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## Patient education: Allergic rhinitis (seasonal allergies) (Beyond the Basics)

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**Literature review current through:** Sep 2016. | **This topic last updated:** Sep 06, 2016.

**ALLERGIC RHINITIS OVERVIEW** — Rhinitis refers to inflammation of the nasal passages. This inflammation can cause a variety of annoying symptoms, including sneezing, itching, nasal congestion, runny nose, and postnasal drip (the sensation that mucus is draining from the sinuses down the back of the throat).

Brief episodes of rhinitis are usually caused by respiratory tract infections with viruses (eg, the common cold). Chronic rhinitis is usually caused by allergies, but it can also occur from overuse of certain drugs, some medical conditions, and other unidentifiable factors.

For many people, rhinitis is a lifelong condition that waxes and wanes over time. Fortunately, the symptoms of rhinitis can usually be controlled with a combination of environmental measures, medications, and immunotherapy.

Other forms of rhinitis are discussed separately. (See "[Patient education: Nonallergic rhinitis \(runny or stuffy nose\) \(Beyond the Basics\)](#)".)

**WHO GETS ALLERGIC RHINITIS?** — Allergic rhinitis, also known as "hay fever," affects approximately 20 percent of people of all ages. The risk of developing allergic rhinitis is much higher in people with asthma or eczema and in people who have a family history of asthma or rhinitis.

Allergic rhinitis can begin at any age, although most people first develop symptoms in childhood or young adulthood. The symptoms are often at their worst in children and in people in their 30s and 40s. However, the severity of symptoms tends to vary throughout life. Patients may experience periods when they have no symptoms at all.

**ALLERGIC RHINITIS CAUSES** — Allergic rhinitis is caused by a nasal reaction to small airborne particles called allergens (substances that provoke an allergic reaction). In some people, these particles also cause reactions in the lungs (asthma) and eyes (allergic conjunctivitis).

The allergic reaction is characterized by activation of two types of inflammatory cells called mast cells and basophils. These cells produce inflammatory substances, such as histamine, which cause congestion (fluid to build up in the nasal tissues), itching, sneezing, and runny nose. Over several hours, these substances activate other inflammatory cells that can cause persistent symptoms.

**Seasonal versus perennial allergic rhinitis** — Allergic rhinitis can be seasonal (occurring during specific seasons) or perennial (occurring year round). The allergens that most commonly cause **seasonal allergic rhinitis** include pollens from trees, grasses, and weeds, as well as spores from fungi and molds ([figure 1](#)).

The allergens that most commonly cause **perennial allergic rhinitis** are dust mites, cockroaches, animal dander, and fungi or molds. Perennial allergic rhinitis tends to be more difficult to treat.

**ALLERGIC RHINITIS SYMPTOMS** — The symptoms of allergic rhinitis vary from person to person. Although the term "rhinitis" refers only to the nasal symptoms, many people also experience problems with their eyes, throat, and ears. In addition, sleep may be disrupted. Symptoms may include the following:

- **Nose** – Watery nasal discharge, blocked nasal passages, sneezing, nasal itching, postnasal drip, loss of taste, facial pressure or pain
- **Eyes** – Itchy, red eyes, feeling of grittiness in the eyes, swelling and blueness of the skin below the eyes (called "allergic shiners") (see "[Patient education: Allergic conjunctivitis \(Beyond the Basics\)](#)")
- **Throat and ears** – Sore throat, hoarse voice, congestion or popping of the ears, itching of the throat or ears
- **Sleep** – Mouth breathing, frequent awakening, daytime fatigue, difficulty performing work

When an allergen is present year round, the predominant symptoms include postnasal drip, persistent nasal congestion, and poor quality sleep.

**ALLERGIC RHINITIS DIAGNOSIS** — The diagnosis of allergic rhinitis is based upon physical examination and the symptoms described above. Medical tests can confirm the diagnosis and identify the offending allergens.

**Identify allergens and other triggers** — It is often possible to identify the allergens and other triggers that provoke allergic rhinitis by:

- Recalling the factors that precede symptoms
- Noting the time at which symptoms begin
- Identifying potential allergens in the home, work, and school environments

Skin tests may be useful for people whose symptoms are not well-controlled with medications or in whom the offending allergen is not obvious.

**ALLERGIC RHINITIS TREATMENT** — The treatment of allergic rhinitis includes reducing exposure to allergens and other triggers in combination with medication therapy ([table 1](#)). In most people, these measures effectively control the symptoms.

**Reduce exposure to triggers** — There are some simple measures that can reduce exposure to allergens and triggers that provoke allergic rhinitis. These measures are discussed in detail in a separate topic review. (See "[Patient education: Trigger avoidance in allergic rhinitis \(Beyond the Basics\)](#)".)

Several different classes of drugs counter the inflammation that causes symptoms of allergic rhinitis. The best treatment(s) will depend on symptoms and personal preferences.

**Nasal irrigation and saline sprays** — Rinsing the nose with a salt water (saline) solution is called "nasal irrigation" or "nasal lavage." Saline is also available in a standard nasal spray, although this is not as effective as using larger amounts of water in an irrigation.

Nasal irrigation is particularly useful for treating drainage down the back of the throat, sneezing, nasal dryness, and congestion. The treatment helps by rinsing out allergens and irritants from the nose. Saline rinses also clean the nasal lining. Patients can use it before applying sprays containing medications to get a better effect from the medication.

Nasal lavage with warmed saline can be performed as needed, once per day, or twice daily if symptoms are severe. Nasal lavage carries few risks when performed correctly and with saline made with sterilized water. Saline nasal sprays and irrigation kits can be purchased over-the-counter. Saline mixes can also be purchased, or patients can make their own solution.

A variety of devices, including syringes, Neti pots, and bottle sprayers, may be used to perform nasal lavage. Instructions for nasal lavage are provided in the table ([table 2](#)). At least 200 mL (about three-quarters of a cup) of fluid (salt solution made with distilled or boiled water or sterile saline, not tap water) is recommended for each nostril.

**Nasal glucocorticoids** — Nasal glucocorticoids (steroids) delivered by a nasal spray are the first-line treatment for the symptoms of allergic rhinitis. These drugs have few side effects and dramatically relieve symptoms in most people. Studies have shown that nasal glucocorticoids are more effective than oral antihistamines for symptom relief [1]. (See "[Antihistamines](#)" below.)

Some nasal glucocorticoids are available over-the-counter in the United States (sample brand names: Flonase Allergy Relief, Rhinocort Allergy), while others require a prescription. These drugs differ with regard to the frequency of doses, the spray device, and cost, but all are similarly effective for treating all the symptoms of allergic rhinitis.

People with severe rhinitis may need to use a nasal decongestant for a few days before starting a nasal glucocorticoid to reduce nasal swelling. This allows the nasal spray to reach more areas within the nasal passages. (See "[Decongestants](#)" below.)

Patients may notice symptom relief on the first day of treatment with nasal glucocorticoids, although their maximal effectiveness may not be noticeable for days to weeks. For this reason, nasal glucocorticoids are most effective when used regularly. Some people are able to use lower doses when symptoms are less severe.

**How to use a nasal spray** — Nasal sprays work best when they are used properly and the medication remains in the nose rather than draining down the back of the throat. If the nose is crusted or contains mucus, the patient can clean it with a saline nasal spray before a nasal spray that contains medication.

The head should be positioned normally or with the chin slightly tucked. The spray should be directed away from the nasal septum (the cartilage that divides the two sides of the nose). After spraying, sniff gently to pull it into the higher parts of the nose. Avoid sniffing too hard, as this can result in the medicine draining down the throat.

Some people find that holding one nostril closed with a finger improves their ability to draw the spray into the upper nose. Spit out any medicine that drains into the throat, since it is not effective unless it remains in the nose.

**Side effects** — The side effects of nasal steroids are mild and may include a mildly unpleasant smell or taste or drying of the nasal lining. In some people, nasal steroids cause irritation, crusting, and bleeding of the nasal septum, especially during the winter. Patients can minimize these problems by reducing the dose of the nasal steroid, applying a moisturizing nasal gel or spray to the septum before using the spray, or switching to a water-based (rather than an alcohol-based) spray.

Studies suggest that nasal steroids are generally safe when used for many years. However, if patients use these drugs for years, they should have periodic nasal examinations to check for rare side effects, such as nasal infection.

Steroids taken as a pill or inhaled into the lungs can have side effects, especially when taken for long periods of time. However, the doses used in nasal steroids are low and are NOT associated with these side effects. However, clinicians usually recommend using the lowest effective dose.

Use of steroid nasal sprays may slightly slow growth rate in some children if used for extended periods of time. If a child requires a nasal steroid spray for more than two months of the year, the caregiver should talk to his or her doctor or nurse for advice.

**Antihistamines** — Antihistamines relieve the itching, sneezing, and runny nose of allergic rhinitis, but they do not relieve nasal congestion. Combined treatment with nasal steroids or decongestants may provide greater symptom relief than use of either alone.

**Oral medications** — Several antihistamines have been available for many years without a prescription, including brompheniramine (sample brand names: Dimetapp allergy, Nasahist B), chlorpheniramine (sample brand name: Chlor-Trimeton), diphenhydramine (sample brand name: Benadryl), and clemastine (sample brand name: Tavist). These drugs often cause sedation and should not be used before driving or operating machinery. Even if patients do not feel excessively drowsy, these drugs can have a sedating effect, so they should be careful when taking them.

Less sedating oral antihistamines include loratadine (sample brand names: Claritin, Alavert), desloratadine (brand name: Clarinex), cetirizine (sample brand name: Zyrtec), levocetirizine (brand name: Xyzal), and fexofenadine (sample brand name: Allegra). Loratadine, cetirizine, and fexofenadine are available without a prescription. These drugs work as well as the sedating antihistamines for rhinitis, but they are less sedating and are available in long-acting formulas. However, they may be more expensive.

**Nasal sprays** — Azelastine (brand names: Astelin, Astepro) and olopatadine (brand name: Patanase) are prescription nasal antihistamine sprays that can be used daily or when needed to relieve symptoms of postnasal drip, congestion, and sneezing. These sprays start to work within minutes after use. The most common side effect with azelastine is a bad taste in the mouth immediately after use. Patients can minimize this by keeping their heads tilted forward while spraying, to prevent the medicine from draining down their throats. (See ['How to use a nasal spray'](#) above.)

**Combinations of nasal glucocorticoid and antihistamines** — A prescription combination of the nasal steroid fluticasone and the nasal antihistamine azelastine (brand name: Dymista) appears to improve symptoms of allergic rhinitis better than either drug alone in three clinical trials. The combination drug has the side effects of both when used at the recommended dose (one spray in each side of the nose twice a day), and is approved for use in people over 12 years old. The most common side effects are a bad taste, nose bleed, and headache [2].

**Decongestants** — Decongestants (like pseudoephedrine or phenylephrine [sample brand names: Sudafed, Actifed, Drixoral]) are often combined with antihistamines in oral, over-the-counter allergy drugs. In the United States, pseudoephedrine has been used to make illegal drugs, which caused many companies to substitute phenylephrine for pseudoephedrine. However, phenylephrine is not effective for treating allergic rhinitis.

Oral decongestants elevate blood pressure and are not appropriate for people with high blood pressure or certain cardiovascular conditions. Men with an enlarged prostate who have difficulty urinating may notice a worsening of this symptom when they take decongestants. (See "[Patient education: Benign prostatic hyperplasia \(BPH\) \(Beyond the Basics\)](#)".)

Decongestants in the form of nasal sprays are also available, including oxymetazoline (sample brand name: Afrin) and phenylephrine (sample brand name: Neo-synephrine); however, these are NOT recommended for treating allergic rhinitis. It is better to use a medication that can safely be taken for weeks or even months, such as a nasal steroid spray (see '[Nasal glucocorticoids](#)' above). Nasal decongestant sprays should not be used for more than two to three days at a time because they may cause a type of rhinitis called "rhinitis medicamentosa," which causes the nose to be congested constantly UNLESS the medication is used repeatedly. This condition can be difficult to treat. (See "[Patient education: Nonallergic rhinitis \(runny or stuffy nose\) \(Beyond the Basics\)](#)".)

**Cromolyn** — Cromolyn (brand name: NasalCrom) prevents the symptoms of allergic rhinitis by interfering with the ability of allergy cells to release natural chemicals that cause inflammation. This drug is available as an over-the-counter nasal spray that must be used three to four times per day, preferably before symptoms have begun, to effectively prevent the symptoms of allergic rhinitis.

## Allergen immunotherapy

**Allergy shots** — Allergy shots, also known as "allergen immunotherapy," are injections given to reduce sensitivity to allergens. Allergy shots are only available for common allergens, including pollens, cat and dog dander, dust mites, and molds. (They are not used to treat allergies to food, latex, or medicines.) The shots contain solutions of the allergen(s) to which the patient is allergic and are made up specifically for the patient. The process of immunotherapy changes the patient's immune response to the allergens over time. As a result, being exposed to the allergen causes fewer symptoms and may even eliminate symptoms altogether.

Immunotherapy can help many people with allergic rhinitis. In children, immunotherapy can help prevent the development of allergic asthma later in life. However, immunotherapy is relatively time consuming and is often reserved for people who have a poor response to medication or want to minimize the number of medications they need long term. People initially stay on medications when they start immunotherapy and then gradually reduce the medications as their symptoms improve. Immunotherapy can be expensive, but many insurance plans cover it because long-term use of allergy medications is also costly.

Immunotherapy is usually started by an allergist. Treatment begins with several months of weekly injections of gradually increasing doses, followed by monthly maintenance injections.

Immunotherapy is usually administered for a minimum of three to five years. Studies have shown that getting shots for this long is more likely to give patients lasting benefit after they stop, compared with just a year or two. Once patients stop getting the shots, the benefits gradually diminish over time. In some people, this happens rapidly, and in others, the symptoms remain improved for several more years [3]. It is not possible to predict how long the effect of the shots will last in an individual person.

Immunotherapy injections carry a small risk of a severe allergic reaction. These reactions occur with a frequency of 6 of every 10,000 injections. The symptoms usually begin within 30 minutes of the injection. For this reason, patients are required to remain in the office after routine injections so that such a reaction could be quickly treated. Because drugs called beta-blockers may interfere with the ability to treat these reactions, people who take beta-blockers are often advised to avoid immunotherapy. If patients are getting allergy shots and another clinician prescribes a beta-blocker medicine for high blood pressure or another reason, the patients must make sure to tell their allergy clinician.

**Immunotherapy pills placed under the tongue** — "Sublingual immunotherapy" is a form of immunotherapy that is given as a daily pill that dissolves under the tongue. Sublingual immunotherapy is given every day for several months of the year. The first dose is given in the clinician's office, but after that, patients can take it at home. This type of treatment does not involve getting shots and it is very safe because it rarely causes severe allergic reactions. However, it is only available for a few types of allergies, and if patients forget to take the pills daily, the treatment might not work.

**Other treatments** — Other drugs may be recommended for some people with allergic rhinitis.

- **Ipratropium** – Nasal atropine is effective for the treatment of severe runny nose. This drug, available as ipratropium bromide (sample brand name: Atrovent), is not generally recommended for people with glaucoma or men with an enlarged prostate.
- **Leukotriene modifiers** – Release of substances called leukotrienes may contribute to the symptoms of allergic rhinitis. Drugs that block the actions of leukotrienes, called leukotriene modifiers, can be very useful in people with asthma and allergic rhinitis. However, nasal steroids are more effective than leukotriene modifiers for treating allergic rhinitis. Thus, leukotriene modifiers are generally reserved for people who also have asthma or who cannot tolerate nasal sprays (due to nose bleeds).

**PREGNANCY AND ALLERGIC RHINITIS** — Women who have allergic rhinitis before pregnancy may have worsening, improvement, or no change in their symptoms during pregnancy. Most women notice some nasal congestion in the later stages of pregnancy, even if they did not have rhinitis before. This is called rhinitis of pregnancy and is related to hormone levels. Rhinitis of pregnancy does not respond to medications and goes away after delivery. The discussion below applies only to allergic rhinitis.

As a general rule, most medications should be avoided or used at the lowest dose that controls symptoms during pregnancy. If patients are pregnant, they should review any medication (over-the-counter or prescription) before taking it, and talk to their clinician or nurse if they have questions. However, several of the drugs used to treat allergic rhinitis are thought to be safe.

Women with mild rhinitis may be able to control symptoms using only saline nasal sprays or irrigation, which do not contain any medications ([table 2](#)) (see '[Nasal irrigation and saline sprays](#)' above). If medication for rhinitis is needed during pregnancy, the following are considered to be safer choices:

- **Nasal sprays** – Certain nasal sprays are a sensible option for pregnant women, because much less medication is required to control symptoms when it is sprayed directly into the nose, compared with taking that same medication by mouth.
  - Cromolyn nasal sprays are safe for use during pregnancy. Only a very small amount of drug is absorbed into the bloodstream with this medication and no serious side effects are known to occur. (See '[Cromolyn](#)' above.)
  - Nasal steroids, as a group, are considered safe for use in pregnancy, although there is more information about some medications than others. We avoid triamcinolone (sample brand name: Nasacort Allergy 24HR) based on a Canadian study showing that there might be an increased risk of congenital respiratory defects if used in the first trimester. Overall, the study supports the use of nasal steroids when indicated during pregnancy. Pending further studies, we prefer to use other drugs, such as fluticasone (sample brand name: Flonase Allergy Relief), budesonide (brand names: Rhinocort Aqua, Rhinocort Allergy), or mometasone (brand name: Nasonex), during the first trimester. (See '[Nasal glucocorticoids](#)' above.)
- **Antihistamines** – Cetirizine (sample brand name: Zyrtec), loratadine (sample brand names: Claritin, Alavert), and chlorpheniramine (sample brand name: Chlor-Trimeton) are considered safe for use during pregnancy.
- **Decongestants** – Pseudoephedrine should be avoided during the first trimester of pregnancy if possible, because its safety has not been confirmed. After the first trimester, it should be used only when needed and only as directed. However, it should not be used at all by women with high blood pressure or preeclampsia. Phenylephrine should be avoided altogether during pregnancy.
- **Allergy shots** – If patients are already getting allergy shots and have not had allergic reactions to the shots in the past, they may safely continue treatment through pregnancy. However, the dose should not be increased during pregnancy due to the risk of a serious allergic reaction (anaphylaxis), which could potentially reduce the blood supply to the fetus. For the same reason, allergy shots are not started during pregnancy.

**WHERE TO GET MORE INFORMATION** — Your health care provider is the best source of information for questions and concerns related to your medical problem.

This article will be updated as needed on our website ([www.uptodate.com/patients](http://www.uptodate.com/patients)). Related topics for patients, as well as selected articles written for health care professionals, are also available. Some of the most relevant are listed below.

**Patient level information** — UpToDate offers two types of patient education materials.

**The Basics** — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

[Patient education: Seasonal allergies in adults \(The Basics\)](#)

[Patient education: Giving your child over-the-counter medicines \(The Basics\)](#)

[Patient education: Allergy shots \(The Basics\)](#)

[Patient education: Allergy skin testing \(The Basics\)](#)

[Patient education: Rinsing out your nose with salt water \(The Basics\)](#)

[Patient education: Seasonal allergies in children \(The Basics\)](#)

**Beyond the Basics** — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

[Patient education: Nonallergic rhinitis \(runny or stuffy nose\) \(Beyond the Basics\)](#)

[Patient education: Allergic conjunctivitis \(Beyond the Basics\)](#)

[Patient education: Trigger avoidance in allergic rhinitis \(Beyond the Basics\)](#)

[Patient education: Benign prostatic hyperplasia \(BPH\) \(Beyond the Basics\)](#)

**Professional level information** — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

[Allergen avoidance in the treatment of asthma and allergic rhinitis](#)

[An overview of rhinitis](#)

[Chronic nonallergic rhinitis](#)

[Chronic rhinosinusitis: Clinical manifestations, pathophysiology, and diagnosis](#)

[Allergic rhinitis: Clinical manifestations, epidemiology, and diagnosis](#)

[Occupational rhinitis](#)

[Pathogenesis of allergic rhinitis \(rhinosinusitis\)](#)

[Pharmacotherapy of allergic rhinitis](#)

The following organizations also provide reliable health information.

- [National Library of Medicine](#)
- [Allergy, Asthma, and Immunology Online](#)
- [American Academy of Allergy, Asthma, and Immunology](#)

[1,3-5]

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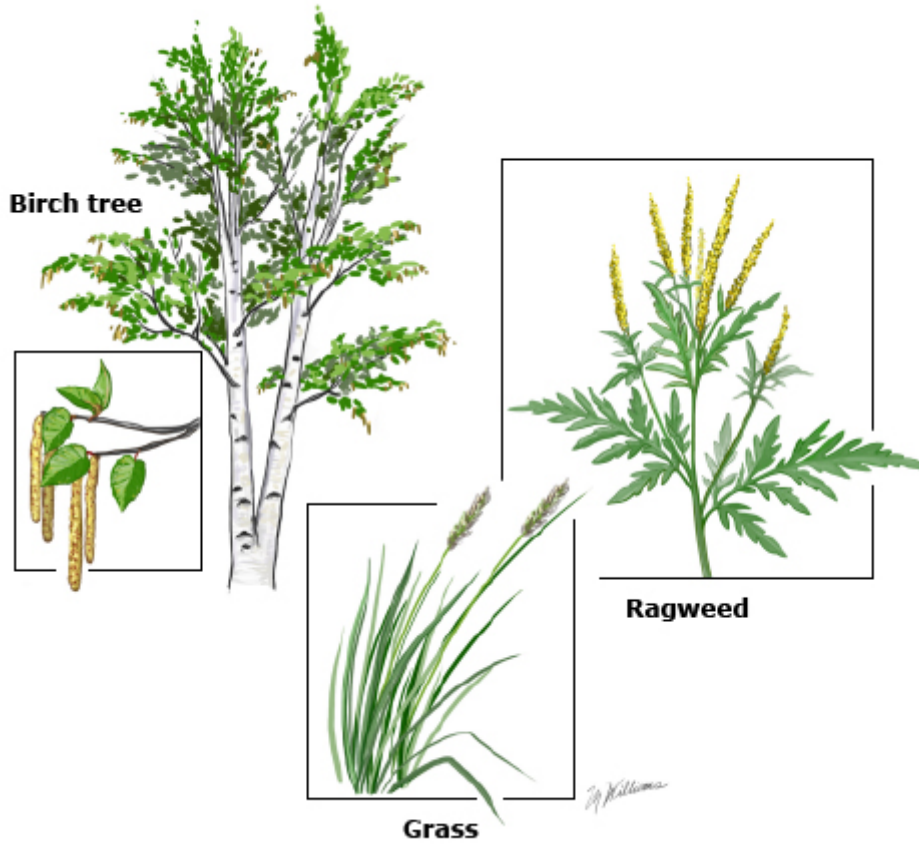
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## GRAPHICS

### Common causes of seasonal allergies

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## Medications commonly used for seasonal allergies

Category	Medications and sample US brand name(s)	Prescription required or available over-the-counter (OTC) in the US?
Nasal steroid sprays	Over-the-counter: <ul style="list-style-type: none"> <li>■ Budesonide (Rhinocort Allergy)</li> <li>■ Fluticasone propionate (Flonase Allergy Relief)</li> <li>■ Triamcinolone (Nasacort Allergy 24HR)</li> </ul> Prescription: <ul style="list-style-type: none"> <li>■ Beclomethasone (Beconase AQ, Qnasl)</li> <li>■ Budesonide (Rhinocort Aqua)</li> <li>■ Ciclesonide (Omnaris, Zetonna)</li> <li>■ Flunisolide (generic)</li> <li>■ Fluticasone furoate (Veramyst)</li> <li>■ Fluticasone propionate (generic; Ticaspray)</li> <li>■ Mometasone (Nasonex)</li> <li>■ Triamcinolone (generic)</li> </ul>	Some prescription, some OTC
Less-sedating oral antihistamines	Over-the-counter: <ul style="list-style-type: none"> <li>■ Cetirizine (ZyrTEC, others)</li> <li>■ Fexofenadine (Allegra, others)</li> <li>■ Loratadine (Claritin, Alavert, others)</li> </ul> Prescription: <ul style="list-style-type: none"> <li>■ Desloratadine (Clarinex)</li> <li>■ Levocetirizine (Xyzal)</li> </ul>	Some prescription, some OTC
Sedating oral antihistamines*	<ul style="list-style-type: none"> <li>■ Brompheniramine</li> <li>■ Chlorpheniramine (Chlor-Trimeton, others)</li> <li>■ Clemastine (Tavist, others)</li> <li>■ Diphenhydramine (Benadryl, others)</li> </ul>	OTC
Nasal antihistamine sprays	<ul style="list-style-type: none"> <li>■ Azelastine (Astelin, Astepro)</li> <li>■ Olopatadine (Patanase)</li> </ul>	Prescription
Nasal steroid/antihistamine combination	<ul style="list-style-type: none"> <li>■ Fluticasone and azelastine (Dymista)</li> </ul>	Prescription
Oral decongestant/antihistamine combination <sup>¶</sup>	<ul style="list-style-type: none"> <li>■ Brompheniramine-pseudoephedrine (Brotapp, Rynex PSE, others)</li> <li>■ Cetirizine-pseudoephedrine (ZyrTEC-D Allergy &amp; Congestion, others)</li> <li>■ Chlorpheniramine-pseudoephedrine (SudoGest, others)</li> <li>■ Fexofenadine-pseudoephedrine (Allegra-D, others)</li> </ul>	OTC

	<ul style="list-style-type: none"><li>■ Loratadine-pseudoephedrine (Claritin-D, Alavert Allergy and Sinus, others)</li></ul>	
Cromolyn	<ul style="list-style-type: none"><li>■ Cromolyn (Nasalcrom, others)</li></ul>	OTC

OTC: Over-the-counter means that you do not need a doctor's prescription to buy these. OTC medicines can be sold under many different brand names and store brands. Always read the generic names on the label of your OTC medicines to be sure you are not taking more than one product that has the same medicine in it. Taking too much of the same medicine can be harmful. If you are also taking other medicines or have health problems, check with your doctor to be sure OTC medicines are safe for you to use. Many medicines that used to be available by prescription only are becoming available over-the-counter.

\* These medications often cause sedation and should not be used before driving or operating machinery. The less-sedating oral antihistamines are often a better choice since they don't cause impairment.

¶ Pseudoephedrine should **not** be used in children, older adults, or people with certain medical problems (such as high blood pressure, heart disease, stroke, or trouble urinating due to an enlarged prostate). Talk to your doctor before using pseudoephedrine. Many OTC decongestants contain phenylephrine rather than pseudoephedrine. We do not recommend phenylephrine for seasonal allergies because it does not work well.

Graphic 100700 Version 8.0

## How to perform nasal irrigation

### Buffered normal saline nasal irrigation

#### The benefits

1. Saline (salt water) washes the mucus and irritants from your nose.
2. The sinus passages are moisturized.
3. Studies have also shown that a nasal irrigation improves cell function (the cells that move the mucus work better).

#### The recipe

Use a one-quart glass jar that is thoroughly cleansed.

You may use a large medical syringe (30 cc), water pick with an irrigation tip (preferred method), squeeze bottle, or Neti pot. Do not use a baby bulb syringe. The syringe or pick should be sterilized frequently or replaced every two to three weeks to avoid contamination and infection.

Fill with water that has been distilled, previously boiled, or otherwise sterilized. Plain tap water is not recommended because it is not necessarily sterile.

Add 1 to 1½ heaping teaspoons of pickling/canning salt. Do NOT use table salt because it contains a large number of additives.

Add 1 teaspoon baking soda (pure bicarbonate).

Mix ingredients together and store at room temperature. Discard after one week.

You may also make up a solution from premixed packets that are commercially-prepared specifically for nasal irrigation.

#### The instructions

Irrigate your nose with saline one to two times per day.

- If you have been told to use nasal medication, you should always use your saline solution first. The nasal medication is much more effective when sprayed onto clean nasal membranes, and the spray will reach deeper into the nose.
- Pour the amount of fluid you plan to use into a clean bowl. DO NOT put your used syringe back into the storage container because it contaminates your solution.
- You may warm the solution slightly in the microwave, but be sure that the solution is NOT HOT.
- Bend over the sink (some people do this in the shower) and squirt the solution into each side of your nose, aiming the stream toward the back of your head, NOT the top of your head. The solution should flow into one nostril and out the other, but it will not harm you if you swallow a little.
- Some people experience a little burning sensation the first few times they use buffered saline solution, but this usually goes away after they adapt to it.

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## Contributor Disclosures

**Richard D deShazo, MD** Nothing to disclose **Stephen F Kemp, MD** Nothing to disclose **Jonathan Corren, MD** Speaker's Bureau: Merck [Allergic rhinitis (SLIT)]. **Anna M Feldweg, MD** Nothing to disclose

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