

ACUTE SINUSITIS

Fadi J. Zaben RN MSN
IMET2000, Ramallah
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Outline:

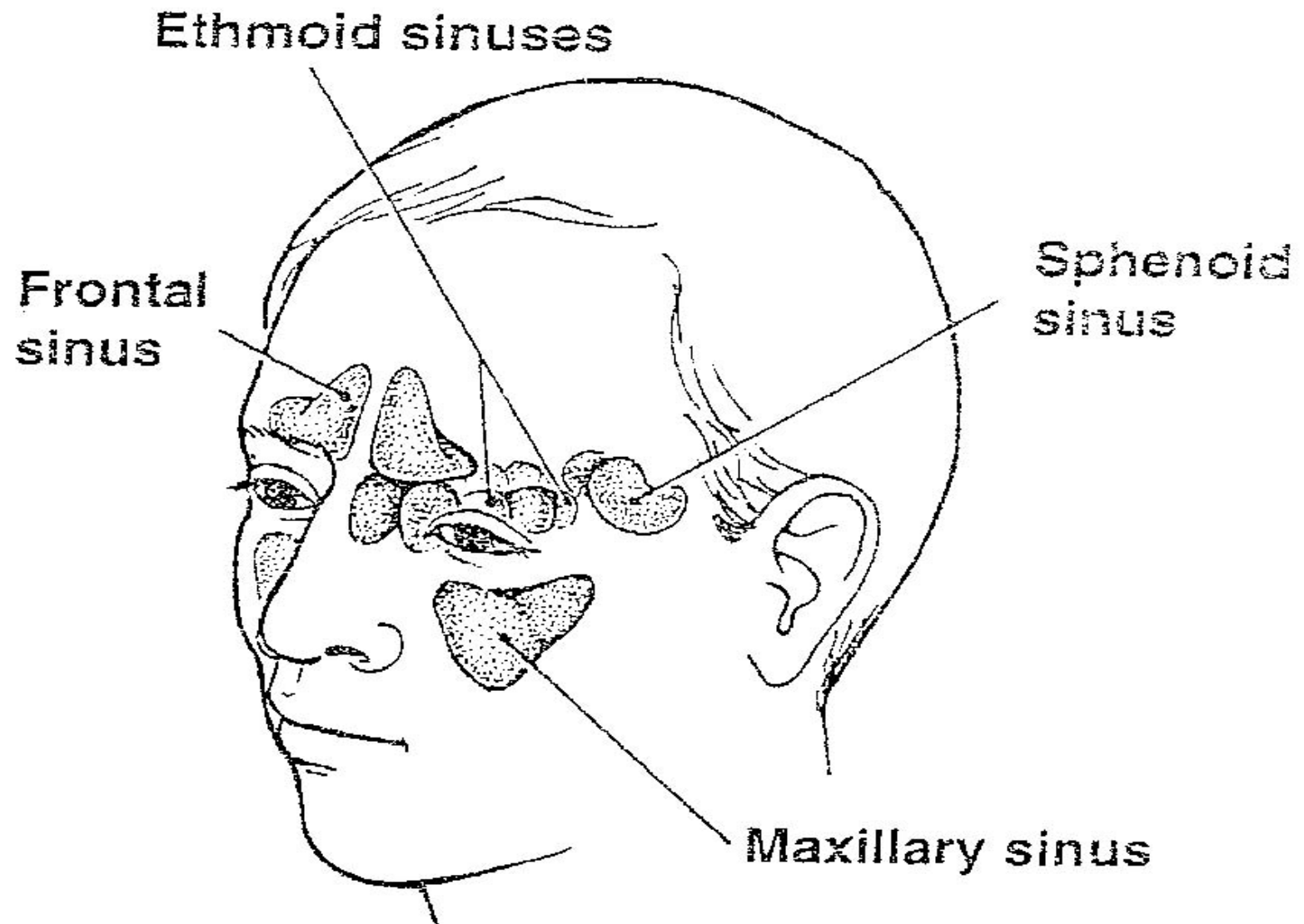
- ❏ **Overview.**
- ❏ **Definition.**
- ❏ **Prevalence.**
- ❏ **Pathophysiology and Etiology.**
- ❏ **Signs and Symptoms.**
- ❏ **Diagnostic Finding.**
- ❏ **Treatment.**
- ❏ **Complications.**
- ❏ **Nursing Considerations.**

Overview:

- ✿ Nearly everyone has experienced a sinus problem.
- ✿ A stuffy head with pain and pressure around the face are common symptoms of sinusitis due to cold, allergies, or a sensitivity to air borne pollutants.
- ✿ The sinuses are mucus-lined cavities filled with air inside the bone of face that drain normally into the nasal cavity.
- ✿ Blocked sinuses do not drain properly and causing pressure and pain.

Anatomy:

- # Sinuses are hollow air spaces.
- # There are four pairs of cavities or spaces known as paranasal sinuses.
- # These cavities located within the skull or bones of the head surrounding the nose, include:
 1. **Frontal sinuses** over the eyes in the brow area.
 2. **Maxillary sinuses** inside each cheek bone.
 3. **Ethmoids** just behind the bridge of the nose and between the eyes.
 4. **Sphenoids** in the upper region of the nose and behind the eyes and ethmoids sinuses.



Definition:

- **Sinusitis** is an inflammation of the mucous membranes of one or more paranasal sinuses.
- Five subtypes of sinusitis have been identified: ***acute, subacute, chronic, allergic, and hyperplastic sinusitis.***

Acute sinusitis & Sub-acute sinusitis :

- **Acute sinusitis** refers to rapid-onset infection in one or more of the paranasal sinuses that resolves with treatment.
- Acute sinusitis is defined to be less than 4 weeks duration.
- **Sub-acute sinusitis** is persistent purulent nasal discharge despite therapy with symptoms lasting less than 3 months.

Chronic sinusitis:

- **Chronic sinusitis** occurs with episodes of prolonged inflammation and with repeated or inadequate treatment of acute infections. Irreversible damage to the mucosa may occur.
- Symptoms last for longer than 3 months.

Prevalence:

- ☀ Each year more than 31 million cases of sinusitis are reported in the United States.
- ☀ Sinusitis affects over 14% of the population.
- ☀ Some individuals are more prone to sinusitis because of their occupations. For example, continuous exposure to environmental hazards such as paint, sawdust, and chemicals may result in chronic inflammation of the nasal passages.

Pathophysiology:

- Sinusitis frequently develops as a result of an upper respiratory infection, such as an unresolved viral or bacterial infection, or an exacerbation of allergic rhinitis.
- Nasal congestion, caused by inflammation, edema, and transudation of fluid, leads to obstruction of the sinus cavities.
- This provides an excellent medium for bacterial growth.

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- ***Other conditions that can block the normal flow of sinus secretions include:***

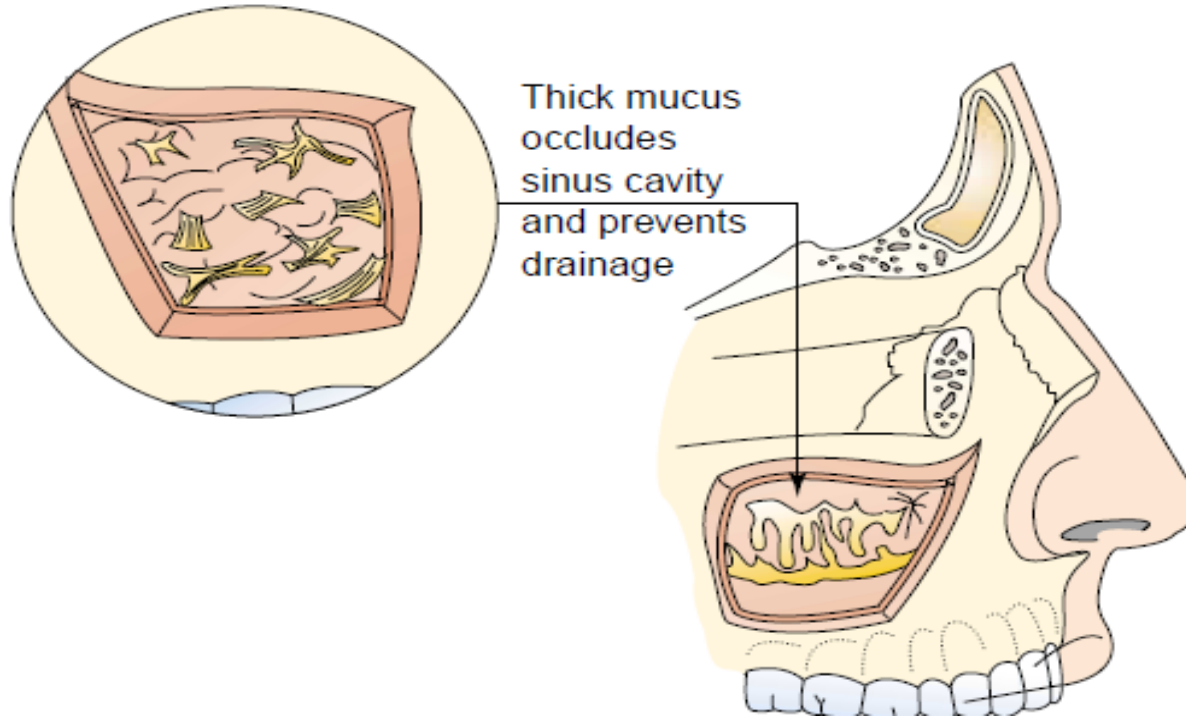
1. Abnormal structures of the nose.
2. Enlarged adenoids.
3. Diving and swimming.
4. Trauma to the nose.
5. Tumors.
6. Pressure of foreign objects.
7. Dental infections.

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- Bacterial organisms account for more than 60% of the cases of acute sinusitis, **namely** (most common):
 - Streptococcus pneumoniae.
 - Haemophilus influenzae.
 - Moraxella catarrhalis.
- Organisms (Less common) include:
 - Chlamydia pneumoniae;
 - Streptococcus pyogenes.
 - Viruses.
 - Fungi (Aspergillus fumigatus).
- Fungal infections occur most often in immunosuppressed patients.

Pathophysiology:

B. Sinusitis



The sinus cavity mucous membranes are also marked by inflammation and congestion, with thickened mucous secretions filling the sinus cavities and further occluding the openings.

CAUSATIVE FACTORS IN SINUSITIS:

- **Environmental pollution** and allergies, temperature changes, and possibly stress and certain foods.
- **Inflammatory factors** include upper respiratory tract infections.
- **Systemic factors** include immunodeficiency, ciliary dyskinesia syndrome, cystic fibrosis, rhinitis of pregnancy, and hypothyroidism.

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- **Mechanical factors** include choanal atresia, sinonasal polyps, deviated septum, foreign body, trauma, tumor, nasogastric tube, turbinate hypertrophy, concha bullosa, adenoid hypertrophy.
- **Medicative** causes include beta-blockers, birth control pills, antihypertensives, aspirin intolerance, rhinitis medicamentosa (overuse of topical decongestants), and cocaine abuse.
- **Anatomic abnormalities.**

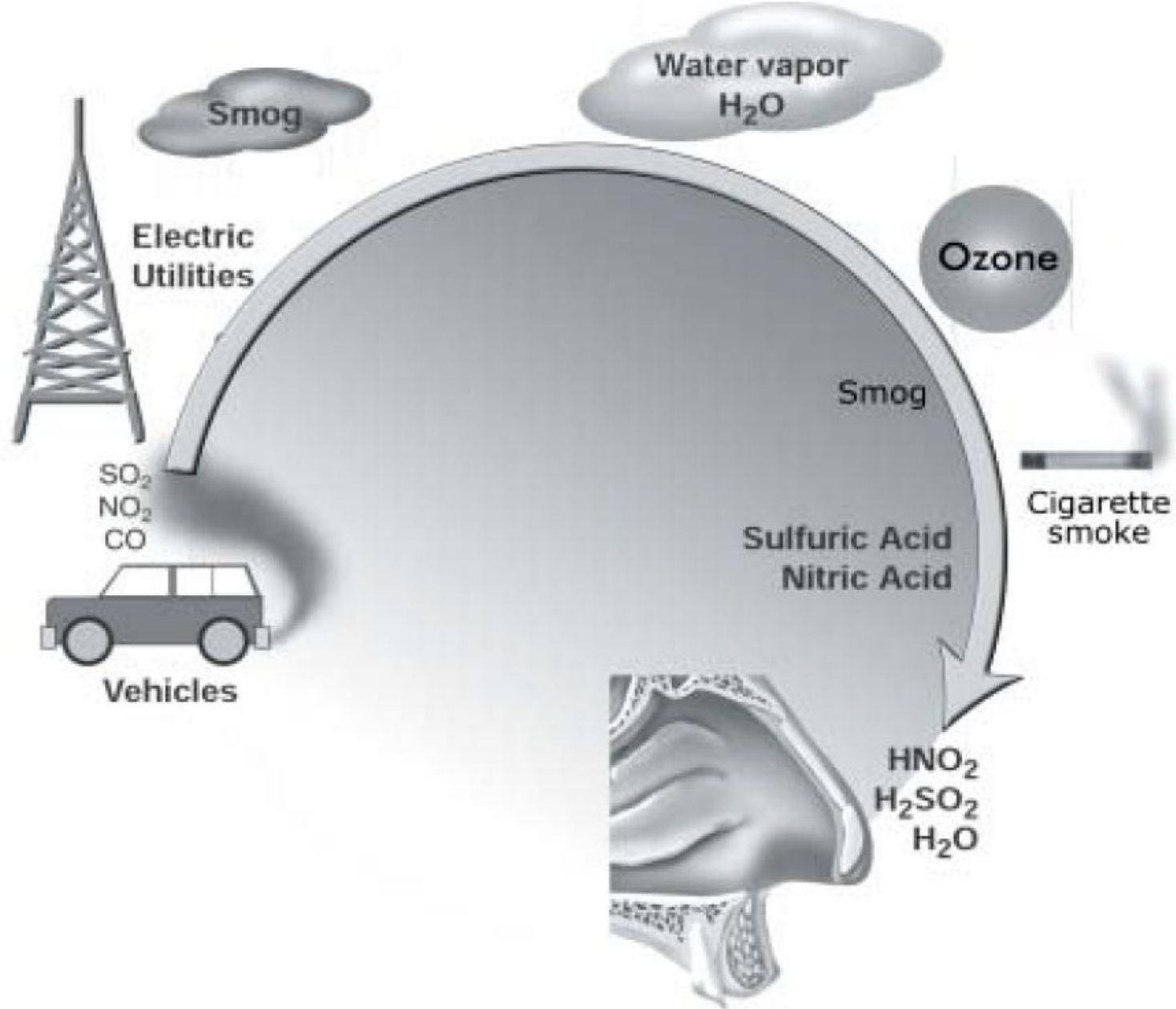


FIGURE 3. Environmental pollutants in the air, such as factory pollution and cigarette smoke, can cause increased irritation of the nasal and sinus passages, particularly in people with hypersensitive nasal lining (mucosa).

Clinical Manifestations:

Symptoms of acute sinusitis may include:

- Facial pain or pressure over the affected sinus area.
- Nasal obstruction.
- Fatigue and headache.
- Purulent nasal discharge.
- Fever and cough.
- Ear pain and fullness and dental pain.
- Decreased sense of smell and sore throat.
- Eyelid edema, or facial congestion or fullness.

Acute sinusitis can be difficult to differentiate from an upper respiratory infection or allergic rhinitis.

Assessment and Diagnostic Findings:

1. History and physical examination:

- Nose, ears, teeth, sinuses, pharynx, and chest..
- There may be tenderness to palpation over the infected sinus area.
- The sinuses are percussed using the index finger, tapping lightly to determine if the patient experiences pain.
- The affected area is also transilluminated; with sinusitis, there is a decrease in the transmission of light.

2. Sinus x-rays (sinus opacity, mucosal thickening, bone destruction, and air–fluid levels).

3. Computed tomography CT scanning of the sinuses is the most effective diagnostic tool. It is also used to rule out other local or systemic disorders, such as tumor, fistula, and allergy.

Medical Management:

- The goals of treatment of acute sinusitis are to treat the infection, shrink the nasal mucosa, and relieve pain.
- There is a growing concern over the inappropriate use of antibiotics for viral upper respiratory infections; such overuse has resulted in antibiotics being less effective (more resistant) in treating bacterial infections such as sinusitis.
- As a result, careful consideration is given to the potential pathogen before antimicrobial agents are prescribed.

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- The antimicrobial agents of choice for a bacterial infection vary in clinical practice:
 - ❖ First-line antibiotics include amoxicillin, trimethoprim/sulfamethoxazole and erythromycin.
 - ❖ Second-line antibiotics include cephalosporins such as cefuroxime and amoxicillin clavulanate (Augmentin).
 - ❖ Newer and more expensive antibiotics with a broader spectrum include macrolides, azithromycin (Zithromax), and clarithromycin.
- The course of treatment is usually 10 to 14 days.
- A recent report found little difference in clinical outcomes between first-line and second-line antibiotics (costs were greater when newer second-line antibiotics were used).

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- Use of oral and topical decongestant agents may decrease mucosal swelling of nasal polyps, thereby improving drainage of the sinuses.
- Heated moist and saline irrigation also may be effective for opening blocked passages.
- Decongestant agents such as pseudoephedrine have proven effective because of their vasoconstrictive properties.
- Topical decongestant agents such as oxymetazoline may be used for up to 72 hours.

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- A mucolytic agent, may also be effective in reducing nasal congestion.
- If the patient continues to have symptoms after 7 to 10 days, the sinuses may need to be irrigated and hospitalization may be required.

Complications:

- ❑ If Acute sinusitis left untreated, may lead to severe and occasionally life-threatening complications such as:
 - ✘ Meningitis.
 - ✘ Brain abscess.
 - ✘ Ischemic infarction.
 - ✘ Osteomyelitis.
- ❑ Other complications of sinusitis, although uncommon, include:
 - Severe orbital cellulitis.
 - Subperiosteal abscess.
 - Cavernous sinus thrombosis.

Nursing Management:

- Patient teaching is an important aspect of nursing care for the patient with acute sinusitis.
- The nurse instructs the patient about methods to promote drainage such as inhaling steam (steam bath, hot shower, and facial sauna), increasing fluid intake, and applying local heat (hot wet packs).
- The nurse informs the patient about the side effects of nasal sprays and about rebound congestion.
- In the case of rebound congestion, the body's receptors, which have become dependent on the decongestant sprays to keep the nasal passages open, close and congestion results after the spray is discontinued.

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- The nurse teaches the patient the early signs of a sinus infection and recommends preventive measures such as following healthy practices and avoiding contact with people who have upper respiratory infections.
- The nurse should explain to the patient that fever, severe headache, and nuchal rigidity are signs of potential complications. If fever persists despite antibiotic therapy, the patient should seek additional care.



*The future
looks bright!*