with order sets for pre-operative nurses. Standardized multimodal regimens align with enhanced recovery after surgery, paving the way for early mobilization and faster recovery of respiratory and bowel function. Variability from provider to provider, along with inconsistency in the outcomes due to dosage differences and/or opioid use. The use of multimodal will decrease the opioid use, therefore decreasing opioid related adverse effects. The average dose of opioids administered in the post-operative phase was also significantly reduced from 23.7 to 0.7 mg in the post-multimodal analgesia group [2]. The dosage of the non-opioid will be increased but will significantly decrease the opioid if not eliminate the use in most cases. Patients who were prescribed a combination of intravenous acetaminophen and ketorolac had a 73.8% reduction in post-operative opioid use compared to patients who were prescribed hydromorphone patient-controlled analgesia [1].

To be standardized, an algorithm should be implemented, which will have to be medications commonly used as multimodal, once called joint juice. This will include ketamine, magnesium, and dexamethasone titrated to effect. Preoperative screening will be the start of the algorithm assessing the pain risk, such as major surgery, consisting of, but not limited to, abdominal, thoracic, spine, and orthopaedic surgeries. Other pain risk assessments will be opioid tolerance, chronic pain, obesity, history of severe postoperative nausea and vomiting, or expecting high opioid requirements. If lower pain is expected, consider a lower dose.

There are clear contraindications that serve as hard stops for using these agents. For ketamine, these include uncontrolled hypertension, coronary artery disease, elevated

intracranial pressure, or active psychosis [3]. Magnesium should be avoided in patients with renal failure, a history of heart block, or neuromuscular weakness [3]. Dexamethasone is contraindicated in cases of poorly controlled diabetes or active immunosuppression [3]. In the absence of these contraindications, administering a multimodal regimen is generally more beneficial than withholding it. Below, I included "Drugs and Techniques used in Opioid-Sparing Anesthesia" cited from Nagelhout Anaesthesia 7th Edition (2022) to make different combinations for multimodal analgesia.

Agent/Technique	Advantages	Disadvantages
Local anesthetic wound infiltration	Easy to perform with minimal risk	Limited duration
Regional blocks	Analgesia, opioid sparing	Invasive procedure, motor block, unwanted side effects
NSAIDs	Analgesia, opioid sparing	Platelet dysfunction, Gl irritation, renal dysfunction
Acetaminophen	Analgesia, opioid sparing	Hepatic toxicity
Dexmedetomidine, clonidine	Analgesia, opioid sparing, avoids respiratory depression	Sedation, hypotension, hypertension, bradycardia, postoperative sedation
Gabapentinoids (gabapentin, pregabalin)	Analgesia, opioid sparing	Sedation, dizziness, peripheral edema, blurred vision
Intravenous lidocaine	Analgesia, opioid sparing	Systemic toxicity, dosing uncertain, postoperative sedation
Magnesium	Opioid sparing, some analgesia	Sedation, systemic toxicity, potentiation of neuromuscular blockers, postoperative sedation
Ketamine	Analgesia, opioid sparing, avoids respiratory depression	Hypertension, psychic disturbances, tachycardia, salivation, dosing uncertain. postoperative sedation
Dexamethasone, methylprednisolone	Analgesia, 1 length of stay in postanesthesia care unit	Hyperglycemia, anxiety

Table 1: Drugs and technique used in opioid sparing anaesthesia.
GI, Gastrointestinal; NSAIDs, nonsterodial anti inflomatory drugs

Conclusion

Finally, if multimodal strategies are effective in populations that are more susceptible to opioid-related adverse effects, they are likely to be even more beneficial in healthier individuals. Multimodal perioperative management significantly reduces postoperative pain, nausea, and vomiting compared to single-modality approaches such as opioids alone by targeting multiple physiological pathways and limiting opioid dependence. These strategies can be customized using various drug combinations to suit the patient and the specific procedure. Importantly, even modest reductions in opioid use can lead to substantial decreases in opioid- related adverse effects.

References

1. Ziemann-Gimmel P, Hensel P, Koppman J, Marema R (2013) Multimodal analgesia reduces narcotic requirements and antiemetic rescue medication in laparoscopic Roux-en-Y gastric bypass surgery. Surg Obes Relat Dis 9(6): 975-980.

2. Ng JJ, Leong WQ, Tan CS, Poon KH, Lomanto D, et al. (2017) A Multimodal Analgesic Protocol Reduces Opioid-Related Adverse Events and Improves Patient Outcomes in Laparoscopic Sleeve Gastrectomy. Obes Surg 27(12): 3075-3081.

3. Nagelhout JJ, Elisha S, Heiner JS (2022) Nurse Anesthesia. 7th (Eds.), Elsevier.