

Blood Pressure Monitoring

1. A Doppler ultrasonic blood pressure monitor is appropriate and most reliable for monitoring blood pressure in patients less than 5 kg. A Doppler can be used for monitoring BP in patients weighing > 5 kg.
2. A Doppler is strongly recommended as a back-up monitor for all patients.
3. An oscillometric blood pressure monitor (automatic) is appropriate and reliable for monitoring of patients larger than 5 kg, only IF the patient 1) is not tachycardic or bradycardic, 2) does not have any arrhythmias, and 3) is not hypotensive or hypothermic. If these factors exist, a Doppler or intra-arterial pressure monitor are indicated.
4. The appropriate cuff width is equal to 30 – 40% of the circumference of the limb.
5. Cuffs may be placed on the forelimb (below or above the elbow), hind limb (above the hock) or at the base of the tail.
6. A single wrap of self-adhesive stretch bandage material (eg, VetWrap) can be used to secure the cuff. Do not encircle the cuff with white tape because it will prevent the cuff from inflating properly.
7. For anesthetized dogs and cats, systolic blood pressure should be greater than 100 mmHg.
Mean arterial pressure should be greater than 70 mmHg.
8. Initiate treatment for **Hypotension if SAP < 90 mmHg or MAP < 60 mmHg**.
Modify treatment if patient does not respond within 10 – 15 minutes. Consider discontinuing anesthesia and staging the procedure if hypotension does not respond to treatment.

Treatment of Hypotension (basic approach)

1. **Decrease inhalant**
 - a. Decreasing inhalant concentration will help reduce dose-dependent vasodilation and cardiovascular depression associated with isoflurane.
2. **Administer a fluid bolus**
 - a. IV fluids help restore vascular volume in the face of vasodilation and hypovolemia.
 - b. Give fluid bolus (LRS or Normosol) of 3 – 10 ml/kg, IV over 5 – 10 minutes; repeat if needed.
 - c. Hetastarch can then be administered to treat hypotension that does not respond to crystalloid bolus. Hetastarch dose is 1 – 5 ml/kg (cats) or 5 – 10 ml/kg (dogs), IV to effect given over 10 – 20 minutes.
3. **Additional considerations**
 - a. Bradycardia and hypothermia (temp < 98° F) contribute to hypotension.
 - b. Treat bradycardia (cats < 100 bpm; small dogs < 80 bpm; large dogs < 60 bpm) if low heart rate could be contributing to low blood pressure. Ex: glycopyrrolate 0.005 mg/kg, IV or 0.01 mg/kg, IM or Atropine 0.01 mg/kg, IV to effect or 0.02 mg/kg, IM. Avoid anticholinergic administration if patient received dexmedetomidine due to high risk of potentially harmful hypertension.
4. **Advanced approach to treatment of hypotension**
 - a. Local anesthetic techniques (nerve blocks, incisional blocks) and/or analgesic constant rate infusions to reduce inhalant requirements
 - b. Cardiovascular support medications (ex: dopamine, dobutamine or ephedrine) because anesthetic medications, age and disease impair cardiac contractility and vascular tone.
 - c. Check blood glucose, PCV/TP, ionized calcium levels for other causes of hypotension.