SINUSITIS

CASE DEFINITION

Sinusitis is an inflammation of the mucosa lining the paranasal sinuses. The medical term is "rhinosinusitis" ("rhino-" meaning "nose"), because it affects the mucous membranes lining the nose and the sinuses (which are air-filled spaces located behind the forehead, nasal bones, cheeks, and eyes in the skull).

AETIOLOGY

A. Exciting Causes

- Nasal allergies
- Nasal infections
- Swimming and diving
- Trauma
- Dental infections

B. Predisposing causes

1. Local:
   - Obstruction of the sinus ostia
     - Nasal Packing
     - Deviated nasal septum
     - Hypertrophic turbinates
     - Nasal polypi
     - Benign or Malignant neoplasm.
   - Congenital anatomical abnormality of the nose and sinuses causing inflammatory edema of the sinus mucosa as from common cold,
   - Decreased mucociliary activity.

2. General:
   
a) Environment: Sinus is common in cold and wet climate. Atmospheric pollution, smoke, dust and overcrowding also predispose to infection.

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1. Fact sheet: Acute sinusitis
2. Dhingra PL & S; Diseases of Ear, Nose and Throat; 5th Edition; Elsevier, A division of Reed Elsevier India Private Limited; New Delhi; 2010: 208
b) Poor general health: Recent attacks of exanthematous fever (like measles, chickenpox, whooping cough etc.), nutritional deficiency, systemic disorder (diabetes, immune deficiency syndromes)

c) Hereditary.
The underlying causes of acute sinusitis are diverse and include viruses, bacteria, fungi, and allergies. Viral infections are a common cause of acute sinusitis. Most individuals resolve the infection spontaneously and only a small proportion develops a secondary bacterial infection. Acute bacterial rhino sinusitis (ABRS) is generally diagnosed in the presence of more than 7-10 days of nasal discharge. The most common bacteria are Streptococcus pneumonia, Haemophilus influenzae, Moraxella catarrhalis, Group A beta-hemolytic streptococci and Staphylococcus aureus. Anaerobes predominate in rhino sinusitis of dental origin, and fungi and Pseudomonas aeruginosa in immunocompromised patients.

INCIDENCE
• The incidence of acute sinusitis ranges from 15 to 40 episodes per 1000 patients per year; it is much more common in adults than it is in children, whose sinuses are not fully developed.
• Maxillary sinusitis is the most common type of sinusitis, followed by ethmoidal, frontal and sphenoidal sinusitis.
• Dental infection may cause 5-10% of cases of maxillary sinusitis.

RISK FACTORS
• Allergic rhinitis or hay fever
• Cystic fibrosis
• Going to day care
• Diseases that prevent the cilia from working properly
• Changes in altitude (flying or scuba diving)
• Large adenoids
• Smoking
• Weakened immune system from HIV or chemotherapy

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6 Brook I. Acute Sinusitis; Antimicrobe 2010; USA: 2010 [cited 23rd August 2015] Available at http://www.antimicrobe.org/e2.asp#top
8 CCRH; Homoeopathy for Mother and Child Care; Training Manual Vol.2; Reprint Edition; Central Council for Research in Homoeopathy, New Delhi; 2010:84-87.
TYPES
There are two types of sinusitis:
- Acute sinusitis is when symptoms are present for 4 weeks or less. It is caused by bacteria growing in the sinuses.
- Sub-acute is when the symptoms last for 4-8 weeks.
- Chronic sinusitis is when swelling and inflammation of the sinuses are present for longer than 3 months.
- Recurrent sinusitis is when there are several attacks within a year.

SYMPTOMS

The symptoms of acute sinusitis in adults very often follow a cold that does not get better or that gets worse after 5 - 7 days. Symptoms include:
- Symptom of common cold persist beyond 10 days
- Nasal stuffiness and discharge
- Facial pain on pressure is felt depending on sinus involved:
  - Maxillary sinus pain is often perceived as being located in cheeks or upper teeth.
  - Ethmoid sinus pain is perceived between the eyes or in retroorbital region
  - Frontal sinus pain is perceived above the eyebrow
  - Sphenoid sinus pain is felt in the upper half of the face or retroorbital radiating to occiput.
- Fever
- Headache
- Bad breath or loss of smell
- Cough, often worse at night
- Pressure-like pain, pain behind the eyes, toothache, or tenderness of the face
- Sore throat and postnasal drip
- Fatigue and general feeling of being ill

Chronic rhino sinusitis (CRS) refers to a condition when inflammation lasts twelve (12) weeks or longer and causes at least two or more of the following signs and symptoms:
- Mucopurulent drainage (anterior, posterior, or both)
- Nasal obstruction (congestion),
- Facial pain-pressure-fullness, or
- Decreased sense of smell

And inflammation is documented by one or more of the following findings:

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- purulent (not clear) mucus or edema in the middle meatus or ethmoid region,
- polyps in nasal cavity or the middle meatus, and/or
- radiographic imaging showing inflammation of the paranasal sinuses
- Recurrent acute rhino sinusitis Four (4) or more episodes per year.

Table: Major and minor clinical criteria suggestive of bacterial sinusitis

<table>
<thead>
<tr>
<th>Major criteria</th>
<th>Minor criteria</th>
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<tr>
<td>Facial pain or pressure (requires a second major criterion to constitute a suggestive history)</td>
<td>Headache</td>
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<tr>
<td>Facial congestion or fullness</td>
<td>Fever (for subacute and chronic sinusitis)</td>
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<tr>
<td>Nasal congestion or obstruction</td>
<td>Halitosis</td>
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<tr>
<td>Nasal discharge, purulence or discoloured postnasal drainage</td>
<td>Fatigue</td>
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<tr>
<td>Hyposmia or anosmia</td>
<td>Dental pain</td>
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<tr>
<td>Fever (for acute sinusitis; requires a second major criterion to constitute a strong history)</td>
<td>Cough</td>
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<tr>
<td>Purulence on intranasal examination</td>
<td>Ear pain, pressure or fullness</td>
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* A strongly suggestive history requires the presence of two major criteria or one major and two or more minor criteria. A suggestive history requires the presence of one major criterion or two or more minor criteria.

**PHYSICAL EXAMINATION**

Physical examination should include:
- A thorough and complete general and head and neck examination (including the orbit, extra ocular motility, the response of the pupils, vision, and cranial nerve function).
- Palpation and/or percussion over the frontal sinuses, cheeks (maxillary sinuses), and medial orbit (ethmoid sinuses).
- The nasopharynx should be assessed for postnasal drip and obstruction caused by adenoid hypertrophy, choanal atresia, malignancy, polyps, and septal deviation.
- Nasal examination including anterior rhinoscopy with a good light source looking for edema, erythema, crusting, purulent secretion, and presence of a foreign body.
- Bend the patient’s head forward (when sitting) and holding it at knee level for 45–60 seconds can elicit a sensation of fullness and pain at the involved sites (compliance in young patients may be difficult).
- Endoscopic examination performed by an otolaryngologist may localize pus within the nasal cavity directing the examiner to the involved sinus(es); bacterial cultures can also be obtained; however, the specimens may contain nasal mucosal flora.
- Transillumination is infrequently utilized because the findings do not always
correlate with the disorder, and reproducibility between observers is poor.

Signs of sinus infection that can be observed by physical examination are:

- Mucopurulent nasal or posterior pharyngeal discharge.
- Erythematous nasal mucosa that can be pale and boggy.
- Signs of throat infection that can be associated with mal-odorous breath.
- Acute otitis media can be present in association with acute bacterial rhinosinusitis.
- Facial tenderness is inconsistent and nonspecific.
- Periorbital edema with skin discoloration may be present, especially with ethmoiditis.
- Upper molar teeth pathology may be the source of maxillary sinusitis.

INVESTIGATIONS

1. X-ray examination of Paranasal sinuses: Water’s view is taken for better visualization of maxillary sinuses. Caldwell’s view is ideally suited for frontal sinuses. Sub-mento-vertical view is ideally suited for Sphenoid sinuses. Lateral view can help in distinguishing various pathologies of frontal sinuses. Oblique view helps in demonstrating posterior ethmoidal air cells and optic foramen.

Following features indicate bacterial infection

- Radiologic opacity
- Air-fluid level
- Sinus mucosal thickening-more than 4 mm

2. Transillumination of the sinuses: Press a light source against the patient’s upper cheek, close to nose. Ask the patient to open his mouth widely and look at his palate to see red spot of light passing through in normal sinuses. No red dot or light would be seen if sinuses are blocked.

3. CT of sinus is more sensitive particularly for ethmoid and sphenoid disease.

Imaging by X-ray, CT or MRI is generally not recommended unless complications develop. Imaging studies utilized for the diagnosis of acute bacterial rhino sinusitis. However, they are non-specific and cannot differentiate viral from bacterial rhino sinusitis. Sinusitis lasting more than 12 weeks (Chronic) a CT scan is recommended.

COMPLICATIONS:

Although very rare, complications may include:

- Abscess
• Bone infection (osteomyelitis)
• Meningitis
• Skin infection around the eye (orbital cellulitis)

EVALUATION AND ASSESSMENT\(^\text{11}\)

History\(^7\)
Recorded medical history should include:
• History of upper respiratory allergies
• Previous episodes of sinusitis, and other respiratory tract infections
• Previous use of antibiotics
• Potential of nasal foreign bodies
• Having a child attend a day care center
• Immunizations; history of allergy
• exposure to cigarette smoke

The presence of any swelling and pain especially in the facial, forehead, temporal, orbital area or any other site in the head should be noted. Information about what makes the symptoms worse or better should be obtained. The length of symptoms such as cough, nasal secretions, headaches, pain, fever, hyposmia, dental pain or problems should be recorded.

Outcome test
Sino-nasal outcome test (snot-20) can be used to analyze the condition. (www.northwestern-sinus.com/wp-content/uploads/2011/12/snot20.pdf)

PREVENTION\(^\text{10}\)

The best way to prevent sinusitis is:
• To avoid colds and flu or treat problems quickly.
• Eat plenty of fruits and vegetables,
• Reduce stress.
• Wash hands often, particularly after shaking hands with others.
• Avoid smoke and pollutants.
• Drink plenty of fluids to increase moisture in body.
• Take decongestants during an upper respiratory infection.
• Treat allergies quickly and appropriately.
• Use a humidifier to increase moisture in nose and sinuses.
• Breathing exercises and Yoga

RED FLAG
• High fever

• Orbital infections like orbital cellulitis or orbital abscess which is indicated by:
  - Fever
  - Erythema
  - Conjunctival injection
  - Chemosis
  - Proptosis
  - Ophthalmoplegia
  - Diplopia
• Intracranial Complications like: Meningitis, subdural empyema, epidural abscess and cerebral abscess
• Bony complications like: Pott’s puffy tumor, Osteomyelitis and Osteitis.

MANAGEMENT

Medicinal management when given along with the following auxiliary measures can help to effectively manage acute attacks of sinusitis.9,10

• Drink plenty of fluids to thin the mucus
• Inhale steam 2 - 4 times per day
• Use nasal spray

Certain other measures when followed can further aid in managing the condition and prevent further attacks. These include:
• Intake of plenty of fruits and vegetables,
• Reduction of stress.
• Avoidance of smoke and polluted environments
• Prompt treatment of upper respiratory infections and allergies
• Practicing breathing exercises and Yoga

Homoeopathic medicines can help relieve symptoms of sinusitis and also reduce the frequency of recurrence of attacks when prescribed a constitutional remedy after complete case history and analysis and taking into account all the accessory circumstances of the case. Few research studies show the beneficial role of homoeopathic therapy in such cases.12,13,14 Several medicines are given in the

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homoeopathic repertories for the condition; some are given under the peculiar sub- rubrics which when found in a case shall indicate the required remedy. 27 medicines are indicated in Murphy’s repertory, under the rubric “sinusitis, infection, nose”\textsuperscript{15}. In Synthesis repertory, the rubric “sinuses of” (sinusitis) has 83 medicines. Indications of a few specific remedies which may be found useful in cases of sinusitis with paucity of symptoms include\textsuperscript{16}:

\textit{Eucalyptus globulus}- Chronic catarrhal, purulent and foetid discharge. Ethmoid and frontal sinus involved,

\textit{Teucrium marumvarum}- Chronic nasal catarrh with atrophy; large, offensive crusts and clinkers, ozena, loss of sense of smell (anosmia).

The commonly indicated remedies with their indications are given below for a glimpse. However, the present totality of symptoms in each individual case shall always be the guide to the indicated remedy.

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|}
\hline
\textbf{S.No.} & \textbf{Medicines} & \textbf{Indications} \\
\hline
1. & \textbf{Belladonna} & Affected from throbbing frontal right side headache with congestion of face which is characterized by Sudden, violent effects, bright redness, burning heat, throbbing pains, appear and disappear suddenly. Adapted to sensitive and nervous person. Bell Patient worse in afternoon (3 p.m.), drafts, washing head, after taking cold. Better: light covering, rest in bed, better in bending backward. \\
\hline
2. & \textbf{Nux vomica} & Stuffy colds after exposure to dry, cold atmosphere. Nux patient worse in warm room. Stuffed up, at night especially. Odors tend to produce fainting. Coryza: fluent in daytime; stuffed up at night and outdoors; or alternates between nostrils. Bleeding in morning. Acris discharge, but with stuffed up feeling. Frontal headache with desire to press the head against something. Adapted to nervous disposition, spare, quick, active, zealous and irritable, impatient, spiteful with violent action. \\
\hline
3. & \textbf{Pulsatilla} & Found useful in maxillary, frontal and fronto-maxillary sinusitis. Nasal obstruction, worse indoors and better in open air. Headache, shifting type, character of discharge may be thick, purulent, greenish yellow catarrh. Low grade fever with chilliness and thirstlessness. Patient will be worse \\
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\end{table}

\textsuperscript{15}Murphy Robin Homoeopathic Medical Repertory. Third Edition. Lotus Health Publishers; 2005
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<td>5.</td>
<td>Hepar sulphuricum</td>
<td>Sinusitis of allergic origin with patient being very sensitive to cold. Acute sinusitis (frontal / fronto-maxillary) becoming chronic with the passage of time. Allergic rhinitis, sneezing culminating into sinusitis. Patient worse in dry, cold air, better in damp weather. Adapted to irritable, difficult to pleaseextremely chilly patient, hypersensitive to cold, pain, fainty easily, sweats easily.</td>
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<td>8.</td>
<td>Kali bichromicum</td>
<td>Frontal sinusitis with pain in supraorbital region or inner canthi of both the eyes and at the root of the nose. Postnasal catarrh exciting cough, discharge from nose relatively scanty but sticky, purulent, yellow.Chilly patient, susceptible to cold,shifting pains, complaints occurring in hot weather,worse from cold, damp, open air, morning, after sleep,2-3 a.m.Better from heat, motion. Adapted to indolent,aversion to mental and physical labor.</td>
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<td>9.</td>
<td>Lachesis</td>
<td>Left sided chronic maxillary sinusitis, nasal obstruction causing choking at night. Highly offensive muco-purulent nasal discharge from left nostril. Sometimes discharge is blood stained.Mentally patient is loquacious, jumps from one idea to another, jealous, suspicious, indolent.Other symptoms are Hot patient, emaciated, hemorrhagic diathesis, great sensitive to touch, hot flushes and perspiration, all complaints are worse after sleep.</td>
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<tr>
<td>10.</td>
<td>Calcarea sulphuricum</td>
<td>Chronic sinusitis with thick yellow, lumpy, and bloody discharge.Tendency to suppuration.Mucous</td>
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<td>11.</td>
<td>Natrum arsenicum</td>
<td>Catches cold frequently. Often used as specific medicine in case of sinusitis. Prescribed in chronic sinusitis with nasal obstruction, resulting in post nasal catarrh, the discharge being yellowish, mucopurulent with involvement of pharynx i.e. pharyngeal congestion. Worse in damp cold weather. Easily excited. Mental exertion makes the symptoms worse.</td>
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<td>13.</td>
<td>Mercurius solubilis</td>
<td>Frontal sinusitis, pain worse at night with nasal obstruction. Fever associated with sweat, chilliness, worse at night. Pain and swelling of nasal bones, and caries, with greenish fetid ulceration. Sensitive to change of temperature, profuse offensive perspiration, tongue flabby with imprint of teeth, increased salivation, increased thirst. All symptoms are worse at night, from warmth of bed, from damp, cold, rainy weather, worse during perspiration. Mentally patients is fearful, shy, hurried, violent, impulsive, weak memory, nervous and irresolute.</td>
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<td>14.</td>
<td>Silicea</td>
<td>Nasal bone painful when touched, in nasal bones soreness as if beaten. Gnawing pains (and ulcers) in upper part of nose, with heaviness when stooping, and excessive sensibility to contact and pressure. Uncovering the head aggravates catarrhal symptoms and those pertaining to head. Extremely chilly patient, profuse offensive discharges. Sweat profuse especially on feet, easy suppuration, glandular affinity, large head and distended abdomen. Silicea patient is Obstinate, headstrong, nervous, oversensitive, irritable and fearful.</td>
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<td>15.</td>
<td>Sanguinaria canadensis</td>
<td>Ozæna, with profuse, offensive yellowish discharges may be associated with nasal polyp. Periodical sick headache; pain begins in occiput, spreads upwards, and settles over eyes, especially right. Worse from with sun, weekly, night, Climaxis, odors. Is a right-sided remedy pre-eminently, and affects chiefly the mucous membranes, especially of the respiratory tract.</td>
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<td>S.No.</td>
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<td>16.</td>
<td>Spigelia</td>
<td>Stoppage and dryness of anterior nose, with copious discharge of whitish and yellowish mucus from posterior nares. Frequent sneezing; discharge of bloody mucus which is at one time white, at another time yellow, is discharged from nose. Worse: touch, jar, periodically, with the sun, better: lying on r. side, with head high.</td>
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<td>17.</td>
<td>Gelsemium</td>
<td>Sneezing; fullness at root of nose. Dryness of nasal fossæ, swelling of turbinates, watery, excoriating discharge. Acute coryza, with dull headache and fever may be associated with Heaviness of head; band-feeling around and occipital headache. Worse: from weather, spring, foggy, humid, muggy, heat of summer.</td>
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<td>18.</td>
<td>Tuberculinum</td>
<td>Increased secretion of mucus, with frontal headache secretion of mucus from nose, viscid, yellow-green. The nose, which used to feel &quot;hot and burning,&quot; has lost this sensation. Worse: close room, weather: damp (cold), before a storm; standing; dampness; from draught; early morning, and after sleep. Better, open air.</td>
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<td>19.</td>
<td>Hydrastis canadensis</td>
<td>Constant discharge of thick white mucus; frontal headache. Secretion runs more from posterior nares, thick and tenacious. Dull, heavy frontal headache over eyes; catarrhal. Worse: air, inhaling, cold, dry winds, open.</td>
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<tr>
<td>20.</td>
<td>Sticta pulmonaria</td>
<td>Pressure or stuffy fullness at root of nose; blows it without relief. Constant need to blow nose, but no result on account of dryness. Excessive and painful dryness of mucous membrane; secretions dry rapidly, forming scabs difficult to dislodge. Worse: night, lying down, change of temperature better: free discharges, open air.</td>
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**ALGORITHM OF TREATMENT PROCESS**

**Diagnosis through clinical signs and symptoms:**

**Acute Sinusitis**
- Nasal congestion or obstruction
- Nasal discharge, purulence or discoloured postnasal drainage
- Facial pain or pressure (requires a second major criterion to constitute a suggestive history)
- Facial congestion or fullness
- Hyposmia or anosmia
- Fever (for acute sinusitis; requires a second major criterion to constitute a strong history)
- Purulence on intranasal examination

**Chronic Sinusitis**
When inflammation last twelve (12) weeks or longer of two or more of the following signs and symptoms:
- Mucopurulent drainage (anterior, posterior, or both)
- Nasal obstruction (congestion),
- Facial pain-pressure-fullness, or
- Decreased sense of smell

**Clinical examination/Investigations:**
1. Transillumination of the sinuses: Press a light source against the patient's upper cheek, close to nose. Ask the patient to open his mouth widely and look at his palate to see red spot of light passing through in normal sinuses. No red dot or light would be seen if sinuses are blocked.
2. X-ray examination: Following features indicate bacterial infection.
3. Radiologic opacity
   - Air-fluid level
   - Sinus mucosal thickening-more than 4 mm
4. CT of sinus is more sensitive particularly for ethmoid and sphenoid disease.

**Start homoeopathic treatment and Advice for general management**

**Follow up**

**Improvement**

**General management:**
- Apply a warm, moist washcloth to face several times a day.
- Drink plenty of fluids to thin the mucus.
- Inhale steam 2 - 4 times per day (for example, while sitting in the bathroom with the shower running).
- Spray with nasal saline several times per day.
- Use a humidifier.
- Avoid bending over as it may increase facial pain.

**Refer for treatment**

**Continue Homoeopathic Treatment**

**Check for complete resolution**

**If resolution is incomplete**
- Reassess the case and give appropriate homoeopathic medicine

**If resolution is Complete**
- Stop treatment

**Referral criteria**
- High fever
- Orbital infections like orbital cellulitis or orbital abscess which is indicated by:
  - Fever
  - Erythema
  - Conjunctival injection
  - Chemosis
  - Proptosis
  - Ophthalmoplegia
  - Diplopia
- Intracranial complications like:
  - Meningitis, subdural empyema, epidural abscess and cerebral abscess
- Bony complications like: Pott's puffy tumor, Osteomyelitis and Osteitis.