

## Calculating CRI

### Step 1

**CONSTANT RATE INFUSIONS (CRI)  
– WHY?**

1. A more stable plane of analgesia with less incidence of break-through pain (which can be difficult to treat);
2. A lower drug dosage delivered at any given time, resulting in a lower incidence of dose-related side effects;
3. Greater control over drug administration (easy to change the dose);
4. Decreased need for stimulation of resting patients to administer drugs;
5. Decreased cost (when compared to technician time, needles, and syringes required for repeat injections).

### Step 2

**CONSTANT RATE INFUSIONS  
(CRI) – HOW? The Rules**

**Need to know two doses plus one rate:**

- Loading dose** (mg/kg)
- CRI dose** (mg/kg/hr)
- Fluid rate** (ml/kg/hr)

### Step 3

## CONSTANT RATE INFUSIONS – RULES CATTLE, SHEEP & GOAT

- **Need to know two doses:**
  - Loading – eg. Xylazine 0.05 mg/kg IM, Ketamine 5 mg/kg IV & Lidocaine 1mg/kg
  - CRI – eg. Xylazine 0.05mg/kg/hr & Ketamine 5 mg/kg/hr
    - Lidocaine 1mg/kg/hr
  - Fluid rate – for surgery 5-10 ml/kg/hr
- **Choices:**
  - Use formula –
  - Made easy rule:
    - 60mg of any drug in 1L
    - X Flow Rate in ml/kg/hr delivers X mcg/kg/min of drug

**Drug (mg) = [Infusion rate of the drug (mg/kg/hour) ÷ Fluid infusion rate (ml/kg/hour)] x diluent volume (ml)**

**Formula for CRI**

$$M = \frac{(D)(W)(V)}{(R)(16.67)}$$

M = number of mg of drug to add to delivery fluid  
 D = dosage of drug in mcg/kg/min  
 W = patient body weight in kg  
 V = volume in ml of delivery fluid  
 R = rate of delivery in ml/hr  
 16.67 = conversion factor

### Step 4

**CRI Drug (mg) = [Infusion rate of the drug (mg/kg/hour) ÷ Fluid infusion rate (ml/kg/hour)] x diluent volume (ml)**

**MAINTENANCE RATE = 1-2 ml/kg/hr    SURGICAL RATE = 5-10 ml/kg/hr**

DRUG	CONCENTRATION	DOSE <span style="border: 2px solid red; border-radius: 50%; padding: 2px;">Sheep/goat</span>	CALCULATION (infusion rate 5ml/kg/hr)
Xylazine	20mg/ml	0.05mg/kg/hr	(0.05/5) x 1000 = 10mg = 0.5mls
Ketamine	100mg/ml	5mg/kg/hr	(5/5) x 1000 = 1000 = 10 mls
Lidocaine	20mg/ml	1mg /kg/hr	(1/5) x 1000 = 200 = 10mls

Calculated of Drip Rate in drops per sec - (ml/min x drip factor)/60 = drops/sec

50kg Sheep drop/sec = (50kg x 5ml/kg/hr x 20 drops/ml) / (60min/hr x 60sec/min) = 1.4d/sec