Single-Dose Methadone for Perioperative Pain and Opioid Reduction

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Objectives

- Review the physiology and pharmacology of methadone therapy
- Distinguish differences in duration and mechanism of action between traditional opioids and methadone
- Describe the impact that methadone use has on multiple outcome variables
- Identify barriers to implementing methadone in the perioperative period

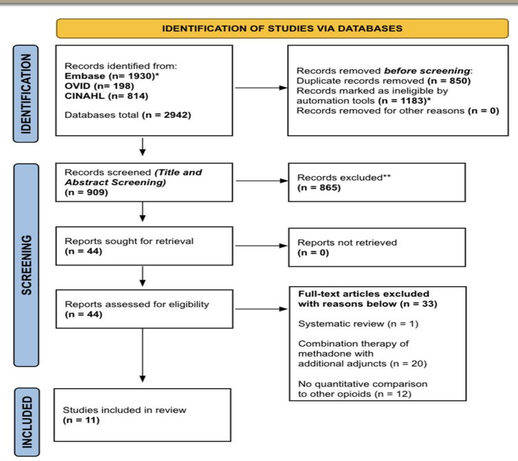
Background & Significance

- Opioid addiction and abuse is a major unintended consequence of surgical procedures.
- Opioids used to manage pain after surgery can lead to a range of adverse effects, including respiratory depression, nausea and vomiting, constipation, and higher healthcare costs.
- Methadone is a long-acting opioid with a reduced risk of adverse effects. The goal is to determine the best effective dosage range and its impact on reducing the total amount of opioids given to patients during surgery.

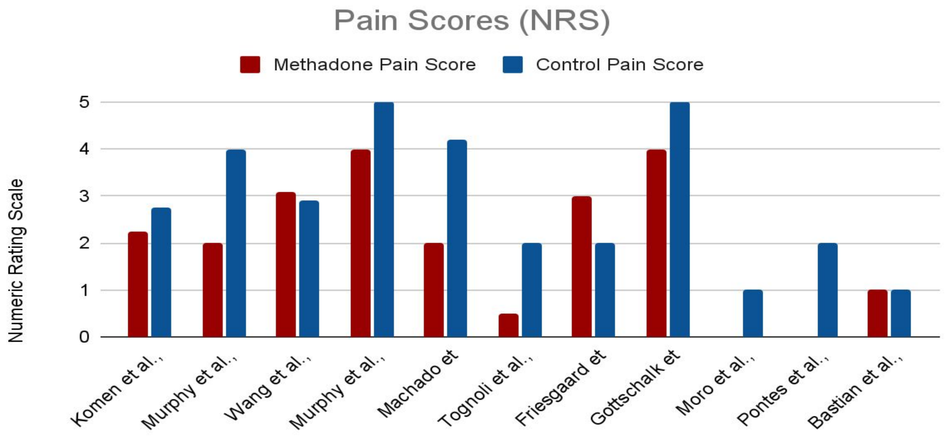
Clinical Question

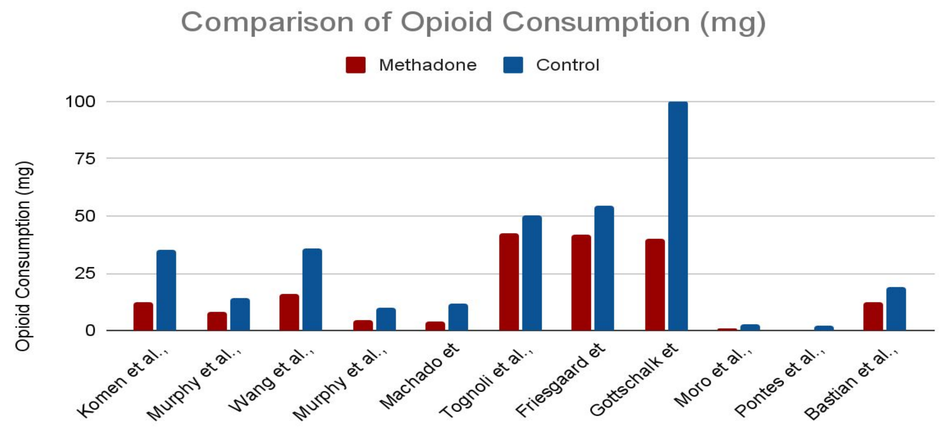
In adult surgical patients, what is the impact of perioperative methadone administration compared to short-acting opiate on postoperative opioid consumption and pain scores in the first 48 hours?

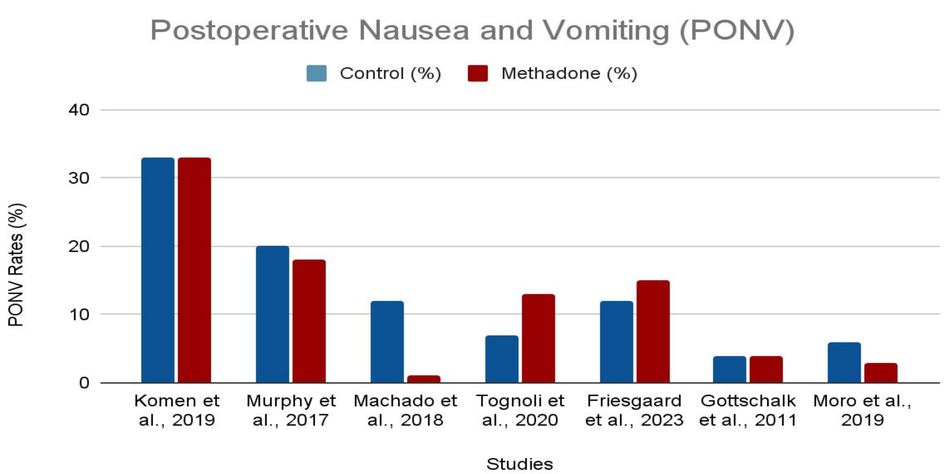
Methods



Results







Discussion

- Studies using methadone included same-day ambulatory procedures, cardiac bypass, major vascular, complex spine, bariatric, colectomy, various laparoscopic procedures, breast surgery, and orthopedic procedures were all included
- Methadone can attenuate the development of opioid tolerance, hyperalgesia, allodynia, and conversion of acute to chronic postoperative pain
- **Results included significant decrease in opioid administration throughout the perioperative period**
- Patients who received methadone experienced **no increase in length of stay or PONV**
- **The research demonstrates that methadone can be used for everyday surgical procedures, rather than only those deemed to be high-risk or high-pain.**

Practice Recommendations

- Administer a **single intravenous dose of methadone (0.15-0.3 mg/kg)** given prior to or during surgery
- Patients undergoing routine and complex surgeries should be considered candidates for methadone administration Patients at high risk for QTc prolongation should have baseline ECG studies
- Use with caution in individuals deemed high risk for prolonged postoperative respiratory depression

Conclusion

Synthesis of the best evidence suggests that methadone is a low-cost, low-risk, and safe medication for prolonged analgesia that can decrease perioperative opioid consumption and pain scores and not increase the risk of negative side effects.

References