

Vetamac Vapors

(800)334-1583

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Please visit our booth at these upcoming conferences. For locations and booth numbers, please go to our website at www.vetamac.com.

October 11-14 Wisconsin Veterinary Medical Association

October 14 Ohio Association of Vet Techs Discovery 2007

November 2-4 Illinois State Vet. Medical Association

Treatment of Hypotension During Anesthesia

The volume and type of fluids needed to correct hypotension are different for every patient. The electrolyte status, surgical procedure, and expected losses need to be considered before choosing a fluid. Crystalloids (e.g., lactated Ringer's solution, Normosol) can be given at a bolus rate of 10 to 20 ml/kg. Synthetic colloids (e.g., hetastarch, dextran-70) or plasma can be given to help increase oncotic pressure and maintain vascular volume. In patients that have suffered blood loss, packed red blood cells or fresh whole blood is the best choice for volume replacement.

If the patient has received an appropriate volume of fluids and remains hypotensive, then it is time to consider inotropic support. Inotropes increase cardiac contractility, thereby increasing cardiac output and arterial blood pressure.

Ephedrine is very effective in raising blood pressure as it increases cardiac contractility and causes peripheral vasoconstriction. It can be given intravenously as a bolus at a dose of 0.1 to 0.25 mg/kg. The effects of ephedrine are variable, but is useful in anesthetized patients during short procedures (e.g., dentals, tumor removals).

Dopamine has a very short half-life; therefore, it needs to be administered as a constant-rate infusion (CRI). The dose for dopamine is 5 to 10 µg/kg/min. A quick and easy method of mixing dopamine by using a Buretrol (drip size = 60 drops/ml) is as follows: Add 6 mg of dopamine to 100 ml of D5W in the Buretrol. The rule of thumb for this combination is ml/kg/hr = µg/kg/min.

The combination of dobutamine and dopamine given as a CRI is the inotropic cocktail of choice at Iowa State University Veterinary Hospital. Both drugs are calculated at 5 to 10 µg/kg/min and mixed together in the same syringe with D5W. A fluid rate of 1 ml/kg/hr is calculated for the patient. The calculation for the inotropes is:

$$\text{Dose } (\mu\text{g}) \times \text{Body weight (kg)} \times 60/1,000 = \text{mg/hr of each drug}$$

Monitoring blood pressure has become routine in many practices and provides the opportunity to not only detect hypotension but to administer proper treatment.

By Debbie A. Coleman
RVT, VTS (Anesthesia)

Drug Effect at Adrenergic Receptors

Drug	Dopaminergic	α_1	β_1	β_2
Phenylephrine	0	+++	Less, then +	0
Norepinephrine	0	+++	++	0
Epinephrine	0	+ to +++	+++	+++
Ephedrine	0	++	+++	++
Dopamine	+++	+ to +++	+++	+++
Dobutamine	0	Less, then +	+++	++
Isoproterenol	0	0	+++	+++

++++ = strong effect; + = weak effect; 0 = no effect.

Adrenergic Receptor Responses

Receptor	Target Organ	Response
α_1	Arterioles	Constriction
	Urethra	Increased tone
	Eye	Dilation of pupil
β_1	Heart	Increased rate, conduction, and contractility
	Kidneys	Renin release
β_2	Skeletal blood vessels	Dilation
	Bronchioles	Dilation
Dopaminergic	Kidneys	Dilation of blood vessels
	Heart	Dilation of coronary vessels
	Mesenteric blood vessels	Dilation

FAQs

Q: Can the Universal F-Circuits that have a tube within a tube replace a non-rebreathing system?

A: No. A patient breathing through these circuits must still open the one way valves. Inspired gas always moves toward the patient in the inside tube and expired gas always moves away from the patient in the outside tube.

Q: How do I know that my vaporizer output is accurate?

A: The output must be verified by calibrating the vaporizer with a gas analyzer. Vetamac performs this calibration on site as part of our routine service on the anesthetic machine.

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