Diagnosis of Sinusitis

How do I know if I have sinusitis?
Many people think they have sinusitis when actually they may have a cold or allergies. The diagnosis of sinusitis is very difficult, even for physicians. This is because there is not one test to diagnose sinusitis. Physicians use their experience to bring together various forms of information to come up with a best diagnosis, including the patient’s:

- symptoms
- physical exam findings
- culture results
- nasal endoscopy
- CT scans

Even the best doctors are not always right in their diagnosis of sinusitis. Generally, people with sinusitis have:

- thick drainage from their nose
- facial pressure
- decreased smell
- nasal congestion

These things are not necessary to come up with the diagnosis. When in doubt of your findings, it is always best to consult your doctor.

How does one diagnose sinusitis?
Sinusitis is often a difficult diagnosis. This is because the symptoms of sinusitis overlap with many other diseases. The main symptoms of sinusitis—headache, pressure, and fatigue—are some of the most common symptoms doctors see. Physicians must look at the timing and duration of symptoms along with clinical and radiographic findings. The findings doctors look for on exam include facial tenderness, thick mucous or pus in the nose, and edema on nasal exam. It is important for patients with chronic sinusitis or recurrent symptoms to be evaluated with an endoscope (a small camera that enables the physician to look at the area where the sinuses drain). CT (or CAT) scans are another avenue that doctors look at to determine if diseases exist within the sinuses. Patients need to be cautioned about CT findings, as the correlation between findings on CT scans and patient symptoms are very poor. The most important thing to evaluate is how the patient feels and not what the images look like. It is not uncommon to find patients who suffer from sinusitis and feel miserable and have minimal findings on their CT scan. Likewise, many patients with abnormal findings on a CT scan feel fine. Many of these patients do not require treatment.

Why is sinusitis so difficult to diagnosis and treat?
As previously mentioned, because the symptoms of sinusitis overlap with many other diseases, it is very difficult to diagnosis and treat. Furthermore, there is not one good
test for sinusitis, such as a blood test for diabetes. This makes the treatment even more difficult. Treatment is often difficult because we still are not sure about what causes sinusitis, thus making the treatment different for each individual.

**What types of sinusitis are there?**
Basiclly we think of sinusitis as acute and chronic. Acute is a sinus infection that lasts less than 12 weeks. Some patients may have acute recurrent infections in that they get an infection and then totally clear it up, only to quickly get another infection. The other type is chronic sinusitis, which is an infection lasting more than 12 weeks. The more recent term used for chronic sinusitis is chronic rhinosinusitis as this more accurately describes that the infection is not limited to the sinuses but involves the nasal passages as well.

**What new evidence is there about the cause of sinusitis?**
There is constant research on the cause of sinusitis. It is quite possible that not all sinusitis is the same. For instance, one person may have sinusitis caused by a bacterial infection, while another person may have sinusitis caused by a fungal infection. Recent studies have focused on biofilms (or colonies of bacteria), endotoxins (or released products from bacteria), and osteitis (bone involvement from sinusitis).

**What is endoscopy?**
Endoscopy is the in-office evaluation of the nasal passages, nasopharynx (or back of the nose), and sinus passages or drainage. It is accomplished using a tiny “scope” or camera to look in these areas. It can be recorded for education purposes or to compare in response to treatment. Some providers use rigid scopes which improve the quality of the picture, or flexible scopes which may improve the ability to look in different areas. The procedure is usually carried out after using some form of spray in the nose and takes about two minutes to accomplish. It is usually well tolerated and causes minimal discomfort with few complications. Often, if a patient has not had sinus surgery, the physician can look at where the sinuses are draining, but not actually into the sinuses.

**What is a CT (CAT) scan?**
A computed tomography is basically high tech X-rays of the sinuses. They are far superior to X-rays in that they not only look into the sinuses but show the outflow tracts (or drainage) of the sinuses. They provide high detail and usually allow the doctor to look in multiple planes into the sinuses. They will show the degree of disease and obstruction of the sinuses and often allow a doctor to determine if polyps exist. Furthermore, they allow the doctor to look for further complications and spread of disease beyond the sinuses. CT scans do require some amount of radiation and only take a matter of a few minutes to complete. They do not require a closed unit like an MRI, so patients who are claustrophobic tend to tolerate this test okay.
Can tumors exist in the nose?
Tumors can exist anywhere in the body. Sinus and nasal tumors are rare, but do happen. Most nasal and sinus tumors are benign (non-cancerous) or pre-malignant (have the potential to turn into cancer if not treated). Depending on the type of tumor and location, most can be treated using minimally invasive techniques, often without incisions. Perhaps the most common nasal tumor is called an inverted papilloma. This is a premalignant tumor with a high recurrence rate (quoted as 25%). They have up to a 10% chance of turning into a cancer if not treated properly. Nowadays, most inverted papillomas can be removed without incisions.

What is the impact on smoking on the sinuses?
Smokers have a 5 times more likely chance of having a nasal cancer then a non-smoker. Furthermore, tobacco smoke has a negative impact on sinusitis. This is because cigarette smoke destroys the dynamic nasal fibers called cilia whose job it is to beat mucus. It also increases nasal airway resistance and decreases mucociliary transport.

How do I know if my symptoms are caused by allergies?
This is tough. Usually allergies are seasonal, but in some cases can be year round. Allergies often cause itchy eyes, runny nose, sneezing, watery eyes and stuffiness. Depending on what the person is allergic to, different seasons can be worse. Most typically, allergic patients are worse in the spring and the fall. This is particularly true in the Northeastern United States. An allergy workup is important. This is usually done by an allergist who uses skin tests to determine what you are allergic to. In some cases, blood tests can be done as well. Some patients clearly have a reactivity to certain things, but their tests come up negative. It is unclear why this occurs.

Why do people with chronic sinusitis often have problems with their lungs?
Actually, we are not entirely sure. There is no doubt that there is a large subset of patients with sinusitis that have lung disease. This may be because whatever is occurring in the nose (decreased activity of cilia or swelling of the nasal airway) may be occurring in the lungs simultaneously. This is the notion of the so-called unified airway. Alternatively, a bad post nasal drip may irritate the trachea or bronchial tubes and thus precipitate lung problems.

How are cultures done of the sinuses?
Because of antibiotic overuse and the fact that many infections are caused by bacteria that are resistant to certain antibiotics, cultures are important. In the past, cultures were carried out by sticking a sharp instrument (called a trochar) into the sinus and suctioning out fluid to analyze. Due to the significant discomfort this caused to patients, we have developed better methods. Currently, the best way to do a culture is to use the
endoscope. An ear, nose, and throat doctor can use the camera to put a fine culture swab into the area where the sinus drains and get material suitable for analyzing. This is much better than blindly swabbing the nose. This is similar to swabbing the throat to look for a strep throat. This allows the physician to determine if there is a true bacterial infection or if the bacteria is resistant to traditional antibiotics.

**What is fungal sinusitis?**
There are many different types of fungal sinusitis. This can be confusing for patients, particularly if they search on the internet. The scariest form of fungal sinusitis is called Mucormycosis. This is an invasive fungal infection that only occurs in patients that are immunocompromised. This includes patients that have undergone chemotherapy, have received a transplant, have AIDS, or have out of control diabetes. This infection can be life threatening. Other fungal infections are “fungal ball” and allergic fungal sinusitis. Fungal balls can happen in any patient and are treated by removal of the fungus. They usually do not require any other treatment. This is also called a Mycetoma or Aspergilloma. Allergic fungal sinusitis is caused by a patient’s immune response to normal fungus that lives in the environment. This is more of an “allergic” disease then a fungal disease. For a time, there was evidence from the Mayo clinic that fungal sinusitis and regular sinusitis should be treated with topical antifungal medications. Recently, a big study was done that showed no improvement in patients with treatment with topical antifungal medications.

**What is allergic fungal sinusitis?**
Allergic fungal sinusitis is a subset of sinusitis that is thought to be due to the body’s immune response to normal fungus from our environment. These patients usually have more severe symptoms including more aggressive polyps that may erode bone, thick “peanut-butter” consistency mucus, and increased nasal congestion. Characteristic findings of patients with allergic fungal sinusitis include:

- allergic mucin
- high blood eosinophils
- positive allergy skin tests for fungus
- characteristic CT findings

This disease process is thought to be IgE mediated (a subset of the immune system).

**What is Sampter’s triad?**
Sampter’s triad is the phenomenon of nasal polyps, asthma, and sensitivity to asthma. Because of this, many patients who have polyps and asthma together are told to avoid asthma. For patients with Sampter’s triad, there may be a role for treating polyps with aspirin desensitization. In this form of treatment, patients are rapidly challenged with aspirin and then maintained on high dose aspirin. The thought is that this will keep the polyps from reforming.
What is MRSA?
MRSA stands for methicillin resistant Staphylococcus aureus. Basically, this is a bacterial infection caused by Staph bacteria that is resistant to many of the typical antibiotics (by definition, all penicillin-based antibiotics). This can be a scary infection in patients with weakened immune systems, but for most of us, it is simply another type of bacterial infection. The important thing is that patients are put on the right antibiotics for the right period of time and monitored closely. Studies have shown that the incidence of MRSA infections may be as high as 10% in sinusitis.

Can sinusitis spread to the brain or eye?
This is possible but unlikely—the chance is far less than 1%. Usually, this occurs in patients with weakened immune systems or adolescent males. The reason behind it is unknown but thought to be due to hormonal changes in development. These infections can be very serious and even life-threatening, and should be addressed immediately. It usually requires surgical intervention. Infections of the frontal and sphenoid sinus are often the most worrisome for spread beyond the sinus.