Ketamine Webcast

Kimberlee M. Bayless, DNP, FNP-BC
George E. Wahlen VA Medical Center, Salt Lake City, Utah
Transitional Pain Service, Director | Department of Anesthesiology
@DrKimBaylessNP | Kimberlee.Bayless@va.gov

Faculty Disclosure

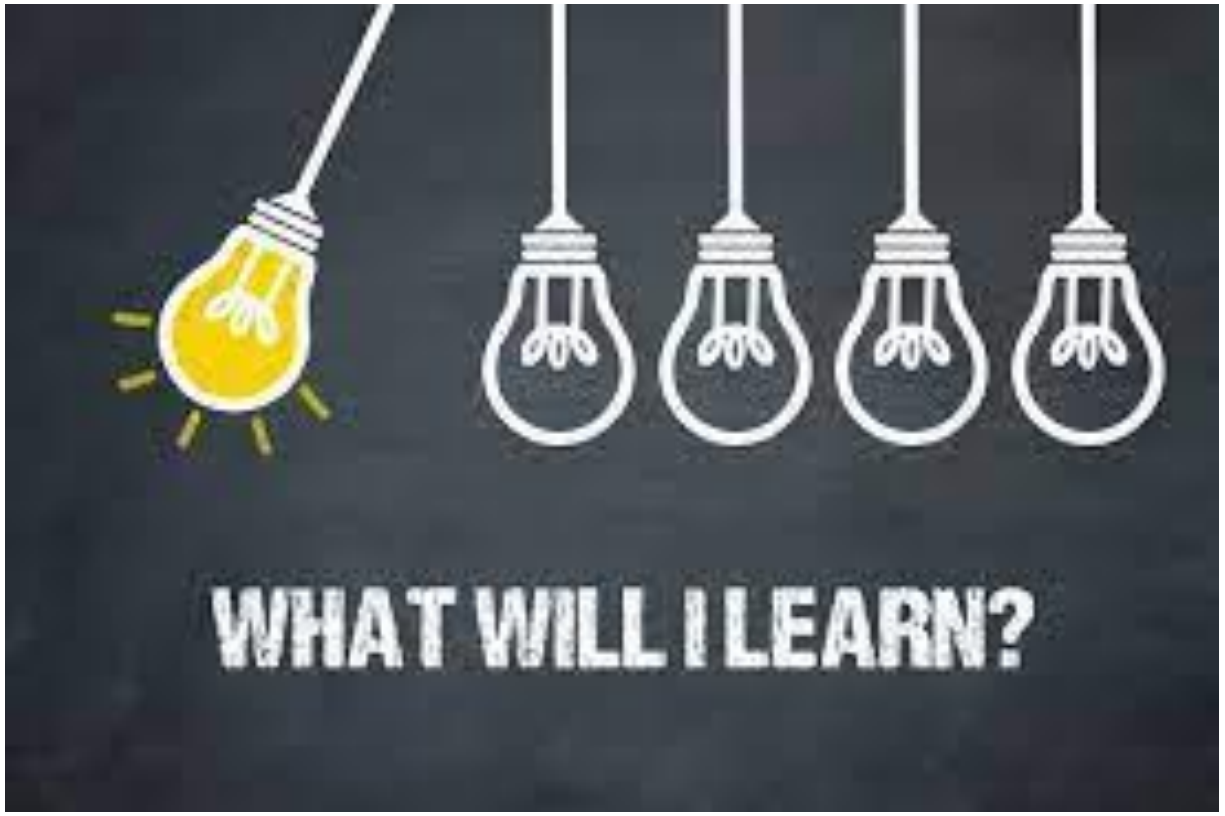
	Nothing to disclose
X	**Yes, as follows:**

Honoraria/Expenses	
Consulting/Advisory Board	
Speakers Bureau	Medtronic
Funded Research (Individual)	
Funded Research (Institution)	
Royalties/Patent	
Stock Options	
Ownership/Employee	
Other	

Off-Label Product Use

Will you be presenting or referencing off-label or investigational use of a therapeutic product?	
x	**No**
	Yes, as follows:

- To provide guidance on the indications and safe use of intravenous ketamine for the treatment of acute postoperative pain and severe acute pain.
- This guidance does not apply to the use of ketamine for procedural sedation by trained providers in the emergency department (emergency physicians, anesthesiologists, certified registered nurse anesthetists), for sedation in intubated patients in the ICU setting, or for ketamine use in outpatient settings.



- Who and what conditions
- What are the dosing parameters
- Where to infuse
- How to monitor

Patient selection

- To provide maximal benefit with minimal risk to the greatest number of patients.
- Surgical
  - Abdominal, thoracic, orthopedic (limb and spine)
  - Opioid tolerant or dependent
- Non-Surgical
  - Opioid-dependent patient during acute exacerbations of chronic pain conditions
  - Rib fractures
  - Sickle cell disease
  - Inpatient palliative care
- Patients at risk for opioid-related adverse events i.e. respiratory depression
  - OSA
  - Naloxone therapy

Contraindications

- Elevated intracranial pressure
- Elevated intraocular pressure
- Acute psychosis
- Pregnancy
- Sever cardiovascular disease, acute MI, unstable or sever angina, decompensated heart failure, severe valvular disease
- Severe hepatic dysfunction

Adverse Effects

- Nausea
- Vomiting
- Vivid dreams
- Hallucinations
- Dissociations
- Treatment of adverse effects
  - Benzodiazepine
  - Alpha-2 agonists

Drug, monitoring and documentation

- Acute pain ketamine dosing
- FDA prescribing dose 1-4.5mg/kg
  - average dose 2mg/kg
- Clinical practice IV 0.3-0.5mg/kg bolus with or without infusion starting at 0.1-0.2mg/kg per hour.
- Infusion rate with a maximum of 0.5 mg/kg/hr ideal body weight. Typical dosing is usually in the range of 0.1-0.2 mg/kg/hr ideal body weight.
  - Dosing above 0.5-1 mg/kg/hr may occasionally be required but should only be used in highly monitored settings such as the ICU.
  - Higher doses increase the risks for vivid dreams and hallucinations.
- Bolus dosing is occasionally, but not typically, needed at the start of the infusion.
  - Bolus doses should not exceed 0.35 mg/kg ideal body weight.
  - If a bolus is given, recommended to be administered by an anesthesiologist, certified registered nurse anesthetist, or intensivist and remain at the bedside for no fewer than 10 minutes after delivery.

Monitoring

- Ketamine is a controlled substance
  - Standard protocol for controlled substance infusion
- Blood pressure, heart rate, respiratory rate, level of sedation/consciousness and pulse oximetry.
- Standard floor monitoring protocols for post-surgical patients maybe adequate

Role of the beside nurse/team

- Ordering service
  - Acute Pain Service (APS)
  - Anesthesia
  - ICU
- Ordering service/provider should be available for consultation 24/7 for ketamine management.
- Registered Nurse
  - ICU, step-down, inpatient wards
    - Infusion set up and patient monitoring

How to establish IV ketamine on the ward

- Discuss evidence
  - Opioid sparing effects
  - Reduced risk for post-operative sedation without increased harm.
- Outcome measures
  - Improved function and decrease pain at rest and during movement
  - Cumulative morphine consumption
  - Opioid related adverse events
  - Duration of analgesia
  - Length of stay
  - Number of patient with chronic post-operative pain

Case Study: Ketamine Consideration

- HPI: 70 y/o male s/p thoracotomy POD#0
  - 198 lbs
- PMH: CAD, HTN, HLD, COPD, tobacco use, alcohol use
- Social history: Lives with his wife
- Chronic pain history: chronic neck and thoracic spine pain, knee pain.
  - (currently on hydrocodone 10/325 QID #120 from PCP)
- Mental health history: anxiety, PTSD
  - Patient reports that his mental health is stable currently. He reports nightmares.
  - Denies use of illicit substances

- Post-op Management- in ICU
  - Regional Anesthesia
    - ESP catheter
    - Intracoastal blocks per surgical team
  - Multi-Modal
    - Acetaminophen 1000mg TID
    - Pregabalin 75mg BID
    - Unable to consider NSAID per surgery team
  - Opioids
    - Oxycodone 5-10mg PO Q4 hrs prn
    - Hydromorphone 0.4mg IV Q2 hrs prn
  - Behavioral interventions
    - Mindfulness at bedside

How do YOU proceed?

Summary

- Subanesthetic ketamine is powerful NMDA agonist medication that can be used for various surgical and non-surgical moderate to severe pain.
- Psychomimetic and CV adverse effects can be a barrier to implementation however, these effects are often dose dependent.

References

REGIONAL ANESTHESIA AND ACUTE PAIN

SPECIAL ARTICLE

OPEN

Consensus Guidelines on the Use of Intravenous Ketamine Infusions for Acute Pain Management From the American Society of Regional Anesthesia and Pain Medicine, the American Academy of Pain Medicine, and the American Society of Anesthesiologists

Eric S. Schwenk, MD, Eugene R. Viscusi, MD,* Asokumar Buvanendran, MD,† Robert W. Hurley, MD, PhD,‡ Ajay D. Wasan, MD, MSc,§ Samer Narouze, MD, PhD,|| Anuj Bhatia, MD, MBBS,** Fred N. Davis, MD,†† William M. Hooten, MD,‡‡ and Steven P. Cohen, MD§§*

Perioperative intravenous ketamine for acute postoperative pain in adults

Elina CV Brinck, Elina Tiippana, Michael Heesen, Rae Frances Bell, Sebastian Straube, R Andrew Moore, Vesa Kontinen

Authors' declarations of interest

Version published: 20 December 2018 Version history

https://doi.org/10.1002/14651858.CD012033.pub4

Collapse all Expand all

Abstract

Available in English | Español | فارسی

Background

Inadequate pain management after surgery increases the risk of postoperative complications and may predispose for chronic postsurgical pain. Perioperative ketamine may enhance conventional analgesics in the acute postoperative setting.

Objectives

To evaluate the efficacy and safety of perioperative intravenous ketamine in adult patients when used for the treatment or prevention of acute pain following general anaesthesia.

Perioperative ketamine for postoperative pain management in patients with preoperative opioid intake: A systematic review and meta-analysis

Christine H Meyer-Frießem [1], Erik Lipke [2], Stephanie Weibel [3], Peter Kranke [3], Sylvia Reichl [4], Esther M Pogatzki-Zahn [5], Peter K Zahn [6], Alexander Schnabel [5]

Affiliations + expand

PMID: 35065394 DOI: 10.1016/j.jclinane.2022.110652

Abstract

Study objective: Postoperative pain management in opioid users remains challenging. The perioperative administration of ketamine might lead to favourable pain outcomes in these patients.

Study design: A systematic review of randomised controlled trials (RCT) with meta-analysis and assessment of the quality of evidence by GRADE was performed.

Setting: Perioperative pain treatment.

Patients: Adult opioid users undergoing surgery.

Ketamine for the treatment of acute pain

William K. Silverstein, David N. Juurlink and Jonathan S. Zipursky

CMAJ November 01, 2021 193 (43) E1663; DOI: https://doi.org/10.1503/cmaj.210878

Article | Figures & Tables | Related Content | Responses | Metrics | PDF

Ketamine's analgesic and anesthetic effects are dose dependent

Ketamine is a phencyclidine (PCP) derivative that exerts its effects primarily through *N*-methyl-d-aspartate receptor inhibition.[1] At low doses (0.1–0.3 mg/kg), ketamine produces mainly analgesia.

Thank you!

QUESTIONS?

Kimberlee M. Bayless, DNP, FNP-BC
George E. Wahlen VA Medical Center, Salt Lake City, Utah
Transitional Pain Service, Director | Department of Anesthesiology
@DrKimBaylessNP | Kimberlee.Bayless@va.gov