

# SINUSITIS

WHAT IS IT?

WHAT SHOULD YOU DO?

WHAT WORKS?

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## SINUSITIS. WHAT IS IT? WHAT SHOULD YOU DO? WHAT WORKS?

The American Academy of Otolaryngology, Head and Neck Surgery released a clinical practice guidelines update on acute sinusitis in April 2015.

### WHAT IS SINUSITIS?

Sinusitis is an inflammation or infection of the nose and paranasal sinuses. These cavities are contiguous and any inflammatory or infective process that affects one affects the other. So the first thing to note is that the appropriate term is: "rhinosinusitis" rather than "sinusitis".

**Acute rhinosinusitis.** Clinicians should aim to distinguish **acute rhinosinusitis** caused by a **viral upper respiratory tract infection** from **acute bacterial rhinosinusitis**. Both of these conditions ideally should, on the basis of history and clinical examination, be differentiated from acute rhinosinusitis caused by noninfectious conditions.

A clinician should diagnose **acute bacterial rhinosinusitis** when symptoms or signs of acute rhinosinusitis, that is to say purulent nasal discharge, are accompanied by: nasal obstruction, facial pain, pressure sensation or fullness in the head which persist without evidence of an improvement for **at least 10 days** after the onset of a viral upper respiratory tract infection. Acute bacterial rhinosinusitis can also be diagnosed when the symptoms and signs laid out above, worsen within 10 days after an initial clinical improvement. In both of these instances it is reasonable and appropriate, particularly in the presence of mucopurulent nasal discharge, to imply that there is an infective bacterial acute rhinosinusitis.

**Chronic rhinosinusitis.** **Chronic rhinosinusitis** is a condition characterized by the presence of nasal obstruction, facial pain, fullness in the head, nasal discharge or post nasal drip persisting for more than 12 weeks, with or without acute exacerbations. Chronic rhinosinusitis is now defined as:

Chronic rhinosinusitis without nasal polyps or,

Chronic rhinosinusitis with nasal polyps.

Both of these conditions, their diagnoses and treatments will be discussed later.

Remember that facial pain without nasal discharge is more likely than not acute rhinosinusitis although many patients may present with a history of self-reported/self-diagnosed sinus headache. This headache with the presence of nasal discharge is more likely to be a variant of **migraine** and is appropriately treated with **anti-migraine therapy**.

## TRANSITION FROM VIRAL TO BACTERIAL INFECTION

Remember that only 0.5% to 2% of viral rhinosinusitis episodes are complicated by a secondary or intercurrent bacterial infection. **Viral infections** can promote acute bacterial rhinosinusitis by obstructing sinus drainage, promoting growth of bacterial pathogens that colonize the nose and nasopharynx, by depositing nasal bacteria into the nose/sinuses during nose blowing and by altering the immune response. Notwithstanding all of these things occurring **no more than 1 in 50 cases** of a viral upper respiratory tract infection, of which rhinosinusitis symptoms predominate, go on to frank acute bacterial rhinosinusitis.

In the first 3-4 days of a viral upper respiratory tract infection and viral rhinosinusitis cannot really be differentiated from the onset of bacterial rhinosinusitis therefore only patients with unusually **severe** presentations or **extra sinus** manifestations are presumed to have a **bacterial illness**. For the first 5-10 days it is reasonable clinical practice to assume that everyone has a viral infection of their nose and sinuses unless the symptoms are:

- Unusually severe
- Not responsive to simple supportive medication
- Presence of any extra sinus complication or infection.

During this period of time the so called double worsening "effect", whereby a patient initially improves and then symptoms return with increased severity should be assumed to have a **secondary bacterial infection** and treated as acute **bacterial rhinosinusitis**.

The American academy guidelines statement on radiographic imaging in acute rhinosinusitis is that:

*"Clinicians should not obtain radiographic imaging for patients who meet diagnostic criteria for acute rhinosinusitis unless a complication or alternate diagnose is strongly suspected."*

## WHAT SHOULD YOU DO?

**Symptomatic relief of viral rhinosinusitis.** Clinicians should recommend analgesics, topical intranasal steroids and/or nasal saline irrigation for the symptomatic relief of viral sinusitis. It is important to let the patient know the clinical cause of the disease and to let them know the criteria which may lead them and you to think that there is a significant secondary bacteria infection or that this infection that they now have is bacterial.

**Symptomatic relief of acute bacterial rhinosinusitis.** A careful look at the evidence on community acquired acute bacterial rhinosinusitis shows that, in the majority of simple uncomplicated cases, there is little benefit by adding antibiotics as first line treatment. Clinicians should recommend analgesics, topical intranasal steroids and/or nasal saline irrigations in the first place to afford symptomatic relief of acute bacterial rhinosinusitis.

**1) The role of steroids in acute rhinosinusitis.** Topical nasal steroids have been used alone or in combination for symptomatic relief of acute bacterial rhinosinusitis. There seems to be little difference in the efficacy in this acute phase of the commonly used prescription: low dosed water based surface acting steroids. A Cochrane review including four randomized control studies showed that topical intranasal steroids versus placebo or no intervention significantly increased the rate of symptomatic improvement. Therefore the use of **intranasal steroids** as an adjunct to irrigations or in appropriate cases as an adjunct to oral antibiotic therapy for managing acute bacterial rhinosinusitis is **strongly recommended**.

**Systemic Steroids:** A Cochrane review of systemic steroids for acute bacterial rhinosinusitis found **no benefit** over placebo when oral steroids were used as monotherapy. Limited data from five trials has found that oral steroids used in combination with antibiotics may have a modest short-term beneficial effect for symptom relief but confidence in results was limited by significant lack of appropriate data for analysis. The decision to add oral steroids should be limited to **severe cases** and those that are **not responding** as expected to the use of therapeutic regimens mentioned above.

**2) Saline irrigation.** Saline irrigations alone or in combination with other adjunctive measures **improve** the rate of resolution of symptoms of acute rhinosinusitis. In terms of various salt solutions, buffered **hypertonic** (3-5%) saline irrigation shows superior anti-inflammatory effects as compared to isotonic saline and are most appropriately used **decongestants**.

**3) Decongestants.** Although decongestants have been used to treat nasal congestion associated with the common cold for many years, there are no randomized controlled studies that specifically look at the efficacy of decongestants alone in acute bacterial rhinosinusitis, although two small studies have shown that decongestant nasal sprays may reduce congestion of sinus and nasal mucosa and lead to **symptomatic improvement**. Bear in mind that up to one third of people with rhinosinusitis will have a paradoxical response to topical sympathomimetic amines. That is to say the lining of their nose will be congested rather than decongested after the application of these medications.

**4) Antihistamines.** Antihistamines, either alone or in combination, systemically or mucosally seem to have **no role** in the symptomatic relief in acute bacterial rhinosinusitis in non-atopic patients.

**5) Expectorants.** Expectorants again have been shown to have **no effect** in symptomatic relief of acute bacterial rhinosinusitis. Their theoretical ability to loosen phlegm is based on studies from bronchial secretion and at this stage does not appear to be transferable to the nose and paranasal sinuses.

Initial management of acute bacterial rhinosinusitis should either be **watchful waiting** (without antibiotics) or the prescription of **initial antibiotic therapy** for adults with non-complicated acute bacterial rhinosinusitis. Watchful waiting should only be offered when there is assurance of follow up, such that antibiotic therapy can be started if the patient's condition fails to improve by 7 days or worsens at any time. If there is doubt about the patient's ability to return for follow up, reliability in terms of symptomatic assessment, then a case can be made for initial treatment with antibiotics.

## **THE CHOICE OF ANTIBIOTIC THERAPY FOR ACUTE BACTERIAL RHINOSINUSITIS**

If a decision is made to treat acute bacterial rhinosinusitis with antibiotic agents the clinician should prescribe **Amoxicillin** with or without clavulanic acid as the first line of therapy for 5-10 days for most adults. With regard to the choice of initial antibiotic therapy no significant differences have been found in clinical outcomes for acute bacterial rhinosinusitis in patients treated with Amoxicillin versus Amoxicillin clavulanic acid, compared with cephalosporins or macrolides. The justification for Amoxicillin as first line therapy for most patients with acute bacterial rhinosinusitis relates to its safety, efficacy, low-cost and narrow microbiological spectrum. Consideration to prescribing Amoxicillin clavulanic acid combination for adults with acute bacterial rhinosinusitis is given to those at high risk of being infected by an organism resistant to Amoxicillin. The use of high dose Amoxicillin with clavulanic acid is recommended for adults who are at high risk of being infected with Amoxicillin organisms because high dose Amoxicillin is preferred over the standard dose of Amoxicillin primarily to cover penicillin non-susceptible streptococcus pneumonia. This risk exists in patients from geographic regions with high endemic rates of invasive penicillin non-susceptible strep pneumonia, those with severe infections (e.g. evidence of systemic toxicity with temperatures greater than 39°F), those over 65 years of age, patients who have recently been hospitalized, patients who have used antibiotics within the previous month or those patients who are immuno-compromised.

**Penicillin Resistant Patients.** For penicillin allergic patients either doxycycline or a fluoroquinolone is recommended as the appropriate alternate agent for empiric antibiotic therapy.

**Duration of Therapy.** Most trials of antibiotic therapy in acute bacterial rhinosinusitis recommend antibiotic administration for **10 days**. When 5 days of antibiotic therapy is compared to 10 days, the results are similar, the adverse events occurring are similar but meta-analysis indicates that there is some marginal benefit from a longer course of antibiotics.

Remember that most adverse effects are more common with antibiotic therapy compared to watchful waiting and are probably more common with 10 days of therapy compared to shorter courses.

## **TREATMENT FAILURE FOR ACUTE BACTERIAL RHINOSINUSITIS**

If a patient fails to improve with the initial chosen management option by 7 days or worsens during the initial management, the clinician should reassess the patient to confirm that acute bacterial rhinosinusitis is in fact the correct diagnosis, exclude other causes of illness and try to make every effort to detect complications. If acute bacterial rhinosinusitis is confirmed the clinician should either begin antibiotic therapy or if the patient was initially managed with antibiotics the clinician should change the antibiotic being used. In these cases if initial treatment was expectant then the patient should be commenced on Amoxicillin with clavulanic acid. For penicillin allergic patients either doxycycline or a respiratory fluoroquinolone.

Patients who are initially treated with Amoxicillin with or without clavulanic acid can then be treated with high dose Amoxicillin plus clavulanic acid, a doxycycline, a respiratory fluoroquinolone or the combination of clindamycin and a third generation oral cephalosporin (Cefixime or Cefpodoxime).

## **CHRONIC RHINOSINUSITIS**

As stated before, chronic rhinosinusitis is defined as the persistence of symptoms for more than 12 weeks. Contemporary classification of chronic rhinosinusitis divides it into:

- Chronic rhinosinusitis **with nasal polyps**,
- Chronic rhinosinusitis **without nasal polyps**.

From the point of view of the primary care physician, it is probably appropriate that **all cases of chronic rhinosinusitis** are sent to an **Otolaryngologist** for appropriate clinical examination and investigation. What the Otolaryngologist has to offer is endoscopic evaluation of the nose, often from simple anterior rhinoscopy the presence or absence of nasal polyps cannot be elucidated.

Endoscopic evaluation of the nose can look at the osteomeatal recess the outflow tracts from the sinuses, assess whether there are polyps present or no polyps present, assess whether there are any other obstructive lesions, assess the role of any intercurrent problems such as nasal septal deviation, pneumatization with enlargement of the head of the middle turbinate (concha bullosa), the role of the erectile tissue in the nose, namely the inferior turbinates and the nasal septal swell body.

To reiterate the diagnosis of chronic rhinosinusitis from a primary care physicians point of view is 12 weeks or more of 2 or more of the following signs or symptoms:

1. Mucopurulent discharge, be it anterior, posterior or both,
2. Nasal obstruction
3. Facial pain or pressure
4. Decreased sense of smell.

A condition called **recurrent acute rhinosinusitis** is a condition characterised when four or more episodes of acute bacterial rhinosinusitis occur within a 12 month period without symptoms or signs of rhinosinusitis between each acute exacerbation. Although recognised as a distinct form of rhinosinusitis only a few studies exist documenting this condition and the treatment guidelines for it are essentially those that have been referred to for the appropriate treatment of acute bacterial rhinosinusitis.

Those studies that have been done suggest that in cases of recurrent acute bacterial rhinosinusitis there is more likely than not to be an anatomical cause for the problem. If the anatomy as assessed either endoscopically or radiologically is normal, then mucosal immune defects have to be eliminated as a significant etiological factor.

A paradigm shift needs to occur in terms of our clinical approach to rhinosinusitis. We need to be very mindful of the need to differentiate viral from bacterial rhinosinusitis, to treat bacterial in the majority of cases without antibiotic therapy, to use appropriate antibiotic therapy when indicated for appropriate periods, to recognise possible clinical complications and to treat them aggressively, to be mindful of the condition of recurrent acute bacterial rhinosinusitis, to be mindful of the condition of chronic rhinosinusitis and have a clinical approach and treatment paradigm for each of these conditions.

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