



Common Anesthetics: Effects on Pulse Oximetry

Advantages / Disadvantages of Anesthetic Premedications in Cats and Dogs¹

| Drug | Advantages | Disadvantages | Pulse Oximetry |
|-----------------------------|---|---|------------------|
| Acepromazine | Potent tranquilizer. | Hypotension platelet inhibition; seizures in susceptible animals; animal may be unresponsive to sound/movement if used alone. | 3, 5 |
| Butorphanol | Moderate analgesia; mild sedation; minimal cardiovascular effects; less respiratory depression than oxymorphone. | Bradycardia (atropine-responsive); dysphoria; respiratory depression; expensive; ±efficacy for severe pain. | 3, 5, 6 |
| Diazepam | Decreases induction dose; muscle relaxation; ±mild sedation; minimal cardiovascular effects; treatment of seizures. | Poor tranquilizer; excitement or disorientation; rapid bolus may lead to hypotension. | 3, 4, 5 |
| Ketamine | Dissociative anesthetic agent; good somatic analgesia; stimulates cardiovascular system. | ±Cardiovascular depression; ±excessive cardiovascular stimulation; ±respiratory depression; increases intraocular and intracranial pressure; muscle rigidity; no visceral analgesia. | 1, 3, 4, 6, 7 |
| Morphine | Excellent analgesia; mild sedation; minimal cardiovascular effects; mild respiratory depression; reversible; less expensive than oxymorphone. | Bradycardia (anticholinergic-responsive); dysphoria; respiratory depression; histamine release most often seen when given IV; ±hypotension; expensive; vomiting commonly seen. | 2, 3, 5, 6 |
| Oxymorphone | Excellent analgesia; mild sedation; minimal cardiovascular effects; mild respiratory depression; reversible. | Bradycardia (anticholinergic-responsive); dysphoria; expensive; significant respiratory depression at higher doses. | 2, 3, 6 |
| Tiletamine-zolazepam | Muscle relaxant/immobilize; some somatic analgesia; stimulates cardiovascular system. | Long difficult recoveries; ±cardiovascular depression; ±excessive cardiovascular stimulation; ±respiratory depression; increases cerebral blood flow; increases intraocular pressure; movement possible with stimulation. | 1, 2, 3, 5, 6, 7 |

Effects to Pulse Oximeter

- Increase in pulse rate reading.
- Decrease in pulse rate reading.
- Decrease in blood pressure. Low perfusion: indicator may change green to yellow.
- Immediate increase in pulse rate: sedation may be adequate.
- Motion artifact: indicator may change green to yellow.
- Decrease in oxygen saturation (SpO₂) reading.
- Increase in blood pressure.



VETERINARY USE

Some Distinguishing Attributes of Anesthetic Induction Drugs in Cats and Dogs¹

| Drug | Distinguishing Attributes | Pulse Oximetry |
|--------------------------|--|----------------|
| Etomidate | Rapid, smooth induction; rapid recovery; least cardiovascular depression of induction drugs; not arrhythmogenic (occasional mild bradycardia); transient hypoventilation; adrenocortical; vomiting and pain on injection; muscle fasciculations; expensive. | 1, 2, 5, 6 |
| Ketamine | Must be combined with tranquilizer (dog); \pm increased heart rate and blood pressure; mild respiratory depression; avoid in hypertrophic cardiomyopathy or outflow; tract obstructions; increase intracranial and intraocular pressure. | 1, 3, 4, 6, 7 |
| Propofol | Rapid, smooth induction; very rapid recovery; little "hangover" effect; \pm hypotension, administer slowly, especially in compromised animals; respiratory depression; \pm apnea; contains no preservatives – open ampule supports bacterial and fungal growth; expensive. | 3, 6 |
| Thiopental Sodium | Rapid, smooth induction; \pm hypotension; \pm arrhythmias; respiratory depression, \pm apnea. | 3, 6 |

Some Distinguishing Attributes of Inhalation Anesthetics in Cats and Dogs¹

| Drug | Distinguishing Attributes | Pulse Oximetry |
|-----------------------|---|----------------|
| Halothane | Faster induction and recovery than methoxyflurane; dose-dependent cardiovascular depression; increases susceptibility to arrhythmias; dose-dependent respiratory depression; about 25% metabolized by the liver. | 3, 6 |
| Isoflurane | Faster induction and recovery than halothane; cardiovascular depression less than halothane or methoxyflurane; arrhythmias less common than with halothane; dose-dependent respiratory depression; less than 1% metabolized by liver; can induce acute renal failure if given with other nephrotoxic drugs. | 3, 6 |
| Methoxyflurane | Slow induction and recovery; some residual analgesia during slow recovery; dose-dependent cardiovascular depression; less arrhythmias arrhythmogenic than halothane; dose-dependent respiratory depression (greater than with halothane); up to 50% metabolized by liver; can induce acute renal failure if given with other nephrotoxic drugs. | 3, 6 |

α 2-adrenergic Medication

| Drug | Distinguishing Attributes | Pulse Oximetry |
|-------------------------------|--|------------------|
| Medetomidine (Domitor) | Bradycardia ^A ; peripheral vasoconstriction ^A ; occasional vomiting; moderate hypothermia; diuresis 90 – 120 minutes after treatment; increases systemic blood pressure with corresponding decrease in heart rate; reduction in cardiac output; depressed respiration; rapid sedation; hypertension; quickly reversible; cyanosis, apnea; increase in blood glucose. | 1, 2, 3, 5, 6, 7 |
| Xylazine | Potent tranquilizer, analgesia, reversible (yohimbine, other α -2 antagonists). Disadvantages include decreased cardiac output, hypotension, bradycardia, first- and second-degree A-V block, ventricular arrhythmias, respiratory depression, animal may move abruptly with stimulation. | 3, 6 |

^AExpected physiological response, reversed with Antisedan.

Nonin Medical, Inc.

13700 1st Avenue North, Plymouth, MN 55441-5443, USA
 Phone: +1 763.553.9968 | Toll Free: 800.356.8874 | Fax: +1 763.553.7807 | Email: info@nonin.com



www.nonin.com