**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](http://kidshealthwa.com/about/disclaimer/)- print to PRPMEMER08 (PMH only)
  - Complete the [Ketamine Sedation Checklist](http://kidshealthwa.com/about/disclaimer/) 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, O₂ 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

• American Academy of Paediatrics, Committee on drugs. Guidelines for Monitoring and management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures. Pedaitrics;1992;89: 1110-5.
  • 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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