a) 0.025–0.075 mg/kg subcutaneously q8h. Dosage is variable and should be adjusted for each patient. (Jose-Cunilleras and Hinchcliff 1999)

If bladder is capable of weak contractions:

a) 0.025–0.075 mg/kg SC 2–3 times; or 0.25–0.75 mg/kg PO 2–4 times a day. **Note:** Oral dose is 10X that of SC dose (Schott II and Carr 2003)

- **CATTLE:**

For adjunctive medical therapy (with fluids, mineral oil, and NSAIDs if needed) of cecal dilation/dislocation (CDD):

a) Only if animal is "normal" or only slightly disturbed, defecation is present, and rectal exam does not reveal torsion or retroflexion. If these criteria are not met, or no improvement within 24 hours of medical therapy, surgical therapy is recommended. Bethanechol at 0.07 mg/kg SC three times daily for 2 days. Withhold feed for 24 hours and then gradually give increasing amounts of hay if defecation is present and CDD is resolved. (Meylan 2004)

Monitoring

- Clinical efficacy
- Urination frequency, amount voided, bladder palpation
- Adverse effects (see above section)

Client Information

- Give medication to animal with an empty stomach unless otherwise instructed by veterinarian
- Contact veterinarian if salivation or GI (vomiting, diarrhea, or anorexia) effects are pronounced or persist

Chemistry/Synonyms

A synthetic cholinergic ester, bethanechol occurs as a slightly hygroscopic, white or colorless crystalline powder with a slight, amine-like or "fishy" odor. It exhibits polymorphism, with one form melting at 211° and the other form at 219°. One gram of the drug is soluble in approximately 1 mL of water or 10 mL of alcohol.

Bethanechol Chloride may also be known as: carbamylmethylcholine chloride, *Duvoid®, Miotonachol®, Muscaran®, Myo Hermes®, Myocholine®, Myotonine®, Ucholine®, Urecholine®, Urocarb®*, or *Urotonine®*.

Storage/Stability

Bethanechol tablets should be stored at room temperature in tight containers.

Dosage Forms/Regulatory Status

VETERINARY-LABELED PRODUCTS: None

The ARCI (Racing Commissioners International) has designated this drug as a class 4 substance. See the appendix for more information.

HUMAN-LABELED PRODUCTS:

Bethanechol Chloride Tablets: 5 mg, 10 mg, 25 mg, & 50 mg; *Urecholine®* (Odyssey); generic; (Rx)

An injectable product was formerly commercially available; a compounding pharmacy may be able to prepare a bethanechol injectable form.

Bicarbonate — see Sodium Bicarbonate

BISACODYL

(bis-a-*koe*-dill) Dulcolax®

ORAL/RECTAL LAXATIVE

Prescriber Highlights

- Stimulant laxative used in dogs & cats
- Contraindicated in GI obstruction
- GI cramping/diarrhea possible
- Don't give with milk products or antacids

Uses/Indications

Bisacodyl oral and rectal products are used as stimulant cathartics in dogs and cats.

Pharmacology/Actions

A stimulant laxative, bisacodyl's exact mechanism is unknown. It is thought to produce catharsis by increasing peristalsis by direct stimulation on the intramural nerve plexuses of intestinal smooth muscle. It has been shown to increase fluid and ion accumulation in the large intestine thereby enhancing catharsis.

Pharmacokinetics

Bisacodyl is minimally absorbed after either oral or rectal administration. Onset of action after oral administration is generally 6–10 hours and 15 minutes to an hour after rectal administration.

Contraindications/Precautions/Warnings

Stimulant cathartics are contraindicated in the following conditions: intestinal obstruction (not constipation), undiagnosed rectal bleeding, or when the patient is susceptible to intestinal perforation.

Bisacodyl should only be used short-term as chronic use can damage myenteric neurons.

Adverse Effects

Bisacodyl has relatively few side effects when used occasionally; cramping, nausea, or diarrhea may be noted after use.

Reproductive/Nursing Safety

In humans, the FDA categorizes this drug as category ***B*** for use during pregnancy (*Animal studies have not yet demonstrated risk to the fetus, but there are no adequate studies in pregnant women; or animal studies have shown an adverse effect, but adequate studies in pregnant women have not demonstrated a risk to the fetus in the first trimester of pregnancy, and there is no evidence of risk in later trimesters.*)

Bisacodyl may be distributed into milk but at quantities unlikely to cause any problems in nursing offspring.

Overdosage/Acute Toxicity

Overdoses may result in severe cramping, diarrhea, vomiting and potentially, fluid and electrolyte imbalances. Animals should be monitored and given replacement parenteral fluids and electrolytes as necessary.

Drug Interactions

The following drug interactions have either been reported or are theoretical in humans or animals receiving bisacodyl and may be of significance in veterinary patients:

- **ANTACIDS/MILK:** Do not give milk or antacids within an hour of bisacodyl tablets as it may cause premature disintegration of the enteric coating.

- **ORAL DRUGS:** Stimulant laxatives may potentially decrease GI transit time thereby affecting absorption of other oral drugs. Separate doses by two hours if possible.

Doses

Note: Bisacodyl enema products and pediatric suppositories are no longer available in the USA. Human pediatric suppositories were 5 mg; the 10 mg "adult" suppositories can be cut lengthwise to approximate one pediatric suppository.

- **DOGS:**

As a cathartic:

a) One 5 mg tablet PO for small dogs; one to two 5 mg tablets (10–15 mg) for medium to large dogs. Do not break tablets. (Willard 2003a)

b) 5–20 mg (1–4 tablets) PO once daily, or 1–3 pediatric suppositories (Sherding 1994)

- **CATS:**

As a cathartic:

a) One 5 mg tablet PO; do not break tablets. (Willard 2003a)

b) 5 mg (1 tablet) PO once daily, or 1–3 pediatric suppositories (Sherding 1994)

c) One 5 mg tablet PO q24h. May be given in combination with fiber supplementation. Avoid daily use if used chronically as it may damage myenteric neurons. (Washabau 2001)

Client Information

- If using oral tablets, do not crush or allow animal to chew; intense cramping may occur.
- Unless otherwise directed by veterinarian, bisacodyl should be used on an "occasional" basis only. Chronic use can damage the nerves in the colon and has lead to laxative dependence in humans.

Chemistry/Synonyms

A diphenylmethane laxative, bisacodyl occurs as white to off-white crystalline powder. It is practically insoluble in water and sparingly soluble in alcohol.

Bisacodyl may also be known as bisacodylum; many trade names are available.

Storage/Stability

Bisacodyl suppositories and enteric-coated tablets should be stored at temperatures less than 30°C.

Dosage Forms/Regulatory Status

VETERINARY-LABELED PRODUCTS: None

HUMAN-LABELED PRODUCTS:

Bisacodyl Enteric-coated Tablets: 5 mg; *Alophen*® (Numark); *Bisa-Lax*® (Bergen Brunswig); *Dulcolax*® (Boehringer Ingelheim); *Fleet*® *Laxative* (Fleet); *Modane*® (Savage Labs); *Bisac-Evac*® (G and W Labs); *Caroid*® (Mentholatum Co); *Correctol*® (Schering-Plough); *Feen-a-mint*® (Schering-Plough); generic; (OTC)

Bisacodyl Delayed-Release Tablets: 10 mg; *Doxidan*® (Pharmacia); (OTC)

Bisacodyl Rectal Suppositories: 10 mg; *Dulcolax*® (Boehringer Ingelheim); *Bisacodyl Uniserts*® (Upsher-Smith); *Bisa-Lax*® (Bergen Brunswig); *Bisac-Evac*® (G & W Labs), *Fleet*® *Laxative* (Fleet); generic; (OTC)

Bisacodyl enema products and pediatric suppositories are no longer available in the USA. Pediatric suppositories were 5 mg and the 10 mg "adult" suppositories can be cut lengthwise to approximate a pediatric suppository.

BISMUTH SUBSALICYLATE

(***biz***-mith sub-sal-***iss***-ih-layt) BSS, Pepto-Bismol®

ANTIDIARRHEAL

Prescriber Highlights

- Used to treat diarrhea & as a component of "triple therapy" for treating Helicobacter GI infections
- High doses may cause salicylism, use with caution in cats
- Constipation/impactions may occur
- Refrigeration may improve palatability

Uses/Indications

In veterinary medicine, bismuth subsalicylate products are used to treat diarrhea and as a component of "triple therapy" for treating Helicobacter GI infections. The drug is also used in humans for other GI symptoms (indigestion, cramps, gas pains) and in the treatment and prophylaxis of traveler's diarrhea.

Pharmacology/Actions

Bismuth subsalicylate is thought to possess protectant, anti-endotoxic and weak antibacterial properties. It is believed that the parent compound is cleaved in the small intestine into bismuth carbonate and salicylate. The protectant, anti-endotoxic and weak antibacterial properties are thought to be because of the bismuth. The salicylate component has antiprostaglandin activity that may contribute to its effectiveness and reduce clinical signs associated with secretory diarrheas.

Pharmacokinetics

No specific veterinary information was located. In humans, the amount of bismuth absorbed is negligible while the salicylate component is rapidly and completely absorbed. Salicylates are highly bound to plasma proteins and are metabolized in the liver to salicylic acid. Salicylic acid, conjugated salicylate metabolites and any absorbed bismuth are all excreted renally.

Contraindications/Precautions/Warnings

Salicylate absorption may occur; use with caution in patients with preexisting bleeding disorders. Because of the potential for adverse effects caused by the salicylate component, this drug should be used cautiously, if at all, in cats.

As bismuth is radiopaque, it may interfere with GI tract radiologic examinations.

Adverse Effects

Antidiarrheal products are not a substitute for adequate fluid and electrolyte therapy when required. May change stool color to a gray-black or greenish-black; do not confuse with melena. In human infants and debilitated individuals, use of this product may cause impactions to occur.

Reproductive/Nursing Safety

The FDA has not, apparently, given bismuth subsalicylate a pregnancy risk category. As it is a form of salicylate, refer to the aspirin monograph for further guidance. Use with caution in pregnant animals.

Use with caution in nursing dams.