

Anesthesia Cheat Sheet

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Choosing an endotracheal tube

The following guidelines are based on the weight of the animal. It is a good idea to place the largest tube you can without causing trauma to the larynx or surrounding structures. Always use a cuffed ET tube. I choose three tubes, one based on the weight of the animal, one half size bigger, and one half size smaller. I first try to intubate with the largest one and then switch to the next size if needed and so on. The cuffs should be inflated and checked for leaks prior to induction. When lubing the tube, lube the cuff, and be sure not to occlude the "eye" of the tube.

DOGS

2 kg	5.0 mm
3.5 kg	5.5 mm
4.5 kg	6 mm
6 kg	6.5 mm
8 kg	7 mm
10 kg	7.5 mm
12 kg	8 mm
14 kg	8.5 mm
16 kg	9 mm
18 kg	9.5 mm
20 kg	10 mm
25 kg	11 mm
30 kg	12 mm
40-60+ kg	14 - 16 mm

CATS

1 kg	3.0 mm
2 kg	3.5 mm
3.5 kg	4.0 mm
4+ kg	4.5 mm

Remember to base the weight guidelines on lean body weight, obese cats and dogs don't have larger tracheas. There will also be some variation by breed, brachycephalic dogs and cats tend to have narrower tracheas than a mesocephalic breed of similar weight.

Breathing bag size

To calculate this, you take the tidal volume (TV) and multiply it by six.

Bag size= (TV) 6

Tidal volume is the volume of air inhaled and exhaled with each breath, 10 -20 ml/kg

The number that you get will be in milliliters, so just convert it to liters, and that is the size bag that your patient needs.

Here is a helpful chart

Weight of animal	Bag size
1 - 5 kg	0.5 liter bag
5 - 10 kg	1.0 liter bag
10 - 20 kg	2.0 liter bag
20 - 30 kg	3.0 liter bag
30 - 50 + kg	5.0 liter bag
500 kg	15 liter bag
> 500 kg	30 liter bag

Vaporizer and oxygen settings

MAC is the minimum alveolar concentration. The MAC value is a measure of anesthetic potency; it is inversely proportional to anesthetic potency: an inhalant having a low MAC value is more potent than an inhalant having a high MAC value. The value given is the concentration of the inhalant anesthetic that will prevent gross movement in response to painful stimulus in 50% of patients (MAC₅₀). To increase this to 95%, just multiply the MAC by 1.5 (MAC₉₅), this will provide a surgical plane of anesthesia. MAC values do not take into consideration any pre-medications that may have been given; pre-meds will lower the MAC, which is part of the reason why we give them.

Inhalant	MAC
Halothane	0.8 - 0.9% both dogs and cats
Isoflurane	1.2 - 1.3% in dogs 1.6% in cats
Sevoflurane	2.4% in dogs 2.6% in cats

Rebreathing systems, circle systems for patients greater than 7 kg

When initially hooking a patient up to the machine, many people make the inhalant and the oxygen level higher in order to "equilibrate" the machine. To do this, start off with the oxygen at 2 L/min and the inhalant no higher than 3%. This will flush the inhalant through the machine and the tubing at a faster rate allowing the anesthetic to reach the patient faster. These settings should be decreased within 5 minutes to prevent overdosing the animal. The maintenance settings of inhalant should be somewhere between MAC₅₀ and MAC₉₅ but since we always use pre-meds our required vaporizer setting is often less than MAC; the oxygen flow rate is usually kept around 1 L/min.

Non-Rebreathing systems for patients smaller than 7 kg

This system provides less resistance making it easier for our smaller patients to breath. They require higher oxygen flow rates; 100-120 ml/kg/min.

Induction set-ups should include:

Catheter supplies;

Tape, catheters, prn, hep-saline +/- Elastikon, Kling, and T-port (sterile cath)

Gauze squares (at least two but not 36) with a piece of tape on one for the lube

Eye lube

Tube lube

Gauze tie (hang on IV stand for easy access)

Lidocaine for cats (about 2/10 of an ml)

Laryngoscope (appropriate size)

Cuff syringe (usually hanging on machine, but double check)

Re-breathing hoses (appropriate size)

Re-breathing bag (appropriate size)

Endotracheal tubes (appropriate sizes)

For artline; mini extension set, stopcock, 10 or 20 ml syringe, tape, catheters (20, 22 or 24 gauge), vetrap, hep-saline

Guidelines for induction and maintenance

1. Have everything you need within arms reach; ET tubes (three sizes), roll gauze to tie in the tube, laryngoscope, induction agent, flush or fluids, eye lube, monitoring devices (Doppler, pulse ox), lidocaine for cats, tube lube, gauze squares...
2. Once the animal has been given the induction agent (bolus 1/3 of calculated dose and then titrate to effect) and the jaw has gone slack, quickly intubate your patient. You have only a few minutes (propofol peak effect is 90 sec. after administration) of anesthesia deep enough for intubation with the short acting agents that we typically use. Give your restrainer a gauze square to help him/her to hold the slimy tongue out. If you are inducing a cat, put a drop of lidocaine on either side of the larynx before intubating, this helps to prevent laryngospasm.
3. Once the animal is successfully intubated, tie in the tube with roll gauze and hook up to the anesthetic machine using the induction settings mentioned earlier. Check for a pulse. Then check if you need to inflate the cuff. To do so, close the pop-off valve and squeeze the bag up to 20 cm of H₂O, if it holds there, then you don't need to inflate the cuff, if it drops, then open the pop-off, inflate the cuff a bit and try again until you get it to hold. Some animals may not require an inflated cuff initially, but once they relax further it may be necessary.
4. Assess pulse rate and quality
5. Assess respiration. If the animal is apneic or the rate is slow, assist ventilation.
6. Apply eye lube
7. Hook up monitoring devices and record your first reading, and every 5 minutes thereafter.
8. Adjust your vaporizer settings and oxygen flow rate to that of maintenance anesthesia.