

Animal Dental Care  
& Oral Surgery

# Anesthesia Plans: A Practical Approach

Martin Kennedy, DVM, DACVAA

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## Anesthesia Plans: Disclosures

- No financial relationships



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## Anesthesia Plans: Outline

- Making a Plan
  - Goals & considerations
  - Protocol design
  - Example cases



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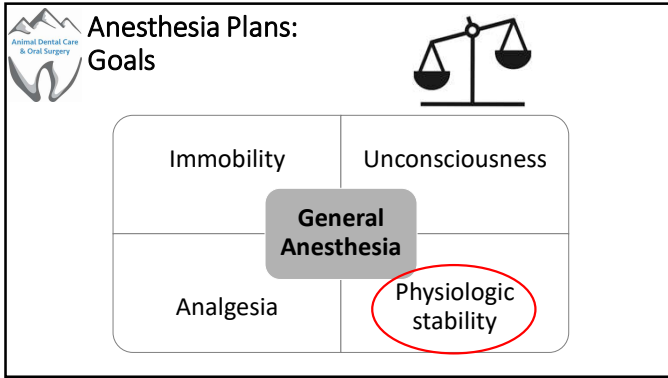
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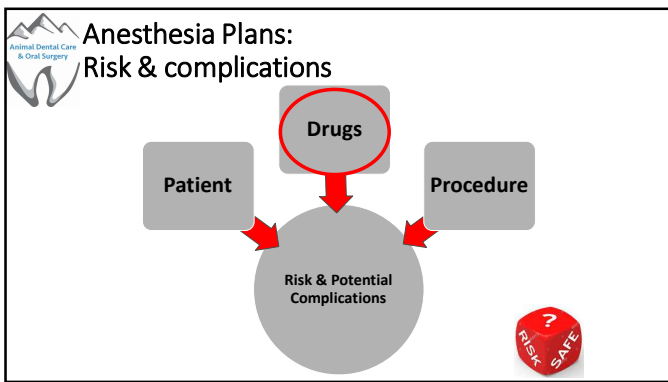
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**Anesthesia Plans: Protocol Design**

- Premedication
- Induction
- Maintenance
- Recovery
- **DEDICATED ANESTHETIST!!!**



The slide lists the steps of anesthesia protocol design: Premedication, Induction, Maintenance, Recovery, and a bolded 'DEDICATED ANESTHETIST!!!'. To the right is a meme featuring a man with a mustache and a blue shirt, with the text 'YOU WILL GO TO SLEEP' at the top and 'OR I WILL PUT YOU TO SLEEP' at the bottom.

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**Sedatives:**  
**Scenario #1: Sedation at home**

- PO medication
- Need 2 hours
- Avoids/minimizes escalation
- Less stressful
- Fewer hospital resources required




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**Sedatives:**  
**Sedation at home**

- **Trazodone**
  - Dogs: 3.5-12mg/kg q8-12hr PO (Gruen et al.)
  - 50mg per cat (Stevens et al. JAVMA 2016 Jul 15;249(2):202-7)
  - Minimal side effects reported
  - Potential drug interactions
- **Gabapentin**
  - Wide dose range
    - 10-30mg/kg q8-12hr PO
    - 100-150mg/cat
  - Minimal side effects reported
    - ASPCA: sedation, ataxia, lethargy




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**Sedatives:**  
**Scenario #2: Sedation in hospital**

- IM medication
- Sedative + Opioid
- Options?
- Considerations?




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**Sedatives:**  
**Acepromazine**

- Phenothiazine
- Mild → marked sedation
- Long lasting
- Inexpensive
- Low volume injection
- **Cautions**
  - $\alpha$ -blockade → Hypotension
    - Contraindicated: hypovolemia, HCM
  - NOT reversible
  - NO analgesia



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**Sedatives:**  
**Dexmedetomidine**

- $\alpha_2$ -agonist
- Mild → profound sedation
- Short acting & reversible
  - Atipamezole
- Analgesia
- **Cautions**
  - ↓CO by ~50-70%!!!
    - Patient selection critical!!!
  - Expensive
  - Multiple concentrations



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**Sedatives:**  
**Midazolam**

- Benzodiazepine
- Mild sedation\*
  - **Patient selection critical**
- Short acting & reversible
- Minimal side effects
- **Cautions**
  - Disinhibition
  - NO analgesia



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**Anesthesia Plans:  
Protocol Design**

- **Premedication:**
  - Sedative + Opioid
- Induction
- Maintenance
- Recovery



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**Opioids:  
Morphine**

- Full  $\mu$ -agonist
- Excellent analgesia
- Minimal cardiovascular effects\*
- Reversible
- Inexpensive
- **Disadvantages**
  - Histamine release if given rapidly IV
  - Vomiting with IM
    - $\uparrow$ IOP &  $\uparrow$ ICP



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**Opioids:  
Hydromorphone**

- Full  $\mu$ -agonist
- Excellent analgesia
- Minimal cardiovascular effects
- Reversible
- Inexpensive
- IM or IV
- **Disadvantages**
  - Vomiting with IM
    - $\uparrow$ IOP &  $\uparrow$ ICP
  - Panting, Hypothermia/hyperthermia



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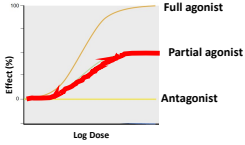

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**Opioids:**  
**Buprenorphine**

- Partial  $\mu$ -agonist
- Moderate analgesia
- Minimal cardiovascular effects
- Longer duration
  - Formulation\*
- Cats: OTM, transdermal
- **Disadvantages**
  - Expensive
  - High affinity for  $\mu$ -receptor

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**Opioids:**  
**Butorphanol**

- $\mu$ -antagonist/ $\kappa$ -agonist
- Sedation
- Minimal cardiovascular effects
- Reversible
- No vomiting or panting
- **Disadvantages**
  - Only mild analgesia
  - Short acting
  - Expensive



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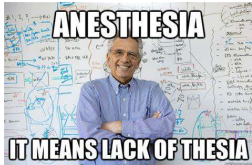
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**Anesthesia Plans:**  
**Protocol Design**

- Premedication:
  - Sedative + Opioid
- **Induction**
  - Injectable anesthetic
- Maintenance
- Recovery



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**Animal Dental Care & Oral Surgery**

### Induction Drugs: Propofol

- Non-barbiturate hypnotic
- Smooth, rapid induction
- Noncumulative
- Good muscle relaxation
- **Disadvantages**
  - Hypotension
  - Respiratory depression
  - Shelf life



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**Animal Dental Care & Oral Surgery**

### Induction Drugs: Ketamine + benzodiazepine

- NMDA antagonist
- Maintains/increases CO, MAP
- Minimal respiratory depression
- Inexpensive
- **Disadvantages**
  - Muscle rigidity, myoclonus
    - + Midazolam or diazepam
  - +/- Tachycardia, ↑MVO<sub>2</sub>



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**Animal Dental Care & Oral Surgery**

### Induction Drugs: Alfaxalone

- Neurosteroid
- Sedation → anesthesia
  - Dose & route dependent
- Minimal/mild cardiovascular depression\*
- IV or IM
- **Disadvantages**
  - Respiratory depression
  - Cost



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**Animal Dental Care & Oral Surgery**

### Induction Drugs: Ketamine + Propofol

- Ketamine 2mg/kg IV →
- **Propofol** to effect
- Smooth induction
- Good hemodynamics
- **Disadvantages**
  - Respiratory depression



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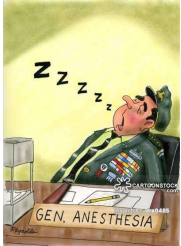
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**Animal Dental Care & Oral Surgery**

### Anesthesia Plans: Protocol Design

- Premedication:
  - Sedative + Opioid
- Induction
  - Injectable anesthetic to effect
- **Maintenance**
- Recovery



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**Animal Dental Care & Oral Surgery**

### Anesthesia Plans: Maintenance

- Isoflurane
- Sevoflurane



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**Anesthesia Plans: Maintenance**

- Why use CRIs???
- Reduce inhalant requirement
- Multimodal analgesia
- Smooth out maintenance & recovery




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**Anesthesia Plans: Protocol Design**

- Premedication:
  - Sedative + Opioid
- Induction
  - Injectable anesthetic to effect
- Maintenance
  - Inhalant, +/- local, +/- CRIs
- Recovery



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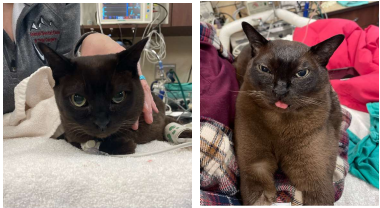
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**Anesthesia plans: Recovery**

- Monitoring!!!
  - TPR
  - Mentation
  - Pain score
- Supportive care
  - Pain control
  - +/- Heat
  - +/- Sedation
  - +/- Reversals



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**Anesthesia Plans:  
Example Case #1**

- "Big Z"
- 3 yr Boxer-X
- COHAT +/- extractions
  - PE: WNL, very excited!
  - Additional considerations?
  - Premedication?
  - Induction drug?
  - Maintenance?
  - Recovery?



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**Anesthesia Plans:  
Example Case #2**

"Sassy"

- 6 yr FS DSH
- Hx of stomatitis
- NOT nice!!!
- COHAT + lots of extractions!!!
  - Additional considerations?
  - Premedication?
  - Induction drug?
  - Maintenance?
  - Recovery?



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**Anesthesia Plans:  
Example Case #3**

"Otis"

- 12 yr MN Golden
- PE: BAR, super nice!!!
- COHAT +/- extractions
  - Additional considerations?
  - Premedication?
  - Induction drug?
  - Maintenance?
  - Recovery?



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