Paediatric Directorate Guideline
Ketamine sedation in children

1.0 Introduction
Ketamine is a powerful anaesthetic agent with anxiolytic and amnesic properties with a proven wide margin of safety. The doses advised in this guideline are for analgesic sedation only and are designed to leave the patient capable of protecting their own airway. It is possible, after administering the doses recommended in this guideline, that a failure of sedation may occur. In these circumstances, the child should be referred to an appropriate in-patient team for a general anaesthetic.

2.0 Scope
This guideline applies to all medical staff in the paediatric emergency department who will be administering intramuscular ketamine. At this time, ketamine administration will be limited to Consultants and Specialist Registrars in Emergency Medicine/ Paediatrics who are APLS providers and are experienced in paediatric sedation. As not many procedures need to be done the same day, a dedicated list at 9 am Monday to Friday will be available and should be utilised at all times. This will guarantee the availability of a Consultant, middle grade and nursing staff when children can be starved in preparation.

3.0 Indications for use
Ketamine is to be used in those children (12 months of age or older) that need a mild protective sedation to tolerate a painful or frightening procedure in the course of their emergency care. It should not be used in those cases where a child will tolerate a procedure after receiving reassurance or analgesia. Ketamine is suitable for the following procedures:
· Injuries requiring wound toilet and suturing.
· Minor surgery, e.g. uncomplicated nail bed repairs, incision and drainage of small abscess, removal of foreign bodies.
· Uncomplicated fractures in need of minor realignment.
4.0 Contraindications

- Meal within 3 hours, clear fluids within 2 hours.
- URTI, LRTI.
- Cognitive/behavioural/motor disorder.
- Head injury (not facial injury).
- Depressed level of consciousness.
- Known cardiac / respiratory disorder.
- Renal / liver failure.
- Hyperthyroidism / taking thyroxine.
- Porphyria.
- Allergy to Ketamine/sedatives.

5.0 Procedure for administration

Please follow all steps of administration as per the algorithm (page 4) and do not exceed stated doses.

Operator and assistant must be present throughout the procedure. A full paediatric resuscitation trolley must be present at all times with the patient.

5.1 Induction

- Weigh the child and obtain written consent from parent and carer.
- Take baseline pulse, SaO2, respiratory rate.
- The strength of Ketamine solution used should be 100mg/1ml.
- Use an initial dose of 2mg/kg.

  - A cannula should be sited and a dose of 1-2mg/kg given over at least 60 seconds, adjusted according to response. Ketamine can take around five minutes to become noticeably effective.

  - Suxamethonium 1mg/kg must be available for immediate use in the rare event of laryngospasm.

5.2 Management

- Patient is normally sedated within 5 minutes and typically will have glazed eyes and nystagmus.
This state lasts for approximately 30 minutes (see pharmacology section).

Apply local anaesthesia to the area being treated to aid procedural and post-procedural analgesia.

Patient should be monitored at all times with recordings of pulse, respiratory rate and SaO2 throughout the procedure.

5.3 Recovery

30 minutes after the induction the child should be taken to a dedicated quiet monitoring area.

The child must be continuously monitored during the recovery phase by staff trained in conscious sedation.

Recovery should be complete after 90 minutes following administration.

Child may be discharged when able to weight bear and walk unaided.

- The cannula should be removed just prior to discharge.

- If the child has not fully recovered by the time they have been in the emergency department for four hours they should be transferred to a ward to recover fully before discharge.

6.0 Action and pharmacokinetics

Ketamine is a phencyclidine derivative that produces a dissociative state characterized by a cataleptic condition in which the eyes remain open with a slow nystagmic gaze. The patient is non-communicative with varying degrees of hypertonus and purposeful movement that often occur independent of surgical stimulation. The patient is amnesic, and analgesia is intense.

The intramuscular dose of Ketamine is 2-4 mg/kg. Full sedative action should occur within
10 minutes (normally 5 minutes) and allow procedures not longer than 30 minutes. Full recovery time is about 90 minutes (range 30-270 minutes). The analgesic effect can last up to 4 hours.

7.0 Audit. An audit of ALL patients receiving ketamine will be carried out every 6 months

9.0 References
British National Formulary 58 (September 2009) BMA & RPSGB: London or www.bnf.org


SIGN guideline 58: safe sedation of children undergoing diagnostic and therapeutic procedures.

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