Anesthesia & Analgesia for Fractious/Aggressive Dogs & Cats

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Start Treatment at Home

Ideally, treatment of the fractious/aggressive patient should start at home before the patient leaves its house or yard. Having a calmer patient to anesthetize is not only extremely beneficial for the patient but also make our job easier and safer. The dose of drugs needed to sedate/anesthetize patients escalates as 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 fractiousness/aggression should be analyzed and the specific cause treated, if possible. 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. 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) or immediate therapy the day before and day of the veterinary visit (eg, trazodone, gabapentin, sedatives, opioids, etc…). Trazodone and gabapentin are fairly safe and effective for calming dogs and cats prior to their visit to the veterinary clinic. Although either species could have either drug, trazodone seems to be most effective for dogs and gabapentin seems to be most effective for cats. 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 patient leaves home. Both drugs can cause some sedation (which is a benefit in this situation) and, as with all sedatives, 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. For patients that need deeper sedation acepromazine can be added to the protocol. 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.

Administer drugs, even if a small treat is necessary to entice the patient to take the drugs. What happened to nothing to ear after midnight? That is more about big meals than small treats and anesthetists should always induce patients quickly and intubate to protect the airway regardless of whether the patient is NPO or not. Sometimes the patients find things to eat unbeknownst to the owner. And perhaps our fasting protocols are too long. Fasting times are now generally much shorter in humans and this may be our direction in animals.

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. 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 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 general anesthesia immediately (even if no exam has been done) or rescheduling the appointment.

Drugs – and more importantly the drug dosages – for sedation/anesthesia/analgesia should be chosen based on the patient's degree of fear/anxiety or aggression, level of pain, and sedation/anesthesia risk level (ASA Status, **Table 1**). Also consider 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. 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.

Sample Protocols based on Patient ASA, Fear/Aggression and Pain Levels

Dosages for drugs listed in the protocols are listed in **Table 2**. Unless indicated otherwise, drugs are generally administered IM to decrease stress from restraint for IV injection. The subcutaneous route of administration is not recommended because the absorption is too slow and results in low circulating concentrations of the drug.

Low Fear/Anxiety, Mild Pain, ASA I-II (low risk)

- Dexmedetomidine low dose
  - Low end range: large cats and dogs, older patients
  - High end range: smaller patients, younger patients, if used solo (without opioid)
- AND/OR dose of acepromazine
  - Not an anxiolytic so may add a benzodiazepine to the protocol if not using alpha-2 agonist
  - ADD if long duration sedation is necessary
  - NOT REVERSIBLE, NO ANALGESIA
- +/- the opioid of your choice
  - Match the opioid to the degree of pain; butorphanol &/or buprenorphine may be appropriate for mild pain

Low Fear/Anxiety, Mild Pain, ASA III-IV (moderate to high risk)

- Midazolam OR alfaxalone
- PLUS opioid appropriate for level of pain. DO NOT ADMINISTER BENZODIAZEPINES ALONE – may cause paradoxical excitement.
- If the patient is extremely fractious, consider microdose of dexmedetomidine
  - This level of fear/anxiety is likely more detrimental than a microdose of a reversible drug
  - Staff safety must be considered along with health status of the pet

Moderate Fear/Anxiety or Pain, ASA I-II

- Start calming therapy pre-visit
  - Dexmedetomidine higher dose (Dosing caveats same as for ASA I-II)
  - +/- acepromazine or midazolam (Comments are the same as for ASA I-II)
- Midazolam is an excellent addition as a true anxiolytic (but not likely to need BOTH ace & midazolam)
- +/- the opioid of your choice
  - Match the opioid to the degree of pain
    - Moderate-high pain: morphine, hydromorphone, methadone, oxymorphone
- If the procedure is painful, use other analgesics as appropriate for the procedure
  - Eg, local anesthetic blockade, constant rate infusion, etc…

Moderate fear/anxiety/fractiousness or Pain, ASA III-IV

- Start calming/sedating therapy pre-visit
- Midazolam OR Alfaxalone
- PLUS Opioid (standard doses – low end of range) appropriate for degree of pain
- If painful procedure, use other analgesics as appropriate for the procedure

Severe Fractiousness/Aggression, Any ASA

- START CALMING/SEDATING TREATMENT PRE-VISIT
- DO NOT put personnel in danger or stress the patient any further - Go straight to sedation/anesthesia

Protocol 1:

- High dose dexmedetomidine (can use LABEL DOSE)
- PLUS an opioid appropriate for the level of pain
- Will get calmer patient in about 20 mins – but may still need IV or IM anesthetic drugs (Protocol 2)

Protocol 2:

- Next step if previous protocol not effective OR first step if patient is dangerous
- Add ketamine to protocol above
  - 1-2 mg/kg may provide dissociation without anesthesia; often called 'ketamine stun'
  - 5-10 mg/kg added for true anesthesia – often used in cats but volume too high for most dogs
- OR Add Telazol to protocol above
- Combine all drugs in same syringe, administer together IM by quick hand injection, pole syringe or dart.

REFERENCES

Hammerle M, Horst C, Levine E, et al. 2015 AAHA Canine and Feline Behavior Management Guidelines. J Am Anim Hosp Assoc. 2015;51(4):205-21.

Overall K. Medications for fearful dogs and cats.
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TABLE 1: American Society of Anesthesiologists (ASA) Risk for Anesthesia Related Adverse Events

ASA#	Risk
1	Low; free from disease or conditions that would impact anesthetic drug/management choices
2	Low; with mild disease or conditions that might impact anesthetic drug/management choices
3	Moderate; has disease or condition that will moderately impact anesthetic drug/management
4	Severe; disease or condition will profoundly impact anesthetic choices, patient may die
5	Profound; patient has life-threatening disease and may die with or without anesthetic intervention

TABLE 2: Sedative, Analgesic and Anesthetic Drugs

Note: Not all of the drugs in these charts are FDA-approved for use in dogs and cats. Drugs like the alpha-2 agonists and acepromazine are often used at lower than the FDA-approved dose as profound sedation is not always necessary. However, all of the dosages in this chart are commonly used and are referenced in the veterinary literature. A variety of drugs/protocols are available, choices should be made based on the veterinarian's experience. Drugs are presented in alphabetical order in each category.

DRUG & DOSAGE (mg/kg)	ADVANTAGES	DISADVANTAGES/ CONCERNS	COMMENTS
Drugs to Administer at Home			
ACEPROMAZINE **Dog** & **Cat**- 0.025-0.05 oral transmucosal	Inexpensive	Effects are not consistent with PO administration	Effects are highly variable
BENZODIAZEPINES	True anxiolytics	May take days – weeks for full effect	Variety used for anxiolysis
CLONIDINE **Dog** & **Cat**- 0.01 to 0.05	Oral alpha-2 agonist	Bradycardia	Little to no information for using in this context
DEXMEDETOMIDINE GEL (see label for dose)	Effective for mild calming	Unlikely to be potent enough for aggressive patients	FDA-approved for noise phobia, not fractiousness and aggression
GABAPENTIN **Dog**- 10-20; **Cat**- 50-100/cat	High safety margin	No major concerns	Effective for calming, mild to moderate sedation
TRAZODONE **Dog**- 5-7 (up to 15); **Cat**- 50 mg/cat	High safety margin	No major concerns	Effective for calming, mild to moderate sedation
Sedative/Analgesic Drugs for In-Hospital Use			
ACEPROMAZINE **Dog**- 0.01-0.03 IV or IM (up to 0.2 IM); **Cat**- 0.03- 0.05 (up to 0.2 IM);	Mild to moderate sedation for several hours; can be given orally or	Not anxiolytic, analgesic or reversible; duration may be longer than	If anxiolysis rather than sedation is required, a benzodiazepine should be added to the protocol. No absolute contraindications but use with

Can be used alone but best used in combination with opioids and/or other sedatives.	transmucosally but higher doses will be required & onset of effects are slow	desired	caution in patients with hepatic disease, clotting dysfunction, or hypotension; recent evidence proves that ace does NOT cause seizures.
ALFAXALONE 0.5-1.0 IM	Mild to moderate sedation for 20-40 minutes	Mild 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; 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.	Provide analgesia & sedation; effects are reversible rapid onset; titratable sedation from mild to profound; decreased stress as evidenced by decreased cortisol release	Cardiovascular effects including hypertension and increased cardiac work due to vasoconstriction; sudden, brief arousal can occur with painful stimulus – alleviated by concurrent opioid administration.	Generally the best drugs for patients exhibiting moderate to profound fear/anxiety and/or fractiousness/aggression; most predictable effects when used in combination with opioids. Dosages in this handout are based on, but not exactly the same as, the FDA-approved label dosages. See the product insert for more information on dosing. Can reverse drug effects once procedure is complete and patient is in a calm, quiet area where restraint is possible if needed. Contraindication: do not use in patients with cardiovascular disease. An oral dexmedetomidine paste is available for treatment of noise phobia that might also be effective for mild calming in some patients.
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 physiologic effects; enhance calming when used in combination with true sedatives; midazolam can be administered IM	True sedation is minimal; may not be not effective if patient is already exhibiting fear/anxiety/ aggression and paradoxical excitement can occur if used alone!	Never use alone. Use in combination with an opioid and/or true sedative for those exhibiting fear/anxiety/ aggression 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 oral transmucosal (slow onset)	Opioids provide mild to potent analgesia depending on the drug and have a wide safety margin; fast onset except buprenorphine (10-30 mins); reversible; many to choose from; variety of routes of administration;	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 to avoid excitement in cats; with mild pain use butorphanol or buprenorphine; with moderate to severe pain use hydromorphone, methadone, morphine or oxymorphone. No absolute 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 or IV; **Cat:** 0.1 IM or IV; *Methadone:* **Dog:** 0.3-0.5 IM or			

IV; **Cat:** 0.3 IM or IV; *Morphine:* **Dog:** 0.3-1.0 IM; **Cat**: 0.1-0.3 IM	synergistic with sedatives		
Anesthetic Drugs Any of the anesthetic drugs can be used if IV access is available. Listed here are the anesthetics used IM.			
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 **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	Decrease CNS response to circulating neurotransmitters in those already exhibiting fear/anxiety 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 or seizures and those with clinically-significant hepatic or renal disease since these drugs are cleared by the liver & kidneys.