



BREED CONSIDERATIONS IN ANESTHESIA

LESLEY J. SMITH DVM, DACVAA

CLINICAL PROFESSOR OF ANESTHESIOLOGY

UNIVERSITY OF WISCONSIN, MADISON

OBJECTIVES

- Understand the unique anesthetic challenges that come with certain dog breeds
- How to manage those challenges in a practical and simple approach
- Learn what pre-operative management may be helpful
- Learn how to choose anesthetic/sedative drugs and doses
- Learn how to trouble shoot anesthetic induction, maintenance, and recovery
- What we will cover: brachycephalic breeds, sighthounds, herding breeds
- If time, cover: Giant breeds, King Charles Cavalier, Northern breeds, Toy breeds

GENERAL BREED CONSIDERATIONS

- body size, body composition
- anatomical features of the breed
- “typical” temperament
- what they “do for a living”
 - may impact normal physiologic parameters, e.g. heart rate, muscle mass



CERTAIN DOG BREEDS ARE SENSITIVE TO ANESTHESIA?

- Anesthesia is a risk for any animal, any breed
- Example of the $n = 1$ rule
- Very few scientifically documented *true* breed sensitivities
- Owner education important

BRACHYCEPHALIC BREEDS

- stenotic nares
- high vagal tone
- prone to aspiration
- everted laryngeal saccules
- elongated soft palate
- hypoplastic trachea



WHICH BREEDS ARE TRUE BRACHYCEPHALICS?A MATTER OF DEGREE

- English bulldogs
- French bulldogs
- Boston terriers
- Shih-tzu
- Pug
- Pekinese
- Others?



BRACHYCEPHALIC “SYNDROME”

- Increased resistance to upper airway flow
- Increased intra-thoracic negative pressure due to work of breathing
 - Leads to pharyngeal and laryngeal collapse due to increased negative inspiratory pressure
- Stertor, stridor, dyspnea, exercise intolerance, gagging, regurgitation, cyanosis, increased body temperature, syncope and collapse

BRACHYCEPHALIC BREEDS

- 3.5 times increased risk of death due to upper respiratory tract complications primarily associated with the airway or due to aspiration pneumonia



BRACHYCEPHALIC BREEDS – PREOPERATIVE PREPARATION

- > 6 hour fast from liquid/soft food (no kibble for 12 hours)
- Cisapride 0.1-0.5 mg/kg IV (pro-motility)
- Famoditine 1 mg/kg IV (H2 blocker to decrease acidity)
- Metoclopramide 0.2-1.0 mg/kg IV or 1 mg/kg/hour CRI (pro-motility, increased esophageal sphincter tone, decreased nausea)
- Maropitant 1 mg/kg IV (anti-emetic)

BRACHYCEPHALIC BREEDS

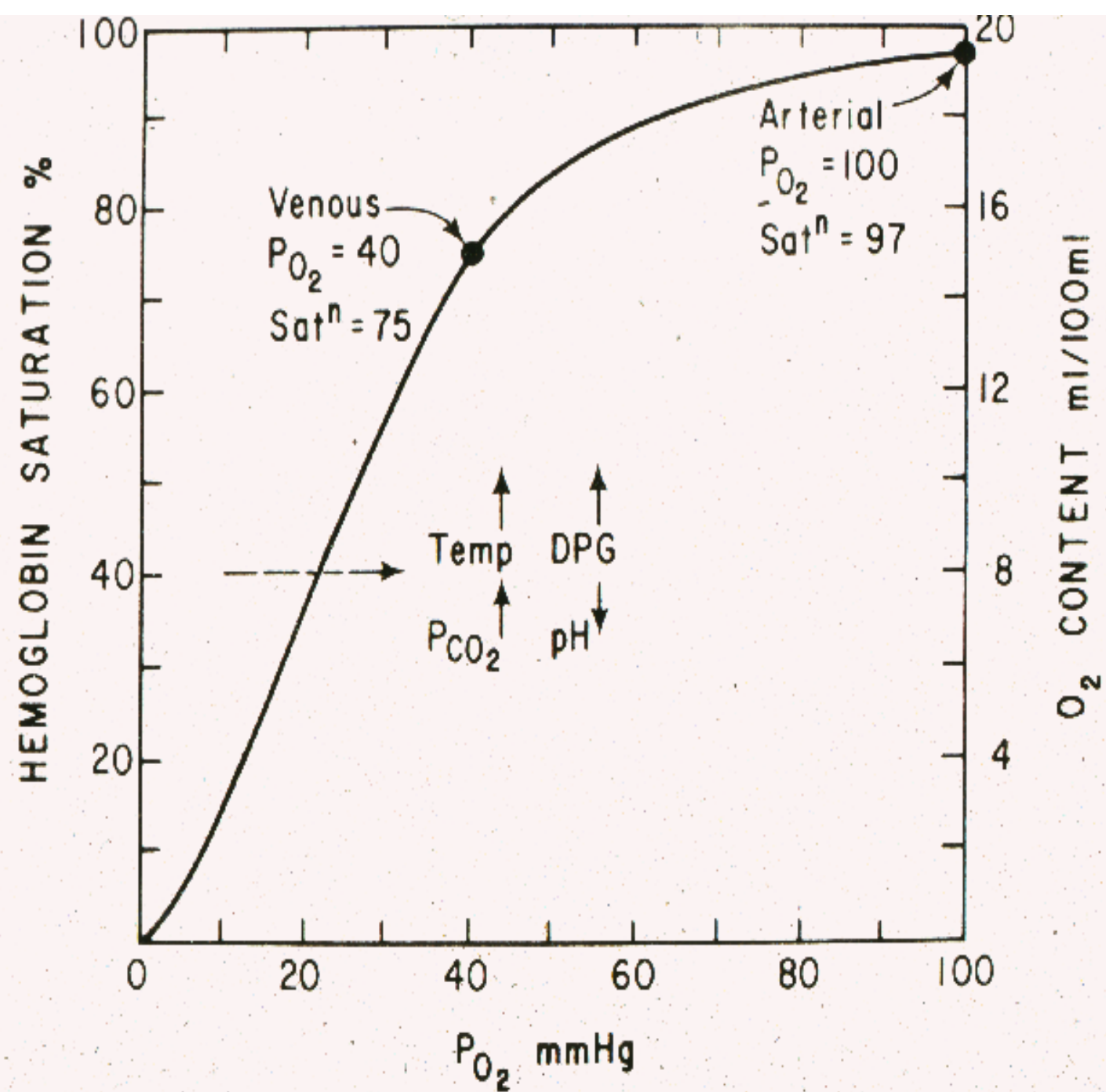
- Avoid heavy/profound sedation
 - i.e. large doses of acepromazine, α -2 agonists, and opioids
- Preoxygenate
- Choose lots of (smaller) tube sizes

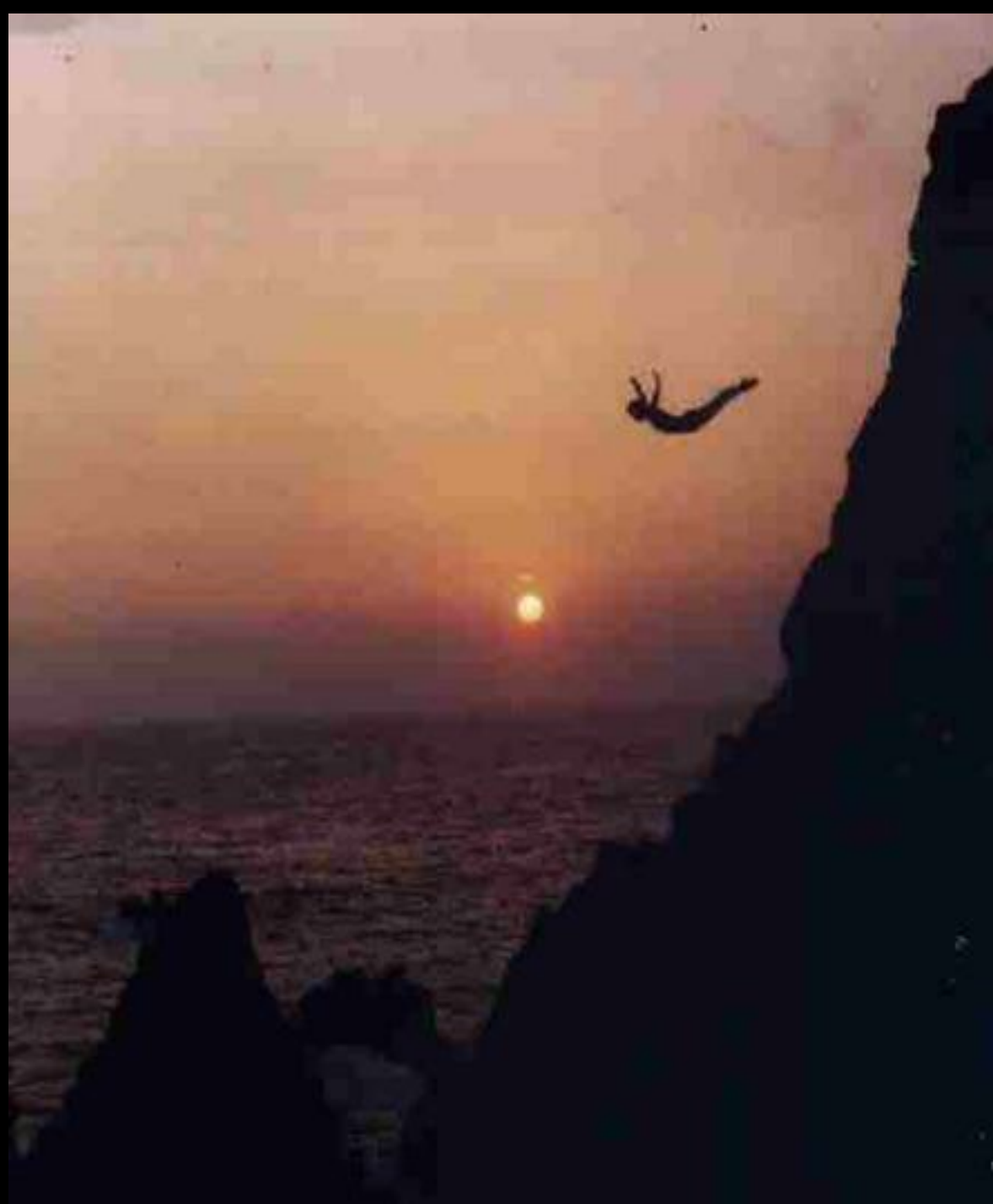
BRACHYCEPHALIC BREEDS

- Pre-anesthetic sedation
 - Alpha-2 agonists
 - Dexmedetomidine ideally IV 1-2 mcg/kg or IM 1-3 mcg/kg
 - Consider reversal at recovery
 - Benzodiazapines
 - Midazolam IV 0.1-0.2 mg/kg
 - IM???? Considerations!
 - Acepromazine?

PREOXYGENATION



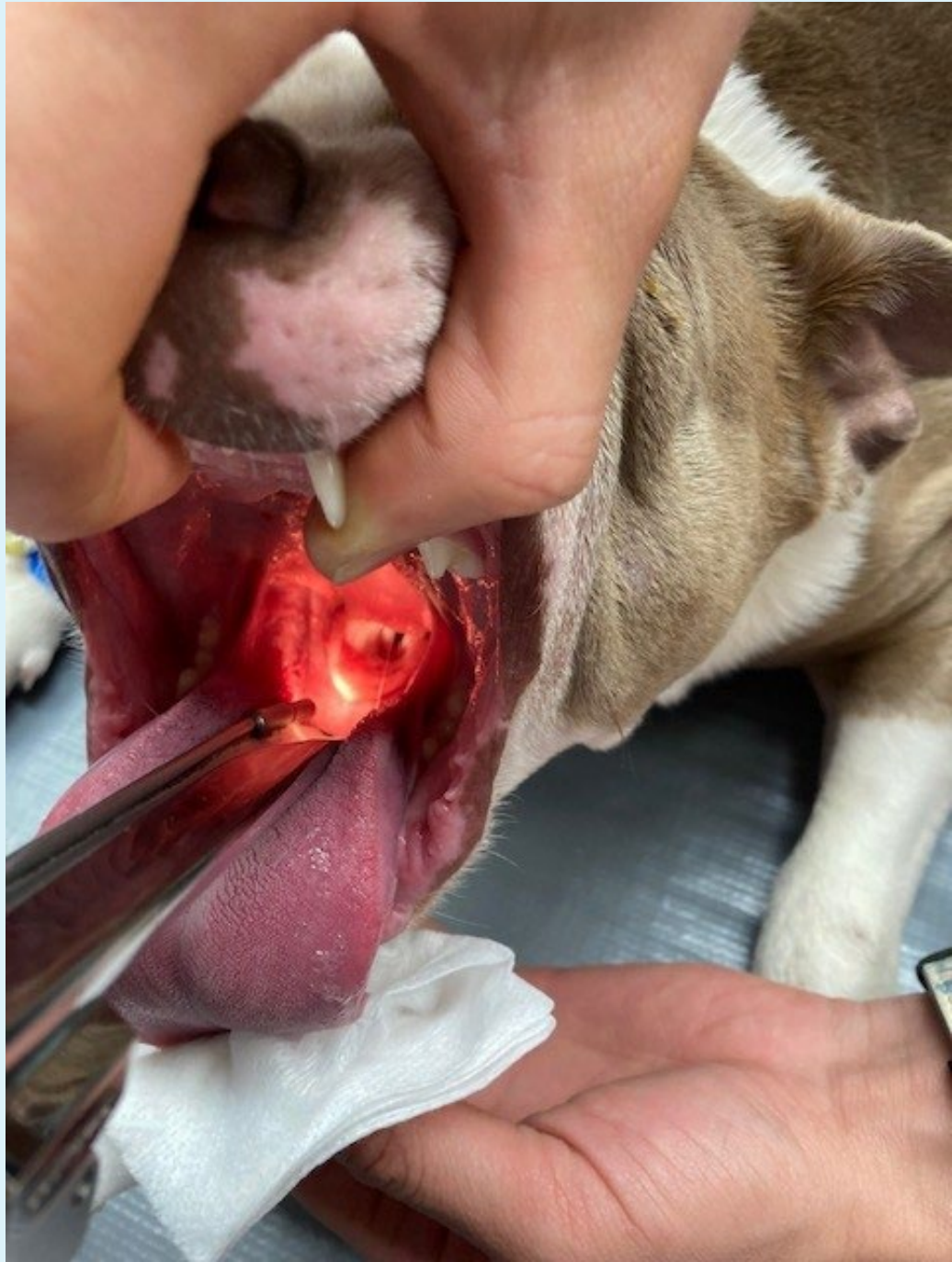




BRACHYCEPHALIC BREEDS

- Induction
 - Doesn't really matter what injectable you choose
 - Getting a quick airway is the *MOST* important goal
- Inhalant inductions are a **HUGE NO!**





BRACHYCEPHALIC BREEDS

- ANESTHETIC MANAGEMENT?
 - PRETTY ROUTINE
 - INCREASED VAGAL TONE MAY NECESSITATE ANTICHOLINERGICS DURING PROCEDURE
 - GLYCOPYRROLATE OR ATROPINE

BRACHYCEPHALIC BREEDS - RECOVERY

- Extubation will be delayed....be patient!
- Watch these patients after extubation!
- Careful attention to mucous membrane color, body temperature, positioning (sternal, sitting, or standing)

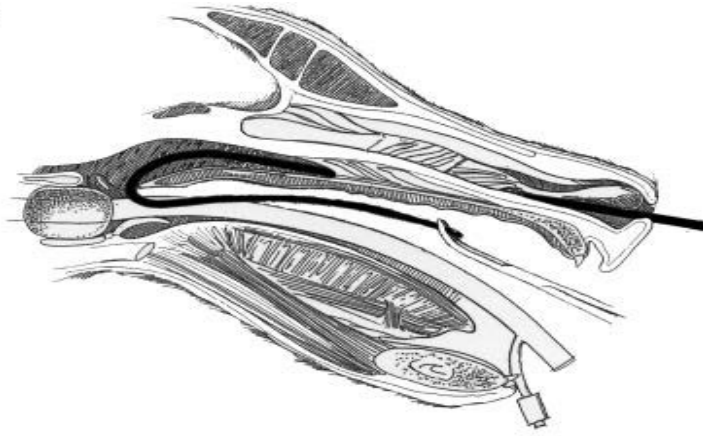
BRACHYCEPHALIC BREEDS – RECOVERY!



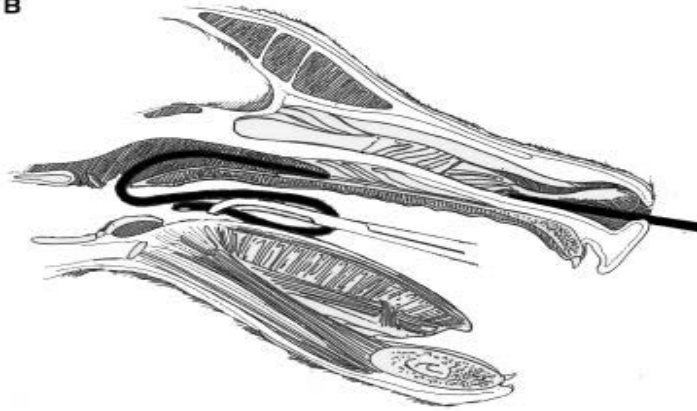
OPTIONS FOR OXYGEN SUPPORT DURING RECOVERY

- Continued mask administration of O₂
- O₂ cage
- Nasal prongs
- Naso-tracheal catheter
- Tracheostomy?

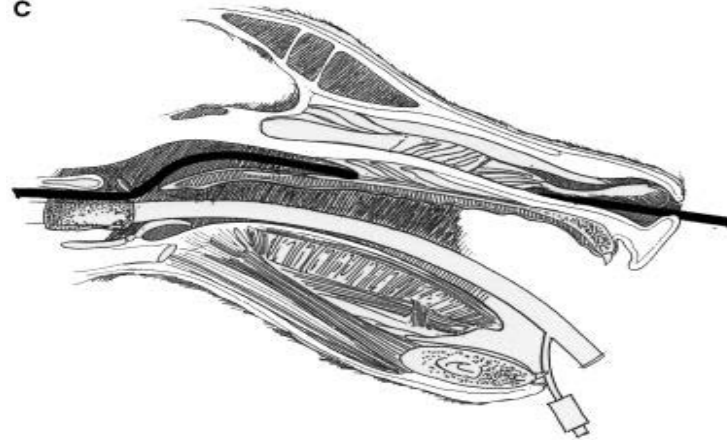
A



B



C





GREYHOUNDS (SIGHTHOUNDS...?)

- Delayed recovery from thiobarbiturates
- Due to
 - Lean body mass, relative adipose uptake
 - Reduced ability for hepatic transformation to inactive metabolites



GENERAL SIGHTHOUND CONSIDERATIONS

- thin haircoat, lean body type
 - prone to hypothermia
- high anxiety
 - Consider oral sedation prior to hospital visit
 - Consider sedation for recovery
- higher than normal PCV is “normal”

PRE-HOSPITALIZATION SEDATION RECOMMENDATIONS

- Pretty safe for most dogs of most breeds.....
 - Have owner try a 'trial' at home if there are concerns
- Trazadone PO
 - 2-10 mg/kg 8-12 hours prior
- Gabapentin PO
 - 10-50 mg/kg 8-12 hours prior

HERDING BREEDS

- Collies, Shetland Sheepdogs, Old English Sheepdogs, Australian Shepherds
- MDR1 genetic polymorphism
- Drugs that are p-glycoprotein substrates
 - Ivermectin
 - Acepromazine, Opioids
 - Butorphanol especially!



HERDING BREEDS

- Use caution with opioids and sedatives
- Educate owner to delayed recovery risks
- Dose to effect! Consider reversals if indicated (i.e. non-painful procedure)





GIANT BREEDS

- Low body surface area:
volume ratio
- Need lower doses of
drugs...generally
- Consider age related
diseases early



NORTHERN BREEDS



NORTHERN BREEDS

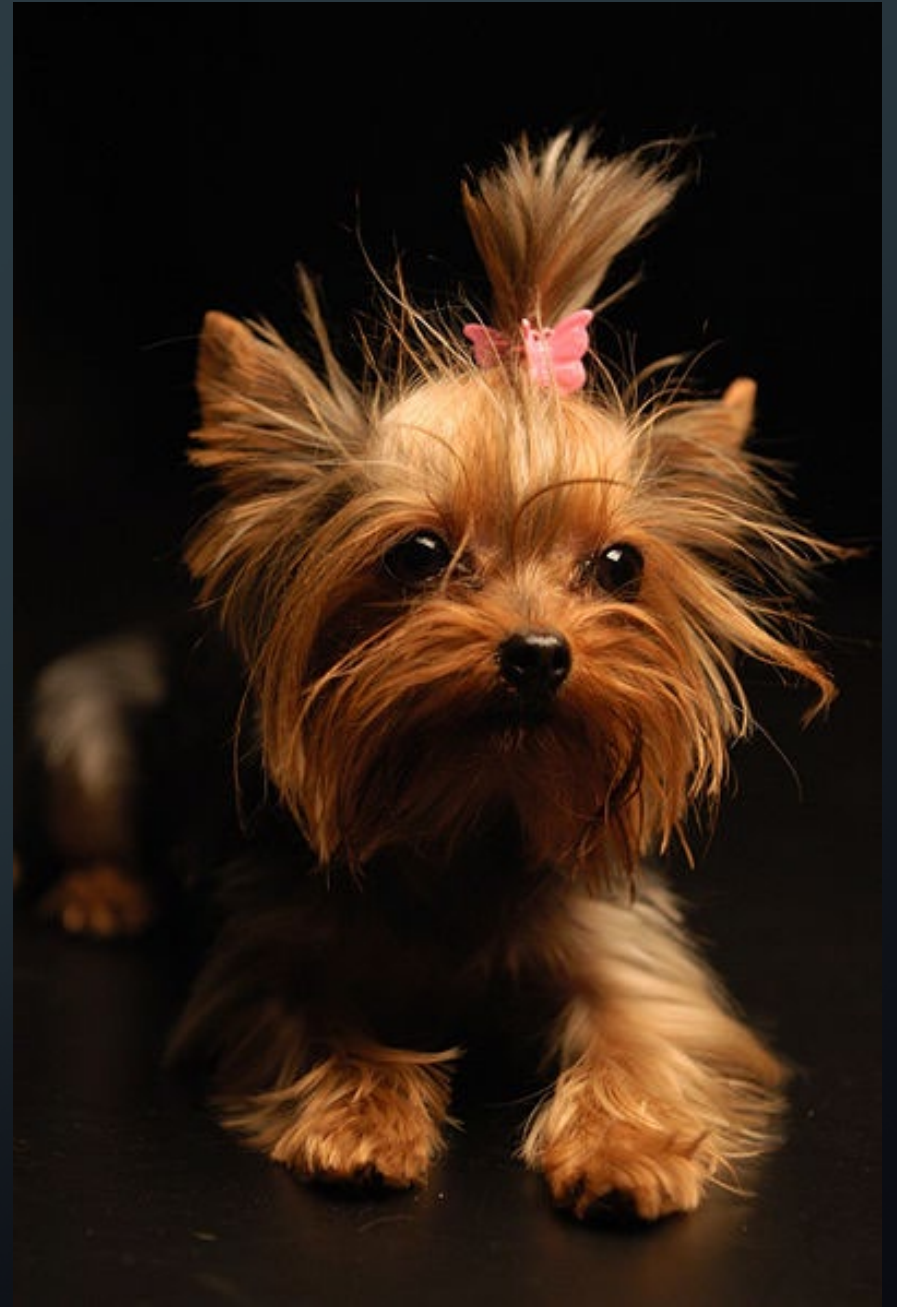
- Thick hair coat predisposes to hyperthermia in hospital
- PO sedation as per previous slides may be indicated
- Recovery management can be tricky!

NORTHERN BREEDS



TOY BREEDS

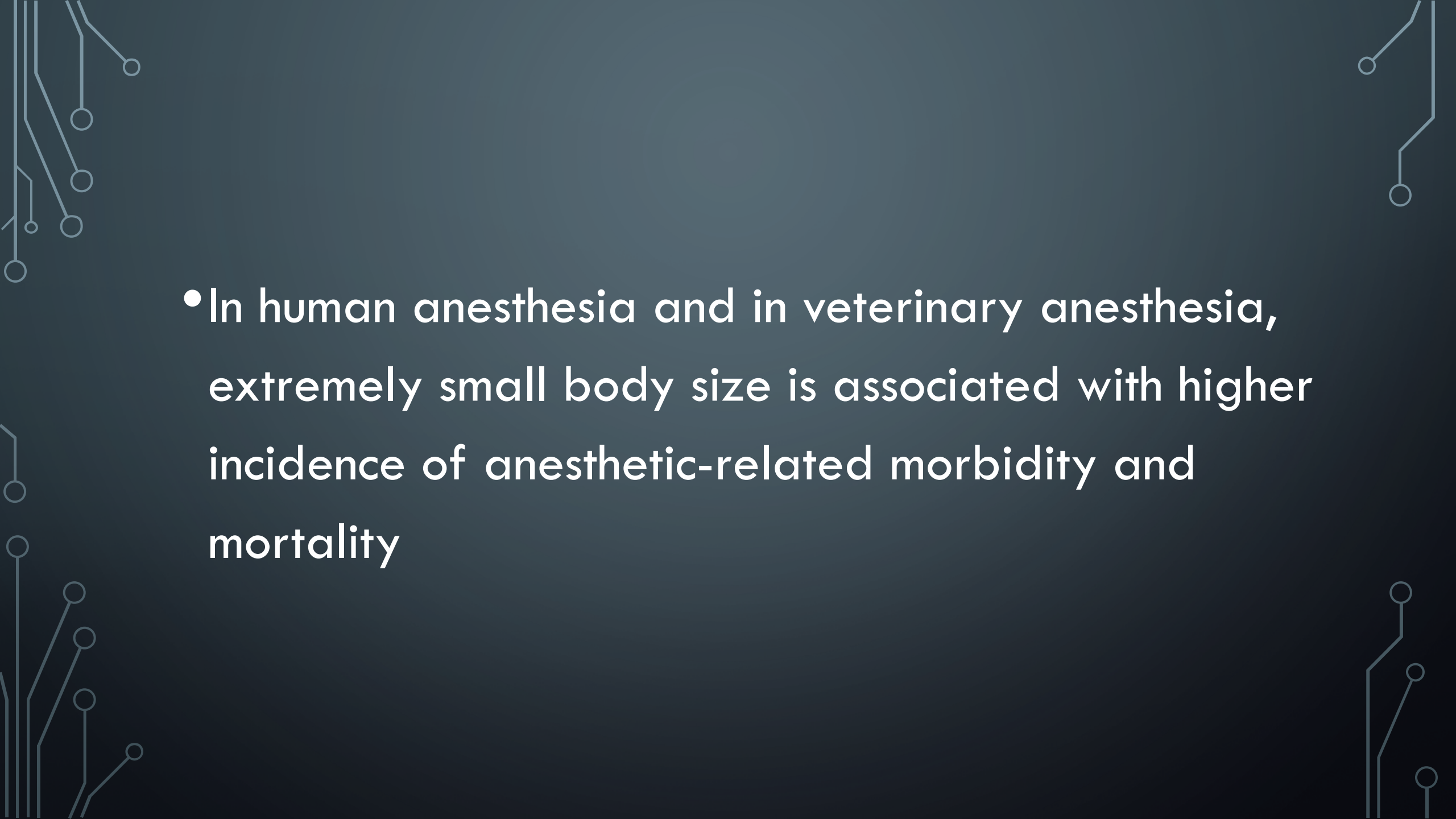
- Body size and hypothermia
- Screen for porto-systemic shunts!
- Hypoglycemia risk



TOY BREEDS

- Monitoring is challenging!
- IV catheter placement....
- Blood glucose?
- Warming methods



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- In human anesthesia and in veterinary anesthesia, extremely small body size is associated with higher incidence of anesthetic-related morbidity and mortality

OTHER DOG BREED TRIVIA....

- Huge tracheas for their body weight
- Deep chested, narrow thorax
 - don't ventilate well in dorsal without assistance



OTHER DOG BREED TRIVIA

- High vagal tone predisposes to bradycardia
- Large tracheas for their body weight
- Prone to increased BMI
 - Dose on lean body weight



OTHER DOG BREED TRIVIA

- Prone to MMVD and, eventually, CHF
- Refer for cardiology consult
- If contractility is poor, refer for anesthesia



QUESTIONS?

