■ **EXOTIC SPECIES:**

a) An extensive list of suggested *Telazol*® dosages may be found in the article by E. Schobert entitled, "*Telazol*® Use in Wild and Exotic Animals" in the October 1987 issue of Veterinary Medicine.

b) For carnivorous mammals (not tigers): 2–4 mg/mL usually provides adequate restraint. (Suedmeyer 2003)

■ **REPTILES:**

a) Large Snakes: 3 mg/kg IM to facilitate handling and anesthesia. Administer 30–45 minutes prior to handling. Sedation may persist for up to 48 hours. May also be used in Crocodilians at 4–8 mg/kg. (Heard 1999)

b) 3–10 mg/kg IM. Lizards and snakes can generally be treated with lower end of dosage range and chelonians may require high end. If sedation is inadequate, may give incrementally up to the maximum dose. Monitor closely for apnea and ventilate if required. (Innis 2003)

c) Significant interspecies and interpatient differences in effectiveness. At lower doses of 4–10 mg/kg sedation may be sufficient for some procedures (venipuncture, gastric lavage, intubation for inhalation anesthesia). At higher doses (15–40 mg/kg), recovery may be greatly prolonged. Suggest starting out at 7–15 mg/kg the first few times this is used on reptiles in your practice (and to use on your own "in house" pets first!), and then use increasing dosages as needed. (Funk 2002)

■ **BIRDS:**

a) Ratites: 5 mg/kg IM or IV (Jenson 1998)

Monitoring

- Level of anesthesia/analgesia
- Respiratory function; cardiovascular status (rate, rhythm, BP if possible)
- Monitor eyes to prevent drying or injury
- Body temperature

Client Information

Should only be administered by individuals familiar with its use.

Chemistry/Synonyms

Tiletamine is an injectable anesthetic agent chemically related to ketamine. Zolazepam is a diazepinone minor tranquilizer. The pH of the injectable product, after reconstitution, is 2.2–2.8.

Tiletamine HCl may also be known as: CI-634, CL-399, CN-54521-2, or *Telazol*®.

Zolazepam HCl may also be known as: CI-716.

Storage/Stability

After reconstitution, solutions may be stored for 4 days at room temperature and 14 days if refrigerated. Do not use solutions that contain a precipitate or are discolored.

Dosage Forms/Regulatory Status

VETERINARY-LABELED PRODUCTS:

Tiletamine HCl (equivalent to 250 mg free base) and Zolazepam HCl (equivalent to 250 mg free base) as lyophilized powder/vial in 5 mL vials. When 5 mL of sterile diluent (sterile water) is added a concentration of 50 mg/mL of each drug (100 mg/mL combined) is produced; *Telazol*® (Fort Dodge); (Rx, C-III). Approved for use in cats and dogs. *Telazol*® is a Class-III controlled substance.

HUMAN-LABELED PRODUCTS: None

TILMICOSIN

(til-mi-coe-sin) Micotil®, Pulmotil®

MACROLIDE ANTIBIOTIC

Prescriber Highlights

- Macrolide antibiotic used in cattle, sheep, & sometimes rabbits; used in swine as a medicated feed article
- Contraindications: Not to be used in automatically powered syringes or to be given IV
- May be fatal in swine (when injected) & non-human primates; potentially in horses
- Adverse Effects: IM injections may cause a local tissue reaction resulting in trim loss; edema is possible at SC injection site
- Avoid contact with eyes
- In case of human injection, contact physician immediately

Uses/Indications

Tilmicosin is indicated for the treatment of bovine or ovine respiratory diseases (BRD) caused by *Mannheimia* (*Pasturella*) *haemolytica*.

Pharmacology/Actions

Like other macrolides, tilmicosin has activity primarily against gram-positive bacteria, although some gram-negative bacteria are affected and the drug reportedly has some activity against mycoplasma. Preliminary studies have shown that 95% of studied isolates of *Pasturella haemolytica* are sensitive.

Pharmacokinetics

Tilmicosin apparently concentrates in lung tissue. At 3 days post injection, the lung:serum ratio is about 60:1. MIC_{95} concentrations (3.12 micrograms/mL) for *P. Haemolytica* persist for a minimum of 3 days after a single injection.

Contraindications/Precautions/Warnings

Not to be used in automatically powered syringes or to be given intravenously as fatalities may result. Tilmicosin has been shown to be fatal in swine (when injected), non-human primates and potentially, in horses.

Avoid contact with eyes. Accidental self-injection can be fatal in humans. Do not use in automatically powered syringes. Emergency treatment includes applying ice to injection site and contacting a physician immediately. Emergency medical telephone numbers are 1-800-722-0987 or 1-317-276-2000.

Adverse Effects

If administered IM, a local tissue reaction may occur resulting in trim loss. Edema may be noted at the site of subcutaneous injection.

Reproductive/Nursing Safety

Safe use in pregnant animals or animals to be used for breeding purposes has not been demonstrated.

Overdosage/Acute Toxicity

The cardiovascular system is apparently the target of toxicity in animals. In cattle, doses up to 50 mg/kg IM did not cause death, but SC doses of 150 mg/kg did cause fatalities, as well as IV doses of 5 mg/kg. Doses as low as 10 mg/kg in swine caused increased respiration, emesis and seizures; 20 mg/kg IM caused deaths in most animals tested. In monkeys, 10 mg/kg administered once caused no signs of toxicity, but 20 mg/kg caused vomiting; 30 mg/kg caused death.

In cases of human injection, contact physician immediately. The manufacturer has emergency telephone numbers to assist in dealing with exposure: 1-800-722-0987 or 1-317-276-2000.

Drug Interactions

In swine, **epinephrine** increased the mortality associated with tilmicosin. No other specific information was noted; refer to the erythromycin monograph for potential interactions.

Doses

- **CATTLE:**

  For susceptible infections (subcutaneous injection under the skin in the neck, or if not accessible, behind the shoulders and over the ribs is suggested).

  a) For treatment of pneumonic pasteurellosis: 10 mg/kg SC every 72 hours (Shewen and Bateman 1993)

  b) Package insert (*Micotil® 300*—Elanco): 10 mg/kg SC (not more than 15 mL per injection site)

- **SHEEP:**

  For susceptible infections:

  a) 10 mg/kg SC (not more than 15 mL per injection site). Subcutaneous injection under the skin in the neck, or if not accessible, behind the shoulders and over the ribs is suggested. Do not use in lambs less than 15 kg of body weight. (Package insert; *Micotil® 300*—Elanco)

- **RABBITS, RODENTS, SMALL MAMMALS:**

  Rabbits: Two regimens:

  1) 25 mg/kg SC once; repeat in 3 days if necessary.

  2) 5 mg/kg SC on day 0, if no reaction, give 10 mg/kg SC on days 7 and 14. Can cause weakness, pallor, tachypnea and sudden death. May cause acute death if given IV. SC injections can cause local swelling and necrosis. (Ivey and Morrisey 2000)

Monitoring

- Efficacy
- Withdrawal times

Client Information

- If clients are administering the drug, they should be warned about the potential toxicity to humans, swine, and horses if accidentally injected
- Carefully instruct in proper injection techniques
- Avoid contact with eyes

Chemistry/Synonyms

A semi-synthetic macrolide antibiotic, tilmicosin phosphate is commercially available in a 300 mg/mL (of tilmicosin base) injection with 25% propylene glycol.

Tilmicosin may also be known as EL-870, LY-177370, *Micotil®* or *Pulmotil®*.

Storage/Stability/Compatibility

Store the injection at or below room temperature. Avoid exposure to direct sunlight.

Dosage Forms/Regulatory Status

VETERINARY-LABELED PRODUCTS:

Tilmicosin for Subcutaneous Injection: 300 mg/mL in 50 mL, 100 mL and 250 mL multi-dose vials; *Micotil® 300 Injection* (Elanco); (Rx). Approved for use in cattle and sheep. Not approved for use in female dairy cattle 20 months or older. Do not use in lactating ewes if milk is to be used for human consumption. Do not use in veal calves. Slaughter withdrawal (at labeled doses) = 28 days.

Tilmicosin Feed Medication: 90.7 g/lb. *Pulmotil® 90* (Elanco); (OTC). Approved for veterinary use in swine only. Slaughter withdrawal (at labeled doses) = 7 days.

HUMAN-LABELED PRODUCTS: None

TILUDRONATE DISODIUM TILUDRONIC ACID

(til-yoo-*droe*-nate) Tildren®, Skelid®

BISPHOSPHONATE BONE RESORPTION INHIBITOR

Prescriber Highlights

- **Bisphosphonate bone resorption inhibitor available in some countries for the intravenous treatment of navicular disease in horses**
- **Adverse effects: Signs of colic, muscle tremor (hypocalcemia), fatigue/lassitude, sweating, injection site effects, salivation, tail hypertonia**
- **Must be legally imported into the USA**

Uses/Indications

Tiludronate disodium (tiludronic acid) is a bisphosphonate bone resorption inhibitor that is available in some countries for the intravenous treatment of navicular disease in horses. Treatment earlier in the course of the disease apparently results in greater efficacy.

For humans, there is an orally administered FDA-approved product for treating Paget's disease (osteitis deformans).

Pharmacology/Actions

Tiludronate, like other bisphosphonates, inhibit osteoclastic bone resorption by inhibiting osteoclast function after binding to bone hydroxyapatite thereby helping to regulate bone remodeling.

Pharmacokinetics

After intravenous injection in horses the drug is rapidly distributed to bone. Binding is greater to cancellous bone than cortical bone. Plasma protein binding is reported to be approximately 85% and elimination half-life is approximately 4.5 hours. Repeated daily doses do not result in accumulation in plasma. Unbound drug is eliminated unchanged in the urine. Approximately 25–50% of a single IV dose is eliminated in the urine over 96 hours.

Contraindications/Precautions/Warnings

The labeling for *Tildren®* states that the drug should not be used in horses with renal dysfunction or those producing milk for human consumption. Because there is an absence of data on the effects the drug may have on the skeleton of young animals, the manufacturer states to not administer to horses less than 3 years old.