

# Cholinergic Blocking Drugs

## Key Terms

<i>anticholinergics</i>	<i>mydriasis</i>
<i>cholinergic blocking drugs</i>	<i>parasympathomimetic blocking drugs</i>
<i>cycloplegia</i>	<i>photophobia</i>
<i>drug idiosyncrasy</i>	

## Chapter Objectives

On completion of this chapter, the student will:

- Discuss the uses, general drug actions, general adverse reactions, contraindications, precautions, and interactions of the cholinergic blocking drugs.
- Discuss important preadministration and ongoing assessment activities the nurse should perform on the patient taking cholinergic blocking drugs.
- List some nursing diagnoses particular to the patient taking cholinergic blocking drugs.
- Discuss ways to promote an optimal response to therapy, how to manage common adverse reactions, and important points to keep in mind when educating patients taking a cholinergic blocking drug.

Like adrenergic blocking drugs, the cholinergic blocking drugs have an effect on the autonomic nervous system. These drugs block the action of the neurotransmitter acetylcholine in the parasympathetic nervous system. Because parasympathetic nerves influence many areas of the body, the effects of the cholinergic blocking drugs are numerous.

**Cholinergic blocking drugs** also are called **anticholinergics** or **parasympathomimetic blocking drugs**. Examples of cholinergic blocking drugs include atropine, scopolamine, and propantheline.

## ACTIONS

Cholinergic blocking drugs inhibit the activity of acetylcholine in parasympathetic nerve fibers (see Chap. 24 for a description of the role of acetylcholine in the transmission of nerve impulses across parasympathetic nerve fibers). When the activity of acetylcholine is inhibited, nerve impulses traveling along parasympathetic nerve fibers cannot pass from the nerve fiber to the effector organ or structure.

Because of the wide distribution of parasympathetic nerves, these drugs affect many organs and structures of the body, including the eyes, the respiratory and gastrointestinal tracts, the heart, and the bladder (see Display 25-1).

### DISPLAY 25-1 • Effects of the Cholinergic Blocking Drugs

Cholinergic blocking drugs produce the following responses:

*Central nervous system*—dreamless sleep, drowsiness; atropine may produce mild stimulation in some patients

*Eye*—**mydriasis** (dilatation of the pupil), **cycloplegia** (paralysis of accommodation or inability to focus the eye)

*Respiratory tract*—drying of the secretions of the mouth, nose, throat, bronchi, relaxation of smooth muscles of the bronchi resulting in slight bronchodilatation

*Gastrointestinal tract*—decrease in secretions of the stomach, decrease in gastric and intestinal movement (motility)

*Cardiovascular system*—increase in pulse rate (most pronounced with atropine administration)

*Urinary tract*—dilatation of smooth muscles of the ureters and kidney pelvis, contraction of the detrusor muscle of the bladder

However, responses to administration of a cholinergic blocking drug vary and often depend on the drug and the dose used. For example, scopolamine may occasionally cause excitement, delirium, and restlessness. This reaction is thought to be a **drug idiosyncrasy** (an unexpected or unusual drug effect).

## USES

Because of their widespread effect on many organs and structures of the body, cholinergic blocking drugs have a variety of uses. Some of the uses of atropine include treatment of pylorospasm, peptic ulcer, ureteral and biliary colic, vagal-induced bradycardia, parkinsonism, and preoperatively to reduce secretions of the upper respiratory tract before the administration of a general anesthetic. Other cholinergic blocking drugs have a more selective action, that is, they affect principally one structure of the body. An example of this type of drug is clidinium bromide (Quarzan), which is used only in the treatment of peptic ulcer. The Summary Drug Table: Cholinergic Blocking Drugs lists the uses of specific cholinergic blocking drugs.

## ADVERSE REACTIONS

Dryness of the mouth with difficulty in swallowing, blurred vision, and **photophobia** (aversion to bright light) are commonly seen with the administration of a cholinergic blocking drug. The severity of many adverse reactions is often dose dependent, that is, the larger the dose, the more intense the adverse reaction. Even in normal doses, some degree of dryness of the mouth almost always occurs.

Constipation, caused by a decrease in intestinal motility, may occur in those taking one of these drugs on a regular basis. Drowsiness may occur with the use of these drugs, but at times this adverse reaction is desirable. For example, when atropine is used preoperatively to reduce the production of secretions in the respiratory tract, drowsiness is part of the desired response.



### Gerontologic Alert

When the nurse gives these drugs to elderly patients, confusion or excitement may be seen even with small doses.

The nurse should observe patients receiving a cholinergic blocking drug during the hot summer months for signs of heat prostration (fever, tachycardia, flushing, warm dry skin, mental confusion) because these drugs decrease sweating.

Other adverse reactions that may be seen with the administration of a cholinergic blocking drug include:

- *Central nervous system*—headache, flushing, nervousness, drowsiness, weakness, insomnia, nasal congestion, fever
- *Eyes*—blurred vision, mydriasis, photophobia, cycloplegia, increased ocular tension
- *Gastrointestinal tract*—nausea, vomiting, difficulty in swallowing, heartburn
- *Urinary tract*—urinary hesitancy and retention, dysuria
- *Cardiovascular system*—palpitations, bradycardia (after low doses of atropine), tachycardia (after higher doses of atropine)
- *Other*—urticaria, anaphylactic shock, other skin manifestations

## CONTRAINDICATIONS

Cholinergic blocking drugs are contraindicated in those with glaucoma because use of these drugs may lead to an attack of acute glaucoma. Unfortunately, glaucoma in its early stages may have few, if any, symptoms, and the individual may be unaware of this disorder until he or she has an eye examination. The lack of symptoms of early glaucoma combined with individuals failing to read drug labels can have serious consequences.

Other contraindications for the anticholinergics include tachyarrhythmias, myocardial infarction, and congestive heart failure (unless bradycardia is present).

## PRECAUTIONS

Administration of these drugs can result in urinary retention. The nurse should give these drugs with great caution to patients with an enlarged prostate because urinary retention may occur. This caution applies to some over-the-counter preparations available for the relief of allergy and cold symptoms and as aids to induce sleep. Some of these products contain atropine, scopolamine, or other cholinergic blocking drugs. Although this warning is printed on the container or package, many users fail to carefully read drug labels.

The nurse should use these drugs with caution in patients with gastrointestinal infections, benign prostatic hypertrophy, hyperthyroidism, hepatic or renal disease, and hypertension. The nurse should use atropine with caution in patients with asthma. The anticholinergic drugs are classified as Pregnancy Category C drugs and are used only when the benefit to the woman outweighs the risk to the fetus.

## SUMMARY DRUG TABLE CHOLINERGIC BLOCKING DRUGS

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS	DOSAGE RANGES
atropine <i>a'-troe-peen</i>	<i>generic</i>	Pylorospasm, reduction of bronchial and oral secretions, excessive vagal-induced bradycardia, ureteral and biliary colic	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy	0.4–0.6 mg PO IM, SC, IV
belladonna alkaloids <i>bel'-ah-dohn-a</i>	<i>generic</i>	Adjunctive therapy for peptic ulcer, digestive disorders, diverticulitis, pancreatitis, diarrhea	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy	0.25–0.5 mg PO TID
clidinium bromide <i>klih'-dih-nee-uhm</i>	Quarzan	Adjunctive therapy for peptic ulcer	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy	2.5–5 mg PO 3–4 times/d
dicyclomine HCl <i>dye-sye'-kloe-meen</i>	Bentyl, Di-Spaz, <i>generic</i>	Functional bowel/irritable bowel syndrome	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy	80–160 mg PO QID
flavoxate <i>fla-vox'-ate</i>	Urispas	Relieves dysuria, urgency, frequency, and pain of cystitis and prostatitis	Nausea, vomiting, dry mouth, nervousness, vertigo, headache, drowsiness, blurred vision	100–200 mg PO 3–4 times/d
glycopyrrolate <i>glye-koe-pye'-roe-late</i>	Robinul	Oral: peptic ulcer Parenteral: in conjunction with anesthesia to reduce bronchial and oral secretions, to block cardiac vagal inhibitory reflexes during induction of anesthesia and intubation; protection against the peripheral muscarinic effects of cholinergic agents (eg, neostigmine)	Blurred vision, dry mouth, altered taste perception, nausea, vomiting, dysphagia, urinary hesitancy and retention	PO: 1–2 mg BID, TID Parenteral: peptic ulcer, 0.1–0.2 mg IM, IV TID, QID; preanesthesia, 0.002 mg/lb IM Intraoperative: 0.1 mg IV
l-hyoscyamine sulfate <i>high-oh-sigh'-ah-meen</i>	Anaspaz, Donnamar, Levbid	Aids in control of gastric secretions, visceral spasm, hypermotility in spastic colitis, spastic bladder, pylorospasm, relief of symptoms in functional intestinal disorders, biliary and renal colic, peptic ulcer, irritable bowel syndrome, neurogenic colon, pancreatitis	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy	0.125–0.25 mg PO or sublingually 3 or 4 times/d; 0.375–0.75 mg sustained-release form q12h; 0.25–0.5 mg SC, IM, or IV 2–4 times/d
mepenzolate bromide <i>meh-pen'-zoe-late</i>	Cantil	Adjunctive treatment of peptic ulcer	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy	25–50 mg PO TID–QID with meals and at bedtime
methantheline bromide <i>mehth-an'-the-leen</i>	Banthine	Adjunctive treatment for peptic ulcer, hypertonic neurogenic bladder	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy	50–100 mg PO q6h
methscopolamine <i>mehth-scoe-pol'-a-meen</i>	Pamine	Adjunctive therapy for peptic ulcer	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy	2.5 mg 30 minutes AC and 2.5–5 mg HS PO
propantheline bromide <i>proe-pan'-the-leen</i>	Pro-Banthine, <i>generic</i>	Adjunctive therapy for peptic ulcer	Dry mouth, constipation, hesitancy, urinary retention, blurred vision	15 mg PO 30 minutes AC and HS

(continued)

### SUMMARY DRUG TABLE CHOLINERGIC BLOCKING DRUGS (Continued)

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS	DOSAGE RANGES
scopolamine hydrobromide <i>scoe-pol'-a-meen</i>	<i>generic</i>	Preanesthetic sedation, motion sickness	Confusion, dry mouth, constipation, hesitancy, urinary retention, blurred vision	0.32–0.65 mg IM, SQ, IV, and diluted with sterile water for injections; apply 1 patch 4h before travel every 3 d
tridihexethyl chloride <i>trye-hex-eth'-el</i>	Pathilon	Adjunctive therapy for peptic ulcers	Drowsiness, blurred vision, tachycardia, dry mouth, urinary hesitancy	25–50 mg PO 3 or 4 times/d AC and HS
trihexphenidyl <i>trye-hex-ee-fen'-i-dill</i>	Artane	Parkinsonism, extrapyramidal effects caused by antipsychotic drugs	Disorientation, confusion, light-headedness, dizziness, blurred vision, mydriasis, dry mouth, urinary retention, flushing	1–2 mg/d; increase by 2 mg q3–5d, to a total of 6–10 mg/d; divide dose into 3–4 times/d

\*The term *generic* indicates the drug is available in generic form.

## INTERACTIONS

Administration of atropine with meperidine (Demerol), flurazepam (Dalmane), diphenhydramine (Benadryl), phenothiazines, and the tricyclic antidepressants may increase the effects of atropine. There is a decreased effectiveness of haloperidol when administered with the anticholinergic drugs.

## NURSING PROCESS

### ● The Patient Receiving a Cholinergic Blocking Drug

#### ASSESSMENT

##### *Preadministration Assessment*

Before administering a cholinergic blocking drug to a patient for the first time, the nurse obtains a thorough health history as well as a history of the signs and symptoms of the current disorder. The focus of the initial physical assessment depends on the reason for administering the drug. In most instances, the nurse obtains the blood pressure, pulse, and respiratory rate. The nurse also may include additional assessments, such as checking the stool of the patient who has a peptic ulcer for color and signs of occult blood, determining visual acuity in the patient with glaucoma, or looking for signs of dehydration and weighing the patient if prolonged diarrhea is one of the patient's symptoms.

##### *Ongoing Assessment*

When administering a cholinergic blocking drug, the daily ongoing assessment requires that the nurse closely observes the patient. The nurse checks vital signs,

observes for adverse drug reactions, and evaluates the symptoms and complaints related to the patient's diagnosis. For example, the nurse questions the patient with a peptic ulcer regarding current symptoms, then makes a comparison of these symptoms to the symptoms present before the start of therapy. The nurse reports any increase in the severity of symptoms to the primary health care provider immediately.

#### NURSING DIAGNOSES

Drug-specific nursing diagnoses are highlighted in the Nursing Diagnoses Checklist. Other nursing diagnoses applicable to these drugs are discussed in depth in Chapter 4.

#### PLANNING

The expected outcomes for the patient depends on the reason for administration of a cholinergic blocking drug but may include an optimal response to therapy, management of common adverse drug reactions, maintenance of oral mucous membrane integrity, and an understanding of and compliance with the prescribed therapeutic regimen.

#### Nursing Diagnoses Checklist

- ✓ **Disturbed Sensory Perception: Visual** related to adverse drug reaction
- ✓ **Impaired Oral Mucous Membranes** related to drug action on mucous membranes
- ✓ **Risk for Injury** related to effect of drug
- ✓ **Constipation** related to slowing of peristalsis in the gastrointestinal tract

## IMPLEMENTATION

### Promoting an Optimal Response to Therapy

**THE PATIENT WITH HEART BLOCK.** The patient receiving atropine for third-degree heart block is placed on a cardiac monitor during and after administration of the drug. The nurse watches the monitor for a change in pulse rate or rhythm. Tachycardia, other cardiac arrhythmias, or failure of the drug to increase the heart rate must be reported to the primary health care provider immediately because other drugs or medical management may be necessary.

**THE PATIENT RECEIVING A PREOPERATIVE DRUG.** If a cholinergic blocking drug is administered preoperatively, the nurse instructs the patient to void before the drug is given. The nurse informs the patient that his or her mouth will become extremely dry, that this is normal, and that fluid is not to be taken. The side rails of the bed are raised, and the patient is instructed to remain in bed after administration of the preoperative drug.

### Nursing Alert

*The nurse must administer the preoperative drug at the exact time prescribed because the cholinergic blocking drug must be allowed to produce the greatest effect (ie, the drying of upper respiratory and oral secretions) before the administration of a general anesthetic. The anesthesiologist must be notified if the preoperative drug is given late.*

### Gerontologic Alert

*Cholinergic blocking drugs are usually not included in the preoperative drugs of patients older than 60 years because of the effects of these drugs on the eye and the central nervous system.*

### Monitoring and Managing Adverse Reactions

Because this group of drugs may have widespread effects, the nurse must closely observe all patients for the appearance of adverse drug reactions. In hot weather, sweating may decrease and may be followed by heat prostration. The nurse observes the patient at frequent intervals for signs of heat prostration (see Adverse Reactions), especially if the patient is elderly or debilitated. The nurse withholds the next dose of the drug and contacts the primary health care provider immediately if heat prostration is suspected. The nurse observes the elderly patient receiving a cholinergic blocking drug at frequent intervals for excitement, agitation, mental confusion, drowsiness, urinary retention, or other adverse effects. If any of these should occur, it is important to withhold the next dose of the drug and contact the

primary health care provider. The nurse ensures patient safety until these adverse reactions disappear.

### Gerontologic Alert

*The nurse observes the elderly patient receiving a cholinergic blocking drug at frequent intervals for excitement, agitation, mental confusion, drowsiness, urinary retention, or other adverse effects. If any of these should occur, it is important to withhold the next dose of the drug and contact the primary health care provider. The nurse ensures patient safety until these adverse reactions disappear.*

**MANAGING ALTERATION IN VISUAL ACUITY.** Blurred vision and photophobia are commonly seen with the administration of a cholinergic blocking drug. The severity of this adverse reaction is often dose dependent, that is, the larger the dose, the more intense the adverse reaction. The nurse monitors the patient for any disturbance in vision. The patient may need assistance when ambulating. If photophobia is a problem, the patient may need to wear shaded glasses when going outside, even on cloudy days. The rooms are kept dimly lit and curtains or blinds closed to eliminate bright sunlight in the room.

### Gerontologic Alert

*For elderly patients, as well as those experiencing visual difficulties, the nurse places against the walls any items of furniture (eg, footstools, chairs, stands) that obstruct ambulatory areas. Throw rugs should be removed.*

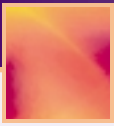
### MANAGING IMPAIRED ORAL MUCOUS MEMBRANES.

When taking these drugs on a daily basis, mouth dryness may be severe and extremely uncomfortable in some patients. The patient may have moderate to extreme difficulty swallowing oral drugs and food. The nurse encourages the patient to take a few sips of water before and while taking an oral drug and to sip water at intervals during meals. If allowed, hard candy slowly dissolved in the mouth and frequent sips of water during the day may help relieve persistent oral dryness. The nurse checks the oral cavity daily for soreness or ulcerations.

**MINIMIZING RISK FOR INJURY.** These drugs may cause drowsiness, dizziness, and blurred vision. Patients (especially the elderly) may require assistance with ambulation.

For elderly patients, as well as those experiencing visual difficulties, the nurse places items of furniture (eg, footstools, chairs, stands) that obstruct ambulatory areas against the wall.









Those with photophobia may be more comfortable in a semi-darkened room, especially on sunny days. It is a



## Home Care Checklist

### COMBATING DRY MOUTH

One of the most common adverse effects occurring with the use of cholinergic blocking drugs is a dry mouth. The nurse offers the following suggestions to the patient to help combat this problem:

-  Perform frequent mouth care, including brushing, rinsing, and flossing.
-  Keep a glass or sports bottle filled with fluid on hand at all times.
-  Sip small amounts of cool water or fluids throughout the day and with meals.
-  Take a few sips of water before taking any oral drugs.
-  Suck on ice chips or frozen ices, such as Popsicles.
-  Chew gum.
-  Suck on sugar-free hard candies.
-  Avoid alcohol-based mouthwashes.

good idea to use overhead lights as little as possible. Mydriasis and cycloplegia, if they occur, may interfere with reading, watching television, and similar activities. If these drug effects upset the patient, the nurse discusses the problem with the primary health care provider. At times, these visual impairments will have to be tolerated because drug therapy cannot be changed or discontinued. The nurse attempts to find other forms of diversional therapy, such as interaction with other patients or listening to the radio.

**MANAGING CONSTIPATION.** Constipation caused by decreased gastric motility can be a problem with cholinergic drugs. The nurse urges the patient to increase fluid intake up to 2000 mL daily (if health conditions permit), eat a diet high in fiber, and obtain adequate exercise. The primary health care provider may prescribe a stool softener, if necessary, to prevent constipation.

#### *Educating the Patient and Family*

A cholinergic blocking drug may be prescribed for a prolonged period. Some patients may discontinue drug use, especially if their original symptoms have been relieved. The nurse must make sure that the patient and family understand the prescribed drug is to be taken even though symptoms have been relieved.

When a cholinergic blocking drug is prescribed for outpatient use, the nurse informs the patient about the more common adverse reactions associated with these drugs, such as dry mouth, drowsiness, dizziness, and

visual impairments. The nurse warns the patient that if drowsiness, dizziness, or blurred vision occurs, caution must be observed while driving or performing other tasks requiring alertness and good vision.

Some of the adverse reactions associated with the cholinergic blocking drugs may be uncomfortable or distressing. The nurse encourages the patient to discuss these problems with the primary health care provider. The nurse makes suggestions to lessen the intensity of some of these adverse reactions.

The following is a list of adverse reactions that can be included in the teaching plan, along with the measures that may lessen their intensity or allow the patient to perform tasks at times when these adverse reactions are least likely to occur.

- Photophobia—Wear sunglasses when outside, even on cloudy days, keep rooms dimly lit, and close curtains or blinds to eliminate bright sunlight in the room; soft indirect lighting is usually more comfortable. Schedule outdoor activities (when necessary) before the first dose of the drug is taken, such as early in the morning.
- Dry mouth—Take frequent sips of cool water during the day, before taking the drug orally, and during meals. In addition, if allowed, chew gum or dissolve hard candy in the mouth (see Home Care Checklist: Combating Dry Mouth).
- Constipation—It is a good idea to drink plenty of fluids during the day, exercise if approved by the primary health care provider, and eat foods high in fiber.

- Heat prostration—Avoid going outside on hot, sunny days; use fans to cool the body if the day is extremely warm; sponge the skin with cool water if other cooling measures are not available; and wear loose-fitting clothes in warm weather.
- Drowsiness—Schedule tasks requiring alertness during times when drowsiness does not occur, such as early in the morning before the first dose of the drug is taken.



### Gerontologic Alert

The nurse advises the family of an elderly patient of possible visual and mental impairments (blurred vision, confusion, agitation) that may occur during therapy with these drugs. Objects or situations that may cause falls, such as throw rugs, footstools, and wet or newly waxed floors, are removed or avoided whenever possible. The nurse alerts the family to the dangers of heat prostration and explains the steps to take to avoid this problem. The patient must be closely observed during the first few days of therapy, and the primary health care provider is notified if mental changes occur.

**EDUCATING THE PATIENT RECEIVING A PREOPERATIVE DRUG.** When one of these drugs is administered preoperatively, the nurse gives the patient an explanation of the preoperative drug, that is, why the drug is being given, when the drug will be given, and when he or she is going to surgery. Sufficient time is allowed for the patient to void before the preoperative drug is administered. The nurse informs the patient and family members present at this time that drowsiness and extreme dryness of the mouth and nose will occur about 20 to 30 minutes after the drug is given. The importance of remaining in bed with the side rails raised after the drug is administered is stressed.

**EDUCATING THE PATIENT WITH A PEPTIC ULCER.** The nurse gives the patient with a peptic ulcer a full explanation of the treatment regimen, which may include drugs and a special diet. The patient is instructed to take the drug exactly as prescribed by the primary health care provider (eg, 30 minutes before meals or between meals) to obtain the desired results. The nurse discusses the importance of diet in the treatment of peptic ulcer and gives a full explanation of the special diet (when ordered).

### EVALUATION

- The therapeutic effect is achieved.
  - Adverse reactions are identified, reported to the primary health care provider, and managed successfully through appropriate nursing interventions.
  - Oral mucous membranes appear normal.
- The patient complies with the prescribed drug regimen.
  - No evidence of injury is seen.
  - The patient and family demonstrate an understanding of the drug regimen.
  - The patient verbalizes the importance of complying with the prescribed therapeutic regimen.

### ● Critical Thinking Exercises

1. Mr. Anthony is prescribed a cholinergic blocking drug for the treatment of peptic ulcer. In planning patient teaching for Mr. Anthony before dismissal from the hospital, determine what information must be included to prevent complications of therapy.
2. A nurse assistant asks you what is the purpose of preoperative drugs and why patients cannot get out of bed after receiving a preoperative drug. Describe how you would explain this to the nurse assistant.
3. Mr. Salinas is prescribed a cholinergic blocking drug for a gastric ulcer. You note in the admission interview that he states that he has a history of enlarged prostate. Discuss how Mr. Salinas' history of enlarged prostate relates to the drug therapy for a gastric ulcer.
4. Develop a teaching plan for Ms. Likens, age 54 years, who will be taking glycopyrrolate (Robinul) for a peptic ulcer. Ms. Likens is alert, well oriented, and teaches school at a local high school.

### ● Review Questions

1. A patient taking clidinium for a peptic ulcer complains of dry mouth. The nurse should \_\_\_\_\_.
  - A. consider this to be unusual and contact the primary care provider
  - B. encourage the patient to take frequent sips of water
  - C. give the patient salt-water mouth rinses
  - D. ignore this reaction because it is only temporary
2. Which of the following adverse reactions would the nurse expect after the administration of atropine as part of a patient's preoperative medication regimen?
  - A. enhance the action of anesthesia
  - B. reduce secretions of the upper respiratory tract
  - C. prolong the action of the preoperative narcotic
  - D. increase gastric motility
3. Because of the effect of cholinergic blocking drugs on intestinal motility, the nurse must monitor the patient taking these drugs for the development of \_\_\_\_\_.
  - A. esophageal ulcers
  - B. diarrhea

- C. heartburn
  - D. constipation
4. Anticholinergic drugs are contraindicated in patients with \_\_\_\_\_.
- A. gout
  - B. glaucoma
  - C. diabetes
  - D. bradycardia

### ● **Medication Dosage Problems**

1. A patient is prescribed glycopyrrolate 0.1 mg M. The drug is available in a solution of 0.2 mg/mL. The nurse administers \_\_\_\_\_.
2. Trihexyphenidyl 4 mg PO is ordered. The drug is available as an elixir with a strength of 2 mg/5 mL. The nurse administers \_\_\_\_\_.