

Ketamine Drug for Pain Management

Posted on September 16, 2018

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Introduction

Ketamine is a dissociative anesthetic that has been used clinically for decades and also has an important off-label role in selected acute and chronic pain settings. In the United States, FDA-approved ketamine injection is indicated for general anesthesia, including induction and use during diagnostic or surgical procedures; chronic-pain treatment is not an FDA-approved indication (FDA, 2026). Off-label use can still be evidence-based when qualified clinicians judge that potential benefits outweigh risks, but the distinction matters because patients should not interpret commercial claims as regulatory approval. Ketamine's analgesic effects are linked principally to antagonism of N-methyl-D-aspartate (NMDA) receptors, which can reduce central sensitization and some processes involved in opioid tolerance or hyperalgesia. Its pharmacology also involves other receptor systems, and analgesic, anesthetic, dissociative, and psychotropic effects can overlap. Evidence is strongest for carefully selected short-term applications and less certain for durable benefit across many chronic conditions. Safe use therefore requires a defined diagnosis, appropriate setting, trained staff, monitoring, and a plan for deciding whether improved pain translates into better function.

Where Ketamine Fits in Acute and Chronic Pain Care

Consensus guidance supports considering intravenous ketamine as part of multimodal analgesia for selected acute-pain patients, including some people who are opioid tolerant, undergoing painful procedures, or experiencing refractory pain (Schwenk et al., 2018). In chronic pain, ketamine has been studied most extensively for severe neuropathic conditions and complex regional pain syndrome, with some patients experiencing temporary reduction in pain. The magnitude and duration of benefit vary substantially, and evidence cannot be transferred automatically from one condition to another (Cohen et al., 2018). Ketamine should therefore not be presented as a universal "third-line" drug or simple substitute for opioids. Comprehensive care may also include physical rehabilitation, psychological treatment, non-opioid medicines, regional techniques, appropriate opioid therapy, sleep management, and treatment of the underlying disease. For complex regional pain syndrome, temporary analgesia may be valuable when it allows greater participation in physical or occupational therapy. Treatment goals should be established before infusion so that success is measured through mobility, sleep, activity, medication burden, and quality of life rather than through a transient change

in a pain score alone.

Monitoring, Cardiovascular Effects, and Dissociation

Ketamine infusion belongs in a clinical environment appropriate to the dose, patient risk, and indication. Before treatment, clinicians may review cardiovascular disease, psychiatric history, substance-use risk, liver function, pregnancy status, concurrent sedatives, and previous responses. Monitoring can include blood pressure, heart rate, oxygen saturation, respiratory status, sedation, pain, and mental state, with staff prepared to manage airway or cardiovascular complications (Cohen et al., 2018; Schwenk et al., 2018). Ketamine often increases sympathetic activity, causing higher blood pressure and heart rate, which can be useful in some anesthetic circumstances but problematic in unstable cardiovascular disease. It can also produce nausea, dizziness, blurred vision, impaired coordination, and dissociation involving altered perceptions of body, time, sound, or environment. Some patients experience these effects as neutral or pleasant, while others feel fear or loss of control. Ketamine tends to preserve spontaneous breathing better than many anesthetics, but respiratory depression, airway obstruction, apnea, excessive secretions, or laryngospasm can still occur, especially with rapid administration, larger exposure, or other sedating drugs.

Repeated Exposure, Organ Toxicity, and Misuse Risk

Short-term tolerability does not eliminate concerns about repeated exposure. Frequent nonmedical ketamine use is associated with painful urinary symptoms, bladder inflammation, reduced capacity, and potentially serious urinary-tract damage. Repeated or prolonged medical exposure can also be associated with liver-enzyme abnormalities and, in uncommon cases, hepatic or biliary injury, so long-term treatment programs should review cumulative exposure and emerging symptoms (Cohen et al., 2018). Attention, judgment, memory, and reaction time can be impaired during and after treatment, which is why patients require clear post-treatment restrictions regarding driving, machinery, and safety-sensitive decisions. Ketamine is a Schedule III controlled substance in the United States and has misuse, tolerance, craving, and diversion potential. Screening for substance-use risk should be non-stigmatizing while still protecting medication security and continuity of care. FDA enforcement in 2026 also highlighted unapproved online ketamine products and reiterated that compounded drugs are not FDA-approved for safety, effectiveness, or quality before marketing (FDA, 2026). Patients should obtain ketamine only through legitimate licensed medical care rather than unverified internet sources.

Informed Consent and the Difference from Psychiatric Uses

Informed consent for pain treatment should explain that the use may be off label, the strength of evidence for the particular condition, expected duration of benefit, alternatives, adverse effects, driving restrictions, follow-up, and circumstances that would cause treatment to stop. Marketing language such as “reset,” “cure,” or guaranteed long-term relief is inappropriate when evidence remains variable. Ketamine’s psychiatric use should also be distinguished from pain management. Racemic ketamine injection is not FDA-approved for depression, although the related S-enantiomer esketamine is approved as the nasal product Spravato for specified depressive indications under controlled conditions (FDA, 2026). Psychiatric and analgesic protocols have different goals, evidence, dosing strategies, and monitoring needs; improvement in depression research cannot simply be used as proof of chronic-pain benefit. Repeated private infusions can also create financial vulnerability when patients are desperate for relief and insurance coverage is uncertain. A responsible clinic should therefore function as part of comprehensive pain care, define measurable goals, communicate uncertainty honestly, and stop repeated treatment when meaningful functional benefit no longer outweighs cumulative burden or risk.

Conclusion

Ketamine is an established anesthetic and a potentially valuable analgesic tool for carefully selected patients, but its usefulness depends on indication, monitoring, and realistic expectations. Subanesthetic intravenous ketamine can reduce pain and opioid requirements in some acute settings and may provide temporary relief in selected neuropathic or complex regional pain conditions. It is not FDA-approved specifically for chronic pain, and long-term benefit remains uncertain for many diagnoses. Cardiovascular stimulation, dissociation, nausea, impaired judgment, respiratory complications, urinary toxicity, liver effects, and misuse potential make supervised administration essential. Treatment should therefore begin with a clear diagnosis and baseline goals, continue only when improvements are meaningful, and remain integrated with rehabilitation and other evidence-based pain strategies. Current FDA warnings about unapproved online products also reinforce the need for licensed medical oversight rather than self-sourced ketamine (FDA, 2026). The appropriate clinical question is not whether ketamine is a dramatic or innovative treatment. It is whether, for a particular patient and condition, a carefully monitored course produces enough functional benefit to justify its known and uncertain risks.

References

Cohen, S. P., Bhatia, A., Buvanendran, A., et al. (2018). Consensus guidelines on intravenous ketamine infusions for chronic pain. *Regional Anesthesia and Pain Medicine*, 43(5), 521–546.

Schwenk, E. S., Viscusi, E. R., Buvanendran, A., et al. (2018). Consensus guidelines on intravenous ketamine infusions for acute pain management. *Regional Anesthesia and Pain Medicine*, 43(5), 456–466.

U.S. Food and Drug Administration. (2026). *FDA-approved ketamine products and enforcement information concerning unapproved ketamine products*.