



**Doug Ducey**  
Governor

**Joey Ridenour**  
Executive Director

## ***Arizona State Board of Nursing***

1740 W. Adams Street, Suite 2000

Phoenix, AZ 85007

Phone (602) 771-7800 Fax (602) 771-7888

E-Mail: arizona@azbn.gov

Home Page: www.azbn.gov

An advisory opinion adopted by AZBN is an interpretation of what the law requires. While an advisory opinion is not law, it is more than a recommendation. In other words, an advisory opinion is an official opinion of AZBN regarding the practice of nursing as it relates to the functions of nursing. Facility policies may restrict practice further in their setting and/or require additional expectations related to competency, validation, training, and supervision to assure the safety of their patient population and or decrease risk.

**OPINION: KETAMINE ADMINISTRATION**  
**APPROVED: 11/15**  
**REVISED DATE: 5/20**  
**ORIGINATING COMMITTEE:**  
**SCOPE OF PRACTICE COMMITTEE**

Within the Scope of Practice of  RN  LPN

### **ADVISORY OPINION KETAMINE ADMINISTRATION**

#### **STATEMENT OF SCOPE**

It is NOT within the Scope of Practice of a Registered Nurse (non-CRNA) to administer IV Ketamine for the purposes of anesthesia. For sub-anesthetic ketamine given for sedation, refer to the Sedation: Deep, Moderate, and Palliative advisory opinion.

It is NOT within the Scope of Practice of a Registered Nurse (non-CRNA) to administer IV or intranasal Ketamine via bolus dose for analgesia, except in areas capable of monitoring and managing complications of unintended sedation as per the Sedation: Deep, Moderate, and Palliative advisory opinion.

It is within the Scope of Practice of a Registered Nurse (RN) to administer low-dose (sub-anesthetic) IV or intranasal Ketamine for the purposes of pain control (analgesia), depression, and sedation.

#### **I. GENERAL REQUIRMENTS**

- A. Written policies and procedures are developed and maintained by the employer/facility. These policies must include, but are not limited to:
  1. Low-dose (sub-anesthetic) Ketamine must be prescribed within applicable legal and policy constraints by a credentialed and privileged licensed independent practitioner (LIP).
  2. Identification of dosage ranges and approved routes of Ketamine administration are defined including appropriate to the age of the patient.

3. ACLS/PALS provider is readily available in facility from the time the medication is initiated until completion of the continuous infusion, intranasal or IV bolus.
  4. A validated sedation scale is used (e.g. Richmond Agitation Sedation Scale, Sedation Agitation Scale) to monitor for unintended sedation.
  5. Guidelines and equipment for patient monitoring, drug administration, and addressing potential complications.
  6. IV Ketamine is prepared by pharmacy or according to manufacture guidelines & recommendations.
  7. IV Ketamine is infused via a dedicated IV line using an IV infusion pump preferably with smart pump technology.
  8. Only RNs who have completed an instructional program and have had supervised clinical practice can administer Ketamine.
- B. Specific requirements related to route/purpose of administration:
1. Low-dose (sub-anesthetic) continuous IV or intranasal Ketamine for chronic pain or treatment-resistant depression:
    - a. RNs may adjust the rate of infusion per a patient-specific order only.
      - i. Titration is NOT allowed.
      - ii. Ketamine IV bolus is NOT allowed prior to initiation, nor during infusion.
      - iii. Standing orders or protocols are NOT used.
    - b. RNs have the right and obligation to refuse to administer continuous IV Ketamine infusion that may induce moderate or deep sedation or anesthesia.
    - c. Minimal monitoring requirements include pulse oximetry, vital signs and level of sedation.
  2. Continuous IV, IV bolus, or intranasal Ketamine for moderate/deep sedation:
    - a. RNs must follow the Sedation: Deep, Moderate, and Palliative advisory opinion.
  3. Low-dose (sub-anesthetic) IV bolus (piggyback) or intranasal Ketamine for analgesia:
    - a. ACLS/PALS provider is readily available in the department from the time the medication is administered until completion of the procedure.
    - b. Minimal monitoring requirements include cardiac monitoring, pulse oximetry, vital signs and level of sedation.

## II. COURSE OF INSTRUCTION

- A. Only RNs who have the knowledge and demonstrated competency may administer low-dose (sub-anesthetic) IV or intranasal Ketamine for the purposes of pain control (analgesia), depression, and sedation. The instructional program includes, but is not limited to:
1. Anatomy and physiology of the respiratory system including principles of oxygen delivery, gas exchange, transport and uptake.
  2. Use of specialized monitoring equipment, sedation scale, pain scale, and smart pump functionality.
  3. Ketamine: Drug classification (general anesthetic, controlled substance), preparation, onset, duration, desired effect, sub-anesthetic dose range, indications, contraindications, medication interactions, side effects, and adverse reactions.
  4. Recognition of potential clinical complications and appropriate nursing interventions including unintended sedation.

5. Levels of sedation (minimal, moderate, deep, and anesthesia) with an emphasis on minimal sedation.
6. Nursing care responsibilities including but not limited to assessment, frequency of vital signs, monitoring and documentation.

B. Completion of education and competency is available on file with the employer.

### III. RATIONALE

Clinical studies have shown that low-dose continuous IV Ketamine may provide analgesia among opioid tolerant patients experiencing refractory post-operative pain, neuropathic pain, and chronic pain and that administration of low-dose IV Ketamine has resulted in improvement in mood and suicidal thinking. In addition, clinical evidence of the safety and side effect profile of low-dose Ketamine is similar to that of opioids. Institutions have incorporated the use of low-dose Ketamine into acute pain management practices to reduce the potential risk of chronic opioid use. A Registered Nurse may acquire the knowledge and skill required to safely administer Ketamine (an anesthetic agent) at sub-anesthetic doses.

### IV. DEFINITIONS

**Anesthetic agents** are medications which cause partial or complete loss of sensation with or without loss of consciousness.

**IV bolus** is a small volume of medication or large volume solution that is given rapidly intravenously (IV) to hasten or magnify the response.

**Licensed independent practitioner (LIP)** is a physician, dentist, nurse practitioner, nurse midwife, certified nurse anesthetics, or any individual's license.

**Minimal sedation** (anxiolysis) is a drug-induced state during which patients respond normally to verbal commands, may have impaired cognitive function or coordination but respiratory and cardiovascular functions remain stable.

**Moderate sedation** (procedural or conscious sedation) is defined as “a drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patient airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained. Centers for Medicare and Medicaid Services (CMS) consistent with American Society of Anesthesiologist (ASA) guidelines, does not define moderate or conscious sedation as anesthesia”(CMS, 2011).

**Deep sedation** is a drug-induced depression of consciousness during, which patient cannot be easily aroused but responds purposefully, following repeated or painful stimulation. While, cardiovascular function is usually maintained, the ability to independently maintain respiratory function may be impaired. Patients may require assistance in maintaining a patent airway, and spontaneous ventilation may be inadequate, therefore the patient must be intubated and mechanically ventilated.

\*Reflex withdrawal from painful stimulus is NOT considered a purposeful response

**General anesthesia** is a drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. General anesthesia affects the patient's ability to maintain an adequate airway and respiratory function, and may impair cardiovascular function.

**Rapid sequence intubation (RSI) or drug assisted intubation (DAI)** is an airway management technique in which a powerful sedative or anesthetic induction agent is administered virtually simultaneously with a paralytic agent.

## V. REFERENCES

Arizona State Board of Nursing. (2020) Advisory opinion: Sedation: Deep, moderate, and palliative.

Ahern, T.L., Herring, A.A., Miller, S., & Frazee, B.W. (2015). Low-dose Ketamine infusion for emergency department patients with severe pain. *Pain Medicine*, 16(7), 1402-1409.

Ventilated patients in surgical intensive care units. *Journal of Intensive Care Medicine*, 34(8), 646–651. <https://doi.org/10.1177/0885066617706907>

Caddy C., Giaroli G., White T. P., Shergill S. S., & Tracy D. K. (2014). Ketamine as the prototype glutamatergic antidepressant: Pharmacodynamic actions, and systematic review and meta-analysis of efficacy. *Therapeutic Advances in Psychopharmacology*, 4(2), 75- 99. <https://doi.org/10.1177/2045125313507733>

---

Certified Registered Nurse Anesthetist; Scope of Practice; Physician and Surgeon Immunity, Arizona Revised Statutes, § 32-1634.04. <https://www.azleg.gov/ars/32/01634-04.htm>

Jouguelet-Lacoste, J., LaColla, L., Shilling, D., & Chelly, J.E. (2015). The use of intravenous infusion or single dose of low-dose Ketamine for postoperative analgesia: A review of the current literature. *Pain Medicine*, 16(2), 383-403.

Merelman, A., Perlmutter, M., & Strayer, R. (2019). Alternatives to rapid sequence intubation: Contemporary airway management with Ketamine. *Western Journal of Emergency Medicine*, 20(3), 466–471. <https://doi.org/10.5811/westjem.2019.4.42753>

Miller, J.P., Schauer, S.G., Ganem, V.J., & Bebart, V.S. (2015). Low-dose Ketamine vs morphine for acute pain in the ED: A randomized controlled trial. *American Journal of Emergency Medicine*, 33(3), 402-408.

Mo, H., Campbell, M., Fertel, B., Lam, S., Wells, E., Casserly, E., & Meldon, S. (2020). Ketamine safety and use in the emergency department for pain and agitation/delirium: A health system experience. *Western Journal of Emergency Medicine*, 21(2), 272–281. <https://doi.org/10.5811/westjem.2019.10.43067>

O’Connell, N. E., Wand, B. M., McAuley J., Marston L., & Moseley G. L. (2013). Interventions for treating pain and disability in adults with complex regional pain syndrome- an overview of systematic reviews. *Cochrane Database of Systematic Reviews*. <http://www.ncbi.nlm.nih.gov/pubmed/23633371>

Schwenk, E.S., Viscusi, E.R., Buvanendran, A., Hurley, R. W., Wasan, A. D., Narouze, S., Bhatia, A., Davis, F. N., Hooten, W. M., & Cohen, S. P. (2018). 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. *Regional Anesthesia and Pain Medicine*, 43(5), 1-11.

## **VI. STATE BOARDS OF NURSING ADVISORY OPINIONS**

Arizona State Board of Nursing. (2020) Advisory opinion: Sedation: Deep, moderate, and palliative.

Alaska Board of Nursing. (2009). *Advisory opinion: Registered nurse administration of sedating and anesthetic agents.*

<https://www.commerce.alaska.gov/web/portals/5/pub/nur1809.pdf>

Minnesota Board of Nursing. (2016, October). *Statement of accountability by the registered nurse for administration of medications classified as anesthetics.*

<https://mn.gov/boards/nursing/practice/nursing-practice-topics/rn-admin-anesthetics.jsp>.

New York State Office of the Professions-Nursing. (2011, June). *IV drug administration of Ketamine for the treatment of intractable pain.*

<http://www.op.nysed.gov/prof/nurse/nurse-iv-ketamine.htm>

Washington State Department of Health Nursing Care Quality Assurance Commission. (2015, March 13). *Advisory opinion 7.1: Administration of sedating, analgesic, and anesthetic agents.*

<https://www.doh.wa.gov/Portals/1/Documents/6000/NCAO7.pdf>

Wyoming State Board of Nursing. (2019, July). *Advisory opinion: Ketamine.*

<https://drive.google.com/file/d/1Q-WU9HF5FZi-2sYobOh1r3UQ20aDnAKs/view>