



EUTHANASIA TECHNIQUES

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Who Am I?

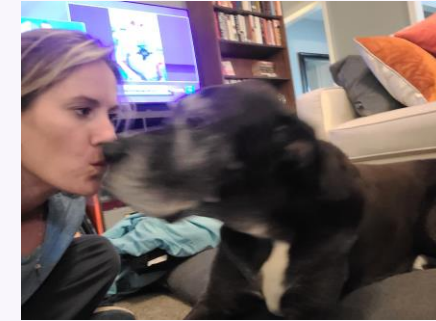
After graduation from Kansas State University, I completed a small animal rotating internship

Practiced emergency medicine

Practicing in-home euthanasia, hospice and palliative care since 2013

CVMA-2016, CHPV-2018, CAETA-2019

Group Medical Director for Blue Pearl Pet Hospice

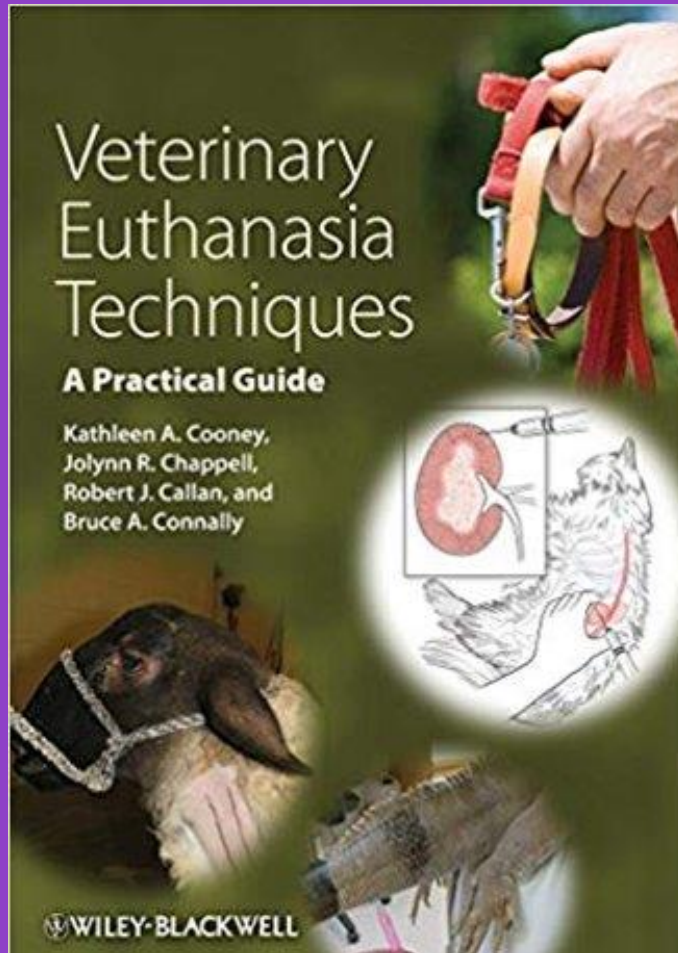


AGENDA

- Pre-euthanasia anesthesia
 - Critical/ill patients
 - Aggressive patients
 - Painful patients
- Intraorgan injections (so many more options than just IV!)
 - IH, IR, IP, IC
- What to expect
- Tips and Tricks
- Case examples



EUTHANASIA TRAINING



- Traditional veterinary education --> many times, euthanasia training is an after thought
- Additional training opportunities:
 - CAETA: Companion Animal Euthanasia Training Academy

DEATH HAS NO DO-OVERS

- Importance of giving a good death
 - Everyone benefits (patient, family and provider)
 - Maintain human animal bond in the end
 - Respect for the pet and the family and the life they had together



THE BIG PICTURE FOR IV ALTERNATIVE EUTHANASIA

- SQ anesthesia in the examination room
- Fully asleep in 7-10 minutes (may take 10-15 minutes depending on patient and disease process)
- Intra-organ injection in the examination room or comfort room
- Peaceful death in 2-10 minutes



ANESTHESIA TOOL KIT

Drug concentrations:

Tiletamine 100 mg/mL

Ketamine 100 mg/mL

Acepromazine 10 mg/mL

Xylazine 100 mg/mL

Dexmedetomidine 0.5 mg/mL

Butorphanol 10 mg/mL

Midazolam 5 mg/mL

Alfaxalone 10 mg/mL

Not one cocktail is perfect for every patient.



I am sharing my favorite cocktail ingredients.

GENERAL RULES TO FOLLOW

- Anesthesia is given to every patient prior to euthanasia (IV or intraorgan)
- Usually given SQ (lessens the sting)
 - For patients in distress, can be given IM
- Goal: Loss of toe pinch sensation at 7-10 minutes; repeat the dose if they are not heavily sedate at 10-15 minutes
- Prepare clients ahead of time for common anesthesia events such as muscle twitching and eyes remaining open
 - Discuss less common events as they occur



ILL AND "READY" PATIENTS

- Dog Cocktail of Choice:

- Tiletamine 0.1 mL/10 lbs PLUS
- Acepromazine 0.1 mL/10 lbs PLUS
- Butorphanol 0.1 mL/10 lbs PLUS
- Xylazine 0.025 mL/10 lbs (ROUND down)

- Cat Cocktail of Choice:

- Equal volumes of tiletamine, acepromazine, and butorphanol dosed by weight of the cat:
- 0-10 lbs: 0.2-0.3 mL of each drug
- 10-20 lbs: 0.3-0.4 mL of each drug
- >20 lbs: 0.5 – 0.6 mL of each drug



Given SQ slowly and mixed in a single syringe

PAINFUL DOGS WITH OR WITHOUT SYSTEMIC ILLNESS

- HIGHER doses are commonly needed
 - Gabapentin sent home with owner to give prior to appointment
 - Oral premedication at time of appointment:
 - Dormosedan gel 0.2 mL/10lbs OTM, wait 5-10 minutes, THEN
 - Subcutaneous:
 - Tiletamine 0.2 mL/10 lbs PLUS
 - Acepromazine 0.2 mL/10 lbs PLUS
 - Butorphanol 0.2 mL/10 lbs PLUS
 - Xylazine 0.025-0.05 mL/10 lbs




ORAL SEDATION FOR NERVOUS, PAINFUL OR REACTIVE CATS

- Feline cues: tail flicking, tensing, hiding, have their ears pinned back
- Cats up to 15 lbs:
 - Tiletamine 0.1 mL, acepromazine 0.1 mL AND Fatal Plus 0.2 ml (or Euthasol 390 mg/mL)
- Cats greater than 15 lbs or young and metabolically healthy:
 - Tiletamine 0.2 mL, acepromazine 0.2 mL and Fatal Plus 0.2 ml (or Euthasol (390 mg/mL) 0.2 mL)
- Can mix with honey, Churu, or syringe directly in the very back of the mouth to prevent drooling
- Profound sedation in 5-10 minutes, may need to follow with SQ or IM injection
- Protocol also works well for small, reactive dogs***



TWO STEP INJECTIONS

First step: butorphanol 0.2mL PLUS
acepromazine 0.2mL SQ



Wait 5-10 minutes



Second step: ketamine 0.1 mL/10 lbs (or)
telazol 0.1 mL/10 lbs (or) both combined

FEARFUL OR AGGRESSIVE DOGS: THREE STEP PROCESS

1) Pre appointment sedation

Oral sedation at home:

- Gabapentin 100 mg/kg PLUS
- Acepromazine 10 mg/kg PLUS
- Trazodone 20 mg/kg OR
Phenobarbital 20 mg/kg
- Given 1-2 hours prior to appointment, can repeat dose if needed
- Instruct owners to feed in **high value** food or treats after fasting for a short period

2) Dormosedan gel: Dose 0.2 mL/10 lbs

3) SQ/ IM injection

- Tiletamine 0.2 mL/10 lbs PLUS
- Acepromazine 0.2 mL/10 lbs PLUS
- Butorphanol 0.2 mL/10 lbs PLUS
- Xylazine 0.025-0.05 mL/10 lbs



EXTRA COCKTAIL INGREDIENTS

- **Midazolam**: Will add in for neurologic patients or seizure patients
 - 0.2-0.4 mL/10 lbs
 - Can give IM if excessive sedation occurs with anesthesia
- **Alfaxalone**: Respiratory distress cat; pleural effusion
 - **SQ** protocol for a 10 lb cat:
 - Alfaxalone 2.5 mL (use 3 mL alfaxalone if >10 lbs) PLUS midazolam 0.2 mL PLUS butorphanol 0.2mL PLUS acepromazine 0.2mL
- **Vitamin B 12**: May reduce the sting of tiletamine
 - Mix in equal amount of B12 with total volume of sedation
 - Weigh pros and cons of increasing volume of injection depending on patient



EUTHANASIA TECHNIQUES

Going beyond intravenous



EUTHANASIA AGENTS OVERVIEW

Fatal Plus (pure pentobarbital)

- Less viscous
- Schedule II drug
- Blue in color
- Easier for intra-organ injections
 - AVMA approved for intraperitoneal injections without anesthesia - NOT recommended

Euthasol/Beuthanasia

(pentobarbital plus phenytoin)

- Viscous
- Schedule III drug due to addition of phenytoin denaturing compounds
- Pink in color
- Can ONLY perform abdominal injections with anesthesia first
- Phenytoin is cardiac depressant

HOW EUTHANASIA SOLUTION WORKS

- Causes death by severely depressing the respiratory, cardiac and vasomotor centers in the brain
 - Why does it matter?
 - Owner perception of death
 - Owners understanding of death
 - Rate of administration



PROS AND CONS OF INTRA-ORGAN INJECTIONS

PROS

- Fully unaware pet with anesthesia
- Stress free for the pet
- Takes the clinical feel away
- Pet can stay close to family, allows space while death occurs
- Less technically difficult for critically ill patients



CONS

- Longer appointment times
- Greater expense for larger pets
- Outside the "norm" → further explanation at times

INTRAORGAN BASICS

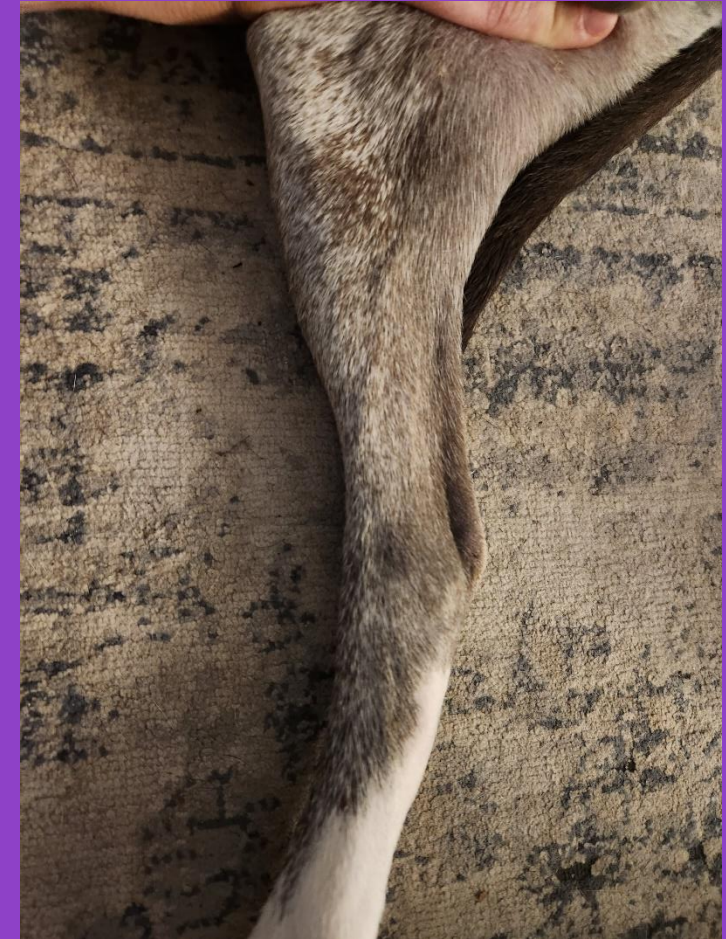


- Once under anesthesia, euthanasia solution given intraorgan
 - Dogs: 3 mL/10 lbs
 - Cats: 6 mL/CAT or 4 mL/10lbs
 - Same dose for IR, IH, IC, IP
 - Same dose for Fatal Plus and Euthasol/Beuthanasia solutions
 - Use 1.5 inch, 18 gauge needle for all pets except obese pets

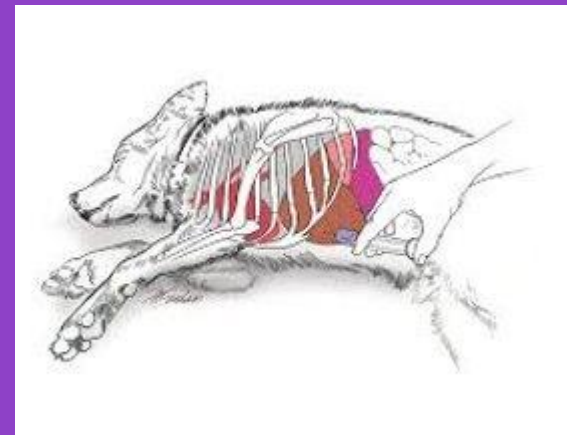
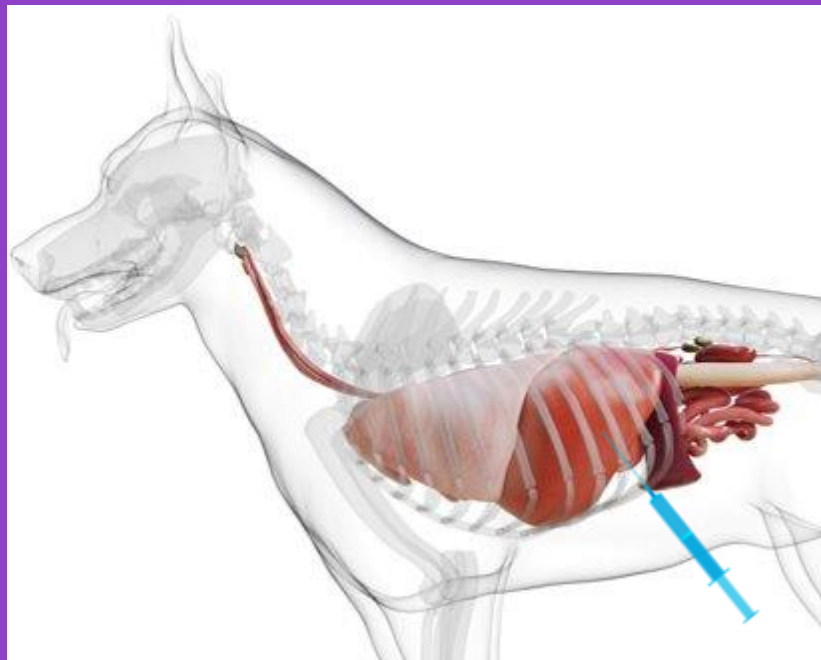
IV ADMINISTRATION UNDER ANESTHESIA

Butterfly catheter

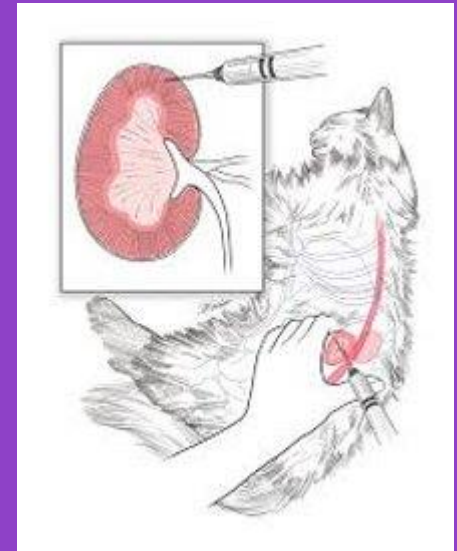
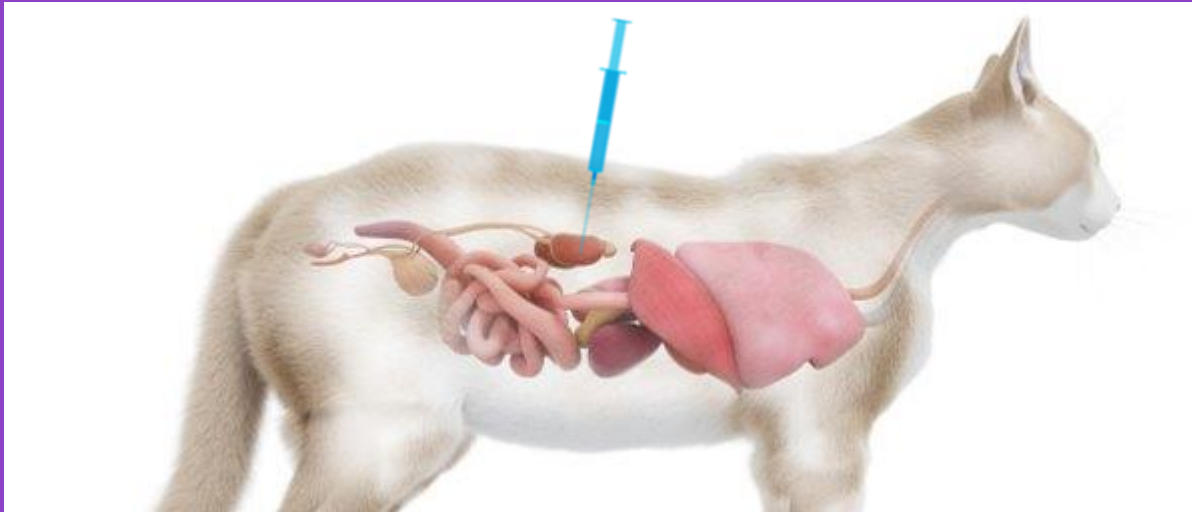
- Front limb:
 - Dorsal pedal
 - Cephalic
- Rear limb:
 - Dorsal pedal
 - Lateral saphenous
 - Medial saphenous (dog or cat)



INTRAHEPATIC (IH)

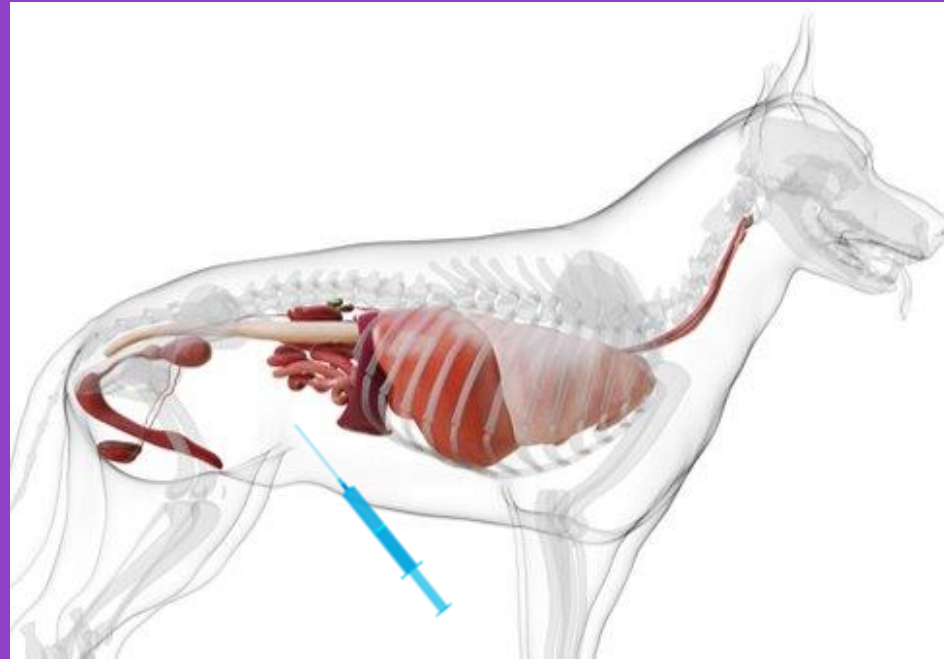


INTRARENAL (IR)



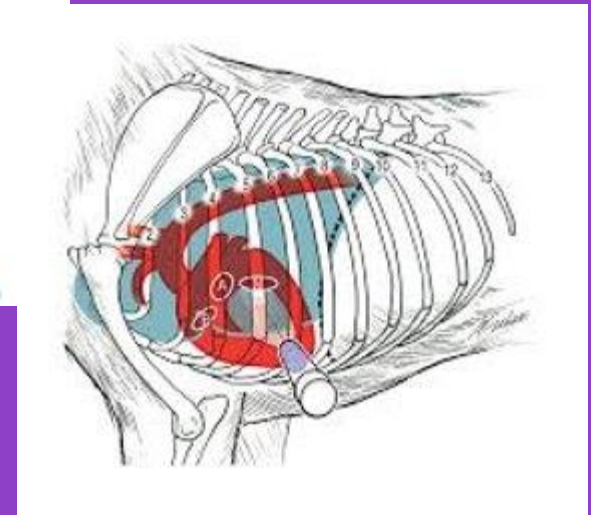
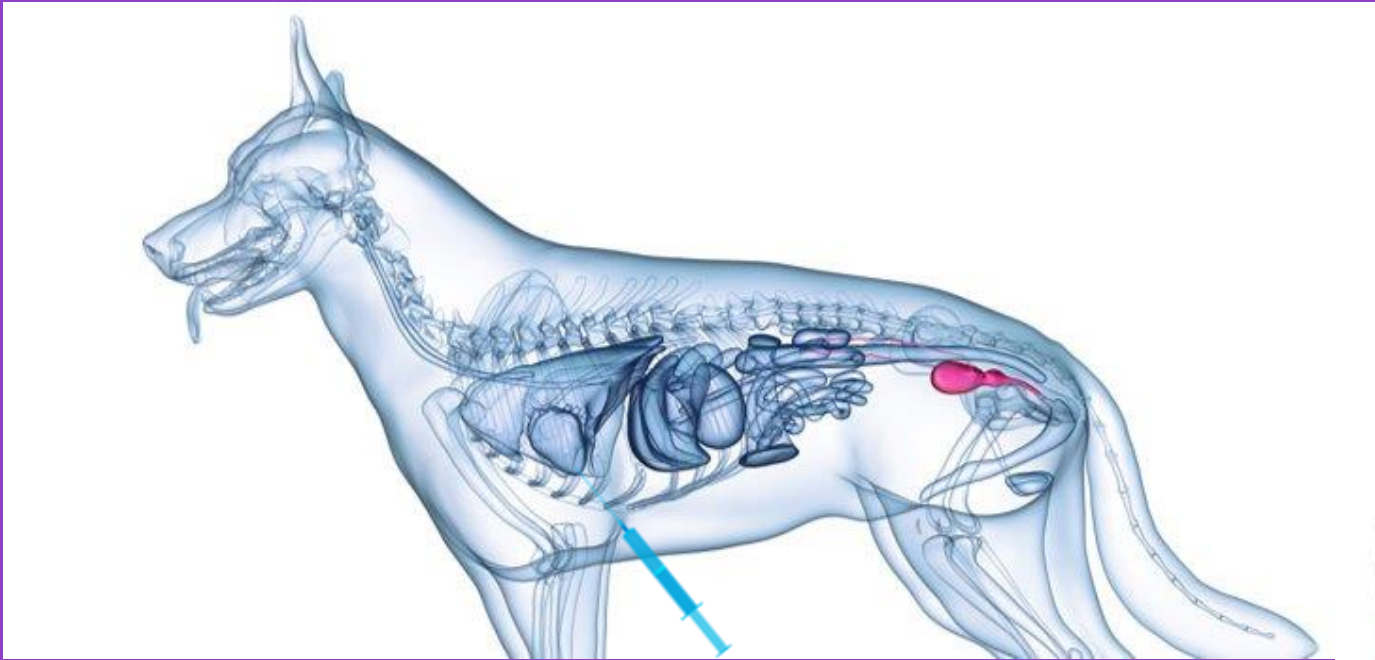
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INTRAPERITONEAL (IP)



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INTRACARDIAC (IC)



TIPS FOR INTRAORGAN INJECTIONS

- Always place a blanket over the patient or use your hand to shield the syringe and needle
- For intrahepatic injections:
 - Give slowly and redirect your needle $\frac{1}{3}$ of the way through
 - Can go between the ribs in larger dogs
- For intrarenal injections:
 - In cats: Isolate left kidney and brace against spine
 - For smaller patients, death is quicker than intrahepatic
- Can repeat dose in 15-20 minutes if needed



CASE EXAMPLES



BRACHYCEPHALIC PETS OR PETS WITH RESPIRATORY DISEASE

- First step SQ:
 - Butorphanol 0.2/10 lbs PLUS acepromazine 0.2/10 lbs
- Wait 5-10 minutes
- Second step SQ:
 - Tiletamine 0.1 mL/10 lbs, +/- midazolam 0.2 mL/10 lbs
- Alfaxalone on standby
- If respiratory distress is severe, proceed with IV euthanasia (propofol plus pentobarbital)



NEUROLOGIC OR SEIZING DOGS



- SQ Sedation:
 - Tiletamine 0.1 mL/ 10lbs PLUS
 - Butorphanol 0.2 mL/10lbs PLUS
 - Midazolam 0.2 mL/10 lbs PLUS
 - Xylazine 0.025 mL/ 10lbs
- Intrahepatic euthanasia
- Prepare the family for potential seizures with anesthesia
- Can give intranasal midazolam if seizing

CAT WITH PAINFUL ORAL SQUAMOUS CELL CARCINOMA (SCC)

- ASK the owner if the cat is better for injections or oral medication with this disease process (some patients are used to oral medications)
- Oral sedation:
 - tiletamine 0.2 mL PLUS
 - acepromazine 0.2 mL PLUS
 - euthanasia agent 0.2 mL
- SQ Injection:
 - tiletamine 0.3mL PLUS
 - acepromazine 0.3 mL PLUS
 - butorphanol 0.3 mL
- Intrahepatic injection: Fatal Plus 6 mL



QUESTIONS?

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