

Appendix 1: Analgesic Doses in Dogs and Cats

Drug	Dose (Dog)	Dose (Cat)
Morphine	0.1-0.5 mg/kg IV q 1-2 hrs 0.1-0.5 mg/kg/hr IV CRI	0.1-0.25 mg/kg IV q 1-2 hrs 0.05-0.25 mg/kg/hr IV CRI
Fentanyl	1-2 µg/kg IV bolus 1-10 µg/kg/hr IV CRI	1-2 µg/kg IV bolus 1-4 µg/kg/hr IV CRI
Butorphanol	0.1-0.2 mg/kg IV q 1 hr 0.04-0.1 mg/kg/hr IV CRI	Same
Buprenorphine	0.01-0.02 mg/kg IV q 4-8 hrs	0.005-0.01 mg/kg IV q 4-8 hrs
Ketamine	0.25-0.5 mg/kg IV bolus 2-10 µg/kg/min IV CRI	Same
Xylazine	0.1-0.2 mg/kg IV q 1-2 hrs	Same
Lignocaine	0.25-2 mg/kg IV bolus 15-30 µg/kg/min IV CRI	NIL
Bupivacaine	1.5-2 mg/kg Intrapleural q 3-6 hrs	Same
Diazepam	0.1-0.5 mg/kg IV q 1-2 hrs	Same
Midazolam	0.1-0.5 mg/kg IV q 1-2 hrs 0.1-0.3 mg/kg/hr IV CRI	Same
Propofol	0.5-4 mg/kg slow IV to induce unconsciousness, then 0.05-0.4 mg/kg/min IV CRI	Same
Acepromazine	0.01-0.02 mg/kg IV q 2-4 hrs	Same
Ketoprofen	1-2 mg/kg IV, SC, IM q 24 hrs	Same

Constant Rate Infusion Formulas for the ICU Patient

NB: All constant rate infusions require an intravenous fluid pump.

Butorphanol Constant Rate Infusion

- CRI dose of butorphanol is 0.04-0.1 mg/kg/hr.
- Add 20 mg of butorphanol to 500 ml bag of intravenous fluids.
- CRI fluid rate = 1-5 ml/kg/hr.
- Incompatibilities include pentobarbital sodium – will cause a haze or precipitate to form in administered fluids.

Metoclopramide Constant Rate Infusion

- CRI dose of metoclopramide is 0.02 mg/kg/hr.
- Add 10 mg metoclopramide to 500 ml bag of intravenous fluids.
- CRI fluid rate = 1 ml/kg/hr.
- Incompatibilities – all may have a physical reaction:
 - Cisplatin
 - Calcium gluconate
 - Cephalothin
 - Chloramphenicol
 - Furosemide
 - Penicillin G
 - Sodium bicarbonate

Morphine Constant Rate Infusion

- CRI dose of morphine is 0.1-0.5 mg/kg/hr.
- Add 60 mg morphine to 500 ml bag of intravenous fluids.
- CRI fluid rate = 1-5 ml/kg/hr.
- Incompatibilities – all have physical reaction – haze or precipitate formation:
 - Aminophylline
 - Heparin sodium
 - Phenobarbital
 - Sodium bicarbonate
 - Thiopental
 - Meperidine

Fentanyl Constant Rate Infusion

- CRI dose is 1-10 mg/kg/hr.
- Fentanyl is supplied in 500 mg vials in 10 ml.
- Add 1000 mg (2 vials) to a 250 ml bag of 0.9% saline (concentration 4 mg/ml).
- Rate of administration = 1-10 ml/kg/hr; use with midazolam sedation if required.

Lignocaine Constant Rate Infusion

- CRI dose rates are between 15-30 ug/kg/min.
- CRI solutions are prepared:
 - 1000 ug/ml – Add 50 ml lignocaine 2% to 1000 ml 5% dextrose

NB: A volume of fluid equal to the volume of lignocaine being placed in the fluid bag must be removed from the fluid bag prior to adding lignocaine.

- CRI fluid rates – 0.7-1.6 mg/kg/hr.

NB: For management of ventricular tachycardia, the fluid rate is 1.5-5 ml/kg/hr.

Midazolam Constant Rate Infusion

- Dose: 0.1-0.3 mg/kg/hr.
- Solution concentration: 0.1 mg/ml.
- Solution preparation: Add 25 mg midazolam to 250 ml 5% dextrose or 0.9% NaCl.

Dose rate:

- For 0.1 mg/kg/hr, dose rate is 1 ml/kg/hr.
- For 0.2 mg/kg/hr, dose rate is 2 ml/kg/hr.
- For 0.3 mg/kg/hr, dose rate is 3 ml/kg/hr.

Ketamine Constant Rate Infusion

- Dose: 2-10 µg/kg/min; 0.12-0.6 mg/kg/hr.
- Solution concentration: 0.25 mg/ml.
- Solution preparation: add 125 mg ketamine to 250 ml 5% dextrose or 0.9% NaCl.

Dose rate:

- For 0.12 mg/kg/hr, dose rate is 0.5 ml/kg/hr.
- For 0.25 mg/kg/hr, dose rate is 1 ml/kg/hr.
- For 0.5 mg/kg/hr, dose rate is 2 ml/kg/hr.

Dopamine Constant Rate Infusion

- CRI dose for dopamine are:
 - 2 µg/kg/min = 120 µg/kg/hr.
 - 4 µg/kg/min = 240 µg/kg/hr.
 - 8 µg/kg/min = 480 µg/kg/hr.
- CRI solutions are prepared as either:
 - 60 µg/ml – Add 60 mg dopamine to 1000 ml 5% dextrose.
 - 120 µg/ml – Add 120 mg dopamine to 1000 ml 5% dextrose.
 - 240 µg/ml – Add 240 mg dopamine to 1000 ml 5% dextrose.

NB: Continuous ECG monitoring is essential when administering a dopamine CRI.

- CRI fluid rates:
 - 2 µg/kg/min – use 120 µg/ml solution prepared as above, and administer at the following dose

DOSE: 1 ml/kg/hr

- 4 ug/kg/min – use 240 ug/ml solution prepared as above, and administer at the following rate
DOSE: 1 ml/kg/hr
- 8 ug/kg/min – use 240 ug/ml solution prepared as above, and administer at the following rate
DOSE: 2 ml/kg/hr

Dobutamine Constant Rate Infusion

- CRI dose for dobutamine is:
 - 2 ug/kg/min = 120 ug/kg/hr.
 - 4 ug/kg/min = 240 ug/kg/hr.
 - 8 ug/kg/min = 480 ug/kg/hr.
- CRI solutions are prepared as either:
 - 120 ug/ml – Add 120 mg dobutamine to 1000 ml 5% dextrose.
 - 240 ug/ml – Add 240 mg dobutamine to 1000 ml 5% dextrose.

NB: Continuous ECG monitoring is essential when administering a dobutamine CRI.

- CRI fluid rates:
 - 2 ug/kg/min – use 120 ug/ml solution prepared as above, and administer at the following rate
DOSE: 1 ml/kg/hr
 - 4 ug kg/min – use 240 ug/ml solution prepared as above, and administer at the following rate
DOSE: 1 ml/kg/hr
 - 8 ug/kg/min – use 240 ug/ml solution prepared as above, and administer at the following rate
DOSE: 2 ml/kg/hr

References

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