Sedation and Anesthesia for Fractious Patients

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Abstract: Patients may be fractious because of underlying behavioral problems or situational responses to stress, like a visit to the veterinary clinic. These patients can be a danger to humans trying to handle them and to themselves with a strong stress response and need for high doses of sedative drugs. The safest way to deal with these patients is to be proactive from the beginning with anxiolytics administered at home and appropriate sedation on arrival at the clinic.

Key Words: sedation, anesthesia, fractious, aggressive, pain, anxiolytics

Start Treatment at Home

Ideally, treatment of the anxious/fractious/aggressive patient should start at home before the patient leaves its house or yard. A calm patient is easier and safer to anesthetize. The dose of drugs needed to sedate/anesthetize patients escalates as anxiety/fractiousness/aggression escalates and, since the adverse effects of most sedative/anesthetic drugs are dose-dependent, this can lead to a dangerous potential for drug overdose.

The cause of the anxiety/fractiousness/aggression should be determined, if possible, as some causes potentially require more extensive treatment for the pet's benefit (eg, behavioral modification). Fear and anxiety commonly cause fractiousness and aggression, as does pain. Fear/anxiety can exacerbate pain and pain – and the anticipation of pain – can exacerbate fear/anxiety. Some patients may be highly fractious/aggressive and require sedation at home. Thus, treatment at home may mean long-term therapy (eg, SNRIs or benzodiazepines for fear & anxiety and/or NSAIDs and/or other analgesic drugs for chronic pain) AND/OR immediate therapy the day before and day of the veterinary visit (eg, trazodone, gabapentin, sedatives, opioids, etc…).

Trazodone and gabapentin have wide safety margins and are effective for calming most dogs and cats prior to their veterinary clinic visit. Although either species could have either drug, trazodone seems to be most effective for dogs and gabapentin seems to be most effective for cats. In cats, the gabapentin dose is 50-200 mg/cat (not per kg) depending on the size of the cat and the fear/fractiousness level. The dose for dogs is 10-20 (up to 40) mg/kg. Trazodone is dosed at 5-7 mg/kg in dogs (up to 15 mg/kg if aggressive – this is much higher than the dose used to change behavior – this is just to get the dog in the clinic) and 50-100 mg/cat (not per kg) in cats. The two can be combined in patients with high anxiety/fractiousness or aggression.

A single dose the morning of travel to the veterinary visit is sufficient for many patients, but if the patient has moderate-high anxiety/stress/fear or is fractious or aggressive, the most effective

protocol is to administer a dose of the drug the night before the veterinary visit and again the morning of the veterinary visit at least two hours before the trigger that indicates that the patient is leaving home (getting the carrier out, grabbing the car keys, etc…). Both drugs can cause some sedation, which is a benefit in this situation. For pre-hospital visit administration, the dose of both drugs is generally higher than that used for long-term calming or treatment of chronic pain (gabapentin only). In those instances, sedation is not usually the goal. As with all sedatives, these drugs can cause ataxia in older or weak patients. Paradoxical excitement has been reported for both drugs but is extremely uncommon and not seen by the author. Diarrhea has also been reported, as with most drugs administered PO.

Dosages for all drugs are in a table at the end of the notes. For patients that need deeper sedation, acepromazine can be added to the protocol and can be used in the specific 'Chill Protocol' that includes not only acepromazine but also gabapentin and melatonin). Transmucosal (Sileo®) or oral alpha-2 agonists might also be beneficial. Longer term treatment with benzodiazepines (eg, lorazepam) may be required in some patients. Short acting benzodiazepines (eg, diazepam) administered immediately prior to the visit may cause paradoxical excitement and are not recommended. Again, pain should also be treated. Gabapentin plays a role in pain relief so it can serve two roles. NSAIDs, oral opioids and other drugs should be considered, depending on the source of pain and patient health.

Ensure pain is managed prior to the visit if possible. Pain can cause high FAS (fear/anxiety/stress) and high FAS can exacerbate the level of pain.

NOTE: A small piece of cheese, meat, peanut butter, etc…. to make the drugs more palatable is totally acceptable and the benefits of the drugs outweigh the fear of 'something in the stomach' at anesthesia time. All patients should be treated as though they have 'something in the stomach' and should be induced and intubated rapidly. Also, fasting times for patients are shorter now than they were in the past with roughly 6 hours likely adequate in most patients.

At the Hospital

Once in the hospital, the patient should spend minimal (or no) time in noisy lobbies, should be placed in a quiet exam room, and should be handled by veterinarians/technicians/staff with appropriate training and compassion for the behavior status of the animal. The use of pheromones, music and other calming techniques may also benefit the patient.

COMMON QUESTIONS: *Do I sedate the patient in the hospital if it had pre-visit calming drugs/sedatives? If so, how do I determine the sedative dose?*

The answer depends on both what the patient is in the hospital for and the compliance level of the patient. If in the hospital for anesthesia, the answer is YES! SEDATE! And add preemptive analgesic drugs (usually opioids). Premedicant sedatives and analgesics make anesthesia safer by

allowing a decrease in the dose of anesthetic drugs required to maintain unconsciousness. Adverse effects of anesthetic drugs are generally dose-dependent. My guideline: If the patient is as sedate as a patient who has in-hospital premeds, administer the analgesic drug only; if the patient is obviously sedate but still a little nervous/reactive, administer ¼ of the usual premedicant sedative dose + full dose of opioid; if the patient clearly has some sedation but not enough to easily handle the patient, administer ½ of the usual premedicant sedative dose + full opioid dose; if the patient is showing no signs of sedation, administer the full dose of the premedicant sedative + full opioid dose. This may prolong recovery, but this can be controlled if reversible sedatives are administered.

If the patient is not necessarily in the hospital for anesthesia, we can gently and briefly 'ask' the patient if it needs more sedation. When it is time to examine or treat the patient, gentle handling may be sufficient if the patient has mild fear/anxiety or pain or even moderate fear/anxiety or pain that has responded to therapy at home. DON'T BE AFRAID TO SEDATE THE PATIENT and DON'T WAIT UNTIL THE SITUATION HAS IRREVOCABLY ESCALATED if the patient is showing signs of moderate-severe anxiety or fear or any level of fractiousness/aggression. This is dangerous for everyone, including the patient, and early use of sedatives/analgesics can prevent a bad situation. If the situation has already escalated beyond what can be controlled by sedation/analgesia, consider either proceeding with general anesthesia immediately (even if no exam has been done) or rescheduling the appointment. If reschedule is not possible, skip to the anesthetic section of the notes – ketamine or Telazol should be used as part of the protocol at this point.

Sedative/analgesic/anesthetic drugs

Drugs, and more importantly the drug dosages (Table 2), for sedation/anesthesia/analgesia are chosen based on the patient's degree of fear/anxiety or aggression, level of pain, and sedation/anesthesia risk level (ASA Status, Table 1). The anticipated degree of restraint required, invasiveness of the procedure that the pet is at the hospital for and degree of pain that will be caused by the procedure are also considerations. There is no 'one size fits all' in these situations. 'Appropriate drugs' and 'appropriate dosages' will be very patient and situation dependent and the protocols presented here are guidelines, but each veterinarian should choose individualized protocols using their clinical experience.

IMPORTANT POINT TO REMEMBER: Response to drugs can be quite varied in patients with fear/anxiety, fractiousness/aggression and/or pain. Expect an unpredictable response – especially in unpredictable patients – and be ready to escalate your protocol – or to send the patient home and try another day.

Alpha-2 adrenergic agonists (eg, Dexdomitor®)

- Advantages: provide analgesia, effects are reversible, can provide anything from light to deep sedation, can be administered IM, onset of action is rapid, oral mucosal absorption does occur and injectable drug can be squirted directly into the patient's mouth or Sileo® can be administered, anxiolytic
- Disadvantages: cause cardiovascular changes that are well-tolerated in patients with healthy hearts but are not appropriate for patients with cardiovascular disease. When a physical exam is not possible due to the patient's level of fear or aggression, the concern for alpha-2 agonist effects on the cardiovascular system should be weighed against the reality of the effects of the patient's behavior (eg, lunging, fighting, running) on the cardiovascular system. Often a dose of an alpha-2 agonist is warranted in these situations.
- TIPS: 1) Even if the patient is not painful, administer the alpha-2 agonist with an opioid for deeper, more predictable levels of sedation; 2) After injection, let the patient 'rest' in a quiet room without attempting to examine the patient for approximately 20 minutes. The onset of the drug is slower in excited/fearful patients; 3) Expect that the peak level of sedation in excited/fearful patients will be lower than in calm patients so be prepared to go to the next step (eg, anesthesia) if necessary; 4) In aggressive patients, start with the full label dose of the alpha-2 agonist (with an opioid) – one injection is likely all that is achievable without further stressing the patient and 5) AGE IS NOT A DISEASE. Not sure where the rule 'patients >7 years of age should not get alpha-2 agonists' came from, but it is totally incorrect. Base that decision on comorbidities, not on age. If the patient can't be examined, sedation is <u>required</u> or nothing can be done with the patient. Warn the owner that the pet is at increased risk for adverse effects since a full physical exam cannot be done and proceed with sedation.

Opioids

- Morphine, hydromorphone, methadone, oxymorphone, fentanyl, butorphanol, buprenorphine
- Advantages: provide moderate to profound analgesia, are reversible
- Disadvantages: may not provide enough sedation when used alone in young, healthy or excited patients
- NOTE: Butorphanol is a good sedative but provides only short-duration analgesia (60 minutes in the dog; 90 minutes in the cat)
- Both buprenorphine (dogs and cats) and methadone (maybe just cats?) are absorbed from the oral mucosa.

Acepromazine

- Advantages: Inexpensive, mild to moderate sedation, long-lasting (appropriate for long-term calming), some transmucosal absorption (ie, injectable acepromazine squirted in the mouth or mixed with food like peanut butter or squirt cheese for the patient to lick up), oral tablets are available and work for some patients.
- Disadvantages: No analgesia, may not be potent enough to sedate fearful/fractious patients when used alone, definitely not potent enough to sedate aggressive patients

when used alone, long-lasting (not desired if the patient is too sedate to be safely discharged), not anxiolytic.

- NOTE: The liquid acepromazine is a fairly common addition to pre-visit protocols in patients that do not have an adequate response to gabapentin and/or trazodone.

Benzodiazepines - Diazepam (Valium®) and Midazolam (Versed®)

- Advantages: minimal to no adverse effects, reversible, anxiolytic
- Disadvantages: generally don't provide adequate sedation when used alone in young, healthy or excited patients, no analgesia. Can cause paradoxical excitement.

Next Step: Add an anesthetic drug

If it is clear that the patient is not manageable without anesthesia, this may be the first step rather than the next step. The most common drug class for this step is the dissociative class, ie, ketamine or Telazol. Both of these drugs can be administered IM and provide profound sedation or anesthesia, depending on the dose. Obviously, if the patient is manageable, any injectable anesthetic drug could be administered IV. THIS IS NOW ANESTHESIA! Physiologic monitoring and support should be provided.

Ketamine

- Advantages: inexpensive, can be administered IM, rarely mild respiratory depression, no cardiovascular depression (unless the patient has uncontrolled heart failure – in which case they are unlikely to have the energy that would lead to the need for this technique).
- Disadvantages - very poor anesthesia and no muscle relaxation when use alone - must be combined with a sedative such as valium, medetomidine or dexmedetomidine, mild to moderate sting on injection.
- TIP: Adding IM ketamine to a protocol can be used at a high dose to provide full anesthesia (eg, the Dexmedetomidine, opioid, ketamine combination often used in cats) or can be used in a lower dose to decrease patient reactivity (‘ketamine stun’). In medium to large dogs the volume of ketamine needed to provide full anesthesia is likely too large to quickly inject so the ketamine stun technique will be more useful.
- Ketamine stun dose: 1-2 mg/kg added to the sedative, administered IM.
- Absorbed when squirted on the oral mucosa: Use the full label dose since some will be ‘lost’.

Telazol®

- Advantages: potent, rapid induction, can be administered IM; other advantages same as ketamine.
- Disadvantages: recoveries can be prolonged and rough (especially in dogs), thus a sedative should always be used in conjunction with Telazol®; other disadvantages same as ketamine.
- TIP: A small volume of Telazol® will provide full anesthesia even in large dogs. This is my drug of choice for aggressive patients.

- Absorbed when squirted on the oral mucosa: Use the full label dose since some will be 'lost'.
- Telazol powder can be reconstituted with dexmedetomidine and butorphanol (called 'TTDex') instead of with sterile water or saline. See information from Dr. Jeff Ko for dosing chart. http://www.aapma.com/resources/TTDex%20Injectable%20Chart%26Micro-dose.pdf
- NOTE: The butorphanol in the TTDex protocol provides minimal analgesia so be sure to add analgesic drugs!

Telazol-Torbugesic-Dexdomitor (TTDex) Injectable Chart

TTDex = Combine 2.5mL Dexmedetomidine (500 mcg/mL) and 2.5mL Butorphanol (10 mg/mL) with 1 bottle (500 mg) of Telazol powder.

Lbs	Kg	Mild Sedation 0.005ml/kg	Moderate Sedation 0.01ml/kg	Profound Sedation 0.02ml/kg	Surgical Anesthesia 0.035ml/kg	Profound Surgical Anesthesia 0.04ml/kg
2-4	1-2	0.005 ml	0.01 ml	0.02 ml	0.035 mL	0.04 ml
4-7	2-3	0.013 ml	0.025 ml	0.05 ml	0.09 ml	0.12 ml
7-9	3-4	0.018 ml	0.035 ml	0.07 ml	0.12 ml	0.15 ml
9-11	4-5	0.023 ml	0.045 ml	0.09 ml	0.16 ml	0.19 ml
11-22	5-10	0.038 ml	0.075 ml	0.15 ml	0.26 ml	0.37 ml
22-29	10-13	0.06 ml	0.12 ml	0.24 ml	0.40 ml	0.48 ml
29-33	13-15	0.07 ml	0.14 ml	0.28 ml	0.49 ml	0.58 ml
33-44	15-20	0.09 ml	0.18 ml	0.36 ml	0.61 ml	0.78 ml

Portion of Dr. Ko's TKD chart

Recovery from Anesthesia

Once the procedure is complete the patient should be allowed to recover in a quiet area and should be discharged as soon as safely possible. In some patients, reversal drugs may be appropriate to speed recovery but remember that fast recovery may mean bad recovery. If at all possible, patients should be allowed to recover quietly without reversal. Reversal drugs can always be administered just before the patient leaves – even in the owner's car if necessary. Ensure that the patient is conscious enough to not be dangerous to the owner (ie, not reactive to stimuli that would not normally cause a reaction in the pet). Pain should be addressed prior to reversal and patients that have undergone painful procedures should be discharged with analgesic drugs. The patient should be discharged patient with calming drugs/anxiolytics/sedatives (eg, trazodone or gabapentin +/- acepromazine; perhaps dexmedetomidine gel) to be administered at home prior to the next hospital visit.

TABLE: Sedative, Analgesic and Anesthetic Drugs. Not all of the drugs or drug dosages in this chart are licensed/approved for use in dogs and cats. However, all of the dosages in this chart are commonly used and can be referenced in the veterinary literature. A variety of drugs/protocols are available, choices should be made based on the veterinarian's experience and drug availability. Drugs are presented in alphabetical order in each category. PO= per os or oral , OTM = oral transmucosal membrane or buccal, FAS = fractious/anxious/stressed. **DOSAGES in mg/kg unless otherwise indicated.**

DRUG & DOSAGE (mg/kg – unless otherwise indicated)	**ADVANTAGES**	**DISADVANTAGES/ CONCERNS**	**NOTES**
Drugs to Administer at Home			
Acepromazine **Dog** & **Cat:** 0.025-0.05 OTM	Inexpensive, this is common injectable acepromazine	Effects are somewhat variable	Effects are variable, but much less variable than oral tables. See below for Chill Protocol
Benzodiazepines (all PO) **Cat:** Alprazolam 0.125-0.25 or lorazepam 0.25-0.5 mg/cat **Dog:** Alprazolam 0.02-0.1, Diazepam 0.5-0.2, Lorazepam 0.02-0.1	True anxiolytics	Can cause paradoxical excitement in some patients	Great choice for anxiety, generally not potent enough for aggressive or extreme FAS; may need extra dose night prior to hospital visit
Clonidine PO **Dog** & **Cat:** 0.01 to 0.05	Oral alpha-2 agonist	Bradycardia	Little to no information for using in this context
Dexmedetomidine gel (OTM) **Dog:** 0.01-0.04 **Cat:** 0.02 (**one dot** on the syringe barrel)	Effective for mild calming at low dosages, more sedation at higher dosages	Unlikely to be potent enough for aggressive patients unless the dose is increased	Licensed for noise phobia, not fractiousness and aggression. Not approved for cats, but used in cats. Administer 30-60 minutes prior to leaving home
Diphenhydramine?			Effects are highly variable
Gabapentin PO **Dog:**10-20 (up to 40) **Cat:** 50-200 mg/cat	Wide safety margin	No major concern. Cleared in part by the kidney so potentially more profound effect in CATS with renal disease. More likely to occur with repeat dosing for chronic pain	Effective for calming, mild to moderate sedation, mild analgesia. Administer at least 2 hrs prior to leaving home, may need extra dose night prior to hospital visit. Dogs have primarily hepatic clearance so renal disease not a concern.
Trazodone PO **Dog:** 5-7 (up to 15 if aggressive); **Cat:** 50-100 mg/cat	Wide safety margin	No major concerns	Effective for calming, mild to moderate sedation. Administer at least 2 hrs prior to leaving home, may need extra dose night prior to hospital visit

Melatonin PO* Small **dogs and cats** 0.5-1 mg; med dogs 1-3 mg; large dogs 5mg	*Note dosing is mg per patient not mg/kg		Administer at least 2 hrs prior to leaving home, may need extra dose night prior to hospital visit
Chill Protocol Gabapentin PO (20-25 mg/kg **dogs** or 50-200/**cat**) and melatonin* PO (dosages listed above); Acepromazine injectable formulation (0.025-0.05 OTM **dogs & cats**)	Wide safety margin, very effective *Note melatonin dosing is mg per patient not mg/kg	No major concerns	Gabapentin & melatonin the night before & morning of (2 hours prior to leaving home) hospital visit; acepromazine 30 minutes before leaving home. *Costa RS, Karas AZ, Borns-Weil S. Clinicians Brief. May 2019.*
Sedative/Analgesic Drugs for In-Hospital Use (primarily IV or IM dosing)			
ACEPROMAZINE **Dog:** 0.01-0.03 IV or IM (up to 0.2 IM) **Cat:** 0.03- 0.05 (up to 0.2 IM) Can be used alone but best used in combination with opioids and/or other sedatives. Can use **OTM** as described in previous section	Mild to moderate sedation for several hours; can be given orally or OTM but higher doses will be required & onset of effects are slow	Not anxiolytic, analgesic or reversible; duration may be longer than desired	If anxiolysis rather than sedation is required, a benzodiazepine should be added to the protocol. No absolute contraindications but use with caution in patients with hepatic disease, clotting dysfunction, or hypotension; recent evidence proves that ace does NOT cause seizures.
ALFAXALONE **Cat and small dog**: 0.5-1.0 IM	Mild to moderate sedation for 20-40 minutes. More predictable effects if combined with an opioid or benzodiazepine	Mild dose-dependent cardiovascular & respiratory depression	Alfaxalone is an anesthetic induction drug that can be used IM for sedation. It is best used with opioids and in cats & small dogs since the injectate volume can be very large for medium-large patients.
ALPHA-2 AGONISTS *Dexmedetomidine* **For light to moderate sedation**: **Dog:**0.001-0.003 IV or 0.003-0.01 IM; **Cat:**0.001-0.005 IV or 0.005-0.015 IM **For deeper sedation:** **Dog:**0.008-0.03 IV or 0.01-0.04 IM **Cat:**0.02-0.04 IM **OTM dosing:** **Dog:** 0.01-0.03 **Cat:** 0.015-0.04	Provide analgesia & sedation; effects are reversible rapid onset; titratable sedation from mild to profound; decreased stress as evidenced by decreased cortisol release. In dogs, 0.2 mg/kg OTM	Cardiovascular effects including bradycardia, hypertension and increased cardiac work due to vasoconstriction; sudden, brief arousal can occur with painful stimulus – alleviated by concurrent opioid	Generally the most effective drugs for patients exhibiting moderate to profound FAS or aggression; most predictable effects when used in combination with opioids. Can reverse drug effects once procedure is complete and patient is in a calm, quiet area where restraint is possible if needed.

Use low end of dosing range if used in conjunction with opioids or other sedatives, for older patients & patients with low level of fear/anxiety; Use high end of range if used alone, for younger patients and patients with higher level of fear/anxiety or aggression. *Medetomidine* Dosages are roughly double the mg/kg dexmedetomidine dosages.	dexmedetomidine provided similar effects to 0.005 mg/kg IV (Dent et al. Am J Vet Res. 2019;80(10):969-975)	administration. Vomiting, especially if administered SQ. Excessive salivation, vomiting and bradycardia are fairly common with OTM administration.	Contraindication: do not use in patients with cardiovascular disease.
MEDETOMIDINE + VATINOXAN I dose roughly the same as medetomidine. Label dose is higher	Similar to other alpha-2 agonists.	Less/no vasoconstriction so no less bradycardia (no reflex bradycardia). Lower intraop BP when compared to other alpha-2s – treatable with dopamine.	Slightly faster onset, slightly shorter duration of action when compared to medetomidine without the vatinoxan. Used as premed (off-label) or for procedural sedation in dogs. Not approved in cats.
BENZODIAZEPINES *Midazolam* **Dog or Cat:** 0.1 -0.2 **IM** or IV *Diazepam* **Dog or Cat:** 0.1-0.2 IV only	Minimal to no adverse effects; enhance calming when used in combination with sedatives	Sedation is minimal; may not be effective if patient is already exhibiting FAS or aggression and paradoxical excitement can occur if used alone!	Never use alone in these patients. Use with an opioid and/or true sedative for those exhibiting FAS and/or aggression. Be cautious with reversal as it may cause sudden arousal. Generally no need to reverse effects.
OPIOIDS: Low Pain *Butorphanol* **Dog & Cat:** 0.2-0.4 IM or IV *Buprenorphine* **Dog & Cat:** 0.02-0.03 IM or IV 0.03-0.05 OTM (slow onset)	Opioids provide mild to potent analgesia depending on the drug & dose and have a wide safety margin; fast onset except buprenorphine (10-30 mins); reversible; many to choose from; variety of routes of administration; synergistic with sedatives	May cause vomiting, slow GI motility and some respiratory depression if used with other respiratory depressing drugs (eg, inhalants); more potent opioids may cause excitement and/or hyperthermia in cats	Combine with a sedative; with mild pain can use butorphanol or buprenorphine; with moderate to severe pain use hydromorphone, methadone, morphine or oxymorphone. No contraindications but use with caution in patients in which vomiting or slowed GI motility would be detrimental.
OPIOIDS: High Pain *Hydromorphone:* **Dog:**0.1-0.2 IM, IV; **Cat:**0.1 IM, IV *Methadone:* **Dog:** 0.3-0.5 IM or IV; **Cat:** 0.3 IM or IV; **0.6 OTM**			

Morphine: **Dog:** 0.3-1.0 IM **Cat**: 0.1-0.3 IM			Ref OTM methadone cat: *Ferreira et al. Am J Vet Res. 2011 Jun;72(6):764-71.*
Anesthetic Drugs Any anesthetic drugs can be used if IV access is available. Listed here are drugs that can also be used IM and/or OTM.			
KETAMINE **Dog & Cat:** 1.0-2.0 IM when used in combination with a sedative may provide dissociation without anesthesia while the same dose IV will provide light anesthesia. 5.0-10.0 mg/kg IM for true anesthesia; IM is a good for route for cats but the volume at this dose may be too high for medium-large dogs **OTM Dog & Cat**: 5-10 **TILETAMINE-ZOLAZEPAM** **Dog & Cat:**1.0-2.0 IM or IV can be added to sedatives/opioids for light to moderate sedation For anesthesia WITH PREMEDS: **Dogs:**5-6 IM; 2-3 IV **Cats:** 6-8 IM; 2-3 IV **Dogs & Cats:** 5-7.5 OTM *(Cat study: Nejamkin P et al. J Feline Med Surg. 2020;22(2):108-113)*	Decrease CNS response to circulating neurotransmitters in those already exhibiting FAS and/or aggression; decrease incidence of sudden arousal to stimulus; ketamine (and maybe tiletamine) can contribute to pain relief.	Duration and/or depth may be longer and/or more profound than desired; ketamine & tiletamine are not reversible; ketamine is painful on injection; prolonged, rough recoveries are possible with tiletamine-zolazepam, especially in dogs.	This is anesthesia so patients should be monitored! There are no absolute contraindications but use with caution in patients with sympathetically driven cardiac arrhythmias and those with clinically significant hepatic or renal disease since these drugs are cleared by the liver & kidneys. For OTM, the most consistent effect is achieved if the ketamine is combined with the OTM alpha-2 agonist. Telazol can be used with or without the alpha-2 agonist with fairly consistent effects. Telazol has been used in meat-balls delivered **orally** to dogs at 20 mg/kg + 2 mg/kg acepromazine. In the same study, pentobarbital (63.2 +/- 5.1 mg/kg) was also effective in meatballs *(Ramsay & Wetzel, JAVMA 1998;213(2):240-2).*