# Acute and Chronic Rhinosinusitis

Bradley A. Otto, MD  
Assistant Professor  
Director, Division of Sinus & Allergy  
Department of Otolaryngology – Head & Neck Surgery  
The Ohio State University Wexner Medical Center

## Overview/Goals

- Review definitions / phenotypes of rhinosinusitis
- Describe the general workup and management of patients with:
  - acute rhinosinusitis (ARS)
  - chronic rhinosinusitis (CRS)
Acute & Chronic Rhinosinusitis
Overview/Goals

ARS

CRS

Acute & Chronic Rhinosinusitis
Overview/Goals

Diagnosis

Medical therapy

Surgery
<table>
<thead>
<tr>
<th><strong>Acute &amp; Chronic Rhinosinusitis</strong></th>
<th><strong>Overview/Goals</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>diagnosis</td>
<td>Key to long term success and to potentially avoiding surgery</td>
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</table>
Rhinosinusitis is characterized by symptomatic inflammation of the nasal cavity and paranasal sinuses.

### Rhinosinusitis Symptomatic Criteria

- Congestion
- Drainage
- Pain or pressure
- Loss of smell
Rhinosinusitis
Symptomatic Criteria

- Fever
- Foul taste or odor
- Fatigue
- Ear pressure / fullness
- Sleep disturbance

Rhinosinusitis is defined by symptomatic criteria confirmed by objective measures
Rhinosinusitis
Objective Findings

- pus
- edema
- polyps
- mucosal changes

POST VIRAL SINUSITIS

VIRAL URI  ABOBS  SUBACUTE RHINOSINUSITIS  CRS

10 DAYS  4 WEEKS  12 WEEKS
## ARS

**Acute Rhinosinusitis**

- Viral URI by far the most common form
- Estimated ~95% cases of ARS
- In most cases diagnosis based on:
  - symptomatic criteria
  - relatively nonspecific / insensitive examination

## ARS

**Acute Rhinosinusitis**

- **Acute viral rhinosinusitis** < 10 days
- 10 days **< postviral rhinosinusitis** < 12 weeks
- **Acute bacterial rhinosinusitis** suggested by:
  - discolored discharge (esp. unilateral)
  - severe local pain
  - fever
  - symptom duration
ABRS

Acute Bacterial Rhinosinusitis

- Duration of symptoms is a commonly used determinant
  - increase in symptoms after 5 days
  - persistent symptoms after 10 days
- Double worsening
  - exacerbation following a phase of improvement

ABRS

Acute Bacterial Rhinosinusitis

- Sensitivity and specificity of symptoms and general exam findings variable
- We lack objective, easy-to-use, point-of-care tests
- Rhinology practice:
<table>
<thead>
<tr>
<th>ABRS</th>
<th>Acute Bacterial Rhinosinusitis</th>
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</thead>
<tbody>
<tr>
<td>○ Endoscopy allows for:</td>
<td></td>
</tr>
<tr>
<td>○ identification of pus</td>
<td></td>
</tr>
<tr>
<td>○ culture acquisition</td>
<td></td>
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<table>
<thead>
<tr>
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<tr>
<td>○ Endoscopic culture:</td>
<td></td>
</tr>
<tr>
<td>○ middle meatus culture generally accurate</td>
<td></td>
</tr>
<tr>
<td>○ <em>Streptococcus pneumoniae</em>, <em>Moraxella catarrhalis</em>, <em>Haemophilus influenzae</em></td>
<td></td>
</tr>
<tr>
<td>○ <em>Staphylococcus aureus</em>, <em>Pseudomonas aeruginosa</em></td>
<td></td>
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Microbiology of Sinusitis

ABRS
CT Scans

- Limited value in uncomplicated acute infection
- Will be positive regardless of etiology
- Best done at baseline
## ABRS
### Odontogenic Sinusitis

<table>
<thead>
<tr>
<th></th>
<th>SYMPTOMS</th>
<th>BASELINE CT</th>
<th>ENDO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrent ABRS</td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Viral URI</td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

[Image of CT scans showing odontogenic sinusitis]
**ABRS**

**Acute Bacterial Rhinosinusitis**

- In setting of ABRS:
  - friable
  - significant edema
  - bleeds easily
- Avoid surgery if possible

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**ABRS: Complications**

- Meningitis
- Intracranial abscess
- Orbital extension
  - cellulitis
  - abscess
- Cavernous sinus thrombosis
ABRS: Complications

- Prompt inpatient management
- ENT consultation
- Main indication for imaging in setting of ARS
chronic rhinosinusitis is:

1. symptomatic inflammation of the nasal cavity and paranasal sinuses lasting over 12 weeks
2. confirmed by objective measures
Diagnosis
Chronic Rhinosinusitis (CRS)

x 12 weeks + or

CRS

SYMPTOMS

10 DAYS  4 WEEKS  12 WEEKS
unclear etiology*
COMMON ASSUMPTION: CRS IS A LONG BACTERIAL SINUS INFECTION

NOT NECESSARILY TRUE. ETIOLOGY OF CRS IS UNCLEAR.
NOT NECESSARILY TRUE. ETIOLOGY OF CRS IS UNCLEAR.

COMMON ASSUMPTION: MULTIPLE INFECTIONS PER YEAR = CRS

ABRS  ABRS  ABRS  ABRS

NOT NECESSARILY TRUE. ETIOLOGY OF CRS IS UNCLEAR.

RECURRENT INFECTIONS MAY BE AN ASSOCIATION TO UNDERLYING CRS. ALTERNATIVELY, PATIENT MAY BE EXPERIENCING RECURRENT ACUTE BACTERIAL SINUSITIS (RABS)
## CRS

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<td>Recurrent ABRS</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>CRS</td>
<td>+</td>
<td>+/-</td>
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</table>
CRS
Chronic Rhinosinusitis

○ Baseline chronic inflammatory state

○ Th1 biased profile in **CRS without nasal polyps**

○ Th2 biased profile in **CRS with nasal polyps**

○ Exacerbations may or may not be related to infection

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CRS
Chronic Rhinosinusitis

**Treatment:**

○ “maximal medical therapy” (MMT)

○ surgery

○ Not well standardized
  ○ MMT and surgical indications vary
  ○ appropriate degree of surgery and skill set varies
# CRS
## Chronic Rhinosinusitis

<table>
<thead>
<tr>
<th></th>
<th>CRSsNP</th>
<th>CRSwNP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topical steroids</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Oral Steroids</td>
<td>Unclear</td>
<td>Yes*</td>
</tr>
<tr>
<td>Short term abx</td>
<td>For acute exacerbation</td>
<td>For acute exacerbation</td>
</tr>
<tr>
<td>Long term abx</td>
<td>Yes*</td>
<td>Yes*</td>
</tr>
<tr>
<td>Nasal irrigation</td>
<td>Yes</td>
<td>Yes</td>
</tr>
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# CRS
## Surgery

- **Goal:** to serve as an adjunct to medical therapy to help decrease the severity of symptoms related to CRS

- **may not necessarily cure the disease**

![Medical therapy and Surgery Diagram](image)
### CRS

**Symptoms ≠ Diagnosis**

- Sensitivity 89%
- Specificity 12%
- PPV 49%
- NPV 54%

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### CRS

**Symptoms ≠ Diagnosis**

- Headache
- LPR
- Rhinitis
- Trauma
- Nasopharyngeal sinus

- Nasal airway
- Tumor
- Nasopharyngitis
- Chronic rhinitis
- Dental disease

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CRS

Symptoms ≠ Diagnosis

RHINITIS  HEADACHE  CRS  REFLUX  TUMOR

HEADACHE

“sinus headache” vs. migraine.
Figure 1. Physician diagnoses of 2991 patients with “sinus” headache according to self-description or previous physician diagnosis.

Headache is Often Mistaken for “Sinus Headache”

MIGRAINE

~50%

of patients who meet criteria for migraine have nasal or ocular symptoms
Allergic & Nonallergic Rhinitis
Chronic Rhinitis (CRS)

- Association with CRS
  - present in 50-80% of patient with CRS
- No definitive cause-effect relationship has been established
- Overlapping symptom set and treatment paradigm
Allergic & Nonallergic Rhinitis

Chronic Rhinitis (CRS)

- **Overlapping symptom set**
  - patient satisfaction is a result of symptom improvement
  - Managing the overlapping CR symptoms is critical for some patients

Chronic Rhinitis & CRS

Similar Symptoms / Treatment

- Topical steroids
- Oral steroids
- Antibiotics*
- Saline

- Turbinate reduction
  - Septoplasty
- Sinus surgery

- Immunotherapy
- Antihistamines
Allergic & Nonallergic Rhinitis

Chronic Rhinitis

CRS

Symptoms ≠ Diagnosis
LARYNGOPHARYNGEAL REFLUX

**LPR**

- No cause effect relationship
- + association with difficult-to-treat CRS
- *Mimic CRS*
  - postnasal drip

LARYNGOPHARYNGEAL REFLUX

**LPR**

- Most patients do **NOT** have heartburn
- Dietary changes and acid reduction are mainstays of therapy
- “Normal” post nasal drip from nose mistaken as etiology to symptoms
Symptoms ≠ Diagnosis

Benign & Malignant Tumors
Sinonasal Tumors

- Commonly mistaken for sinusitis
  - especially during early phase
  - malignant tumors tend to be advanced at time of diagnosis
    - small tumors in paranasal sinuses have paucity of symptoms
Benign & Malignant Tumors
Suggestive Symptoms

- Unilateral
- Nasal obstruction
- Epistaxis
- Progressive

Benign & Malignant Tumors
Suggestive Symptoms

- New and different
- Unresponsive
- Pain, numbness
- Visual changes
- Loose teeth
### Acute and Chronic Rhinosinusitis

#### Summary

- **Acute rhinosinusitis**
  - viral > Bacterial
  - recurrent acute bacterial rhinosinusitis
    - surgery may be indicated with 4 episodes / yr
    - endoscopy may help identify candidates

- **Chronic rhinosinusitis**
  - unclear etiology in many cases
  - medical therapy +/- surgery aimed at symptom resolution
  - symptoms overlap with other disorders