

# Chapter 36

## Mouth, Throat, and Nose Medications

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### KEY TERMS AND DEFINITIONS

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**Anesthetic**—medication that reduces pain by numbing the area to which it is applied.

**Antihistamine**—medication that blocks the histamine receptor to stop allergic reactions and can help dry up nasal secretions.

**Antitussive**—medication that helps stop coughing.

**Decongestant**—medication that decreases nasal congestion by causing vasoconstriction.

**Expectorant**—medication that thins mucus secretions and allows for their removal, usually by coughing.

**Larynx**—the voice box, connecting the throat to the trachea.

**Pharynx**—the part of the throat located at the back of the mouth that leads downward toward the esophagus and trachea.

**Rhinitis**—inflammation or irritation of the nasal tissues, usually causing a runny nose.

**Thrush**—fungal infection that usually starts as a white, creamy lesion on the inner membranes of the cheeks.

**Troche**—drug delivery system, which allows for absorption in the mucous membranes of the mouth, usually held between the cheek and gum until dissolved.

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## LEARNING OBJECTIVES

After completing this chapter, you should be able to

1. Describe oral and upper respiratory system anatomy and physiology.
2. Discuss common conditions of the oral cavity and upper respiratory tract.
3. Identify medications used to treat oral conditions, including sore throat.
4. Identify medications used to treat upper respiratory system conditions, including colds, influenza, and allergies.

## MOUTH AND THROAT STRUCTURE AND FUNCTION (ANATOMY AND PHYSIOLOGY)

The mouth, or oral cavity, is comprised of the lips, teeth, gingivae (gums), and tongue and is bound by the inner cheek, palate (roof of mouth), and mouth floor.<sup>1</sup> As the entry to the gastrointestinal (GI) tract, the mouth aids in starting the digestive process through salivation and propulsion of food and drink. The **pharynx** (throat), which is located at the back of the mouth, also propels food into the esophagus. The throat connects the mouth to the upper respiratory system, and both the mouth and throat play a critical role in speech production. The **larynx**, or voice box, also plays an important role in the production of sound and is located just below the pharynx. Because the mouth and throat are exposed to external influences such as air and food, they are susceptible to many different types of injuries and conditions.

### CASE STUDY

Mr. Harrison, a 62-year-old male, calls your pharmacy and complains of sore teeth and bleeding gums. Mr. Harrison has not seen a dentist in several years and states he brushes his teeth every morning. The pain started gradually several months ago, and his gums bleed when he brushes his teeth vigorously. He wants a recommendation to help stop the bleeding and pain.

## COMMON CONDITIONS OF THE MOUTH AND THROAT

### Cold Sores

Fever blisters, or cold sores, are lesions on the lips or oral mucous membranes caused by the herpes simplex virus type 1 (HSV-1).<sup>2</sup> The sores contain a group of small, fluid-filled blisters that eventually burst, leaving an open sore that oozes and then crusts over. Cold sores are commonly present at the border of the lips and are associated with pain, redness, and discomfort. Additional symptoms include burning, itching, and tingling, which may be felt one day before the visible formation of a lesion. It is estimated that the majority of the population has HSV-1, which is a lifelong infection. The virus typically spreads from person to person through oral secretions containing the virus shared during intimate, though not necessarily sexual, contact. Cold sores are contagious even if the sore cannot be seen and typically heal on their own in two to four weeks. Because the virus never leaves the body, lesions may reappear at varying frequencies.

### Canker Sores

Aphthous ulcers, or canker sores, are small lesions inside the mouth.<sup>2</sup> The round or oval sores are covered by a yellow-gray substance, surrounded by a red rim, and most commonly develop on the inner lips and cheek. Patients may have one or multiple canker sores and may develop the lesions frequently or infrequently. The primary symptom associated with canker sores is pain, which may make it difficult to talk and eat. The exact cause of canker sores is unknown and likely multifactorial. Canker sores typically heal on their own within one to two weeks.

### Thrush

**Thrush** is a fungal infection on the mucous membranes in the mouth caused by *Candida albicans*.<sup>2</sup> It appears as creamy white lesions, which can bleed if rubbed and may be painful. Thrush usually starts on the inside of the cheeks or tongue. If untreated, it can spread to the roof of the mouth, throat, and esophagus. Thrush can occur in anyone but is most common in infants, people with dentures, patients using inhaled corticosteroids like inhalers for asthma, or people with weakened immune systems, including those undergoing cancer chemotherapy.

## Dry Mouth

Xerostomia, or dry mouth, occurs when a patient's salivary glands do not create enough saliva to keep the mouth moisturized.<sup>2</sup> Hundreds of medications, including some antihistamines discussed later in this chapter and many other over-the-counter (OTC) medications, cause dry mouth as a side effect. Other causes of dry mouth include breathing with an open mouth, snoring, aging, health conditions such as diabetes, radiation treatment or nerve damage to the head or neck, dehydration, and use of tobacco, alcohol, and illegal drugs. In addition to experiencing discomfort, patients with dry mouth may have bad breath and difficulty chewing, swallowing, and speaking. Dry mouth can also lead to tooth decay, gingivitis, and infections such as thrush.

## Gingivitis

Gingivitis is the inflammation of the soft, pink gum tissue surrounding each tooth. Gingivitis can cause gum redness, bleeding, swelling, oozing, recession, and discomfort. The most common cause of gingivitis is the buildup of plaque, or bacteria and sugars that adhere to the teeth. If not removed, plaque can harden and turn into tartar, which further promotes an environment in which the bacteria can continue to live. Inadequate oral hygiene leads to this plaque hardening, tartar deposits, and gingivitis. Therefore, proper oral hygiene is recommended to prevent and treat gingivitis. This consists of daily brushing and flossing to remove plaque from the teeth. In addition, professional dental examinations and cleanings are recommended every 6 to 12 months. If untreated, gingivitis can progress to affect other areas supporting the teeth.

### CASE?

What do you think is the cause of Mr. Harrison's pain? What has he done (or not done) to contribute to this?

### PRACTICE POINT

*Good oral hygiene includes regular tooth-brushing, flossing, and routine professional cleanings.*

## Toothache

A toothache is pain or inflammation in or around a tooth. The primary cause of toothaches is tooth decay, or cavities.<sup>2</sup> A cavity occurs when bacteria in plaque produce an acid that eats through the protective enamel coating on a tooth.<sup>2</sup> Patients may first experience pain from a cavity when eating or drinking something hot or cold. Other causes of toothaches include infection at the root of the tooth or gums, fracture or trauma to a tooth, or teeth breaking through the gums as occurs in teething or the appearance of wisdom teeth.

## Sore Throat

Pharyngitis, or sore throat, is inflammation of the pharynx. A sore throat is most commonly caused by a viral infection (see **Table 36-1**). Other causes include bacterial infection, vocal cord nodules, gastroesophageal reflux disease (GERD), allergies, dry indoor air, environmental irritants like tobacco

**TABLE 36-1.** Differentiating Respiratory Conditions

Condition	Signs and Symptoms
Allergic rhinitis	Watery eyes; itchy nose, eyes, or throat; repetitive sneezing; nasal congestion; watery rhinorrhea; red, irritated eyes
Asthma	Cough, shortness of breath, wheezing
Bacterial throat infection	Sore throat (moderate to severe pain), fever,* whitish, yellow, or green fluid around tonsils, painful lymph nodes in the neck
Colds	Sore throat (mild to moderate pain), nasal congestion, runny nose, sneezing
Croup	Fever,* rhinitis, and sore throat initially, progressing to cough (may be "barking" cough), high-pitched wheezing, and shortness of breath

*Continued next page*

TABLE 36-1. Differentiating Respiratory Conditions (Continued)

Condition	Signs and Symptoms
COVID-19	Fever,* muscle and joint aches, sore throat, cough, shortness of breath or difficulty breathing, loss of taste or smell, nausea, vomiting, or diarrhea
Influenza	Muscle and joint aches, fever,* sore throat, nonproductive cough, moderate to severe fatigue
Otitis media	Ear popping, fullness, pain, or discharge, hearing loss, dizziness
Pneumonia or bronchitis	Chest tightness, wheezing, shortness of breath, productive cough, changes in sputum color, persistent fever*
Sinusitis	Tenderness over the sinuses, facial pain aggravated by bending down, fever,* tooth pain, halitosis; poor response to decongestants after 7 days
West Nile virus infection	Fever,* headache, fatigue, rash, swollen lymph glands, and eye pain initially, possibly progressing to gastrointestinal distress, central nervous system changes, seizures, or paralysis
Whooping cough	Initial phase (runny nose, mild cough, sneezing) of 1–2 weeks, followed by 1–6 weeks of paroxysmal coughing

\* Fever = oral temperature  $\geq 100.4^{\circ}\text{F}$  ( $38^{\circ}\text{C}$ )

smoke, and, rarely, head and neck cancers. Symptoms include pain and/or a scratchy sensation in the throat that often worsens with swallowing or talking. Patients may also experience difficulty swallowing, neck pain or swelling, and hoarseness, which describes a voice that sounds dry, raspy, strained, or has a higher or lower pitch than normal. Hoarseness related to sore throat is due to inflammation of the larynx. The duration of sore throat symptoms depends on the cause. Viral pharyngitis typically resolves within one week and does not require medical treatment. Bacterial pharyngitis, which is most commonly caused by *Streptococcus* bacteria, should be treated with appropriate antibiotic therapy (discussed in Chapter 27).

## MEDICATIONS USED FOR COMMON MOUTH AND THROAT CONDITIONS

A variety of medications and formulations are available to treat conditions of the mouth and throat.<sup>3</sup> These are summarized in Medication Table 36-1 (Medication Tables are located at the end of the chapter).

### CASE STUDY

Mrs. Swanson, a 35-year-old female, is at the pharmacy asking for advice on what medication to use to help soothe her sore throat. She states the pain just started this morning and is getting worse. She says it hurts when she swallows but she does not have a fever or any other symptoms.

## Topical Antivirals

Docosanol and acyclovir are antiviral medications used to treat cold sores by preventing HSV-1 entry and replication within cells. Both medications are available in creams that are applied to the cold sore five times per day. For these to be most effective, they should be started at the first sign of a cold sore (tingling, redness, itching). Patients should wash hands before and after application. Cosmetics should be removed and the area cleaned prior to application. When applying, the cream should be rubbed in gently and completely. Both creams are for external use only and should not be applied directly inside the mouth. Side effects may include drying of the lips or skin, burning, and/or itching.

### ALERT!

To prevent the spread of infection, it is important that topical cold sore medications are not shared with others.

## Topical Antifungals

Nystatin suspension (liquid) is a prescription antifungal used to treat thrush and other fungal infections of the mouth in infants and adults. All formulations of nystatin, including creams, ointments, powder, tablets, and capsules work to kill fungi by attacking cell membranes, but only nystatin suspension is used for fungal infections of the mouth. Prior to use, it is important to shake the nystatin suspension well.

It is to be swished around the mouth and held in the mouth for several minutes, or as long as possible, and then swallowed. Treatment should be administered four times a day. With infants or children, half the dose is applied to each side of the mouth using a cotton-tipped applicator or dropper. Because nystatin suspension is poorly absorbed into the body, it can be used to treat infections of the intestine and may cause side effects of nausea, stomach pain, vomiting, or diarrhea.

Clotrimazole is another antifungal medication that works like nystatin to prevent or treat thrush. Clotrimazole is available as a lozenge or **troche**. To treat thrush, the troche is dissolved slowly in the mouth five times a day, typically for 2 weeks. It takes approximately 30 minutes for the troche to dissolve. This slow dissolution is important to make the medication most effective, so patients should not bite or chew the medication troche. One side effect patients may experience is numbness or tingling in the mouth.

### Saliva Substitutes

Saliva substitute products are available OTC to temporarily relieve dryness and discomfort associated with dry mouth. These medications are also referred to as artificial saliva and work by moistening the mouth. Many brands and formulations, such as sprays, gels, rinses, and lozenges are available. Saliva substitutes are used as needed and some products may safely be used as frequently as every hour. Patients should avoid food and drink for 15 minutes after using saliva substitutes to make the effects of these medications last longer.

### Topical Antibacterials

Chlorhexidine gluconate is a prescription antibacterial mouth rinse used to prevent and treat gingivitis and mouth infections. Chlorhexidine works by slowing the growth of and killing bacteria. Patients using chlorhexidine should first brush and floss normally twice daily. After toothpaste is completely rinsed from the mouth, patients should swish 15 mL (one tablespoon) chlorhexidine for 30 seconds and then spit it out. The cap on the bottle can be used to measure 15 mL. After chlorhexidine use, patients should avoid immediately eating or rinsing with water or other mouthwashes. They should also avoid eating for two to three hours after using. While patients may experience taste alteration or staining of surfaces within the mouth, these side effects are rare.

Hydrogen peroxide-based products provide weak antibacterial effects and can be used to help cleanse areas of minor inflammation, including canker sores. Hydrogen

peroxide is available OTC as a gel or solution. Carbamide peroxide, which releases hydrogen peroxide, is also available OTC as a solution. Both hydrogen peroxide and carbamide peroxide are applied to the affected area up to four times daily after meals and at bedtime. After applying the gel or a few drops of the solution, patients should wait two to three minutes and then spit out. Carbamide peroxide and the hydrogen peroxide solution can also be used as mouth rinses, in which case patients should swish the solution for at least one minute prior to spitting out.

#### ALERT!

While the majority of rinses used to treat mouth conditions should be spit out, there are exceptions to this. It is important patients follow instructions closely for information on how much to apply and whether to spit out or swallow the rinse.

#### CASE?

What formulation (liquid, lozenge, spray, etc.) might the pharmacist suggest to Mrs. Swanson to use to treat her sore throat? How often should she use it?

### Topical Anesthetics

Benzocaine, lidocaine, and phenol are common topical **anesthetic** medications used to ease pain that accompanies a mouth sore, toothache, or sore throat. These medications numb the area to which they are applied and work by blocking the pain signal as it travels along nerve paths. While these medications do not treat the underlying cause of mouth conditions such as infection or cleanse the area like hydrogen peroxide-containing preparations, they decrease mouth pain and thus discomfort. A variety of formulations, including lozenges, sprays, gels, and solutions, are available (summarized in Medication Table 36-1).

Benzocaine is the most commonly used topical anesthetic, and it is available OTC. Benzocaine gel, liquid, ointment, or spray is applied to the affected area up to four times daily. Phenol is another anesthetic that is available OTC. It is available as lozenges and a solution that can be gargled or sprayed onto the back of the throat. All phenol preparations

are used every 2 hours as needed. Lidocaine for oral use is a viscous solution available only with a prescription. Fifteen mL of lidocaine is swished in the mouth and spit out if used to numb pain within the mouth. If used for a sore throat, 15 mL is gargled and swallowed. In either case, lidocaine should not be used more frequently than every 3 hours. Side effects of topical anesthetic use include localized burning, tingling, and itching. While these medications work quickly, generally within seconds, the numbing effect may wear off quickly. Avoiding food or drink for one hour after use can prolong the effect of topical anesthetics.

### PRACTICE POINT

*Lozenges should be slowly dissolved in the mouth rather than being chewed.*

### ALERT!

Use of anesthetics should be minimized. Overuse can cause methemoglobinemia, a dangerous condition that impairs oxygen transportation by the blood. Anesthetics should be avoided children under the age of 2 years due to an increased risk of methemoglobinemia in this population.

## Oral Analgesics

Analgesic pain relievers such as acetaminophen and anti-inflammatory medications like ibuprofen or naproxen can be taken to reduce pain associated with mouth and throat conditions. These medications are taken by mouth (not applied topically) and were discussed in Chapter 13. In addition to contributing to patient comfort, some of these medications decrease inflammation associated with a sore throat or other mouth conditions.

## UPPER RESPIRATORY STRUCTURE AND FUNCTION (ANATOMY AND PHYSIOLOGY)

As discussed in Chapter 18, the upper respiratory system consists of the pharynx, nasopharynx, trachea, nose, and sinuses. The nose acts as a filter for the lungs as it warms,

moisturizes, and cleans the air headed to the lungs. The sinuses are hollow areas of the skull that are filled with air. There are four pairs of sinuses: two pairs in the nose, one across the cheeks, and another behind the eyebrows. They help the voice to resonate, reduce the weight of the skull, and insulate the brain. The upper respiratory system is lined with a mucous membrane that secretes mucus. Excess mucus may result in congestion of the nose, sinus pain or pressure, rhinorrhea (a runny nose), or postnasal drip where mucus runs down the back of the throat. Postnasal drip can also cause a sore throat and sometimes a reflexive cough. Because the upper respiratory system is exposed to the open environment it is susceptible to viruses, bacteria, and allergens, which may result in a variety of conditions. See Table 36-1 for common conditions and symptoms.

### CASE STUDY

Ms. Floyd, a 45-year-old female, is at the pharmacy asking for help to treat her congestion and cough. She had a sore throat for 2 to 3 days, which went away, and now has had a runny nose for a day or two and a cough at night. This morning she woke up with pressure "around the eyes" (she points to her eyebrows and cheek bones). Her nose was also "clogged." She is on only one medication: lisinopril 20 mg once daily for her high blood pressure.

## COMMON CONDITIONS OF THE UPPER RESPIRATORY SYSTEM

### Colds

A cold, also known as the common cold, is an acute, self-limiting, viral infection.<sup>4</sup> Most colds are caused by a rhinovirus. Colds may occur at any time of the year, but tend to be more frequent in the winter months. Colds usually start with a sore throat followed by runny nose, congestion, and cough. A typical cold will last 7 to 14 days. Treatments such as decongestants, antitussives, and expectorants can help decrease and manage symptoms but do not cure colds.

### Influenza

Influenza, commonly called the flu, is caused by an influenza virus.<sup>4</sup> Influenza can be a serious illness, especially in very young or old people, or those who are pregnant or have

other chronic health conditions, such as asthma, diabetes, and heart disease. Symptoms, which develop over several days, are usually fever, chills, runny nose, sore throat, and cough. Influenza also causes muscle and joint aches, lack of energy, and sometimes headaches. The flu usually lasts 1 to 2 weeks but severe cases may last longer. Yearly influenza vaccines can help prevent infection. Antiviral cures are available (see Chapter 28) but have limitations. Symptomatic treatments commonly used for colds and oral analgesics (refer to Chapter 13 for details on these medications) are frequently used.

## Allergies

Allergies can be episodic, intermittent (seasonal), or persistent (perennial). Episodic allergies occur with sudden exposure to an allergen.<sup>5</sup> For example, patients visiting homes with pets may develop allergy symptoms that will resolve when they return to their own homes. Intermittent (seasonal) allergies occur at certain times of the year, usually from a grass pollen or ragweed, and can vary in location based on what plants grow in certain areas of the country. Persistent (perennial) allergies are chronic and may be from indoor allergens (dust mite feces, animal dander, and some mold species) or outdoor allergens like pollution. When an allergen comes in contact with mucous membranes a response mediated by immunoglobulin E, abbreviated IgE, occurs.<sup>5</sup> IgE triggers mast cells to release histamine and other agents that cause inflammation, including rhinitis (inflammation of the nose), and an increase in salivary and bronchial secretions. Symptoms of this response include a runny nose, congestion, sneezing, redness, and itchy eyes or skin. More serious symptoms like wheezing or shortness of breath may indicate a severe allergy, which may require immediate medical attention. Avoidance of allergens is the most effective treatment. This can include staying indoors during peak pollen seasons or away from animals or places where pet dander may be present.<sup>5</sup> If avoidance is not possible, symptomatic treatments may be used to bring relief and improve daily function.<sup>5</sup>

## MEDICATIONS USED FOR COMMON UPPER RESPIRATORY CONDITIONS

### CASE?

What is the medical description for Ms. Floyd's stuffy nose? What may be causing it?

## Decongestants

**Decongestants** stimulate certain receptors, usually alpha-1 in the sympathetic autonomic nervous system (SANS; discussed in Chapter 4), causing vasoconstriction. This allows the swollen blood vessels to shrink and reduces congestion. Decongestants can be taken orally or applied topically inside the nose with drops or sprays. **Medication Table 36-2** provides a summary of these products.<sup>6</sup> Orally administered decongestants act systemically (throughout the body), and the vasoconstriction they cause can increase blood pressure. They may also cause jitteriness or insomnia in some patients and should usually be avoided in the late evening. Pseudoephedrine, a common oral decongestant, is only available for purchase at the pharmacy counter. Pharmacies must track purchases according to state and federal laws.<sup>7</sup> The oral decongestant in the pharmacy aisle is phenylephrine, which is an older decongestant. It is less effective than pseudoephedrine for many patients.

### ALERT!

Decongestants are not recommended for children under the age of 4 years.

### CASE?

What might the pharmacist recommend for Ms. Floyd's stuffy nose? Why was this particular medication chosen? What information helps to make this decision?

### PRACTICE POINT

*Because pseudoephedrine can be used in the illegal manufacture of methamphetamine, the federal government restricts how much pseudoephedrine a patient can buy at a time and requires identification for its purchase. Many states have additional laws regulating the sale of pseudoephedrine. Always check your local rules and regulations, as well as your practice site's policies, before selling a patient pseudoephedrine.*

Nasal decongestant drops or sprays act locally in the nose with very little or no systemic effects. However, overuse or prolonged use of nasal decongestants for more than 3 to 5 days may cause rebound congestion.<sup>8</sup> The reason why this occurs is not well understood but the result is inflammation of the nasal mucosa and congestion that is resistant to decongestants.<sup>8</sup>

### ALERT!

Oral decongestants, even OTC products, can increase blood pressure and should be used cautiously by patients taking antihypertensive medications or those with elevated blood pressure. Nasal decongestants may be a more appropriate treatment option for these patients since nasal decongestants only act locally and are less likely to increase blood pressure like systemic decongestants.

### CASE?

If Ms. Floyd also wants something for her cough, what might the pharmacist recommend? Why?

## Antitussives

A cough is one of the body's natural ways to help clear the airways. It can be reflexive or done on command. Colds and influenza are frequent causes of short-term coughs. **Antitussives** work to help stop coughs. Benzonatate is a prescription oral cough medicine, available in capsule form, that numbs the respiratory stretch receptors in the lungs and stops the cough reflex. Other medications work on the cough center in the brain, located in the medulla, which sits at the base of the brain, right at the top of the spinal cord. These include prescription medications like hydrocodone and codeine. These medications are also opiate pain relievers and are controlled substances with abuse potential. To treat a cough, they are typically used in a syrup formulation, but tablet forms are also available. Dextromethorphan (DXM) is a cough medicine that is structurally related to codeine but has less abuse potential. DXM is available OTC. It works in the cough center in the brain and decreases the sensitivity of cough receptors in the lungs. All of these antitussives may cause drowsiness so patients should be counseled to use

caution when driving or doing other activities. Antitussives are listed in **Medication Table 36-3**.<sup>6</sup>

## Expectorants

Guaifenesin is the most commonly used **expectorant** and is available in OTC and prescription formulations. It works by causing an increase in respiratory tract secretions. This increased volume in secretions decreases the viscosity, or stickiness, of the mucus. Thinner mucus is easier to cough up than thick mucus, making it easier for the patient to expectorate, or cough out, the excess mucus. Consuming an increased amount of water can also aid this action and is recommended with expectorants. While expectorants are commonly used in combination with antitussives, they may not always be needed together. Expectorants are listed in Medication Table 36-3.<sup>6</sup>

## Antihistamines

**Antihistamines** are frequently used by patients with allergies and allergic rhinitis. These medications block the histamine receptor and therefore minimize the allergic response and symptoms like rhinitis, rhinorrhea, and sneezing. Antihistamines are available as oral preparations, topical creams, and nasal inhalations. Oral antihistamines are available with or without a prescription. Azelastine and olopatadine are currently the only antihistamines available for nasal use. See **Medication Table 36-4** for a list of these products.<sup>6</sup> Older oral antihistamines, sometimes referred to as first-generation antihistamines, are very drying and commonly cause quite a bit of sedation (drowsiness). Because of this property, they are sometimes used for indications such as motion sickness and as sleep aids. They may also be used in combination with decongestants to treat congestion due to colds or influenza. Newer antihistamines, referred to as second generation, work well for most types of allergy symptoms and do not typically cause as much sedation. They are not effective at treating cold or influenza symptoms. Even when used as a nasal application, antihistamines may cause sedation in many patients.

### ALERT!

Older antihistamines are not appropriate for children under 4 years old. Any antihistamine (even nasal preparations) may cause drowsiness but can, paradoxically, make some children hyperactive rather than sleepy.<sup>9</sup>



## Corticosteroids

Corticosteroids (discussed in detail in Chapter 8) decrease inflammation and mucosal edema, cause mild vasoconstriction, and help stop mast cell reactions. Because they block the allergic response at multiple points, nasal corticosteroids are considered the best choice to treat rhinitis, sneezing, itchy eyes and nose caused by intermittent and perineal allergies.<sup>5</sup> However, unlike antihistamines and decongestants, which both work fairly quickly after use, corticosteroids may take several days for maximum benefit to be seen. Thus, corticosteroids work best if used as early as possible before the allergic response is triggered or when they are needed for more than 2 to 3 weeks to allow time for maximum efficacy. Nasal corticosteroids are indicated for rhinitis due to allergies and are available by prescription and OTC. Nasal corticosteroid products are listed in Medication Table 36-4.<sup>6</sup>

### PRACTICE POINT

*Nasal decongestants are not good options for chronic allergy symptoms because their use is limited to short periods. Nasal corticosteroids can be used for longer periods but may take a few weeks to reach maximum effect.*

## Mast Cell Stabilizers

Mast cell stabilizers are useful in treating patients with allergies because they prevent cells from releasing histamine. Cromolyn is a mast cell stabilizer that is available without a prescription for nasal use. Prescription medications like montelukast, a leukotriene inhibitor (discussed in Chapter 19), can also be used for allergy symptoms.

## Combination Products

A wide variety of treatment combinations are available OTC. These products provide a convenient way to treat several symptoms with a single preparation, but they must be chosen with care to avoid excessive or needless drug therapy. Many combination products have similar names (e.g., Tylenol Cold, Tylenol Sinus) but different ingredients. Others have the same or similar ingredients but in different dosage forms or strengths. Patients should be reminded to read labels and directions carefully and discuss their questions with the

pharmacist. Some representative combinations are listed in Medication Table 36-5.<sup>3,6</sup>

### PRACTICE POINT

*By encouraging patients to discuss their symptoms with the pharmacist, technicians can increase the likelihood of the optimal product being chosen—one with the right mix of ingredients to treat the current symptoms—and avoiding dangerous duplications and interactions.*

### ALERT!

Many combination products have ingredients that may duplicate those patients are taking in other products or dosage forms. Such duplication (e.g., Tylenol tablets for pain, added to a combination preparation containing acetaminophen, such as Theraflu or Nyquil products) can result in serious toxicity or overdose. Also, some liquid products may contain alcohol which should be avoided in children and adults sensitive to alcohol.

## SUMMARY

Anesthetics, antihistamines, decongestants, and corticosteroids can be used to help provide symptomatic relief of symptoms in the nose and throat caused by colds, influenza, and allergies. Gingivitis and mouth pain or irritations can also be treated with topical options such as chlorhexidine gluconate, carbamide peroxide, or topical anesthetics like benzocaine. Antifungal medications can be used to treat thrush topically in the mouth.

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## REVIEW QUESTIONS

1. Describe what is included in *good oral hygiene*. Why is it important?
2. Most medication rinses used to treat conditions of the mouth and throat are to be spit out. Which medications are exceptions to this and should be swallowed?
3. How long can nasal decongestants be used? What happens if nasal decongestants are used for longer than the recommended time?
4. When is the best time to start using a nasal corticosteroid for allergies? How long should nasal corticosteroids be used?
5. Why is it so important for patients to read the labels of OTC cough, cold, and flu products and follow directions carefully?

MEDICATION TABLES

MEDICATION TABLE 36-1. Topical Medications Used for Mouth and Throat Conditions<sup>3</sup>

Condition	Classification	Active Ingredient	Pronunciation	Brand Name(s)	Dose	Regulatory Status
Cold sore	Antiviral	Docosanol	(doe KOE san ole)	Abreva	10% cream: apply to affected area 5 times daily, start at the first sign of cold sore and continue until healed; if not healed in 10 days, stop use and contact healthcare provider	OTC
	Antiviral	Acyclovir	(ay SYE kloe veer)	Zovirax	5% cream: apply to affected area 5 times daily for 4 days, start at the first sign of cold sore	Rx
Thrush	Antifungal	Nystatin	(nye STAT in)	Generics	100,000 IU/mL suspension: swish and swallow 4 times daily for 7–14 days; doses vary from 200,000-600,000 IU (2–6 mL) depending on factors such as age and infection severity	Rx
	Antifungal	Clotrimazole	(kloe TRIM a zole)	Generics	10 mg troche: dissolve one troche slowly 5 times daily for 14 consecutive days	Rx
Dry mouth	Saliva substitute	Xylitol, Glycerin, plus mix of other ingredients	(ZAHY li tawl) (GLIS er in)	Biotene, ACT	Spray: spray directly into mouth; do not rinse Gel: apply on tongue and spread evenly Rinse: rinse in mouth for 30 seconds; some products should be spit out whereas others are safe to swallow Lozenge: dissolve one lozenge in the mouth slowly; allow lozenge to move around	OTC
				Dry Mouth,		
				TheraBreath, others		
Gingivitis	Antibacterial	Chlorhexidine	(klor HEX i deen)	Periogard, Peridex	0.12% solution: swish 15 mL (½ oz) for 30 seconds, then spit out twice daily after brushing and flossing; wait at least 2 hours to eat after using	Rx

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MEDICATION TABLE 36-1. Topical Medications Used for Mouth and Throat Conditions<sup>3</sup> (Continued)

Condition	Classification	Active Ingredient	Pronunciation	Brand Name(s)	Dose	Regulatory Status
Mouth irritation	Antibacterial	Hydrogen peroxide	(HYE droe jen) (per OX ide)	Peroxyl	1.5% solution: use 10 mL up to 4 times daily; swish in mouth over affected area(s) for at least 1 minute before spitting; do not swallow	OTC
					1.5% gel: apply small amount of gel to affected area(s) up to 4 times daily; allow to sit for at least 1 minute and spit out	
Mouth irritation or pain	Anti-inflammatory	Carbamide peroxide	(KAR ba mide) (per OX ide)	Generics	10% liquid: apply several drops to affected area 4 times daily after meals and at bedtime; spit out after a few minutes; to use as a rinse, place 10-20 drops onto the tongue, swish for at least 1 minute, and spit out	OTC
					10%-20% topical gel, liquid, ointment, spray: apply thin layer to area up to 4 times daily	
Mouth irritation or pain	Anesthetic	Benzocaine	(BEN zoe kane)	Anbesol, Orajel	15 mg lozenge: allow 1 lozenge to dissolve slowly in mouth; may repeat every 2 hours as needed; do not chew	OTC
					2% viscous solution: swish and spit with 15 mL (½ oz) every 3-8 hours (max 8 doses/24 hours)	
Mouth irritation or pain	Anesthetic	Lidocaine	(LYE doe kane)	Generics	14.5-29 mg lozenges: use 1-2 lozenges every 2 hours as needed	Rx
					1.4% spray: use 1 spray to affected area; let sit in place for at least 15 seconds, then spit out; use every 2 hours as needed	
Mouth irritation or pain	Anesthetic	Phenol	(FEE nol)	Chloraseptic	1.4% gargle: spray onto throat, gargle 15 seconds and spit out; may repeat every 2 hours	OTC
					1.4% gargle: spray onto throat, gargle 15 seconds and spit out; may repeat every 2 hours	

**MEDICATION TABLE 36-2. Medications Used for Congestion<sup>6</sup>**

Classification	Active Ingredient	Pronunciation <sup>3</sup>	Brand Name	Dose	Regulatory Status
Oral decongestant	Pseudoephedrine	(soo doe e FED rin)	Sudafed	30 mg tablets: 1–2 tablets every 4–6 hours; max 240 mg/day 120 mg 12-hour extended-release tablets: 1 tablet every 12 hours; max 2 tablets/day 240 mg 24-hour extended-release tablets: 1 tablet every 24 hours	OTC
	Phenylephrine	(fen il EF rin)	Sudafed PE	10 mg tablets: 1 every 4–6 hours; max 60 mg/day	OTC
Nasal decongestant	Naphazoline	(naf AZ oh leen)	Privine	0.05% drops or spray: use 1–2 drops/sprays in each nostril every 6 hours	OTC
	Oxymetazoline	(ok see met AZ oh leen)	Afrin	0.05% solution: use 2–3 sprays in each nostril twice daily	OTC
	Phenylephrine	(fen il EF rin)	Neo-Synephrine	0.25% or 0.5% drops or spray: use 1–2 drops/sprays in each nostril every 4 hours as needed	OTC
	Propylhexedrine	(proe pil HEX e dreen)	Benzedrex	0.4–0.5 mg: use 2 sprays in each nostril not more than every 2 hours	OTC

**MEDICATION TABLE 36-3. Medications Used for Cough<sup>6</sup>**

Classification	Active Ingredient	Pronunciation <sup>3</sup>	Brand Name	Dose	Regulatory Status
Antitussive	Benzonatate	(ben ZOE na tate)	Generics	100–200 mg 3 times daily as needed for cough	Rx
	Dextromethorphan	(dex troe meth OR fan)	Delsym, various	10–20 mg every 4 hours; 30 mg every 6–8 hours; or 60 mg extended release every 12 hours; max 120 mg/day	OTC
	Codeine	(KOE deen)	Various, ingredient in combination with guaifenesin; products frequently labeled “AC”	10–20 mg every 4–6 hours as needed; max 120 mg/day in guaifenesin antitussive/expectorant combinations	combined with guaifenesin, schedule V)
Expectorant	Guaifenesin	(gwye FEN e sin)	Mucinex, Tussin, various others	200–400 mg every 4 hours; max 2,400 mg/day 600–1200 mg extended release every 12 hours; max 2,400 mg/day	Rx, OTC

MEDICATION TABLE 36-4. Medications Used for Allergy Symptoms<sup>6</sup>

Classification	Active Ingredient	Pronunciation <sup>3</sup>	Brand Name	Dose	Regulatory Status
Oral antihistamine/ first generation	Diphenhydramine	(dye fen HYE dra meen)	Benadryl	25 mg: 1–2 every 6–8 hours	OTC
	Carbinoxamine	(kar bi NOX a meen)	Karbinal ER; RyVent	4 mg: 1–2 tablets 3–4 times daily	Rx
	Chlorpheniramine	(klor fen IR a meen)	Chlor-Trimeton	4 mg every 4– hours; max 24 mg/day	OTC
	Clemastine	(KLEM as teen)	Generics	2.68 mg: 0.5–1 tablet 2–3 times daily; max 3 tablets/day	OTC
Oral antihistamine/ second generation	Cetirizine	(se TI ra zeen)	Zyrtec	10 mg: 1 tablet daily	OTC
	Loratadine	(lor AT a deen)	Claritin	10 mg: 1 tablet daily	OTC
	Fexofenadine	(fex oh FEN a deen)	Allegra	60 mg: 1 tablet twice daily 180 mg: 1 tablet daily	OTC
	Levocetirizine	(lee voo se TIR i zeen)	Xyzal	5 mg: 1 tablet daily	OTC
	Desloratadine	(des lor AT a deen)	Clarinex	5 mg: 1 tablet daily	Rx
Nasal antihistamines	Azelastine	(a ZEL as teen)	Astepro Allergy	0.15%: use 1–2 sprays in each nostril every 12 hours or 2 sprays in each nostril daily (maximum 4 sprays/nostril in 24 hours)	OTC
	Olopatadine	(oh loe PAT a deen)	Patanase	(0.6%) 2 sprays in each nostril twice daily	Rx
Nasal mast cell stabilizer	Cromolyn	(KROE moe lin)	Nasal crom	40 mg/mL: 1 spray in each nostril 3–4 times daily (max 6 uses/day)	OTC

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MEDICATION TABLE 36-4. Medications Used for Allergy Symptoms<sup>6</sup> (Continued)

Classification	Active Ingredient	Pronunciation <sup>3</sup>	Brand Name	Dose	Regulatory Status
Nasal corticosteroid	Beclomethasone	(be kloee METH a sone)	Beconase AQ, QNASL	42 mcg: 1–2 sprays in each nostril twice daily	Rx
	Budesonide	(byoo DES oh nide)	Generics	32 mcg: 1 spray in each nostril daily	OTC
	Ciclesonide	(syee KLEES oh nide)	Omnaris, Zetonna	50 mcg: 2 sprays in each nostril once daily 37 mcg: 1 spray in each nostril once daily	Rx
	Flunisolide	(floo NISS oh lide)	Generics	50 mcg: 2 sprays in each nostril 2–3 times daily	Rx
	Fluticasone	(floo TIK a sone)	Flonase, Flonase Sensimist, others	50 mcg (Flonase): 1–2 sprays in each nostril once daily 27.5 mcg (Sensimist): 1–2 sprays in each nostril once daily	Rx, OTC (depending on dosage form)
	Mometasone	(moe MET a sone)	Generics	50 mcg: 2 sprays in each nostril daily	Rx
	Triamcinolone	(tryee am SIN oh lone)	Nasacort	55 mcg: 2 sprays in each nostril daily	OTC
Nasal moisturizer	Sodium chloride (sometimes with additional ingredients such as aloe, glycerin, or benzalkonium chloride)	(SOE dee um)	Rhinaris, SalineX, Breathe Free, Ocean	0.2%–0.9% solution or spray: 2–6 drops/sprays in each nostril every 2 hours, as often as needed	OTC
		(KLOR ide)	Rhinaris, Entsol	Intranasal gel: apply a small amount of gel into each nostril every 4 hours as needed	OTC

**MEDICATION TABLE 36-5.** Select Over-the-Counter Combination Products for Upper Respiratory Conditions<sup>3</sup>

Product(s)	Analgesic	Antihistamine	Antitussive	Decongestant	Expectorant
Maximum Strength Mucinex Fast-Max Cold, Flu & Sore Throat Caplets; Robitussin Maximum Strength Severe Multi-Symptom Cough Cold + Flu Liquid; Tylenol Cold + Flu Severe Caplets; Tylenol Cold + Mucus Severe COOL BURST Liquid	Acetaminophen (a seet a MIN oh fen)		Dextromethorphan (dex troe meth OR fan)	Phenylephrine (fen il EF rin)	Guaifenesin (gwee FEN e sin)
Zyrtec-D		Cetirizine (se TI ra zeen)		Pseudoephedrine (soo doe e FED rin)	
Sudafed PE Head Congestion + Pain	Ibuprofen (eye byoo PROE fen)			Phenylephrine (fen il EF rin)	
Advil Cold & Sinus	Ibuprofen (eye byoo PROE fen)			Pseudoephedrine (soo doe e FED rin)	
Aleve-D Sinus & Cold	Naproxen (na PROX en)			Pseudoephedrine (soo doe e FED rin)	
Alka-Seltzer Plus Severe Cold Sparkling Original Powerfast Fizz	Aspirin (AS pir in)	Chlorpheniramine (klor fen IR a meen)		Phenylephrine (fen il EF rin)	
Contac Cold + Flu Night	Acetaminophen (a seet a MIN oh fen)	Chlorpheniramine (klor fen IR a meen) in caplets; doxylamine (dox IL a meen) in liquid		Phenylephrine (fen il EF rin)	
Theraflu Nighttime Multi-Symptom Severe Cold	Acetaminophen (a seet a MIN oh fen)	Diphenhydramine (dye fen HYE dra meen)		Phenylephrine (fen il EF rin)	
NyQuil Cold & Flu Nighttime Relief	Acetaminophen (a seet a MIN oh fen)	Doxylamine (dox IL a meen)	Dextromethorphan (dex troe meth OR fan)		
DayQuil Cold & Flu	Acetaminophen (a seet a MIN oh fen)		Dextromethorphan (dex troe meth OR fan)	Phenylephrine (fen il EF rin)	