



## GUIDELINE

### Ketamine Sedation

<b>Scope (Staff):</b>	All Emergency Department Clinicians
<b>Scope (Area):</b>	Emergency Department

This document should be read in conjunction with this DISCLAIMER  
<http://kidshealthwa.com/about/disclaimer/>

# Ketamine Sedation

## Pre-Procedure

- Only accredited Doctors can perform Ketamine sedation in our department
- Ketamine sedation can **not** proceed until confirmed with ED Consultant and Nurse Coordinator regarding staff availability and acuity of the Department
  - If confirmed, commence and work through the [Ketamine Clinical Pathway](#)- print to PRPMEMER08 (PMH only)
  - Complete the [Ketamine Sedation Checklist](#) prior to commencement of procedure
- Request an Observation Ward admission as early as possible

## General

- Ketamine causes a dissociative anaesthesia to provide anxiolysis, amnesia and analgesia in order to perform procedures
- Procedures with Ketamine should only be performed in the procedure (Major Treatment) or Resuscitation areas
- Procedures under Ketamine sedation require close monitoring (continuous SpO2 monitoring until alert)
- Requires two Doctors: airway/Ketamine Doctor and procedure Doctor

## Indications

Ketamine is suitable for procedures that may be painful but are **short** (procedure time less than 20 mins) and require co-operation/stillness of the patient.

### **Suitable patients:**

- Patients aged over 12 months
- Parent/carer consent
- Otherwise clinically well

### **Procedures that may be suitable are:**

- Suturing of lacerations
- Removal of foreign body (from ear/nose/soft tissues)
- Aspiration of knee joint
- Closed manipulation of fracture

### **Contraindications**

- Previous adverse reaction to Ketamine
- Altered conscious state
- Unstable patient: seizures, vomiting, hypotension
- Cardiovascular disease including heart failure, uncontrolled hypertension, congenital heart disease
- Procedures involving stimulation of posterior pharynx, known airway instability, tracheal abnormality
- Psychosis
- Thyroid disorder or medication
- Porphyria

### **Relative Contraindications:**

- Risk of raised intraocular or intracranial pressure
- Active pulmonary infection or disease (including acute asthma and upper respiratory tract infection)
- Full meal within **3 hours** (relative contraindication only, balance risk against urgency of procedure)
- Consider effects of **recent sedating drugs and analgesics** (morphine/fentanyl)

## **Preparation**

### **Staff**

Consider when timing the procedure that specialist staff may be needed (Surgical or Orthopaedic Registrar).

**Staff Required:**

- **Doctor 1** (Consultant or Senior Registrar) to order, check and administer **sedation**, monitor and manage patient during sedation, and **complete the procedural sedation chart**.
- **Doctor 2** (ED or subspecialty Doctor) to obtain **consent** and perform **procedure**.
- **Nurse** (RN) to administer (IM only) and document medications, monitor patient throughout procedure and recovery.

**Equipment**

- All necessary equipment must be available (including equipment for the procedure itself and airway equipment) – consider this when a Surgical or subspecialty Registrar is to do the procedure.
- Airway equipment: ensure suction, oxygen, bag and mask ventilation and full airway resuscitation trolley are available and all equipment is working.

**Monitoring**

Baseline: HR, BP, RR, O<sub>2</sub> saturations, conscious state and ECG rhythm

A **procedural sedation chart** is required (located on the trolley in Major Treatment room), Doctor 1 is responsible for filling this out:

**Procedure****Medications**

- Ketamine can be given via the IM route in children with difficult IV access and where an IV is not necessary for other needs (e.g. fluids, antibiotics)
- IV access is not necessary to increase patient safety
- IV Ketamine has a more predictable pharmacokinetic profile

**IntraMuscular (IM) Ketamine:**

- Initial dose: Ketamine **4mg/kg**
  - Optional: add Atropine 0.01 mg/kg in same syringe (minimum 0.1mg, max 0.5mg)
  - This is given neat, and not diluted
- Top-up sedation – if adequate sedation not achieved by 15 min after initial dose, give a

further 2mg/kg of IM Ketamine (no Atropine)

- Onset and duration: approximately 5 mins until peak effect, dissociative state lasts for 15-30 mins, and return of coherence and purposeful movement around 30-120 mins.

### **IntraVenous (IV) Ketamine:**

- Initial dose: Ketamine **1 to 1.5mg/kg** over 60 seconds
  - Optional: can also give Atropine 0.01 mg/kg (minimum 0.1mg, max 0.5mg) in same syringe
- Use Ketamine 200mg/2mL vial. Add 100mg of Ketamine (1mL) to 9mL of 0.9% saline. This equals 10mg/mL Ketamine solution.
- Top-up sedation: further IV Ketamine 0.5mg/kg doses to achieve adequate sedation or prolonged effect.
- Onset and duration: peak effect around 1-2 mins, dissociative state for around 10-15 mins and return of coherence and purposeful movement around 30mins.

### **Complications**

Doctor 1 (sedation): Assess for and document any **adverse events**:

- Airway obstruction
- Nystagmus
- Muscle rigidity
- Random movements (can resemble seizure like activity)
- Vomiting (during or after procedure)
- Emergence phenomena
- Apnoea
- Failed procedure (need for a General Anaesthesia)

### **Aftercare**

Ensure no restriction of chest movement or airway with any restraining devices.

### **Observations:**

- Initially: **2 minutes post administration** of Ketamine
- Then **every 5 minutes** until rousable – beware of possible decreased conscious state with cessation of noxious stimuli
- At the end of the procedure place the patient in the recovery position and move them to the Front ED bed or ED Observation Ward if clinically appropriate. Discuss with ED Nurse Coordinator.
- Once rousable, routine post operative observations, as per local policy. For PMH see Paediatric Nursing Practice Manual 8.3.1 [Postoperative / Procedural Care](#) (WA Health link only).

**Note:** also include other observations as appropriate e.g. neurovascular observations for limb injury.

## Discharge Criteria

- Normal vital signs, alert, no nystagmus
- Purposeful movement, can sit without support, can walk if age appropriate, with assistance if necessary (complete resolution of ataxia is not necessary).
- Verbalises appropriately for age
- Tolerates oral fluids (no ongoing vomiting)
- Accompanied by appropriate carer

## On Discharge

- Provide parent with [Ketamine Sedation Health Fact Sheet](#)
- Ensure appropriate follow-up arranged e.g. fracture clinic, letter to General Practitioner, Discharge Summary.

## More

### Evidence points

- **IM** vs **IV** administration: the actual overall length of stay in the ED is similar (despite shorter duration of sedation for the **IV** route)
- Atropine is optional: hypersalivation is rare, atropine can be associated with a transient rash
- No need for a darkened, quiet room

### Internal hospital links

Paediatric Nursing Practice Manual – CAHS (Child and Adolescent Health Service):

8.3.1 [Postoperative / Procedural Care](#)


8.3.3 [Postoperative Care of the Patient Following the Administration of a Ketamine Anaesthetic](#)

## References

- Ramaswamy P, Babl FE, Deasy C, Sharwood LN. Pediatric procedural sedation with ketamine: time to discharge after intramuscular versus intravenous administration. Acad Emerg Med. 2009 Feb;16(2):101-7. PubMed PMID: [19076105](#).
- Brown L, Christian-Kopp S, Sherwin TS, Khan A, Barcega B, Denmark TK, Moynihan JA, Kim GJ, Stewart G, Green SM. Adjunctive atropine is unnecessary during ketamine sedation in children. Acad Emerg Med. 2008 Apr;15(4):314-8. PubMed PMID: [18370983](#).
- Heinz P, Geelhoed GC, Wee C, Pascoe EM. Is atropine needed with ketamine sedation? A prospective, randomised, double blind study. Emerg Med J. 2006 Mar;23(3):206-9. PubMed PMID: [16498158](#); PubMed Central PMCID: PMC2464444.
- Priestley SJ, Taylor J, McAdam CM et al. Ketamine sedation for children in the emergency department. Paediatric Emergency Medicine. 2001; 13: 82-90.
- American College of Emergency Physicians. Clinical policy for Procedural Sedation and Analgesia in the Emergency Department. Annals of Emergency Medicine. 1998;31: 663-77.
- Pediatric Committee of the American College of Emergency Physicians. Pediatric analgesia and Sedation. Annals of Emergency Medicine. 1994;23: 237-50.
- American Academy of Paediatrics, Committee on drugs. Guidelines for Monitoring and management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures. Pediatrics;1992;89: 1110-5.
- Green SM, Johnson NE. Ketamine sedation for Paediatric Procedures: Part 2, Review and Implications. Annals of Emergency Medicine. 1990; 19: 1033-46.
- Australian College of Emergency Medicine. Use of intravenous sedation for procedures in the emergency department. Emergency Medicine. 1998; 10: 63-4.
- Clinical Practice Manual, Princess Margaret Hospital for Children: Operating Theatres, Recovery Room: Post Anaesthetic Documentation 12/2000 Operating Theatres, Recovery Room: Criteria for Discharge. 12/2000
  - Section 10.4.4 Post Anaesthetic / Sedation Discharge Criteria 4/2001
  - Section 1.7b 14 Perioperative Care 8/1999
- PMH Paediatric Nursing Practice Manual Section 8: Care of the Child with a Surgical Condition: 8.3 Post Operative Care
  - 8.31 Postoperative/Procedural Care 4/2011
  - 8.33 Postoperative Care of the Patient following the Administration of A Ketamine Anaesthetic 8/2010
  - 8.3.5 Post Anaesthetic / Sedation Discharge

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