

## How to Use the Drug Store to Treat Coughs and Colds

By: Raymond Lengel, MSN, FNP-BC, RN

Purpose: The purpose of this course is to provide an overview of safe and effective use of over-the-counter products for symptoms related to cough and cold. Symptoms looked at will include fever, sinus congestion, cough, sore throat and allergies.

### Objectives

1. Discuss the safe use of over the counter medications
2. List three over the counter medications used to treat fever
3. Discuss the use of decongestants in sinus congestion
4. Discuss medications used to manage cough
5. Discuss medications used to manage allergies
6. Discuss medications used to manage sore throat

Patients should not be inspired to run to the doctor for any cough, snuffle or sneeze. Patients often want to take antibiotics, but they are not helpful in the management many common infectious diseases.

If patients are going to take care of themselves they need to learn how to use over-the-counter products safely and effectively. Nurses have a role in helping patients learn how to care for themselves partly by teaching about the safe use of over-the-counter medications.

Many health issues can be managed with the treatments at the drug store, but there are times that a doctor will be needed. This course will provide tips to help patients use the drug store safely and effectively and know when to go to the doctor.

The first step in using the drug store safely and effectively is to know how to classify symptoms. By evaluating symptoms the patient will be better able to determine how to treat them. This course will highlight red flags so nurses can teach patients when they need medical intervention.

### ***Over-the-counter products***

An over-the-counter (OTC) drug is one you can buy without a prescription. Contrary to what many think, they are not necessarily safe medications, but they do have some proven degree of safety.

Each OTC product has a Drug Fact Label, which helps patients choose the proper medication. The drug fact label tells the active ingredient, the use of the medication, how to use the medication, which symptoms it affects and who should talk to their doctor before taking the medication (1).

### ***Generic vs. Name brand***

Generic drugs are copies of the brand medications. They have the same use, side effects, dosages, risk and safety associated with it. Generally, generic medications and brand medications have similar effectiveness (1).

It is critical for patients to evaluate the active ingredient list. Products with the same active ingredient to a brand – are similar products.

The Food and Drug Association assures that generic medications are equal to brand name drugs. Some companies that make brand name medications manufacture many of the generic drugs.

Generic medications are inexpensive. These drugs are cheaper than brand names not because they are inferior products but because the company that makes the drug does not have to incur the expense of manufacturing and marketing a new medication.

### **Active ingredient**

The active ingredient is the substance in the medication that is accomplishing the desired effect in the body. The active ingredient is often the same as the name if you are buying a generic product. For example, children's ibuprofen is the name of a product and the active ingredient is ibuprofen.

Knowing the active ingredient is helpful. Some medications have multiple active ingredients. Products with multiple ingredients are commonly seen in cold and flu preparations, cold and cough preparations and some allergy medications.

As a general rule products with multiple active ingredients are less desirable because they are associated with more side effects.

Examples of active ingredients include:

In Tylenol the active ingredient is acetaminophen

In Advil or Motrin the active ingredient is ibuprofen

In Sudafed the active ingredient is pseudoephedrine

### ***Safety of over-the-counter medications***

Are OTC medications safe? When used in healthy individuals as directed they are generally safe – but that is assuming a lot. Many people use over-the-counter medications inappropriately. OTC drugs are generally safe, just make sure you follow the label.

Here is a list of tips for safe use of OTC medication (1)

- Read and follow labels
- Use over-the-counter medications for short-term use
- If the box directs you to, talk to your doctor before taking the medication
- Record all medications that you take
- If you take other medications check with your doctor or pharmacist to assure there is no interaction
- Generally avoid multi-symptom medications. Treat only the symptoms that you are having.
- Keep medicine in the box, tube that it came in so you do not mix up medications
- Keep medications away from dogs and children
- Keep medicines in a dry cool place
- Do not keep expired medications
- Make sure you measure medications correctly
- Be careful about crushing or chewing pills

Healthy adults can generally use medications safely, but other groups of people have more risk. This is particularly true among children and adults with multiple medical problems.

The use of many over-the-counter medications in children under 12-years-old have proven ineffective and unsafe. Many of the problems in children have risen out of

incorrect dosing. Using the measuring device that came with the product is the safest option. It is critically important to use the proper doses of medication in children.

Patients with multiple health care problems have many risks with multiple over-the-counter medicines.

### ***How to choose a product (1)***

The first step in choosing a product is to identify the most troubling symptom and pick the product that targets that symptom. Every once in a while a product that targets two symptoms may be needed. Rarely will a product that targets more than 2 symptoms will be needed. The major time targeting more than 2 symptoms may be appropriate is when you are afflicted with the flu.

Luke is a 28-year-old male who has had a cold all week. His major complaint is nasal congestion. "This stuffy nose is going on a lot longer than I thought it should." He also complains of mild head pressure and a sore throat.

Treating Luke for his major complaint – nasal congestion – is likely all he needs. Clearing up the stuffy nose should help reduce nasal congestion, head pressure and maybe even the sore throat.

Holly is 15-year-old-girl who has the flu. Her major complaint is that she has a fever, chills, achy muscles, headache, some nasal congestion and a non-productive cough. She has been taking Nyquil Cold and Flu. Nyquil Cold & Flu has acetaminophen, a cough suppressant and an antihistamine. It has provided her some relief, but she has been extremely tired, nauseated and has a dry mouth.

When her symptoms were evaluated it was determined that feeling run down, achy and headache were her worst symptoms.

Based on these symptoms she is getting some relieve from the acetaminophen, but the antihistamine and cough suppressant are probably not helping much. The sleepiness, dry mouth and nausea may be related to the antihistamine and cough suppressant.

She switched over to taking 400 mg of ibuprofen and using nasal saline and felt better almost immediately. The sleepiness, nausea and dry mouth stopped and the aching muscles and headache were better relieved with the ibuprofen than with the acetaminophen.

When choosing a drug make sure patients note the below factors (1):

- Name
- Active ingredients and what those active ingredients treat
- The dose of the medication
- How often it should be taken
- How long it should be taken
- If it should be taken with food
- Any precautions with the drug
- Drug interactions with any of the drugs you already take. Patients may need to ask a pharmacist.
- Side effects

Take a drug that targets the major symptoms. Be very cautious of multi-symptoms medications – there are more side effects.

### **Kids and OTC**

Over-the-counter medications are well studied in adults, but are not as well studied in children. New labeling laws have recommended that the use of many over-the-counter medications be limited in children under the age of 4-years-old. A majority of the complications from over-the-counter medication in children have been from improper dosing. Caregivers need to be taught to assure proper doses when giving medications to children.

### **Fever**

A fever is an elevated body temperature. Normal body temperature is classically considered as 98.6 degrees Fahrenheit, but a range of temperatures between 97 and 99 degrees Fahrenheit may be considered normal. Body temperature will fluctuate throughout the day, with temperature being higher at night and lower in the morning.

A fever is an adaptation that the body makes in response to a stressor such as an infection or another illness. The increased body temperature is the body's way of combating the stress.

Temperature greater than 99.5 degrees Fahrenheit when taken orally or 100.4 when taken rectally is a fever. The gravity of the fever needs to take into account the patients age, other symptoms they are having and the degree of fever. The individual needs to

see the doctor if any of the conditions listed under “when fever is more serious” are present.

Severe illness with a fever is often indicated when: someone is not eating or drinking, doesn't want to play or do regular activities, is drowsy/lethargic, has hypotension or is pale and clammy. Individuals who are not as sick will look much better when the fever dissipates.

### ***What is the cause of fever***

Many things can cause a fever. An infection is the most common cause. Other illnesses such as cancer or autoimmune diseases (Lupus or rheumatoid arthritis) less commonly cause fever. Overdressing – more commonly seen in very young children – can cause a slight fever. After getting immunizations a fever is sometimes noted.

### ***When fever is more serious***

Red flags are situations that require urgent and sometimes emergent medical care. Red flags for fever vary depending on age. The list is long, but most red flags are not common. Anyone with fever and the following complaints should see their health care provider.

- Stiff neck
- Abdominal pain
- Chest pain
- Persistent vomiting
- Lethargy
- Excessive crying or fussiness in a child
- Severe headache
- Photosensitivity
- Shortness of breath
- Difficulty swallowing/drooling/severe sore throat
- Severe heart or lung disease such as severe emphysema or heart failure (usually in adults).
- Change in mental status

- Immune system dysfunction (for example, those with cancer or AIDS)
- Recent head trauma
- Newborns who have a temperature less than 97 degrees Fahrenheit
- A non-blanchable purple rash
- History of febrile seizures
- High risk for hyperthermia
- Any fever over 105 degrees Fahrenheit, fever above 106 degrees Fahrenheit often occurs with bleeding into the brain
- Anyone under 6 months-old who has a rectal temperature equal to or greater than 100.4 degrees Fahrenheit
- Anyone under 2 years-old who has a rectal temperature greater than or equal to 102 degrees Fahrenheit
- Persistent fever above 103 degrees Fahrenheit
- Fever that persists beyond five days
- Individuals who cannot describe the symptoms need evaluation (young child or older adult with confusion)

### ***Over-the-counter products***

Any fever above 102 degrees Fahrenheit should probably be treated. The three most common medications used in the treatment of fever are:

1. Aspirin
2. Acetaminophen
3. Non-steroidal anti-inflammatory drugs (NSAIDs)

Aspirin is an analgesic as well as an antipyretic. It may cause gastrointestinal upset and has been linked to ulcers. One advantage is that it is not expensive. It is not recommended in those who are under 18 especially in those with the flu, chickenpox or another viral illness as there is a risk of Reye's syndrome.

Acetaminophen (Tylenol), an analgesic/anti-pyretic, is safe to use when used for short periods of time. Of the three drugs used to reduce fever, acetaminophen has the fewest major drug interactions.

Acetaminophen does not have anti-inflammatory effects, unlike NSAIDs.

Doses higher than 4 grams a day can be toxic to the adult liver. Combining acetaminophen and alcohol increases the risk of hepatotoxicity.

Ibuprofen and naproxen are non-steroidal anti-inflammatory drugs (NSAIDs). They are also safe when used for short periods of time in the healthy adult.

NSAIDs can be problematic in those with kidney disease, heart disease, heart failure, hypertension and stomach ulcers.

NSAIDs should not be used in combination with alcohol. In addition, their regular use may interact with many other medications including many antihypertensive medications (see table on drug interactions).

Naproxen sodium (Aleve) is another pain/fever reducer that is classified as a NSAID. It is not indicated for the child less than 12-years-old and has similar side effects as ibuprofen.

### **Pain Relievers/Fever Reducers (used with permission from 1)**

	Brand names	Dose	Side effects	Notes
<b>Acetaminophen</b> Acetaminophen	Tylenol	325 mg – 12 and older take 2 pills every 4-6 hours, children 6-11-years-old take 1 tablet every 4-6 hours	Few when used as directed for a short period of time	Overdose will affect the liver, do not use with alcohol; Is not an anti-inflammatory drug
Acetaminophen extra strength	Extra strength Tylenol	500 mg – 12 and older take 2 pills every 6 hours		
Liquid acetaminophen	Liquid Tylenol	see package for dosing		
<b>Ibuprofen</b> Ibuprofen	Motrin	200-400 mg every 6-8 hours as needed	Stomach bleeding, upset stomach, abdominal bloating	Do not use during the last 3 months of pregnancy; Use caution in those with bleeding problems, on a blood thinner, those with asthma, a stomach ulcer, high blood pressure,

heart or kidney problems or those over 60 years-old

	Advil	200-400 mg every 6-8 hours as needed see package for dosing		
Liquid ibuprofen				
<b>Naproxen sodium</b>				
Naproxen sodium	Aleve	12-years-old and older – take one tablet (220 mg) every 8-12 hours, 2 pills may be taken for the first dose	Stomach bleeding, upset stomach, abdominal bloating, high blood pressure	Do not use during the last 3 months of pregnancy; Use caution in those with bleeding problems, on a blood thinner, those with asthma, a stomach ulcer, high blood pressure, heart or kidney problems or those over 60 years-old
Aspirin				
Aspirin	Bayer/Ecotrin/St. Joseph	Take as directed on the label	Stomach bleeding, upset stomach, abdominal bloating	Do not use in children especially those with the flu, chickenpox or another viral illness

**Drug interactions (used with permission from 1)**

Drug A	Drug B	What could happen	Notes
Warfarin	NSAID, ASA	Bleeding	Avoid use together

Warfarin	Tylenol	Bleeding	Risk is not as great as NSAID, minimal risk with one or two doses but ideally should be avoided
Antidepressants (SSRIs)	NSAID	Increased risk of bleeding	Watch for any increase in bleeding. APAP is a safer option for pain/fever control
ASA	Some anti-seizure medications	ASA may increase the amount of seizure medication in the blood	Levels of anti-seizure medication may need to be monitored and any signs or symptoms of toxicity need to be watched for
NSAIDs	Blood pressure medications especially beta blockers (propranolol, metoprolol, atenolol)	NSAIDs may decrease the effectiveness	Blood pressure needs to be monitored or medications adjusted
Antihistamines	Sedatives, anti-anxiety medications, sleeping pills and muscle relaxants	May increase sedation	Avoid use together
Pseudoephedrine (Sudafed)	Blood pressure medications	Reduced effect of the high blood pressure medications	Other methods to decongest the nose should be sought
Dextromethorphan (Robitussin DM)	Sedatives	Increased sedation	If used together monitor for sedation
<b>NSAID</b> – Non steroidal Anti-inflammatory drugs (ibuprofen, naproxen); <b>ASA</b> – Aspirin; <b>APAP</b> - Acetaminophen	<b>SSRI</b> – Selective Serotonin Reuptake Inhibitors [antidepressants – sertraline (Zolft), citalopram (Celexa), fluoxetine (Prozac)]; <b>Statins</b> – cholesterol lowering drugs (simvastatin (Zocor), atorvastatin (Lipitor)	Sedatives – some anxiety medications and sleeping pills	

### Nasal Congestion and Rhinorrhea

Nasal congestion is caused by inflamed blood vessels in the nose. This leads to a stuffy nose, facial pressure, post-nasal drip, cough, sore throat and rhinorrhea (runny nose).

Many things can cause nasal congestion including sinus infections, allergies, viral illnesses (such as the common cold) and pregnancy.

Most of the time nasal congestion can be managed by time, home remedies and some over-the-counter medications. Nasal congestion that lasts beyond 7-10 days with minimal improvement may be a bacterial sinus infection, which requires antimicrobial therapy.

Rhinorrhea often comes together with nasal congestion and often accompanies a viral illness. It is also a common presenting symptoms of allergies.

Those with a high fever, confusion, double vision, inability to move the eyes, significant ear pain with fever, swollen forehead, periorbital edema or decreased sensation over the face warrant immediate attention to their health care provider.

### ***Treatment***

Nasal congestion with facial pressure can make one quite miserable. The first step is to get rest and plenty of fluids. Fluids will help prevent dehydration and may help thin the mucus. In addition to consuming fluid, the use of saline nasal spray and cool-mist vaporizers are critical in the management of sinus congestion.

Nasal saline helps clear mucus out of the nose. Many products are available. Before purchasing a product encourage patients to try out the delivery system. The use of an aerosolized system is more comfortable than other systems. Everyone who has nasal congestion or a runny nose should use nasal saline. The use of nasal saline on a regular basis, when not afflicted with nasal congestion, is not recommended as it may remove good mucus that contains antimicrobial properties (5).

Two primary types of nasal saline are normal saline and hypertonic saline. Hypertonic saline has a higher concentration of salt. It is hyped to be more effective at drying the nose than normal saline. It also is more likely to cause a burning and stinging sensation when used (1).

Sore throats from nasal congestion can be managed with oral pain relievers, salt-water gargles or a variety of over-the-counter throat products. No product will make the symptoms completely go away, but many can provide some relief of throat discomfort.

Cool mist humidifiers and steam from showers can ease nasal congestion. Asthmatics should use caution, as there is risk of bronchospasm with humidity changes (1).

Children should sleep on their sides instead of sleeping on the back. Sleeping on the back facilitates post-nasal drip into the throat and chest, which will increase to coughing and a sore throat.

### **Specific Products**

Many over-the-counter medications provide relief while the body fights off the infection. Depending on the primary symptoms, an agent that will help treat those symptoms (see the symptom chart) should be selected.

Acetaminophen, aspirin or non-steroidal anti-inflammatory drugs (NSAIDs) can be used to bring down fever and provide relief to any discomfort.

Antihistamines (see antihistamine chart) manage rhinorrhea, sneezing and itchy eyes, nose and throat. The first generation antihistamines are more potent than the second-generation antihistamines. Side effects of the antihistamines may be more bothersome than the benefits are beneficial, so antihistamines should be used with caution.

Antihistamines are generally not recommended for sinus infections. Antihistamines are best used for those with viral illness where rhinorrhea predominates or in allergies. Antihistamines do not treat nasal congestion but some products are combined with decongestants.

Older antihistamines - chlorpheniramine (Chlor-Trimeton), diphenhydramine (Benadryl) and hydroxyzine (Atarax) - are associated with more side effects, particularly sedation. The most common over-the-counter first-generation antihistamine is diphenhydramine. The first-generation antihistamines are useful in rhinorrhea caused by the common cold and allergies. The second-generation antihistamines are helpful for allergies but have very limited effect in viral causes of nasal symptoms.

Second-generation medications are typically taken once or twice a day (as opposed to 3-4 times a day for the first-generation antihistamines) and are less commonly associated with sedation.

Of the five second-generation antihistamines, two are available over-the-counter. Multiple studies have showed that cetirizine (Zyrtec) is the most powerful over-the-counter second-generation antihistamine. Cetirizine and loratadine (Claritin) are the two over-the-counter second-generation antihistamines.

**Over the counter Antihistamines (adapted from 1)**

Medication	Dose	Side effects
First-generation antihistamines		
Diphenhydramine (Benadryl)	For those 12-years-old and older take 25-50 mg every 4-6 hours; 6-11-years-old take 12.5 to 25 mg every 4-6 hours; not recommended for those under 6-years-old	Sedation, constipation, blurred vision, dizziness, urinary retention, can cause excitability in kids
Chlorpheniramine (Chlor-Trimeton)	For those 12-years-old and older take one tablet (4 mg) every 4-6 hours as needed; 6-11-years-old take one-half tablet every 4-6 hours as needed, not recommended under 6-years-old	Sedation, constipation, blurred vision, dizziness, urinary retention, can cause excitability in kids
Second-generation antihistamines		
Cetirizine (Zyrtec)	5-10 mg orally every day for those over 5-years-old; for those 6-months and older it is indicated for perennial allergic rhinitis - and the dose is reduced to as low as 2.5 mg for those between the ages of 6-months and 5-years-old.	Sedation (therefore dosed at night). It also can cause diarrhea, dry mouth, nervousness and insomnia
Loratadine (Alavert, Claritin)	Dosed as 10 mg in the adult once a day. Loratadine is for those over 2-years-old with seasonal allergies	Headache, sleepiness, fatigue, dry mouth; Kids may show: cold symptoms, wheezing, nervousness, abdominal pain

Decongestants are helpful when the nose is blocked. They come in oral, topical and vapor form. Adults benefit for up to five days with the use of decongestants to a modest extent but children younger than 12 have not seen the same benefit as adults (6).

OTC oral medications include pseudoephedrine (Sudafed) and phenylephrine (Sudafed PE). They work by constriction blood vessels in the nose in addition to vessels all over the body. Therefore, they can increase blood pressure and should be used by caution, if at all, in anyone with heart disease, hypertension, any other cardiovascular condition in addition to diabetes, thyroid problems, glaucoma, or prostate problems.

Topical decongestants are potent medications to decongest the nose. While they probably do not cause as much systemic effects as the oral decongestants they still carry the same precautions as the oral medications.

Another problem with topical decongestants is rebound congestion. The use of topical decongestants for more than three days can lead to congestion that becomes difficult to break up without persistent use of the same topical decongestants. Topical decongestants should never be used for longer than three days.

Vapor decongestants are not as potent as oral or topical decongestants, but are the safest medications to use in those with heart disease.

Side effects of decongestants include hypertension, tachycardia, shakiness, and insomnia.

**Over-the-counter decongestants (adapted from 1 with permission)**

Medication	Dose	Uses	Side effects	Cautions
Oral decongestants				
Pseudoephedrine				
Sudafed (Standard formula)	Adult 30-60 mg every 4 to 6 hours	Nasal congestion, sinus pressure	Tachycardia, hypertension, nervousness, insomnia, dizziness	Hypertension, heart disease, thyroid disease, diabetes, prostate disease
	6-11-years-old – 30 mg every 4-6 hours			
	Under 6 – not recommended			

Sudafed 12-hours	120 mg every 12 hours in those over 12-years-old			
Sudafed 24-hours	240 mg every 24 hours in those over 12-years-old			
Pseudoephedrine liquid	6-11-years-old - 30 mg of liquid every 4-6 hours 4-5-years-old - 15 mg of liquid every 4-6 hours Under 4 years-old not recommended			
Phenylephrine HCl	Dose	Use		
Sudafed PE (Phenylephrine HCl)	12-years-old and older use 10 mg every 4 hours	Nasal congestion, sinus pressure	Tachycardia, hypertension, nervousness, insomnia, dizziness	Hypertension, heart disease, thyroid disease, diabetes, prostate disease
Pseudoephedrine PE liquid	Under 12-years-old - not recommended 6-11-years-old use 10 mg every 4 hours 4-5-years-old use 5 mg every 4 hours Under 4-years-old - not recommended			

### Combination decongestant/antihistamine

Both cold medications and allergy medications have combination products.

When an allergy medication has a “D” on the back, for example, Claritin D, this has a decongestant in it. This is a combination of loratadine and pseudoephedrine. When symptoms are a combination of sneezing, runny nose and watery eyes with nasal congestion, than the use of an allergy product with a decongestant will be most helpful in managing symptoms.

Likewise cold medications often have pseudoephedrine or phenylephrine and some form of antihistamine. Encourage patients to use caution with combination products, as they are associated with more side effects.

Make sure patients take careful inventory of their symptoms. Many patients will be afflicted with mainly congestion, but still take a combination product. The use of an antihistamine when there is only congestion is likely to make the person feel worse.

Antitussives (such as over-the-counter Robitussin - DM) are often used to quiet cough, but in the common cold the best strategy to reduce cough is the use of antihistamines and decongestants. When cough is present it is often due to postnasal drip and antitussives are not as effective as antihistamines and decongestants because these stop the cause of the cough – post-nasal drip.

**Nasal Cromolyn**

Cromolyn sodium (Nasal crom) is an over-the-counter medication used in the management of allergies. Nasal cromolyn is a nose spray. It requires frequent dosing and is given one puff per nostril every 4-6 hours. It is not as useful for immediate relief and it may take a week before benefit is realized. It is not as potent as nasal corticosteroids.

**Symptom Chart (adapted from 1)**

<b>What is your symptom?</b>	<b>Helpful intervention</b>	<b>Helpful medication</b>	<b>May be helpful</b>
Sore throat	Fluids, cool mist humidifier, salt-water gargles	Nasal saline	Throat lozenges/sprays
Stuffy nose	Fluids, cool mist humidifier	Nasal saline	Decongestants
Runny nose	Fluids, cool mist humidifier	Nasal saline	Antihistamines
Headache	Rest, cool compress on the head	APAP, NSAIDs	
Fever	Fluids, dress in light clothes	APAP, NSAIDs	Sponge bath
Body aches	Rest	APAP, NSAIDs	
Earache	Warm wash cloth over the ear	APAP, NSAIDs	Decongestants

Face/sinus pressure	Fluids, warm wash cloth over the face	APAP, NSAIDs	Decongestants
Cough	Fluids, cool mist humidifier	Nasal saline	Guaifenesin or dextromethorphan
Sneezing	Avoid allergens	Nasal saline	Antihistamines

APAP – acetaminophen

NSAIDs – non-steroidal anti-inflammatory drugs (ibuprofen, naproxen)

## **Cough**

Cough is a protective response that clears the airways of secretions and mucus. It is the fifth most common reason for people to visit their doctor (1). Cough can often be managed with over the counter products.

Cough is broken down into acute (less than three to four weeks) or chronic (longer than three to four weeks). The cause of cough is important to determine and can be variable depending on whether the cough is acute or chronic.

Cough is not a disease, but a symptom from another problem.

Cough is caused by many different factors. It can be caused by viral infections, post-nasal drip, sinus infections, allergies, bronchitis, pneumonia or asthma. Less commonly it is caused by a pulmonary embolism, congestive heart failure, tuberculosis, tumors, gastroesophageal reflux or a foreign body.

Cough is often a self-limiting condition, but some causes need to be evaluated by a health care provider. Situations that require evaluation include: shortness of breath with cough, cyanosis, lethargy with cough, stridor, cough with drooling, hemoptysis, orthopnea, weight loss or risk factors of TB or HIV.

## ***Treatment***

Many coughs can be managed with time, rest and over the counter options.

Cough medicine either suppresses the cough and/or helps expel the mucus. Expectorants are used to help rid the body of mucus. Specific cough medicines are discussed below in the table. The main OTC product that acts as an expectorant is guaifenesin. While OTC expectorants and cough medicines are very commonly used, their effectiveness is questionable (7).

Expectorants are most helpful when the cough is accompanied by thick mucus that cannot be expelled.

Cough suppression is not generally recommended for children (and usually not adults) with cough. The cough is a built in protective mechanism that clears mucus from the airway and protects the airway from aspiration of a foreign body.

In adults the use of over-the-counter cough medicine is mildly effective at best. Products like Robitussin DM and Delsym can be tried, but do not expect dramatic results.

Instead of treating the cough itself, treat the cause. Upper respiratory tract infections are treated with nasal saline, rest, increased fluids and cool mist vaporizers. Allergies are treated with antihistamines and nasal steroids. Asthma is treated with inhaled bronchodilators and steroids. Pneumonia is treated with antibiotics. Most cases of bronchitis are viral and are not related and do not respond to treatment with antibiotics, cough suppression may be tried if there is significant cough that is causing pain or interfering with sleep.

Expectorants (adapted from 1 with permission)

**Mucinex** – Mucinex comes in a variety of formulations. Mucinex is guaifenesin, which can be taken 600 mg to 1200 mg every 12 hours. Plain Mucinex is purely an expectorant, which means that it helps remove mucus from the respiratory tract. The pill formulation of this medication is meant for those over the age of 12 and not recommended for those under 12. It should be taken with a full glass of water. The medication is an extended release tablet that should not be broken, chewed or crushed. It comes in a regular formulation and a maximum strength formulation. The regular formulation is one or two pills (600 mg per pill), whereas the maximum strength is the same medication but each pill is 1200 mg and you take one pill every 12 hours.

**Mucinex DM** is a combination product that combines guaifenesin with dextromethorphan. Dextromethorphan (the DM component) is a cough suppressant. Likewise, this medication should not be used in those under that age of 12. It also comes in a regular formulation and a maximum strength formulation.

**Mucinex D** is another combination product that combines guaifenesin with pseudoephedrine. This medication provides the expectorant along with a nasal decongestant. It can help not only rid the body of mucus but reduce nasal congestion.

**Robitussin** syrup is a shorter acting formulation of guaifenesin and is dosed every 4 hours.

**Robitussin DM** syrup is a combination of guaifenesin and dextromethorphan. It is a combination expectorant and cough suppressant.

**Robitussin CF** is a combination of guaifenesin, dextromethorphan and a nasal decongestant.

**Guaifenesin** comes as a generic formulation 400 mg - which is taken every 4 hours in the adult. A child between the ages of 6 and 11-years-old can take one-half of a tablet every 4 hours and it is not recommended for those under the age of 6.

*Mucinex comes in other formulations that are appropriate for children.*

**Mucinex oral solution** comes as guaifenesin 100 mg per 5 ml. It is used in those over the age of 4-years-old and is dosed 50-100 mg every four hours in the child 4-5-years-old; and in children 6-11-years-old it is given 100-200 mg every four hours. It comes in a variety of flavors including grape and berry. The Mucinex oral solution comes combined with a nasal decongestant in Mucinex Cold.

**Mucinex mini-melts** come in packages that contain 100 mg of guaifenesin.

### **Cough Suppression (adapted form 1 with permission)**

**Robitussin DM** is a product already discussed above. The DM component of the medication is dextromethorphan, which is the cough suppressant.

**Dextromethorphan polistirex (Delsym)** is an extended release suspension that provides cough suppression for 12 hours. It is dosed for those 12-years-old and older, 2 teaspoons every 12 hours; in those 6-11-years old, one teaspoon every 12 hours; and for those 4-6-years-old, ½ teaspoon every 12 hours. Make sure the label is read – some of the Delsym products are not indicated for children.

### **Sore throat**

The majority of sore throats are caused by viruses with only 5-15% of sore throats caused by bacteria. The majority of sore throats that are caused by bacteria are caused by Group A Beta Hemolytic Streptococcus (GABHS) or strep throat (2). Viral sore throats are more commonly associated with cough, stuffy nose, red eyes and fatigue.

Most sore throats are caused by a virus and dissipate after a few days. More serious causes of sore throat need to be ruled out to avoid complications (throat abscess, rheumatic fever and streptococcal infections that spread to the kidney)

Individuals with a sore throat and high fever, drooling, difficult time opening the mouth, hot potato voice (muffled voice, sounds like a mouthful of hot potatoes), uvula deviating to one side, one swollen tonsil or difficulty breathing should see their health care provider.

### ***Treatment***

Viral sore throats need to be treated with time and rest and comfort measures. Sore throats with a bacterial origin need antibiotic therapy. Managing pain associated with sore throat is a critical aspect of treatment for both viral and bacterial sore throats.

Ibuprofen, acetaminophen, naproxen or acetaminophen/codeine (in severe cases) can be used for sore throat. The use of medications to reduce pain and fever, in addition to reducing symptoms, may help shorten the course of disease by one to two days (2).

Topical medications are available in many over-the-counter formulations (see table below) and some can be made at home. Most OTC products have similar efficacy and it is often a matter of personal preference, but there is some evidence that the medication Dyclonine (the medication in Sucrets) is most effective in relieving pain (1).

Salt-water gargles (mix one-fourth of a teaspoon of salt in 6-8 ounces of warm water) should be gargled and spit out every 3-4 hours. Sugar-free or regular Popsicle's can help ease the discomfort of a sore throat.

Multiple over-the-counter medications are available for treating sore throat. They come in sprays and lozenges.

Certain foods can soothe a sore throat. Warm or cool liquids ease and moisturize a painful throat. Nasal saline can moisturize the nasal passages and clear mucus (which can be irritating to a sore throat) from the respiratory tract. Nasal saline reduces post-nasal drip and reduces throat discomfort. Herbal teas may be helpful in the treatment of sore throat. Throat coat – a herbal tea - has a demulcent that is more effective at providing relief than regular tea (4).

Home remedies for a sore throat:

- Salt water gargles

- A cool mist humidifier should be used. Many sore throats are caused by or exacerbated by dryness; the moisture that a cool mist humidifier provides can improve symptoms.
- Suck on a sour drop. Lemon drops or another type of drop will stimulate saliva and reduce throat pain.
- Drink tea with honey, as this will coat the throat.

### ***Follow up***

Improvement in the sore throat caused by a bacteria or virus is typically noted in 2-3 days. When there is no improvement or a worsening of symptoms noted a follow up with the health care provider should be attained to rule out a more serious (cellulitis or abscess) or another underlying condition (mononucleosis or chronic post-nasal drip).

### **Over-the-counter products for sore throat (adapted from 1)**

<b><i>Chloraseptic spray</i></b>	Phenol 1.4% spray can be used for those 3 and older. It is to be sprayed and held in place for 15 seconds and then spit out every 2 hours. Five sprays for those 12-years-old and older and three sprays for those 3-11-years old.
<b>Chloraseptic max</b>	Phenol 1.5% (slightly higher level) and glycerin 33% which is a demulcent.
<b>Halls (Halls-Plus)</b>	Menthol 7 mg – marketed as a cough suppressant/oral anesthetic
<b>Halls Breezers</b>	Pectin throat drops – 7 mg of pectin, which is an oral demulcent. They are meant for those five and older
<b>Sucrets</b>	Dyclonine hydrochloride 2.0 mg which is a sore throat/oral anesthetic. It is indicated for those 6 and older and can be repeated every 2 hours, no more than 10 per day
<b>Luden's</b>	Pectin 2.8 mg marketed as a oral demulcent
<b>Ricola</b>	Menthol 4.8 mg marketed as a cough suppressant and oral pain reliever
<b>Cepacol</b>	Benzocaine 15 mg (oral anesthetic) plus menthol 3.6 mg oral analgesic. Can be give to those five and older and repeated every 2 hours
<b>Cepacol (sore throat and cough)</b>	Benzocaine 7.5 mg and 5.0 mg of dextromethorphan (cough suppressant). Individuals 12 and over should take 2 lozenges every 4 hours (max 12 in 24 hours), Individuals 6-12 should take one every four hours (max 6 in 24). It should not be used n those under 6

**Cepacol (Sore throat and Coating relief)**

Combines benzocaine 15 mg and pectin 5.0 mg and can be used every 2 hours in those over the age of 5.

**Tylenol cough and sore throat**

An oral liquid that contains acetaminophen (Tylenol and Dextromethorphan). Nothing in the medication directly works on the throat, but acetaminophen is a general pain reliever that will provide some relief and the liquid may provide an very temporary rush of relief.

**Summary**

Many times over the counter medication is all that is needed to manage many conditions related to cough and colds. Teaching patients how to use the drug store safe and effectively is a critical aspect to the nursing profession.

Nurses have key roles in helping patients identify their symptoms, teach them about red flags that would require health care provider interventions and helping them select appropriate over the counter medications.

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