

Patient is Bradycardic

Defining bradycardia:

A heart rate below 80 in cats or similar sized dogs; a heart rate below 50 in medium size dogs; a heart rate below 40 in large dogs (see flowchart on next page).

Systematically rule out the following possibilities:

1. Too deep a plane of anesthesia.

Evaluate clinical signs of depth of anesthesia: jaw tone, palpebral reflex, rate/depth of breathing and responses to surgical stimulus (*see Monitoring depth of anesthesia page 2-8*).

Decrease vaporizer setting unless the patient is showing signs of being lightly anesthetized.

Hypothermia significantly reduces the necessary dose of inhalant anesthetic. Do not worshop vaporizer dial settings but rather administer only what each individual requires (*see Monitoring depth of anesthesia page 2-8*).

2. Vagal reflex stimulation.

This bradycardia is sudden, pronounced and occurs in response to specific surgical manipulations:

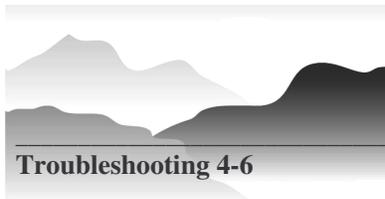
- manipulation of the head, neck, throat, or eye structures
- traction on abdominal organs such as ovarian pedicles and bowel
- manipulation of long bones during fracture repair
- intubation or manipulation of ETT in trachea
- traction on peripheral nerves

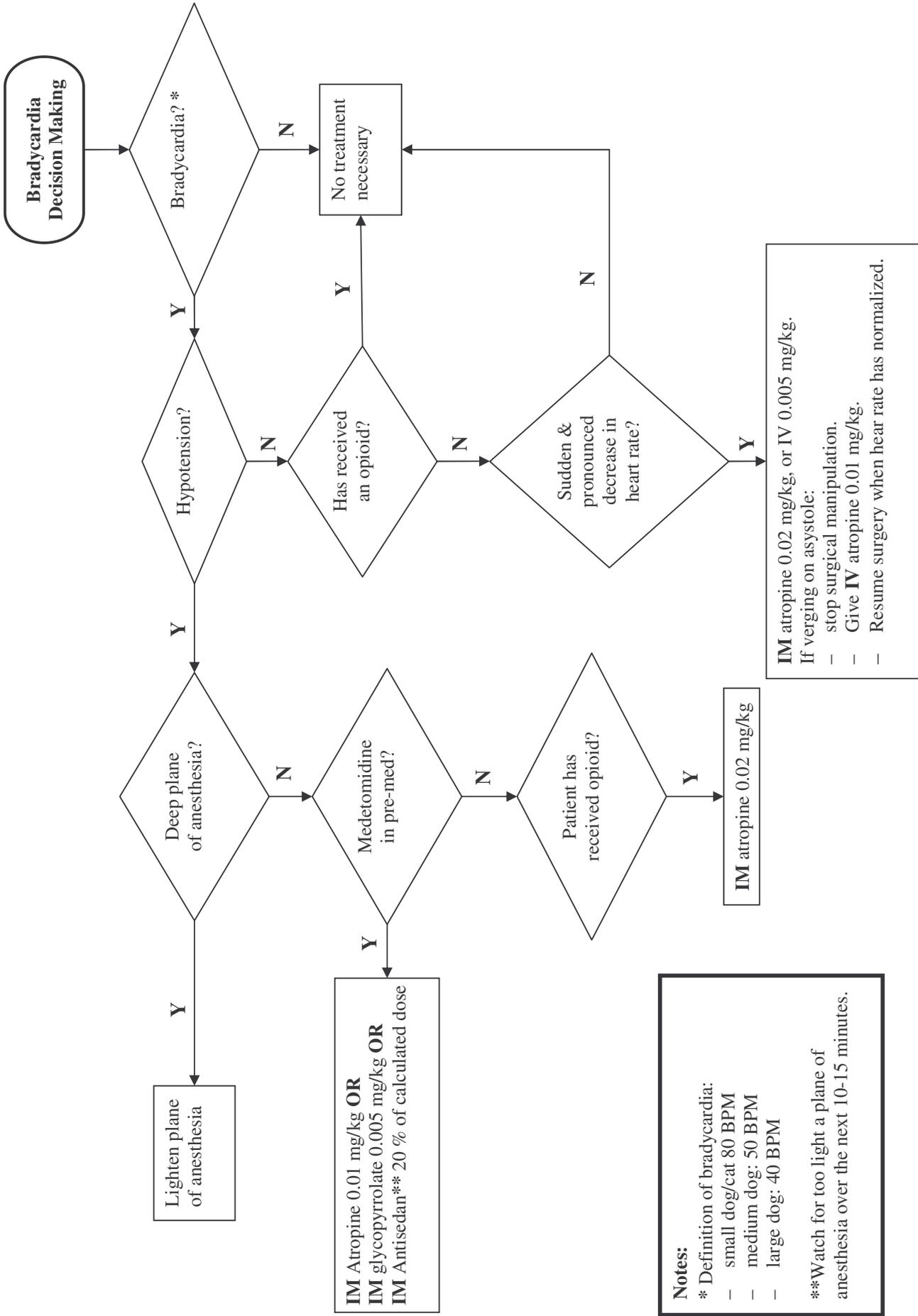
Treatment: Administer 0.01 mg/kg glycopyrrolate IM or 0.02 mg/kg atropine IM. If bradycardia is severe, temporarily stop surgical manipulation while you administer atropine 0.005 mg/kg IV.

If you feel cardiac arrest is imminent, administer atropine 0.01 mg/kg IV.

3. Opioid administration.

Administer 0.01 mg/kg glycopyrrolate IM or 0.02 mg/kg atropine IM.





Notes:

- * Definition of bradycardia:
 - small dog/cat 80 BPM
 - medium dog: 50 BPM
 - large dog: 40 BPM
- **Watch for too light a plane of anesthesia over the next 10-15 minutes.



Patient is Bradycardic (Cont'd)

4. Xylazine or medetomidine administration.

Administer atropine 0.02 mg/kg IM only if bradycardia is accompanied by hypotension. Alternatively, partially reverse the alpha 2 with 20 % of the calculated dose of IM yohimbine (for xylazine) or IM atipamazole (for medetomidine).

If hypertension is noted, as frequently occurs early after alpha 2 administration, administration of atropine is inappropriate.

5. Increased ICP (anisocoria or change in pupil size or light reflex).

Administer mannitol 500 mg/kg slowly IV over 15 minutes or hypertonic saline 2 mg/kg slowly IV over 15 minutes. These doses can be repeated.

6. Impending cardiovascular collapse.

Bradycardia is often a late indicator of ongoing compromise such as hypotension, hypoxemia, or acidosis.

Although administration of atropine is part of treatment, it will be insufficient alone to reverse the impending collapse.

Definitive treatment of the cause of collapse must accompany the use of atropine which will only buy a little time and may even be completely ineffective.

NOTE

If the patient's body temperature is below 35 degrees Celsius, it may not respond to administration of atropine or glycopyrrolate. To evaluate the true impact of bradycardia on an anesthetized patient, you must be able to measure blood pressure. A relatively low heart rate is normal in some individuals and need not be treated unless associated with hypotension.

