

CRS

Chronic Rhinosinusitis

Patient Handbook
Courtesy of



General overview

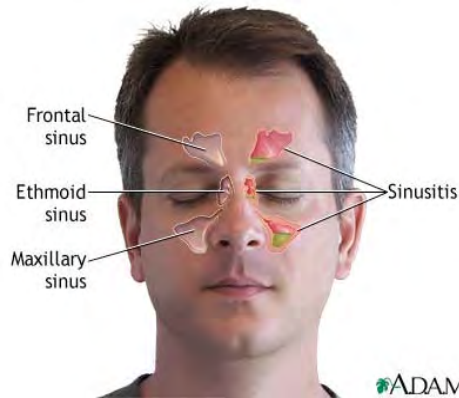
Chronic rhinosinusitis (CRS) is one of the most common chronic diseases in the United States and affects an estimated 37 million people.

When you develop a viral infection, such as a cold, the sinus passages can become blocked. Bacteria and fungi will grow more readily in sinuses that cannot properly drain. As a result, sinus inflammation and infection can develop.

Normal cold symptoms, such as a stuffy nose, will improve within 5 to 7 days. In sinusitis, however, these symptoms last longer and get worse.

To be classified as chronic, this condition must persist for more than three months. Patients with CRS constantly experience at least a low level of sinusitis symptoms. Changes in the nasal mucosa can include inflammation and a general thickening of the mucosal wall. Patients with CRS may also develop nasal polyps that protrude from the mucous lining and often cause an obstruction.

Sinus Cavities



The sinus cavities are the hollow spaces within your facial bones. They are located around your eyes, cheeks, and nose.

There are four pairs of sinuses:

- Frontal: over the eye and brow area
- Ethmoid: between the eyes, just behind the bridge of the nose
- Maxillary: inside each cheekbone
- Sphenoid: (not shown above) behind the ethmoid sinuses, also behind the eyes in the upper region of the nose.

Any one or all of these sinus areas may become blocked in chronic rhinosinusitis.

Sinus Anatomy and Function

Your sinus cavities are designed to humidify and warm the air you breathe. They also aide in your sense of smell and improve the sound of your voice.

Mucus production is a normal part of sinus functioning. Mucus helps to moisturize as well as clean out these passages. Tiny hairs, called cilia, are located inside of your sinuses and work to sweep the mucus out – via the nose or throat – to be removed.

When sinus passages become blocked, either by inflammation or obstruction, mucus will back up. As a result, the sinuses cannot drain properly. When drainage is halted or otherwise obstructed, microorganisms (viruses, bacteria) can multiply and cause an infection.

Infections can cause additional inflammation and can further impede normal sinus drainage. When sinus cavities become clogged, this back up of mucus can also cause pressure and pain.

Additionally, anatomical abnormalities (e.g., deviated septum) may also contribute to sinus problems.

Causes – Acute vs Chronic

In *acute* rhinosinusitis, often a bacterial cause can be identified. Most healthy individuals harbor bacteria in the upper respiratory tract. Normally this occurs without any problems or ill effects. However, when the sinuses cannot drain properly and become blocked or inflamed, the bacteria can multiply. Antibiotics can be used effectively in these patients, but are rarely effective for *chronic* rhinosinusitis (CRS) sufferers.

Clinical studies have revealed that the underlying cause of CRS is fungal, rather than bacterial. Fungal organisms are abundant in the environment and are normally harmless to a healthy person. However, in some patients the body sees the fungus as foreign and begins an attack. This attack causes additional inflammation and swelling in the sinuses. During this attack, a toxic substance, **major basic protein (MBP)**, is released and causes a breakdown of the lining of the sinus cavities. Without the protective lining bacteria now have an opportunity to invade and cause secondary bacterial infections. By identifying this fungal origin, there is a new therapeutic target which can be appropriately treated.

Signs and Symptoms

Typically, patients with CRS display a long-term history of nasal congestion and thick mucus production.

Symptoms can include:

- nasal obstruction
- congestion
- runny nose
- thick (yellow or green) discharge
- loss of smell
- headache
- facial pain or tenderness
- ear pain
- upper jaw and/or teeth pain
- bad breath
- cough (may be more severe at night)
- sore throat (from postnasal drainage)
- fever
- weakness or tiredness

Bacterial infections may cause increased or worsening symptoms of CRS.

CRS sufferers often experience a significant and perhaps even severe impairment to their quality of life.

Diagnosis

If you have experienced many of the signs and symptoms listed on the previous page, there is a good chance you may have chronic rhinosinusitis.

It is important to make an appointment to speak with your primary care physician about your sinus problems. Be prepared to discuss the signs and symptoms you have been experiencing, and indicate how long this condition has been affecting you and to what degree it has impaired your normal daily functioning.

Your primary care physician may refer you to an ENT (Ear, Nose, and Throat) specialist or allergist. ENT's and allergists are experienced in examining and diagnosing this condition and can prescribe the treatment you will need.

A test is now available that your doctor can perform in the office. The test can detect the presence of fungus and MBP in the sinus cavities. If MBP is present in the sinus cavities your physician may prescribe an antifungal nasal irrigation solution to treat the problem.

Medications and Treatments

Many patients who suffer from CRS have tried conventional therapies with little success.

These include:

Antihistamines – will help if a patient also suffers from allergic rhinitis, but will not benefit the CRS patient for whom allergies are not a primary issue.

Nasal decongestants – may offer temporary relief by constricting the dilated blood vessels and reducing some congestion, but should not be used long-term.

Antibiotics – will only help CRS patients suffering from an *acute* bacterial infection. It will not treat the fungal organisms that are prevalent in the sinuses of CRS patients.

Corticosteroids – effective at reducing inflammation, but taken orally may cause some potentially serious adverse effects, particularly in patients with other disease states such as diabetes, ulcers, thyroid disorders, hypertension, and kidney disease. Steroids taken orally can also increase fungal growth because they can elevate blood sugar levels - something fungus needs in order to grow. However, steroid nasal sprays can be effective

against inflammation and produce fewer side effects.

Surgery – in some cases sinus surgery may be warranted, but the beneficial effects are usually temporary. Initially, the surgeon can remove obstructive and/or inflamed tissue and trapped mucus. This will help to increase the drainage and ventilation of the sinus cavities.

Unfortunately, if the fungal component is not properly treated, the sinus condition will soon resurface. Fungi are persistent and it is difficult, if not impossible, to remove all traces during these procedures – even when irrigation with an antifungal is used during the surgical procedure. However, surgical intervention can help improve flow to the various areas of the sinus cavity, allowing for better irrigation access using a nasal antifungal medication following the surgical procedure.

New Treatment Options

Antifungals – nasal antifungal treatments have been developed and have been shown to be effective in treating patients with CRS. Used intranasally, antifungal medications (Amphotericin B, Itraconazole, Voriconazole) allow for a high dose of medication to contact the fungal organism directly without producing the same adverse effects commonly associated with the oral or intravenous routes of administration. Since fungal spores are present in the air we breathe, the treatment of CRS with antifungal agents is long-term. Unlike oral or injectable antifungals, long-term use of intranasal applications has little or no side effects.

Saline irrigation – is typically performed prior to using the topical antifungal medication in order to remove excess mucus and debris so that the medication can reach its target. Irrigating the sinus cavities will help keep sinus passages open and may even help reduce allergy exacerbations by flushing out inhaled chemical or environmental pollutants from the nasal airways. It can also be beneficial in reducing, eliminating, or alleviating some of the congestion experienced during cold and flu season.

Prevention

Irrigating the sinuses frequently with antifungals can help keep nasal passages and sinuses clear.

Humidifiers can be helpful, as are some particulate filtering devices.

Avoid cigarette smoke and other air pollutants whenever possible. Smoking will worsen rhinitis and sinusitis symptoms.

Avoid alcohol as it can cause sinus membranes to swell and can worsen the symptoms of rhinitis and sinusitis.

Chlorinated pools may irritate the lining of your sinus cavities.

If you have allergies, take the necessary steps to limit your exposure to those allergens that cause or worsen your sinusitis symptoms. You may wish to discuss allergy treatment options with your physician.

Questions?

If you have any questions about the information in this handbook or would like to speak with one of our pharmacists, please contact us at:

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