

What is the effective dose of preemptive ketamine that reduces postoperative pain and/or opioid requirements in adult surgical patients?

### Background

Though often used as an intravenous anesthetic agent in pediatrics and adults, ketamine is also commonly used for its analgesic properties both within the anesthesia setting and in other clinical settings where pain management is required. It has been well-established that preemptive use of ketamine does reduce the need for narcotics for pain management in the immediate postoperative period. However, issues of optimal dosing are not resolved by any studies to date. This paper will discuss available evidence regarding effective dosing of preemptive intravenous ketamine (alone or as an adjunct to opioids).

### Methods

A detailed literature review of recent studies was conducted using various professional and academic databases. The primary outcome was the optimal dose of preemptive intravenous ketamine to reduce postoperative narcotic requirements in adult surgical patients.

### Results

Results from this literature review demonstrate that a preemptive bolus of ketamine is typically effective in dosages ranging from 0.15 mg/kg to 0.5 mg/kg. A limited number of studies using either morphine or fentanyl in addition to a preemptive ketamine bolus found that postoperative pain scores were significantly lower in the ketamine/opioid groups and cumulative analgesic requirements for the first 24 hours postoperatively were also reduced. Studies that used a preemptive ketamine bolus followed by a ketamine and remifentanyl infusion found no improvement in postoperative pain scores, even when higher doses of ketamine were used.

## Conclusion

Preemptive ketamine appears to be effective when given as a bolus dose in the range of 0.15 mg/kg to 0.5 mg/kg. More research comparing various preemptive doses of parenteral ketamine/opioid combinations is warranted before optimal dosing protocols and opioid choices can be recommended. .