**Prescription sheet for ketamine use in critical care areas, theatres and the emergency departments.**

**Indications for use on ICU:**

* Induction of anaesthesia as part of a RSI (Rapid Sequence Induction)
* Maintenance of sedation via IV infusion
* IV infusion in the treatment of acute severe asthma (unlicensed indication)
* Treatment of acute pain – as a bolus or given as an IV infusion (unlicensed indication)

**Absolute contraindications:**

* Acute Porphyria
* Allergy

**Relative contraindications:**

* Known ischaemic heart disease
* Uncontrolled hypertension
* Raised intraocular pressure
* Psychosis
* Raised intracranial pressure and cerebral tumour (primary or secondary)
* Previous history of ketamine abuse

**Side effects:**

* Nausea – treat with anti emetics, consider dexamethasone if failure to respond to two agents
* Hallucinations - Create a calm, dark space for emergence to reduce incidence and severity of hallucinations. If problematic consider covering with a benzodiazepine during emergence.
* Excessive salivation - If troublesome the rate of infusion should be halved and, if it remains troublesome, the infusion should be stopped
* Hypertension - Increase in blood pressure to 125% of the patient’s baseline is an expected side effect of ketamine. If the blood pressure increases above 130% of the patient’s baseline then halve the infusion rate and reassess.

**Monitoring:**

All patients receiving ketamine should have their heart rate, respiratory rate, blood pressure and oxygen saturations continuously monitored. A sedation score should be recorded if it is being used as an infusion for sedation.

**Treatment acute pain (unlicensed)**

**Recommended bolus for acute pain:**

* 300 micrograms/kg

**Infusion for acute pain:**

**For patients <70kg**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Drug:**Ketamine (4mg/ml)** | Route:**IV** | Date: |  |  |  |  |  |  |
| Dilution:**200mg diluted to 50mL with NaCl 0.9%** | Start date: | Time: |  |  |  |  |  |  |
| Rate:**1 – 3 ml/hr** | Stop date: | Sign: |  |  |  |  |  |  |
| Signature: | Pharm | Stop sign: | Witness: |  |  |  |  |  |  |

**For patients >70kg**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Drug:**Ketamine (4mg/ml)** | Route:**IV** | Date: |  |  |  |  |  |  |
| Dilution:**200mg diluted to 50mLwith NaCl 0.9%** | Start date: | Time: |  |  |  |  |  |  |
| Rate:**2 – 5 ml/ hr** | Stop date: | Sign: |  |  |  |  |  |  |
| Signature: | Pharm | Stop sign: | Witness: |  |  |  |  |  |  |

**Induction of anaesthesia and maintenanace of sedation**

**Recommended dose for induction of anaesthesia:**

* 1-2mg/kg

**Infusion for the maintenance of sedation:**

Dose: 10-50mcg/kg/min = 0.6 – 3mg/kg/hour

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Drug:**Ketamine (10mg/ml)** | Route:**CVC** | Date: |  |  |  |  |  |  |
| Dilution:**Undiluted** | Start date: | Time: |  |  |  |  |  |  |
| Rate: **ml/ hr** | Stop date: | Sign: |  |  |  |  |  |  |
| Signature: | Pharm | Stop sign: | Witness: |  |  |  |  |  |  |
| **Maximum and mimimum ketamine dose according to body weight** | Body weight (kg) | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
| Min infusion rate

|  |
| --- |
|  (mL/hr)  |

 | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.2 | 4.5 | 4.8 | 5.1 | 5.4 | 5.7 | 6.0 |
| Max infusion rate

|  |
| --- |
|  (mL/hr)  |

 | 13.5 | 15.0 | 16.5 | 18.0 | 19.5 | 21 | 22.5 | 24.0 | 25.5 | 27.0 | 28.5 | 30.0 |

**Treatment of acute severe asthma**

**Bolus dose (optional)**

* Dose: 0.5 – 1mg/kg over 2-4 minutes

**Infusion for the treatment of acute severe asthma:**

Dose: 0.5-2.5mg/kg/hr

Starting dose for infusion: 0.5mg/kg/hr

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Drug:**Ketamine (10mg/ml)** | Route:**CVC** | Date: |  |  |  |  |  |  |
| Dilution:**See below** | Start date: | Time: |  |  |  |  |  |  |
| Rate: **ml/ hr** | Stop date: | Sign: |  |  |  |  |  |  |
| Signature: | Pharm | Stop sign: | Witness: |  |  |  |  |  |  |
| **Maximum and minimum ketamine dose according to body weight** | Body weight (kg) | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
| Min infusion rate

|  |
| --- |
|  (mL/hr)  |

 | 2.2 | 2.5 | 2.7 | 3.0 | 3.2 | 3.5 | 3.7 | 4.0 | 4.2 | 45 | 47 | 5.0 |
| Max infusion rate

|  |
| --- |
|  (mL/hr)  |

 | 11.2 | 12.5 | 13.7 | 15.0 | 16.2 | 17.5 | 18.7 | 20.0 | 21.2 | 22.5 | 23.7 | 25.0 |

**Treatment of Acute Severe Asthma- For Fluid restricted**

**Bolus dose (optional)**

* Dose: 0.5 – 1mg/kg over 2-4 minutes

**Infusion for the treatment of acute severe asthma:**

* Dose: 0.5 - 2.5 mg/kg/hr
* Starting dose: 0.5mg/kg/hr

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Drug:**Ketamine (50mg/ml)** | Route:**CVC** | Date: |  |  |  |  |  |  |
| Dilution:**See below** | Start date: | Time: |  |  |  |  |  |  |
| Rate: **ml/ hr** | Stop date: | Sign: |  |  |  |  |  |  |
| Signature: | Pharm | Stop sign: | Witness: |  |  |  |  |  |  |
| **Maximum and minimum ketamine dose according to body weight** | Body weight (kg) | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
| Min infusion rate

|  |
| --- |
|  (mL/hr)  |

 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 |
| Max infusion rate

|  |
| --- |
|  (mL/hr)  |

 | 2.2 | 2.5 | 2.7 | 3.0 | 3.2 | 3.5 | 3.7 | 4.0 | 4.2 | 4.5 | 4.7 | 5.0 |

**Dilution: Both 10mg/ml and 50mg/ml may be available. However if only a more concentrated solution is available the desired concentration can be made by diluting with Sodium chloride 0.9% or glucose 5%.**