

**Sinusitis: Nothing to Sneeze At**  
**Leonid Skorin, Jr., OD, DO, MS, FAAO, FAOCO**  
**Mayo Clinic Health System in Albert Lea**

**I. Sinusitis**

**A. Disease Prevalence**

1. Affects 35 million Americans – making this disease more common than arthritis or hypertension
2. Most common health complaint leading to office visit – 25 million out-patient visits
3. Prevalence is increasing
4. Three billion in prescription medications, office visits, ancillary tests and procedures
5. Two billion in OTC medications spent on treatment of sinusitis
6. Underdiagnosed because of its occasional subtle clinical presentation

**B. Pathogenesis**

1. Mucociliary activity: removes microorganisms, pollutants and irritants
2. Ostiomeatal complex: obstruction is key element in disease
  - a. composed of maxillary sinus ostia, anterior ethmoidal cells and ostia, middle meatus
3. Nasal airflow: lower O<sub>2</sub> leads to growth of organisms, impaired local defenses, altered leukocyte function and mucous membrane swelling

**C. Predisposing Factors**

1. viral upper respiratory tract infection
2. allergic rhinitis
3. genetic predisposition
4. anatomic ostial compromise
5. air pollution and smoking
6. nasal polyposis
7. pregnancy

**D. Sinusitis Symptoms**

1. nasal obstruction, congestion, discharge
2. postnasal drip
3. facial pressure, headache, toothache
4. cough, halitosis, pharyngitis
5. hyposmia – diminished sense of smell
6. ear fullness
7. fatigue, malaise
8. fever

**E. Time Course of Disease**

1. acute: lasts up to four weeks
2. subacute: longer than four but less than 12 weeks

3. recurrent acute: four or more episodes per year
4. chronic: 12 weeks or more

## II. Physical Examination

### A. Anterior Rhinoscopy – Nasal speculum

1. evaluate and inspect: nasal cavity, nasal vestibule and anterior septum
2. look for: mucosa color, congestion, secretions, septal deviation and polyps
3. technique
  - a. hold speculum in left hand
  - b. left index finger presses against side of nose to act as anchor
  - c. insert blades 1 cm
  - d. open vertically, NOT horizontally
  - e. position right hand on patient's head
  - f. use bright, focused light source
  - g. vasoconstriction with Afrin

### B. Sinus Palpation

1. maxillary
  - a. simultaneous finger pressure over both maxillae
  - b. palpation under the upper lip for fullness
  - c. percussion of maxillary teeth with tongue blade
2. frontal
  - a. finger pressure directed upward toward floor of the sinus
  - b. palpation directly over sinus
3. ethmoid and sphenoid: unable to evaluate

### C. Transillumination

1. maxillary
  - a. place light source over the middle of the infraorbital rim to judge light transmission between sides through the hard palate
  - b. place light source in patient's mouth and note red pupillary reflex, note crescent of light on the lower eyelids, note patient's sense of light in the eyes when they are closed
  - c. inspection over the anterior wall of the maxillary sinus is not dependable
2. frontal
  - a. place light source below supraorbital rim, under the floor of the frontal sinus at the upper inner angle of the orbit
3. ethmoid and sphenoid: unable to evaluate
4. results
  - a. opaque (no light transmission)
  - b. dull (reduced light transmission)
  - c. normal (light transmission typical)
  - d. always compare one side to the other

### D. Nasal Endoscopy

- E. Other Testing
  - 1. cultures: endoscopically guided
  - 2. cytology: blow nose into wax paper
  - 3. allergy evaluation
    - a. *in vitro* testing: RAST or ELISA techniques
    - b. *in vivo* testing: prick and/or intradermal technique
  - 4. ultrasonography: of limited value
  - 5. antral puncture
- F. Radiography
  - 1. radiographic hallmarks of sinusitis
    - a. mucoperiosteal thickening 8mm (adults) or 4 – 5 mm (children)
    - b. air-fluid level
    - c. opacification of sinus
  - 2. Four-View Sinus X-Ray Series
    - a. Caldwell
      - (1) superior and lateral orbital rim
      - (2) ethmoid and frontal sinuses, medial wall
    - b. Waters
      - (1) orbital roof and floor
      - (2) maxillary sinus and blow-out fractures
    - c. lateral: nasopharynx and sella turcica
    - d. submental vertex/nasal: sphenoid, ethmoid sinuses
  - 3. Limited Computed Tomography Scan
    - a. use 4 or 5 mm scan thickness
    - b. provides more information for similar cost
    - c. low radiation exposure
    - d. coronal CT used as preoperative imaging
  - 4. Magnetic Resonance Imaging
    - a. evaluation of brain, nasal or sinus tumors
    - b. fungal sinusitis and complicated sinusitis

### III. Treatment

- A. Analgesics for pain: NSAIDs or acetaminophen
- B. Steam and saline
- C. Topical decongestants: use for 3 – 5 days; otherwise, can develop rhinitis medicamentosa, rebound vasodilation.
- D. Oral decongestants: use for 3-5 days, use with caution in patients with cardiovascular disease, hypertension or benign prostatic hypertrophy
- E. Mucoevacuants: guaifenesin – thins sinus secretions, eases mucus drainage
- F. Antibiotics: amoxicillin, trimethoprim-sulfamethoxazole, erythromycin; for treatment failure use levofloxacin 500mg daily for 10-14 days

- G. Mucoregulators: acetylcysteine – promote synthesis of normal mucus
- H. Topical steroids: beclomethasone (Beconase, Vancerase), triamcinolone (Nasacort), mometasone (Nasonex) – relieve symptoms of allergic and nonallergic rhinosinusitis, suppress inflammation
- I. Oral steroids: prednisone – use in chronic cases
- J. Surgery
  - 1. Caldwell- Luc: strip maxillary sinus mucosa
  - 2. functional endoscopic sinus surgery
- K. Not recommended
  - 1. antihistamines: can cause over-drying of mucosa
  - 2. zinc preparations : can cause permanent anosmia

#### **IV. Complicated Sinus Disease**

- A. Fungal sinusitis: cerebro-rhino-orbital phycomycosis
- B. Subperiosteal orbital abscess or orbital cellulitis: surgical emergency, can lead to blindness, intracranial complications
- C. Mucocele or pyocele

#### **References**

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