

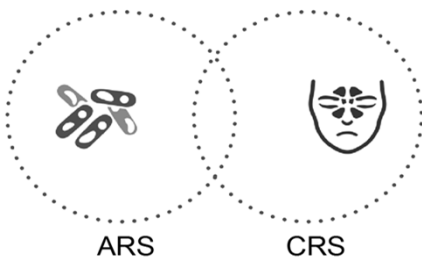
# Acute and Chronic Rhinosinusitis

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

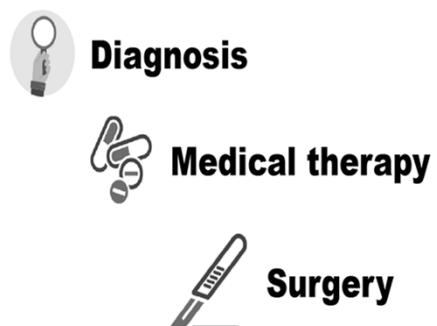
## Acute & Chronic Rhinosinusitis Overview/Goals

- 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



## Acute & Chronic Rhinosinusitis Overview/Goals



## Acute & Chronic Rhinosinusitis Overview/Goals



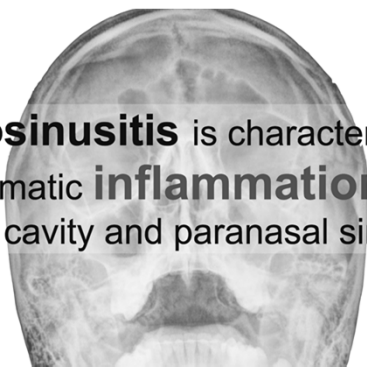
## Acute & Chronic Rhinosinusitis Overview/Goals



diagnosis

Key to long term success  
and to potentially avoiding  
surgery

**Rhinosinusitis** is characterized by  
symptomatic **inflammation** of the  
nasal cavity and paranasal sinuses



## Rhinosinusitis Symptomatic Criteria

Congestion



Drainage



Pain or  
pressure



Loss of smell

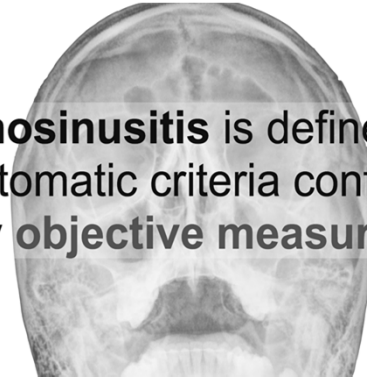


## Rhinosinusitis Symptomatic Criteria

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



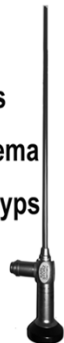
**Rhinosinusitis** is defined by symptomatic criteria confirmed by **objective measures**



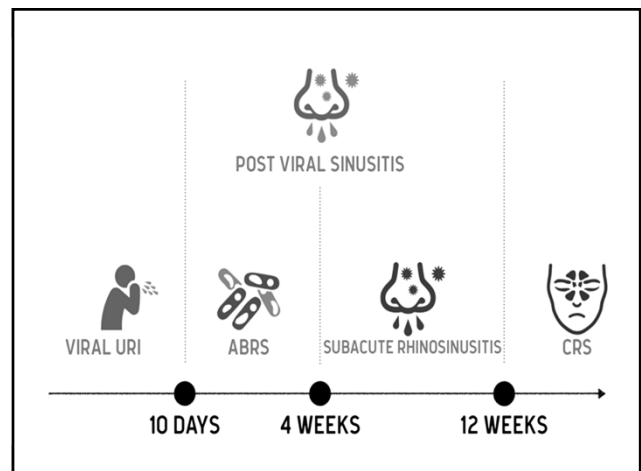
## Rhinosinusitis Objective Findings

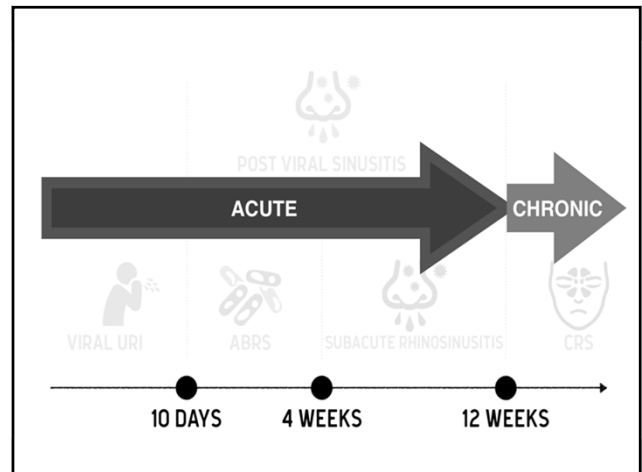
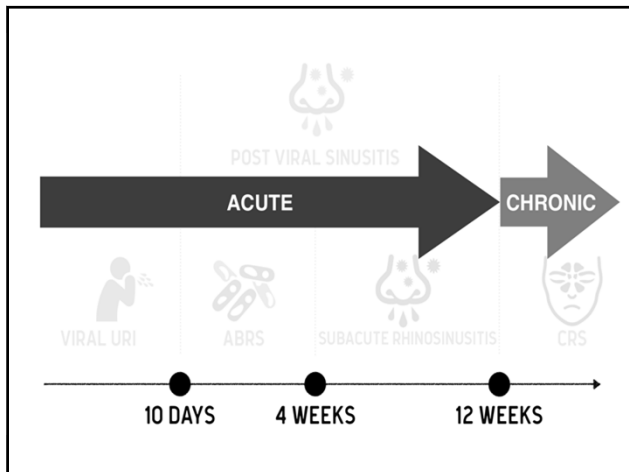


- pus
- edema
- polyps



◦ mucosal changes





## 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

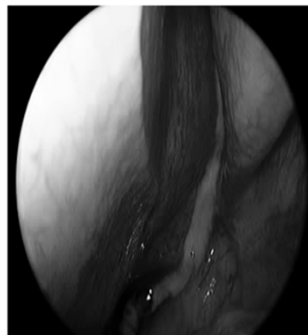
- Sensitivity and specificity of symptoms and general exam findings variable
- We lack objective, easy-to-use, point-of-care tests
- Rhinology practice:



## ABRS

### Acute Bacterial Rhinosinusitis

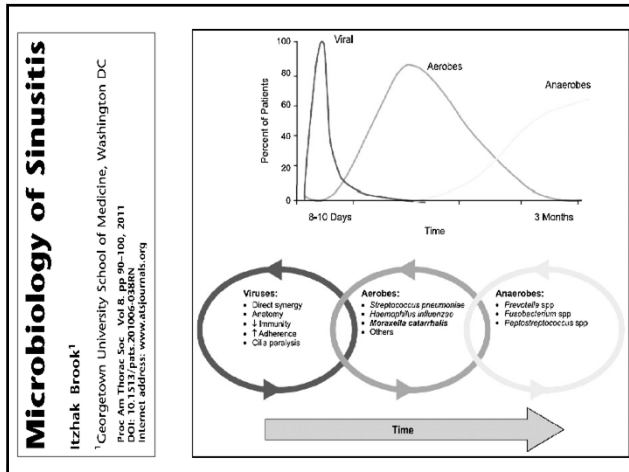
- Endoscopy allows for:
  - identification of pus
  - culture acquisition



## ABRS

### Acute Bacterial Rhinosinusitis

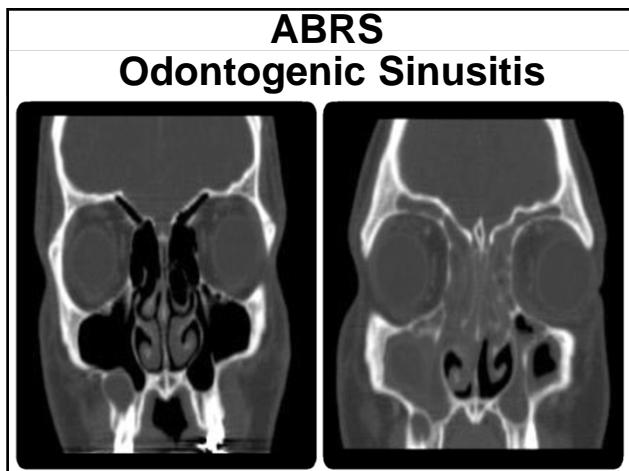
- Endoscopic culture:
  - middle meatus culture generally accurate
- *Streptococcus pneumoniae*, *Moraxella catarrhalis*, *Haemophilus influenzae*
- *Staphylococcus aureus*, *Pseudomonas aeruginosa*



### ABRS CT Scans

- Limited value in uncomplicated acute infection
- Will be positive regardless of etiology
- Best done at **baseline**

A coronal CT scan of the sinuses showing significant opacification of the maxillary and ethmoid sinuses, consistent with acute bacterial rhinosinusitis (ABRS).

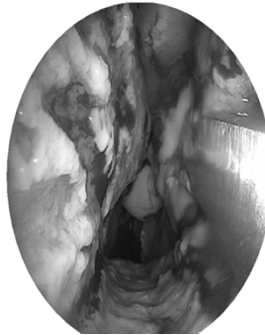


	SYMPTOMS	BASELINE CT	ENDO
Recurrent ABRS		-	+
Viral URI		-	-

## ABRS

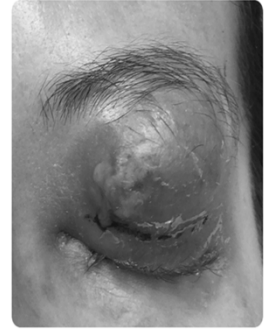
### Acute Bacterial Rhinosinusitis

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



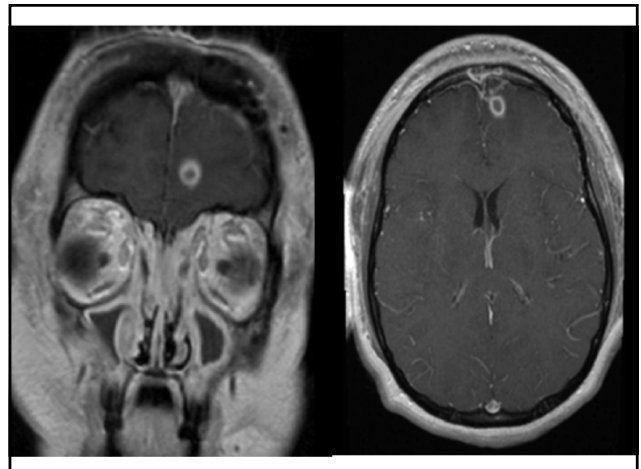
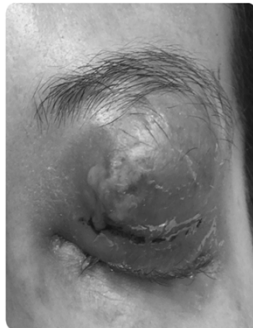
## ABRS: Complications

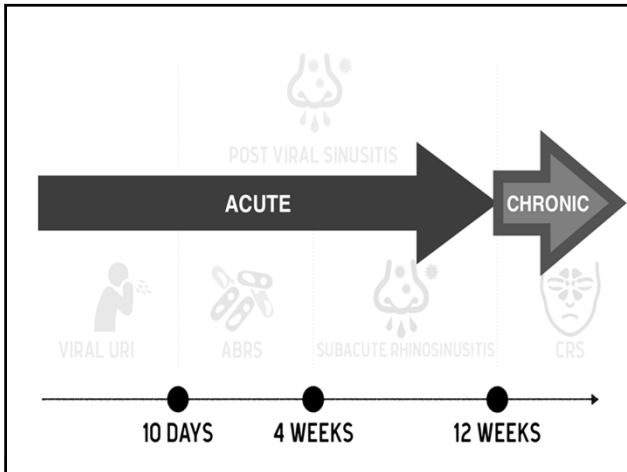
- Meningitis
- Intracranial abscess
- Orbital extension
  - cellulitis
  - abscess
- Cavernous sinus thrombosis



## ABRS: Complications

- Prompt inpatient management
- ENT consultation
- Main indication for imaging in setting of ARS





**chronic rhinosinusitis** is:

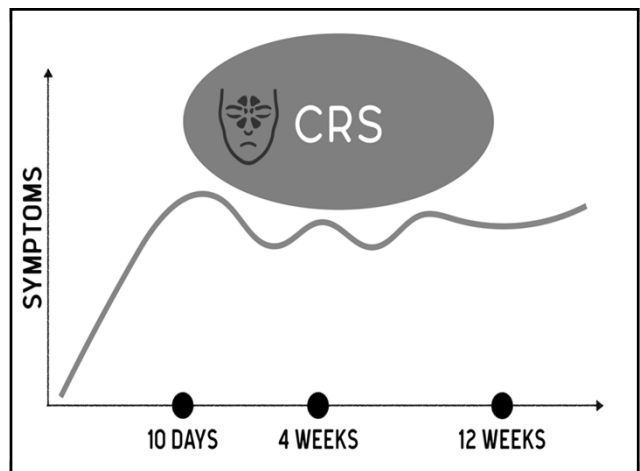
1. symptomatic **inflammation** of the nasal cavity and paranasal sinuses lasting over 12 weeks
2. confirmed by objective measures

### Diagnosis

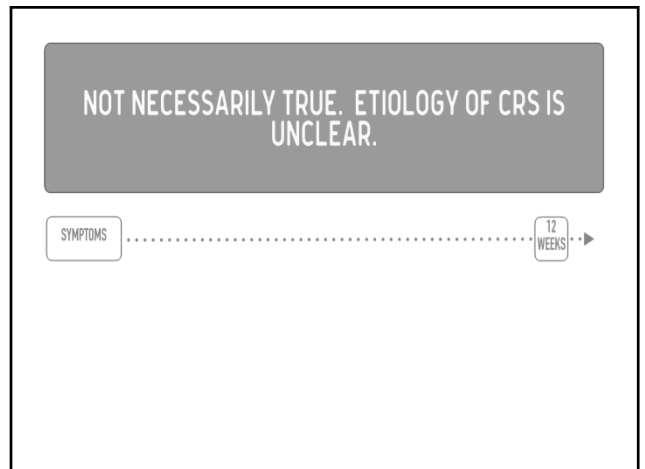
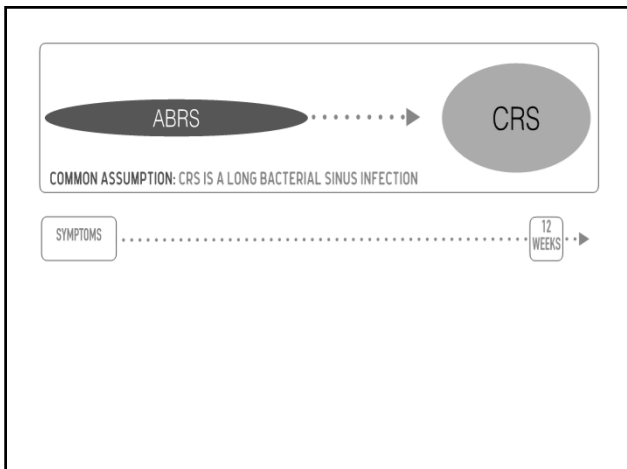
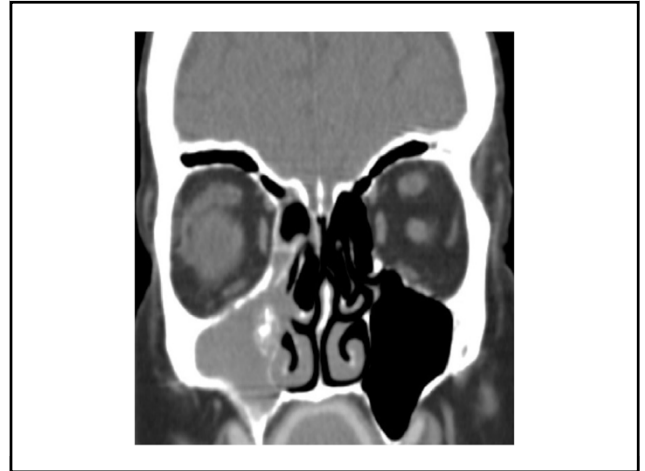
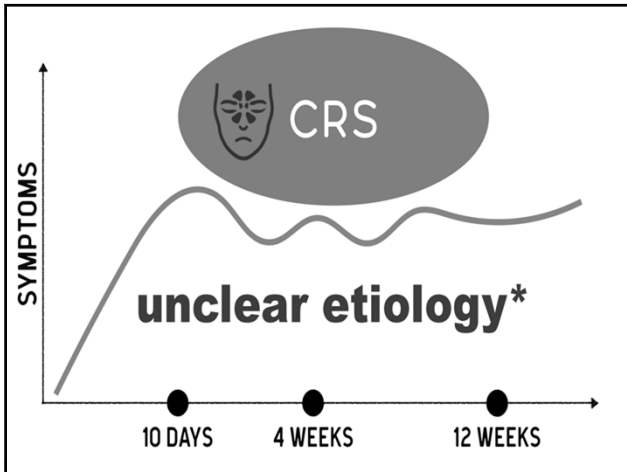
#### Chronic Rhinosinusitis (CRS)

x 12 weeks + or

The diagram shows the diagnostic criteria for CRS. It includes icons for facial pain, nasal discharge, and a sad face, followed by the text 'x 12 weeks + or'. To the right, there is an icon of a nasal endoscope and a CT scan of the paranasal sinuses.







NOT NECESSARILY TRUE. ETIOLOGY OF CRS IS UNCLEAR.

SYMPTOMS

12 WEEKS

COMMON ASSUMPTION: MULTIPLE INFECTIONS PER YEAR = CRS

ABRS

ABRS

ABRS

ABRS

NOT NECESSARILY TRUE. ETIOLOGY OF CRS IS UNCLEAR.

SYMPTOMS

12 WEEKS

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

CRS

Recurrent  
ABRS

SYMPTOMS

BASELINE CT

ENDO

Recurrent  
ABRS



-

+


CRS



+

+/-

## 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

## 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

	CRSsNP	CRSwNP
Topical steroids	Yes	Yes
Oral Steroids	Unclear	Yes*
Short term abx	For acute exacerbation	For acute exacerbation
Long term abx	Yes*	Yes*
Nasal irrigation	Yes	Yes

Fokkens WJ et al. EPOS 2012: European position paper on rhinosinusitis and nasal polyps 2012. A summary for otorhinolaryngologists. *rhinology*. 2012;50(1):1-12.


## 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**



**CRS**  
**Symptoms ≠ Diagnosis**

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

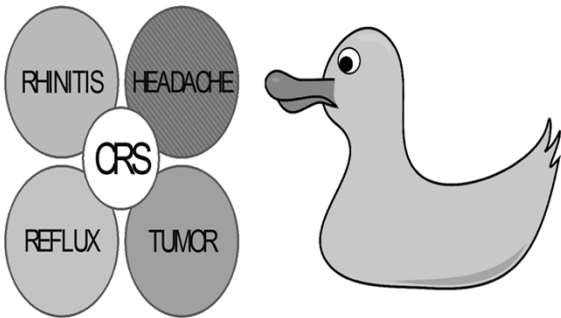
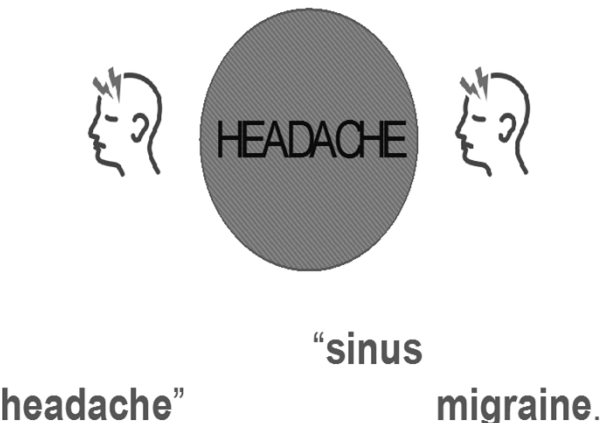


Fokkens WJ et al. EPOS 2012: European position paper on rhinosinusitis and nasal polyps 2012. A summary for otorhinolaryngologists. rhinology. 2012;50(1):1-12.

**CRS**  
**Symptoms ≠ Diagnosis**

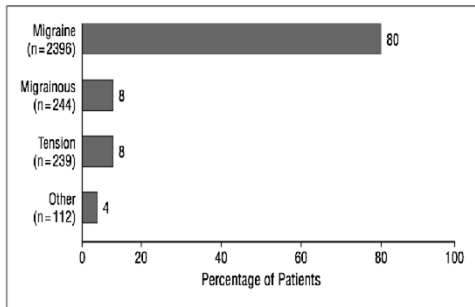
○ Headache	○ Nasal airway
○ LPR	○ Tumor
○ Rhinitis	○ Nasopharyngitis
○ Trauma	○ Chronic rhinitis
○ Nasopharyngeal sinus	○ Dental disease

**CRS**  
**Symptoms ≠ Diagnosis**

“sinus

headache”                      migraine.



**Figure 1.** Physician diagnoses of 2991 patients with "sinus" headache according to self-description or previous physician diagnosis.

Schreiber CP, et. al. Prevalence of migraine in patients with a history of self-reported or physician-diagnosed "sinus" headache. Arch Intern Med. 2004;164(16):769-1772.

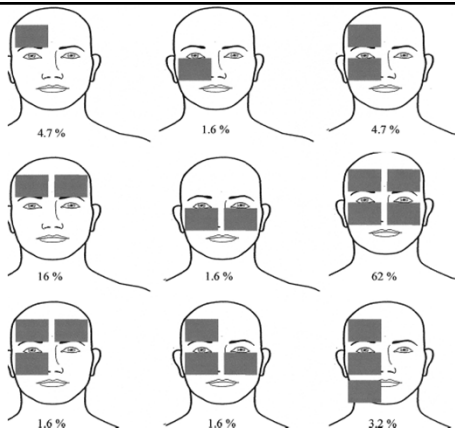
Headache  
© 2007 the Authors  
Journal compilation © 2007 American Headache Society

ISSN 0017-8748  
doi: 10.1111/j.1526-4610.2006.00688.x  
Published by Blackwell Publishing

## Research Submission

### **CME** The Sinus, Allergy and Migraine Study (SAMS)

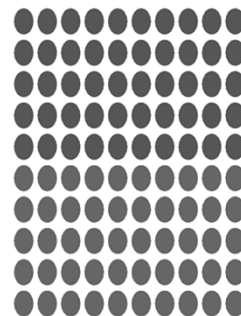
Eric Eross, DO; David Dodick, MD; Michael Eross



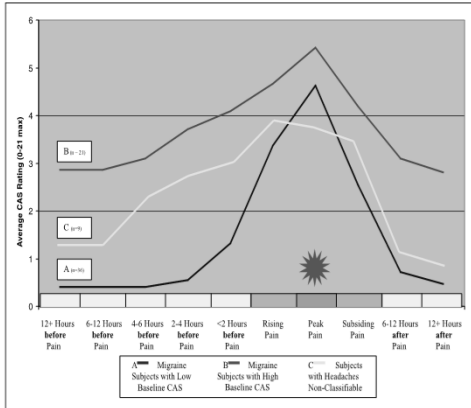
Eross, E., Dodick, D. and Eross, M. (2007), The Sinus, Allergy and Migraine Study (SAMS). Headache: The Journal of Head and Face Pain, 47: 213–224. doi:10.1111/j.1526-4610.2006.00688.x

## Headache is Often Mistaken for "Sinus Headache"

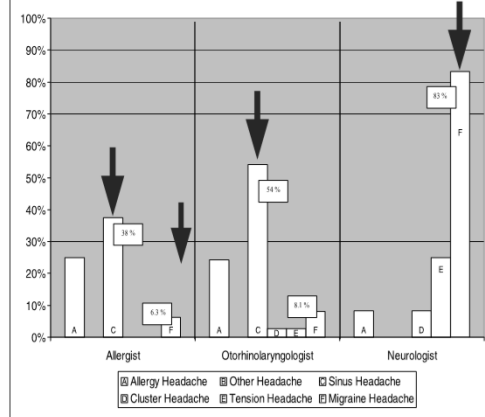
### MIGRAINE



**~50%**  
of patients who meet  
criteria for migraine  
have nasal or ocular  
symptoms

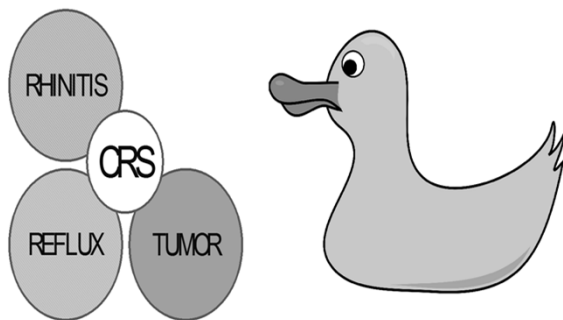


Eross, E., Dodick, D. and Eross, M. (2007), The Sinus, Allergy and Migraine Study (SAMS). Headache: The Journal of Head and Face Pain, 47: 213–224. doi:10.1111/j.1526-4610.2006.00688.x



Eross, E., Dodick, D. and Eross, M. (2007), The Sinus, Allergy and Migraine Study (SAMS). Headache: The Journal of Head and Face Pain, 47: 213–224. doi:10.1111/j.1526-4610.2006.00688.x

## CRS Symptoms ≠ Diagnosis



## Allergic & Nonallergic Rhinitis Chronic Rhinitis (CRS)

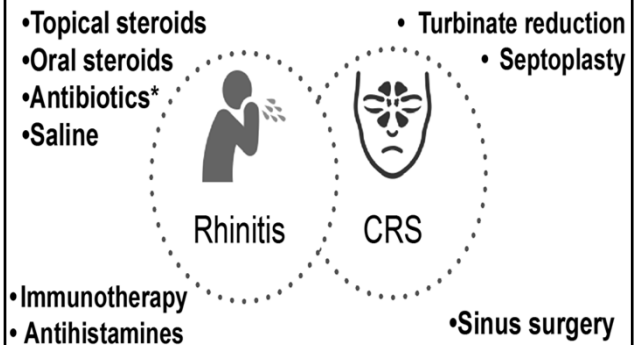
- o Association with CRS
- o present in 50-80% of patient with CRS
- o No definitive cause-effect relationship has been established
- o Overlapping symptom set and treatment paradigm

**Rhinitis**

## 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

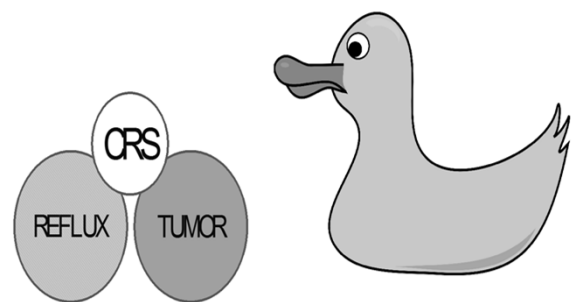
## Chronic Rhinitis & CRS Similar Symptoms / Treatment



## Allergic & Nonallergic Rhinitis Chronic Rhinitis



## CRS Symptoms $\neq$ Diagnosis



#### LARYNGOPHARYNGEAL REFLUX

##### LPR

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

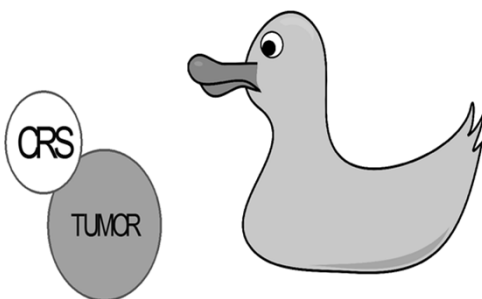
REFLUX

#### 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

#### CRS 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

Tumor



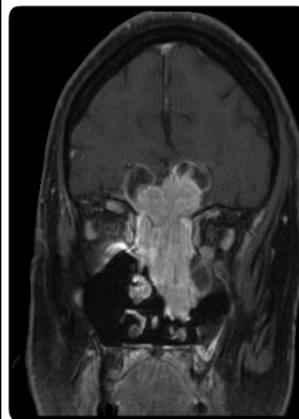
### Benign & Malignant Tumors Suggestive Symptoms

- 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

### **Acute and Chronic Rhinosinusitis Summary**

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