



AMERIVET

VETERINARY PARTNERS

Quick Guide to Anesthesia Knowledge Requirements and Process

1. Medications

a. Sedatives

i. Understand the sedatives, adverse effects, and best cases used for

1. Phenothiazines- ex: acepromazine
2. Benzodiazepines – ex: midazolam, diazepam
3. Alpha-2 agonist- ex: dexmedetomidine

ii. Know the reversals for sedatives in emergency situations

1. Flumazenil used for reverse benzodiazepines
2. Atipamazole (Antisedan) used to reverse dexmedetomidine

b. Analgesia

i. Be able to provide a list of all opiates used in hospital and adverse effects

1. Hydromorphone
2. Methadone
3. Fentanyl
4. Buprenorphine
5. Butorphanol

ii. Know the reversal for opiates

1. Naloxone

c. Non-steroidal anti-inflammatory agents

i. Know which NSAIDs are available in hospital and adverse effects, which cases to consider use in and ones to not use it in

1. Carprofen (Rimadyl)
2. Robenacoxib (Onsior)

3. Meloxicam (Metacam)

d. Induction Agents

- i. Know what induction medication is available in hospital, adverse effects, and best cases used in

1. Propofol
2. Etomidate
3. Alfaxalone
4. Ketamine

e. Anti-cholinergics (parasympatholytics)

- i. Understand the mode of action of these medications and indications to usage

1. Atropine
2. Glycopyrrolate

f. Local Anesthetics

- i. Lidocaine
- ii. Bupivacaine

g. Intravenous Fluid Therapy

- i. Know which Isotonic crystalloids are in hospital and surgical rates

1. LRS, Norm-R, Plasmalyte, 0.9% NaCl
2. Standard Surgical Rates
 - a. Dog 5ml/kg/hr
 - b. Cat 3ml/kg/hr

- ii. Know which colloids are in hospital

1. Vetstarch
 - a. Rates 20 to 50 ml/kg/day
 - b. Boluses
 - i. Dogs 5 to 20 mls/kg
 - ii. Cats 2.5 to 5 mls/kg

- iii. Vasopressors

1. Dopamine
 - a. 5 to 20 mcg/kg/min
2. Norepinephrine
 - a. 0.1 to 2 mcg/kg/min
- iv. Positive inotrope
 1. Cardiac systolic dysfunction
 2. Dobutamine
 - a. 5 to 10 mcg/kg/min

2. Monitoring

- a. Blood pressure
 - i. Normal
 1. Dog and Cats
 - a. Systolic 110 to 160 mmHg
 - b. Diastolic 60 to 100 mmHg
 - c. MAP 80 to 120 mmHg
 - ii. When to notify doctor
 1. Abnormal
 2. Changes in trends
 - b. Electrocardiogram (ECG)
 - i. Normal
 1. Heart rate
 - a. Awake
 - i. Dog – 60 to 120 bpm
 - ii. Cat- 160 to 220 bpm
 - b. Anesthetized patient
 2. What does normal sinus rhythm look like
 - ii. When to notify doctor
 1. Abnormal
 2. Changes in Trend

- c. End Tidal CO₂ (ETCO₂)
 - i. Normal
 - 1. Value 35-45mmHg
 - 2. Waveform appearance
 - ii. Abnormal
 - 1. Changes in waveform
 - 2. Values
 - 3. Changes in Trend
- d. Pulse Oximetry (SpO₂)
 - i. Normal
 - 1. In awake patients not on oxygen - >96%
 - 2. In anesthetized patients on 100%
 - ii. Factors that affect SpO₂
 - iii. Abnormal
 - 1. When to notify doctor to changes
 - 2. Value and trend
- e. Temperature
 - i. Know normal temperature
 - ii. Interventions to maintain normal temperature

3. Anesthetic Procedure

- a. Anesthetic sheet opened and started to fill out
- b. Premedication drugs, dosages, and route double checked with doctor and administer as directed
 - i. Opioids and sedatives
 - 1. Should be administered 10 to 15 minutes prior induction
 - 2. Exemption buprenorphine takes minimally 20 to 40 minutes to exert analgesic effects
 - ii. Antibiotics
 - 1. Should be administered 30 to 60 minutes prior to skin incision

- iii. Antiemetics
- c. Induction agents and dosages double checked with doctor, then drawn up and ready for use
- d. Double check with doctor if pre-operative antibiotics are required
- e. Fluid types and rates double checked with doctor then set up and ready for use
- f. Isoflurane levels checked and filled in anesthetic machine or machines being used
- g. Anesthetic machines being used are leak tested prior to use
- h. If not using ventilator be sure pop off valve is open
- i. If using ventilator set up and check connections
 - i. Double check with doctor pressure limit, tidal volume, and respiratory rate
 - ii. Pressure Limit 20-30mmHg
 - iii. Tidal Volume 10-15mls/kg (about 150mls per 10kg)
 - iv. Respiratory Rate 5-10 breaths per minute
- j. Check with doctor type of breathing circuit required
 - i. rebreathing (F – circuit) vs. non-rebreathing
 - ii. Rebreathing circuit = body wt > 10kg
 - iii. Non-rebreathing circuit = body wt < 10kg
- k. Check with doctor if rebreathing circuit used size of reservoir bag
 - i. Reservoir bag (1 liter per 10 kg)
- l. Cuff of endotracheal tube is leak tested prior to use
- m. Gauze tie, gauze for holding tongue and cuff inflator available for intubation
- n. Eye lubrication out
- o. Estimate size of endotracheal tube required by palpation of patients trachea
 - i. Have a endotracheal tube of one size up and down
- p. Laryngoscope is available
- q. All monitors are checked and running properly
- r. If in surgery check that suction is working

- s. Check that surgical lights are working
- t. Check with doctor if cautery is needed
- u. Turn table heat and bair hugger or Hot Dog on
 - i. Be sure a hand towel is available to protect patient's eyes if using Bair Hugger
- v. If feline check with doctor if lidocaine is needed for laryngospasm
- w. Prior to induction, make sure Surgical Safety Checklist is started
- x. Patient is ready to be induced:
 - i. Multi-parameter monitor in induction area, including ETCO₂
 - ii. Pre-oxygenate patient for 5 minutes
 - iii. Administer induction agents slowly IV to effect
 - iv. Use laryngoscope
 - v. Once intubated check tube placement by:
 - 1. palpating trachea - tube should be located no further than thoracic inlet
 - 2. Evaluate ETCO₂ waveform
 - 3. Direct visualization in trachea between arytenoid cartilages
 - vi. Pressure test system once patient intubated to determine if endotracheal cuff requires inflation with air
 - 1. Assistant holds tube in place during pressure check
 - 2. Inflate cuff with 1cc at a time, pressure testing system after each incremental fill
 - 3. DO NOT EVER FILL ENDOTRACHEAL CUFF WITH OUT PRESSURE TESTING PRIOR OR BY "FEEL"
 - vii. Tie tube in place
- y. Anesthesia period
 - i. Make sure all monitoring is placed on patient
 - ii. This includes pre-surgical prep period
 - iii. Place esophageal stethoscope

- iv. If patient is to be moved to surgical suite, utilize gurney if > 40 lbs
- v. If patient moved to surgical suite
 - 1. Re-evaluate tube position, leak testing, and plane of anesthesia
 - 2. Reconfirm patient positioning
- vi. Leak testing should be performed when patient has reached appropriate anesthetic depth
 - 1. Proper anesthetic depth will result in relaxing of trachea and could allow a leak
- vii. Throughout anesthetic procedure adjust gas and any CRIs (analgesic or sedative) based on anesthetic plane and procedure being performed
- viii. Reduce anesthetic to lowest effective levels
- ix. Re-lubricate eyes every 30 minutes
- x. Go through Surgical Safety Checklist again and fill out
- z. Post anesthetic period
 - i. Turn inhalant off
 - ii. Reduce CRIs to appropriate post anesthetic levels
 - iii. Continue monitoring
 - iv. Disconnect circuit, O2 flush lines to remove any remaining gas anesthesia
 - v. Reconnect patient to circuit with 100% oxygen
 - vi. Make sure patient is spontaneously breathing prior to disconnecting oxygen
 - vii. Once spontaneously breathing
 - 1. Deflate cuff
 - 2. Untie tube
 - viii. Prior to moving patient to recovery area confirm
 - 1. Oxygenating normally off O2, SpO2 > 96%
 - 2. Ventilating normally, ETCO2 35-45 mmHg
 - 3. If these parameters are not being met notify doctor
 - ix. If patient > 40 lbs, use gurney to move to recovery area

- x. During moving insure tube is held in place
- xi. Once in recovery are continue monitoring patient
 - 1. Regular auscultation
 - 2. SpO2 monitoring
- xii. Re-lubricate eyes
- xiii. Patient can be extubated once able to move tongue and protect airway
- xiv. If not nurse continuing care for patient round Treatment Nurse