

# KETAMINE: USE IN THE ED - SCH

## DRUG PROTOCOL<sup>®</sup>

### DOCUMENT SUMMARY/KEY POINTS

- Ketamine is a potent sedative, amnestic, analgesic and anaesthetic agent. It has relatively little effect on the respiratory centre at the doses used, but does cause increased airway secretions.
- The airway is to be managed by a doctor approved by the Emergency Department for this purpose.
- Ketamine administration is a controlled drug

### CHANGE SUMMARY

- Director of SCH ED confirmed the document is safe: Re-released without review.
- Replaces SCH document C.16.K.1 *Ketamine Use in the ED*

### READ ACKNOWLEDGEMENT

- Relevant clinical staff working in SCH ED who prescribe or administer ketamine are to read and acknowledge they understand the contents of this document.

**Note:** Separate Practice Guidelines may be required to cover all aspects of management.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

<b>Approved by:</b>	Director of Clinical Governance	
<b>Date Effective:</b>	1 <sup>st</sup> November 2015	<b>Review Period:</b> 1 year
<b>Team Leader:</b>	Medical Director	<b>Area/Dept:</b> Emergency Department SCH

## Introduction / Background

Ketamine is a potent sedative, amnestic, analgesic and anaesthetic agent. It has relatively little effect on the respiratory centre at the doses used, but does cause increased airway secretions.

## Characteristics of Ketamine Anaesthesia

- Dissociation - the patient passes into a trance like state with the eyes open but not responding, and may continue to vocalise.
- Catalepsy - normal or slightly increased muscle tone is maintained.
- Analgesia - excellent analgesia is typical
- Amnesia is usually total
- Airway reflexes are maintained.
- Cardiovascular state - Blood pressure and heart rate tend to increase.
- Nystagmus is typical and indicative of anaesthetized state

## Patient Selection

### *Indications:*

- **Children aged over 12 months** - there is an increased risk of airway complications in children less than 12 months and particularly less than 3 months.
- **Short painful procedures** especially those requiring immobilisation. Examples of these include: lacerations - especially of the face, and fracture reduction.
- **Adequate Fasting**. 2 hours – water, 4 hours – clear fluids, 6 hours – solids, cows milk or formula milk.

## Contraindications

- Children under 12 months
- Chest infection or chronic lung disease.
- History of previous airway surgery or congenital anomaly.
- Procedures that will stimulate the posterior pharynx.
- Cardiovascular disease including hypertension.
- Head injury with LOC, altered conscious state or vomiting.
- Known or suspected raised intracranial pressure
- Poorly controlled seizure disorder.
- Glaucoma or acute globe injury.
- Psychosis, Porphyrinuria.
- Thyroid disease.

## Potential Side Effects

- Unpleasant emergence phenomena - more common beyond mid adolescence; may require benzodiazepine if marked.
- Recovery agitation.
- Hypersalivation and increased airway secretions.

- Transient laryngospasm.
- Transient apnoea or respiratory depression if combined with other sedatives, or given too quickly.
- Emesis.
- Random purposeless movements, muscle twitching and rash may occur.

## Precautions

The airway is to be managed by a doctor approved by the Emergency Department for this purpose.

## Storage and Handling

Ketamine is a Schedule 8 drug and must be stored in the Dangerous Drugs safe, recorded in the DD book and checked by two staff members. (See: [Medication: Administration & Handling - SCH Sub-Section 14.16](#) )

## Dose

### *Intramuscular (IM)*

3-5 mg/kg Ketamine is administered intramuscularly.

### *Intravenous (IV):*

**Initial Ketamine dose** of 1 mg/kg is given slowly over 2 minutes.

**Subsequent doses** of 0.5mg/kg may be given if longer sedation is necessary to a maximum of 5 mg/kg.

## Administration

### *Intramuscular (IM):*

- Ketamine can be safely and easily used without intravenous access. This is the preferred route for most short procedures, as IV access is not necessary.
- 3-5 mg/kg Ketamine is administered intramuscularly.
- Onset of action is generally 5 minutes, with duration of effective sedation being 15-30 minutes.
- A repeat dose of 3 mg/kg is usually unnecessary but may be given after 10 minutes if not fully sedated.

### *Intravenous (IV):*

- Especially useful for procedures longer than 15-20 minutes, as repeated dosing may be required
- Initial Ketamine dose of 1 mg/kg is given slowly over 2 minutes, as more rapid administration may be associated with respiratory depression.
- Onset of action is generally 1 minute, with duration of effective sedation being 10-20 minutes.
- Further doses of 0.5mg/kg may be given if longer sedation is necessary to a maximum of 5 mg/kg.

## Adjunctive agents

- Local anaesthetic agents are still recommended.
- Midazolam 0.05 mg/kg may be used as needed (to a maximum of 0.1 mg/kg) to ameliorate emergence phenomena in children over 5 years old (note that addition of a benzodiazepine is generally not necessary, make airway protection less predictable and will prolong sedation period).
- Atropine 0.01mg/kg has been used to diminish hypersalivation in the past but is not generally recommended.

## Procedure

- Always discuss with ED Consultant/Fellow before starting the procedure

### **Staff required**

- Approved airway doctor with substantial experience in paediatric airway management.
- Nurse
- Doctor for the procedure.
- Resuscitation equipment must be readily available
- Procedures with Ketamine must be performed in the resuscitation room that provides access to all resuscitation equipment.

### **Safety and Patient Monitoring**

#### **All patients require the following:**

- Hudson mask providing maximal oxygen flow
- Yankauer suction connected and functioning
- Self-inflating bag connected to oxygen source and appropriately sized mask
- Full cardiorespiratory monitoring (ECG, BP, respiratory rate and oximetry).
- Observations should be noted and recorded by nursing staff every 15 minutes while patient is sedated, then every 30 minutes during recovery period.
- Close observation of the airway and chest movements is necessary.

#### **Pre-Sedation**

- The procedure should be explained to the caregivers and child including an explanation of the effects of Ketamine.
- Written informed consent must be obtained. The parent information sheet will assist this process.
- Baseline observations should include BP, PR, RR and O2 saturation.
- Encourage the child and parents to talk (dream) about happy topics. This helps minimise unpleasant emergence phenomena.
- Consider play therapist involvement prior to sedation.

### **Post Procedure**

- Each patient should have pulse oximetry, heart rate and BP monitoring, and a nurse in attendance until recovery is well established. Observations should be documented every 30 minutes during the recovery period.
- Close observation of the airway and chest movements is necessary
- Nil orally until fully alert
- Nurse in a quiet area with minimal noise and physical contact, allow dim lighting if possible, and do not stimulate prematurely.
- When patient is able to walk and talk at a level consistent with their pre-treatment functioning then they may be discharged home. A minimum of 2 hours is recommended.

### **Discharge Instructions**

- Careful adult supervision for at least two hours following discharge.

### **Related Documents**

1. **Medication: Administration & Handling - SCH Sub-Section 14.16**  
<http://chw.schn.health.nsw.gov.au/o/documents/policies/guidelines/2015-7011.pdf>
2. **Parenteral Ketamine – SCH**  
<http://chw.schn.health.nsw.gov.au/o/documents/policies/guidelines/2013-7002.pdf>
3. **Procedural Sedation (Paediatric Ward, Clinic and Imaging Areas)**  
<http://chw.schn.health.nsw.gov.au/o/documents/policies/guidelines/2011-9017.pdf>

### **Copyright notice and disclaimer:**

The use of this document outside Sydney Children's Hospitals Network (SCHN), or its reproduction in whole or in part, is subject to acknowledgement that it is the property of SCHN. SCHN has done everything practicable to make this document accurate, up-to-date and in accordance with accepted legislation and standards at the date of publication. SCHN is not responsible for consequences arising from the use of this document outside SCHN. A current version of this document is only available electronically from the Hospitals. If this document is printed, it is only valid to the date of printing.