Ketamine Injection
Dissociative anaesthetic used singly for pain control or in combination with tranquilisers and muscle relaxants for anaesthesia

Active Constituent
Ketamine (as Hydrochloride) 100 mg/mL

Pack Size
50mL Multi Dose Vial

Ketamine should always be used following sedation with an α2-agonist. Do not use alone for anaesthesia as may cause hyperexcitability and involuntary muscle reactions.

Indications
Ketamine produces a dose-dependent, rapid, dissociative cataleptic anaesthesia characterised by analgesia, normal pharyngeal-laryngeal reflexes, mild cardiac stimulation, respiratory depression and increased sympathetic tone. Protective reflexes are maintained (such as coughing, swallowing and corneal) and the eyes normally remain open with a dilated pupil. Nystagmus is common.

Ketamine-based anaesthesia is the most common anaesthetic technique for short procedures in the field. The duration of anaesthesia is generally less than 30 min.

Ketamine-based anaesthesia can be used as an induction agent prior to intubation and inhalation anaesthesia. Intravenous anaesthesia may also be maintained following α2-agonist + ketamine induction with “Triple Drip” Continuous Rate Infusion (CRI).

Recovery from ketamine-based anaesthesia is considered to be good and superior to thiobarbiturate or inhalation anaesthesia. Ketamine also inhibits NMDA-receptors so may be adjunctively useful to control pain.

Horses should not be fed until they have fully recovered from general anaesthesia due to the risk of oesophageal choke.
Pharmacology

Ketamine will increase heart rate and blood pressure due to increased sympathetic tone. This results in an increase in cardiac output compared with other anaesthetic agents. It has a wide therapeutic index (eg 5x pentobarbital).

Ketamine-based anaesthesia should not be used as the sole anaesthetic mode for major surgery unless supplemented by gaseous or barbiturate anaesthetics or muscle relaxant agents.

Ketamine has been shown to cross the placenta, and depression of neonates may occur if ketamine is used for induction of anaesthesia for caesarean section.

Precautions & Contraindications

Ketamine may cause pain at the injection site if administered intramuscularly.

This product is contraindicated for use in horses with prior hypersensitivity to ketamine, renal or hepatic insufficiency, history of epilepsy, cardiovascular insufficiency, myocardial damage or serious cardiac arrhythmia or horses with glaucoma, hypovolaemic animals, patients prone to seizures or with cerebral trauma or intracranial lesions.

Dosage And Administration

**Horse Hack:** Inadequate sedation in the horse prior to administration of ketamine may result in failure to induce general anaesthesia.

Sedatives other than xylazine may be used prior to ketamine anaesthesia, eg detomidine (0.02 mg/kg) or romifidine (0.1 mg/kg).

**Induction of anaesthesia:** Premedicate with an α2-agonist (eg xylazine 1.1 mg/kg IV or 2.0 mg/kg IM) given 5-10 minutes before induction of anaesthesia with ketamine. Horse must be adequately sedated before administering the ketamine (2.2 mg/kg IV).

Total anaesthetic time is short but can be prolonged by administering one-third to one-half of the induction dose or by instigating “Triple Drip” CRI.

Butorphanol (0.02-0.04 mg/kg IV) may be given with the original xylazine in highly strung horses (such as young horses, Thoroughbreds and Arabs).

Diazepam (0.03 – 0.1 mg/kg IV) may also be administered along with xylazine prior to ketamine to improve induction, improve muscle relaxation during anaesthesia and prolong anaesthesia by about 5-10 minutes.

**Field anaesthesia/“Triple Drip”:** Add 500mg xylazine and 2000mg ketamine to 1L of 5% guaifenesin in dextrose or 0.9% saline.

**Induction:** 1.1 mL/kg IV rapidly.

**Maintenance:** 2.0 -4.5 mL/kg/hr to effect. “Triple drip” should not be used for anaesthetics greater than 1 hour in duration unless oxygen supplementation and respiratory support is provided.

**For Foals & Ponies:** Add 250mg xylazine and 500mg ketamine to 500mL 5% guaifenesin solution.

For induction give 1.1 mL/kg IV rapidly. For maintenance 2-3mL/kg/hr to effect.

**CRI for analgesia:** Loading dose of 0.6 mg/kg IV followed by CRI of 0.4-0.8 mg/kg/hr. Can be increased to 1.2mg/kg/hr if required. To prepare CRI solution, add 30mL ketamine to 1L bag of saline (= 3mg/mL) and administer IV over 8 hours at a rate of 125 mL per hour for a 500kg horse.

**Foals treatment of seizures:** 0.02 mg/kg/min CRI.