Blood, Pus & Mucus
(or What Internists Need to Know to Evaluate & Treat Epistaxis, Acute Pharyngitis and Sinusitis)

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Epistaxis

Common Causes

Local causes
- Epistaxis digitorum (finger picking)
- Chronic sinusitis
- Foreign objects
- Intranasal neoplasms or polyps
- Irritants e.g. cigarette smoke
- Topical corticosteroids
- Rhinitis
- Nasal deviation
- Septal perforation
- Trauma
- Vascular malformation
- Telangiectasias
- Intranasal cocaine use

Systemic Causes
- Hemophilia
- Hypertension
- Leukemia
- Liver disease (e.g. cirrhosis)
- Medications (e.g., aspirin, NSAIDS, anticoagulants)
- Platelet dysfunction
- Thrombocytopenia
Anatomy

Most cases of epistaxis occur in the anterior part of the nose, with the bleeding usually arising from the rich arterial anastomoses of the nasal septum (Kiesselbach’s plexus).

Posterior epistaxis generally arises from the posterior nasal cavity via branches of the sphenopalatine arteries.
History

- Initial presentation of the bleeding
- Previous bleeding episodes and their treatment
- Comorbid conditions
- Current medications, including over-the-counter medicines, herbal and home remedies
- Intranasal cocaine use
- Often, no cause for the bleeding is identified.
Initial Management

- Compression of the nostrils and plugging of the affected nostril with gauze or cotton that has been soaked in a topical decongestant, e.g. oxymetazoline, phenylephrine
- Direct pressure should be applied continuously for at least five minutes, and for up to 20 minutes.
- Tilting the head forward prevents blood from pooling in the posterior pharynx, thereby avoiding nausea and airway obstruction.
- Ensure airway patency
- Ensure hemodynamic stability
Localizing the Source of Bleeding

- Indicated if bleeding doesn’t respond to simple compression and nasal plugging
- Requires suction and irrigation
- Diffuse oozing, multiple bleeding sites, or recurrent bleeding may indicate a systemic process such as hypertension, anticoagulation, or coagulopathy
Bleeding Refractory to Initial Measures

- First anesthetize the nasal cavity with lidocaine gel
- Chemical cautery, e.g. silver nitrate stick applied to site of bleeding for 30 seconds
- Hemostatic packing with absorbable gelatin foam (Gelfoam) or oxidized cellulose (Surgicel)
- Use of desmopressin spray (DDAVP) may be considered in a patient with a known bleeding disorder.
- Larger vessels respond more readily to electrocautery
Bleeding Refractory to Cautery & Gel Packing

Pack nasal cavity from anterior to posterior with ribbon gauze impregnated with petroleum jelly or polymyxin B-bacitracin zinc-neomycin (Neosporin) ointment. Nonadherent gauze impregnated with petroleum jelly and 3 percent bismuthtribromophenate (Xeroform) also works well for this purpose.
Balloon Devices
And if You’re at LAC+USC
Posterior Epistaxis

- Less Common
- Refer for treatment by an otolaryngologist
Acute Pharyngitis

- To treat for Group A Strep (GAS) or not to treat, that is the question
Rationale for Treating GAS

- Prevention of acute rheumatic fever
- Prevention of suppurative complications (e.g., peritonsillar abscess, cervical lymphadenitis, mastoiditis, and, possibly, other invasive infections);
- To improve clinical symptoms and signs
- Rapid decrease in contagiousness
- Reduction in transmission of GAS to family members, classmates, and other close contacts of the
- Allow for the rapid resumption of usual activities
- Minimization of potential adverse effects of inappropriate antimicrobial therapy.
# Differential Diagnosis

<table>
<thead>
<tr>
<th>Organisms</th>
<th>Clinical Syndrome(s)</th>
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<tr>
<td><strong>Bacterial</strong></td>
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<tr>
<td>Group A streptococcus</td>
<td>Pharyngotonsillitis, scarlet fever</td>
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<tr>
<td>Group C and group G streptococcus</td>
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<td><em>Arcanobacterium haemolyticum</em></td>
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<td><em>Neisseria gonorrhoeae</em></td>
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<td><em>Corynebacterium diphtheriae</em></td>
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<td>Mixed anaerobes</td>
<td>Vincent's angina</td>
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<td><em>Fusobacterium necrophorum</em></td>
<td>Lemierre's syndrome, peritonsillar abscess</td>
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<td><em>Francisella tularensis</em></td>
<td>Tularemia (oropharyngeal)</td>
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<td><em>Yersinia pestis</em></td>
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<td><em>Yersinia enterocolitica</em></td>
<td>Enterocolitis, pharyngitis</td>
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<td><strong>Viral</strong></td>
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<tr>
<td>Adenovirus</td>
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<tr>
<td>Herpes simplex virus 1 and 2</td>
<td>Gingivostomatitis</td>
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<tr>
<td>Coxsackie virus</td>
<td>Herpangina</td>
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<tr>
<td>Rhinovirus</td>
<td>Common cold</td>
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<tr>
<td>Influenza A and B</td>
<td>Common cold</td>
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<tr>
<td>Parainfluenza</td>
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<td>EBV</td>
<td>Cold, croup</td>
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<tr>
<td>Cytomegalovirus</td>
<td>Infectious mononucleosis</td>
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<tr>
<td>HIV</td>
<td>CMV mononucleosis</td>
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<tr>
<td>Mycoplasma</td>
<td>Primary acute HIV Infection</td>
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<tr>
<td><em>Mycoplasma pneumoniae</em></td>
<td>Pneumonitis, bronchitis</td>
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<tr>
<td>Chlamydia</td>
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<tr>
<td><em>Chlamydia pneumoniae</em></td>
<td>Bronchitis, pneumonia</td>
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<tr>
<td><em>Chlamydia psittaci</em></td>
<td>Psittacosis</td>
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Centor Score for GAS

Patient with sore throat
Apply streptococcal score

**Criteria**
- Absence of cough: 1 point
- Swollen and tender anterior cervical nodes: 1 point
- Temperature > 100.4°F (38°C): 1 point
- Tonsillar exudates or swelling: 1 point
- Age:
  - 3 to 14 years: 1 point
  - 15 to 44 years: 0 points
  - 45 years and older: -1 point

**Cumulative score:**

- Score ≤ 0: Risk of GABHS pharyngitis 1 to 2.5%
- Score = 1: Risk of GABHS pharyngitis 5 to 10%
- Score = 2: Risk of GABHS pharyngitis 11 to 17%
- Score = 3: Risk of GABHS pharyngitis 28 to 35%
- Score ≥ 4: Risk of GABHS pharyngitis 51 to 53%

**Option**
- No further testing or antibiotics indicated
- Perform throat culture or RADT
  - Negative: No antibiotics indicated
  - Positive: Treat with antibiotics
  - Consider empiric treatment with antibiotics
Which Symptoms Argue Against GAS Infection?

- Cough
- Rhinorrhea
- Conjunctivitis
- Viral exanthem
- Hoarse voice (laryngitis)
- Oral ulcers
Treatment of GAS

- Penicillin or amoxicillin is the recommended drug of choice for those non-allergic to these agents, e.g. Pen Vee-K 500 mg bid or Amoxicillin 500 mg bid x 10 days.

- Penicillin-allergic individuals
  - 1st generation cephalosporin (for those not anaphylactically sensitive) for 10 days
  - Clindamycin or clarithromycin for 10 days, or azithromycin for 5 days (anaphylaxis to PCN)
Suspected EBV Infection

Suspected IM
Patient 10 to 30 years of age with sore throat and significant fatigue, palatal petechiae, posterior cervical or auricular adenopathy, marked axillary adenopathy, or inguinal adenopathy

≥20 % atypical lymphocytosis or ≥10 % atypical lymphocytosis and ≥50 % lymphocytes

Positive heterophile antibody test

Yes → Symptomatic treatment for IM and rapid test for GABHS pharyngitis; antibiotics only if positive

No → Rapid test for GABHS pharyngitis (if not already obtained) and symptomatic treatment for IM

Yes → Order VCA-IgM test to rule out IM.

No → Urgent return to sports considered or other urgent need to establish diagnosis?

Yes → Return in 5 to 7 days for re-evaluation and possible repeat heterophile antibody test. Consider IgM for EBV VCA test if diagnostic confirmation is important.
When to Consider Gonorrhea

- Men who have sex with men
- Patients with human immunodeficiency virus (HIV) infection
- Patients presenting to STI clinics.
Rhinosinusitis
Acute Rhinosinusitis

- Less than 4 weeks duration
  - Acute bacterial rhinosinusitis (ABRS)
    - purulent nasal drainage accompanied by nasal obstruction, facial pain-pressure-fullness, or both persist without evidence of improvement for at least 10 days beyond the onset of upper respiratory symptoms, or symptoms or signs of acute rhinosinusitis worsen within 10 days after an initial improvement (double worsening)
  - Acute viral rhinosinusitis
    - symptoms or signs of acute rhinosinusitis are present less than 10 days and the symptoms are not worsening
Infectious Disease Society of America (IDSA)

- Consider a diagnosis of ABRS for patients presenting with severe symptoms at the onset or has high fever (>39°C or 102°F) and purulent discharge or facial pain lasting at least 3 to 4 consecutive days at the beginning of illness.
Radiography

- Clinicians **should not** obtain radiographic imaging for patients who meet diagnostic criteria for acute rhinosinusitis, unless a complication or alternative diagnosis is suspected
  - Neurologic complication, e.g. meningitis, brain abscess
  - Soft tissue complication, e.g. orbital, facial cellulitis
  - Ophthalmologic complication, e.g. abnormal eye movements
Treatment

- **Viral Rhinosinusitis (VRS)**
  - Analgesics, e.g. acetaminophen, NSAIDS
  - Topical intranasal steroids, and/or nasal saline irrigation

- **Acute Bacterial rhinosinusitis (ABRS)**
  - Analgesics, e.g. acetaminophen, NSAIDS
  - Topical intranasal steroids, and/or nasal saline irrigation
  - **Watchful waiting** – no antibiotics unless patient’s condition fails to improve by 7 days after ABRS diagnosis or if it worsens at any time
  - OR
  - Amoxicillin with or without clavulanate (Augmentin) as first-line therapy for 5 to 10 days
Penicillin Allergic Patients

- Doxycycline
- Levofloxacin or moxifloxacin
- Clindamycin plus a 3rd generation cephalosporin (cefixime or cefpodoxime) is recommended in adults with a history of non-type I hypersensitivity to penicillin

Not Recommended

- Macrolides – resistant *S pneumoniae* (40%) in the U.S.
- Trimethoprim/Sulfamethoxazole – resistant *S pneumoniae* (50%) and *Haemophilus influenzae* (27%)
Chronic Rhinosinusitis (CRS)

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
• decreased sense of smell

AND inflammation is documented by one or more of the following findings:
• purulent (not clear) mucus or edema in the middle meatus or anterior ethmoid region
• polyps in nasal cavity or the middle meatus
• radiographic imaging showing inflammation of the paranasal sinuses.
Evaluation of CRS

- Confirm a clinical diagnosis of CRS with objective documentation of sinonasal inflammation
  - anterior rhinoscopy
  - nasal endoscopy
  - computed tomography
- Important to exclude a diagnosis of allergic rhinitis
Treatment of Chronic Rhinosinusitis

- Saline nasal irrigation, topical intranasal corticosteroids, or both for symptom relief
- Nasal steroids should be used for at least 8 to 12 weeks because of the time needed for symptomatic relief and to assess benefit to the patient
- Avoid antibiotics
- **Do not** prescribe topical or systemic antifungal therapy
Recurrent Acute Rhinosinusitis

- Four or more episodes per year of acute bacterial rhinosinusitis (ABRS) without signs or symptoms of rhinosinusitis between episodes.
- Examination of the patient during an episode of ABRS (among the 4 episodes occurring per year) is necessary to corroborate the diagnosis.
- An allergy-immunology evaluation may be considered to detect coexisting allergic rhinitis or an underlying immunologic deficiency.
- Sinus surgery may be considered in patients with recurrent ARS.
- Chronic antibiotics and intranasal steroids have not proven to be beneficial.