

**RHINITIS, CONJUNCTIVITIS, AND SINUSITIS: CURRENT PERSPECTIVES AND CLINICAL PEARLS.**



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**OBJECTIVES:**

1. Differentiate the various types of rhinitis and conjunctivitis.
2. Explain how sinusitis differs from rhinitis in both diagnosis and management.
3. Apply knowledge of rhinitis, conjunctivitis and sinusitis pathophysiology to appropriate treatment based on history and examination.



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**RHINITIS: DEFINITION AND SYMPTOMS**

Rhinitis is characterized by one or more of the following symptoms:

1. Nasal congestion
2. Rhinorrhea (anterior and posterior)
3. Sneezing
4. Itching.

Allergic Rhinitis (AR) is an IgE antibody-mediated, inflammatory disease.

Other rhinitis subtypes = Non-allergic

- Vasomotor (watery rhinorrhea)
- Gustatory (a subtype of vasomotor)
- Irritant rhinitis
- Non-allergic rhinitis without clear trigger

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## RHINITIS: BURDEN ON HEALTH

**Significant and often underappreciated health burden** for individuals and society.

- Financial burden
- Quality of life

**mHealth app** →

- Assessed impact of allergic rhinitis on work productivity (missing work days) and presenteeism (lower productivity on work days)
- Work productivity reduced from 4.6% during good control to 60.7% when poorly controlled.
- Productivity in those with both AR and asthma was even greater.

Impact of Allergic Rhinitis Control on Work Productivity and Costs: A Real-World Data Matched Cohort Study  
Vera, Behar, Jona et al.  
The Journal of Allergy and Clinical Immunology in Practice, Volume 12, Issue 12, 2017: 2015-2021

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## CLASSIFYING RHINITIS BY SEVERITY AND FREQUENCY

**Severity**

- Mild vs. Moderate vs. Severe
- Moderate/Severe is more likely to impact quality of life

**Frequency**

- Intermittent vs. Persistent

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## RHINITIS: DIAGNOSTIC APPROACH → HISTORY + EXAM

Historical Clue	Most Likely Etiology	Key Differentiating Symptoms & Features
Response to Environmental Triggers	Allergic Rhinitis	Seasonal pattern across 2+ years, clear association between exposure and symptoms (dust, cat/dog/other dander, etc). Rhinorrhea, sneezing and itching common in AR.
Response to NON-Allergic Environmental Triggers	Vasomotor Rhinitis (VHR) or Neurogenic Rhinitis	Symptoms (mainly nasal obstruction and clear secretions/rhinorrhea) are activated by temperature and humidity changes, cold dry air, airborne irritants, strong odors (including tobacco smoke), and/or exercise. VHR is often a diagnosis of exclusion.
Association with Eating	Gustatory Rhinitis	The main symptom is clear rhinorrhea that occurs specifically after ingestion of food, particularly hot and spicy foods.
Alcohol Consumption	Alcohol-Induced Rhinitis	History reveals nasal congestion (most common symptom) followed by rhinorrhea after alcohol intake. This history is important because it should prompt consideration of comorbid diagnoses, especially CRS with nasal polyps.
Pregnancy/Menstrual Cycle	Hormonal Rhinitis	Presents with congestion secondary to hormonal changes (estrogen/progesterone) occurring with pregnancy, menstrual cycle, menopause, or puberty.
Mucopurulent Discharge	Acute Infectious Rhinitis/Rhinosinusitis	Symptoms include nasal congestion, rhinorrhea (clear to purulent, potentially associated with crust formations), facial pain/pressure, and headache. Recurrent seasonal patterns or pruritus strongly suggest AR instead.
Drug Use/Overuse	Drug-Induced Rhinitis (e.g., Rhinitis Medicamentosa)	May be neurogenic (e.g., from alpha- or beta-adrenergic blockers) or inflammatory (e.g., NSAID-induced). The key is the use of certain pharmacological agents, including the overuse of topical decongestants, which causes rhinitis medicamentosa.

\*\*Skin/blood IgE testing reserved for confirmation when history + exam is consistent with AR

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### RHINITIS TREATMENT: INCS

**INCS are the preferred monotherapy for persistent AR.**

- INCS have potent anti-inflammatory properties that reduce sneezing, itching, rhinorrhea, and congestion.
- Continuous use is recommended** and is more efficacious than intermittent use.
- Significant improvement can be seen within 2 to 4 hours, but **peak results take up to 2 weeks.**

**Common adverse effects include:**

- Nasal dryness, burning, stinging, blood-tinged secretions, and epistaxis.
- Package inserts recommend monitoring for intraocular pressure, glaucoma, and cataracts.
- Monitoring growth is recommended in pediatric populations.



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### RHINITIS TREATMENT: LTRA MONOTHERAPY (MONTELUKAST)


INCS are the preferred monotherapy for persistent AR over LTRA in moderate/severe SAR in pts > 15 yrs.

LTRAs only for AR in those with inadequate response to 1<sup>st</sup> line or intolerance to alternatives.

Onset of action for LTRAs is slower than topicals (within 5 hours)  
→ not very helpful as-needed

**Adverse effects include:**

- There are postmarketing reports of rare drug-induced neuropsychiatric events, including aggression, depression, suicidal thinking, and behavior.



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### RHINITIS TREATMENT: ORAL ANTIHISTAMINE MONOTHERAPY

Experts recommend against prescribing a first-generation antihistamine (AH) → favor second-generation AH for AR treatment.

First-generation AH carry risks of sedation, performance impairment, poor sleep quality, anticholinergic-mediated symptoms, and increased risk of dementia.

For seasonal AR symptoms, INAHs are equal to or superior to OAHs!



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**RHINITIS TREATMENT: INAH MONOTHERAPY**

- INAH (e.g. azelastine (astelin), olopatadine (astepro) may be offered as an initial treatment option for seasonal AR.
- INAHs have a more rapid onset of action (as quickly as 15 minutes) than INCS and oral antihistamines.
- They may aid in reducing nasal congestion.



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**RHINITIS TREATMENT: INTRANASAL IPRATROPIUM**

- For watery rhinorrhea from either AR or NAR.
- NAR includes vasomotor, cold-induced, gustatory.
- NO significant effect on congestion or sneezing.
- Common side effects: dryness and epistaxis.



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**RHINITIS TREATMENT: INTRANASAL DECONGESTANTS**

- For short-term management of intermittent or episodic nasal congestion. Onset approx. 30 seconds.
- Regular use → rhinitis medicamentosa (rebound congestion)
- Can be used to clear nasal passage to allow other medications to be applied for up to 5 days.

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RHINITIS TREATMENT: ORAL DECONGESTANTS

- e.g. Pseudoephedrine
- Effective for nasal congestion.
- Caution in older adults and children < 4 years old
- Caution in pts with cardiac arrhythmia, uncontrolled HTN and glaucoma
- Avoid in 1<sup>st</sup> trimester of pregnancy

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RHINITIS TREATMENT: ALLERGEN IMMUNOTHERAPY

- Suggested for patients:
  1. With moderate/severe AR not controlled with allergen avoidance and/or pharmacotherapy
  2. Who prefer immunotherapy → can prevent or reduce comorbid conditions such as asthma.

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RHINITIS TREATMENT: COMBINATION MEDICATIONS

- The combination of an OAH and an INCS is **NOT** recommended as initial treatment in preference to INCS monotherapy for patients ≥12 years of age with SAR symptoms.
- No significant increased symptom relief was found over INCS monotherapy.



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RHINITIS TREATMENT: COMBINATION MEDICATIONS

The combination of an INCS and an INAH may be considered for the initial treatment of **moderate/severe nasal symptoms of SAR** in patients  $\geq 12$  years old AND for SAR, PAR and NAR resistant to monotherapy.

This combination provides a **greater benefit in total nasal symptom reduction** compared with monotherapy with either agent.



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RHINITIS TREATMENT: COMBINATION MEDICATIONS

**Benefit:** When INAH is added to an INCS, the onset of action is reduced to only **5 minutes**, offering rapid symptom relief alongside long-term control.

**Downsides:** headache, bitter taste, epistaxis.



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RHINITIS TREATMENT: OTHER COMBINATION MEDICATIONS

**Combination INCS + Intranasal Decongestant (short-term)**

- Up to 4 weeks (INCS helps protect against rhinitis medicamentosa)

**Combination INCS + Oral Decongestant**

- For patients uncontrolled congestion despite INCS and antihistamines.



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CHRONIC RHINOSINUSITIS WITH NASAL POLYPS (CRSWNP)

Definition:	Who it Impacts:	Cardinal Symptoms:	Diagnosis
<ul style="list-style-type: none"> <li>Chronic → &gt; 12 weeks</li> </ul>	<ul style="list-style-type: none"> <li>Affects 2-4% of adults.</li> <li>Often comorbid with asthma</li> </ul>	<ul style="list-style-type: none"> <li>Loss of smell</li> <li>Nasal obstruction</li> <li>Thick nasal drainage</li> <li>Facial Pressure</li> </ul>	<ul style="list-style-type: none"> <li>Direct visualization of nasal polyps (nasal endoscopy)</li> <li>CRS symptoms/criteria</li> </ul>

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CHRONIC RHINOSINUSITIS WITH NASAL POLYPS (CRSWNP)

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Nasal polyps/polyposis of inflammatory sinusitis: Prof Richard Harty - Sydney, Australia

CHRONIC RHINOSINUSITIS WITH NASAL POLYPS (CRSWNP)

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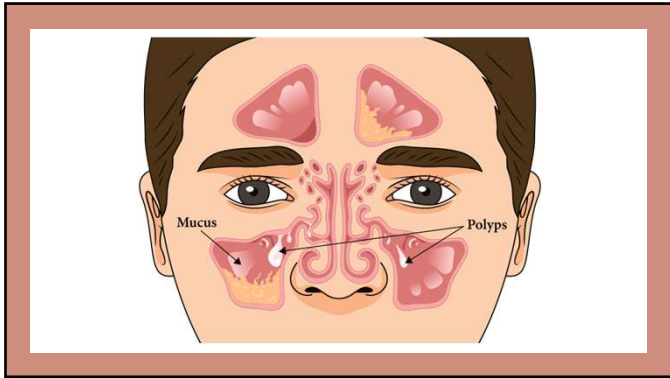
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CRS TREATMENT OPTIONS

**Intranasal corticosteroids**

- Nasal spray
- Sinus rinse with nasal spray within
- Exhalation delivery system
- Stents
- These may all help improve smell, symptoms and quality of life (QOL)

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CRS TREATMENT OPTIONS

**Biologics**

- Target type 2 inflammatory pathways (IL-4/13, IgE)
- Dupilumab- anti-IL4/IL-13 antibody
- Omalizumab- anti-IgE monoclonal antibody
- Both have shown the most benefit for disease-specific quality of life (via SNOT-22 score)

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CRS W/NP TREATMENT OPTIONS

**Biologics**

- Primarily for patients who have tried and failed other options:
  - INCS
  - Surgery
  - Aspirin desensitization

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TREATMENT OPTIONS

**Biologics**

- Dupilumab (Dupixent)-anti-IL4/IL-13 antibody



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TREATMENT OPTIONS

**Biologics**

- Xolair (Omalizumab): Anti-IgE antibody



Approved for patients 18 years and older who have failed other options such as corticosteroids.

Initiate under medical supervision.\*\*

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TREATMENT OPTIONS

**Biologics**

- Xolair (Omalizumab): Anti-IgE antibody

**-----DOSAGE AND ADMINISTRATION-----**

For subcutaneous (SC) administration only. (2.2, 2.3, 2.4, 2.5)  
See full prescribing information for administration instructions (2.6, 2.7, 2.8).

- Asthma:** XOLAIR 75 to 375 mg SC every 2 or 4 weeks. Determine dose (mg) and dosing frequency by serum total IgE level (IU/mL), measured before the start of treatment, and body weight (kg). See the dose determination charts. (2.2)
- Chronic Rhinosinusitis with Nasal Polyps:** XOLAIR 75 to 600 mg SC every 2 or 4 weeks. Determine dose (mg) and dosing frequency by serum total IgE level (IU/mL), measured before the start of treatment, and body weight (kg). See the dose determination charts. (2.3)
- IgE-Mediated Food Allergy:** XOLAIR 75 mg to 600 mg SC every 2 or 4 weeks. Determine dose (mg) and dosing frequency by serum total IgE level (IU/mL), measured before the start of treatment, and body weight (kg). See the dose determination chart. (2.4)

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TREATMENT OPTIONS

**Biologics**

- Xolair (Omalizumab): Anti-IgE antibody

Serum IgE (IU/mL)	Dosing Frequency	Body Weight							
		>30-40 kg	>40-50 kg	>50-60 kg	>60-70 kg	>70-80 kg	>80-90 kg	>90-125 kg	> 125-150 kg
		Dose (mg)							
30 - 100	Every 4 Weeks	75	150	150	150	150	300	300	
>100 - 200		150	300	300	300	300	300	450	600
>200 - 300		225	300	300	450	450	450	600	375
>300 - 400		300	450	450	450	600	600	450	525
>400 - 500	Every 2 Weeks	450	450	600	600	375	375	525	600
>500 - 600		450	600	600	375	450	450	600	
>600 - 700		450	600	375	450	450	525		
>700 - 800		300	375	450	450	525	600		
>800 - 900	Every 2 Weeks	300	375	450	525	600			
>900 - 1000		375	450	525	600				
>1000 - 1100		375	450	600					
>1100 - 1200		450	525	600					
>1200 - 1300		450	525						

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TREATMENT OPTIONS

**Aspirin Desensitization**

- For Patients:
  - With Aspirin-Exacerbated Respiratory Disease (AERD) (not just CRS with polyps)
  - Who can tolerate ASA daily
    - caution for patients who cannot tolerate due to GI or other reasons
- Improves disease-specific QOL (SNOT-22)

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**OCULAR CONJUNCTIVITIS**

**Definition:**  
Simply stated, is inflammation of the conjunctiva of the eye.



**Infectious Etiologies:**

- Viral- by far most common, 80% of cases
- Bacterial
- Parasitic

**Non-infectious Etiologies:**

- Allergic
- Toxic
- Mechanical irritation (contacts etc)
- Inflammatory/Autoimmune

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**OCULAR CONJUNCTIVITIS**

**Bacterial vs. Viral**

- Relying solely on signs and symptoms to predict etiology is often inaccurate.
- However, a combination of the following are **STRONG** predictors of bacterial conjunctivitis:
  - **bilateral matting of the eyelids**
  - **lack of itching**
  - **no previous history of conjunctivitis**



Bacterial                      Viral

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**RULE OUT RED FLAG MIMICS**



Anisocoria- pupillary inequality



Orbital cellulitis

**Eye Emergencies:**

- Uveitis- inflammation of uvea
- Keratitis- corneal swelling
- Acute angle closure glaucoma

**Common Symptoms**

- Decreased vision
- Eye pain
- Painful pupillary reaction
- Anisocoria
- Orbital signs- proptosis, swelling, severe pain
- Red eye

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**CONJUNCTIVITIS:  
WHEN TO  
CULTURE?**

- Cultures of conjunctival swabs are generally reserved for:
- Suspected infectious neonatal conjunctivitis
- Recurrent conjunctivitis
- Conjunctivitis recalcitrant to therapy
- Cases suspicious for gonococcal or chlamydial infection

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**NON-  
INFECTIOUS  
(ALLERGIC)  
MANAGEMENT**

- Non-pharmacological interventions are strongly recommended for allergic conjunctivitis, including:
- artificial tears
- cold compress
- avoidance or removal of allergens
- avoidance of eye rubbing

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**ALLERGIC  
CONJUNCTIVITIS:  
PHARMACOTHERAPY**

Recommended pharmacological interventions include:

- topical antihistamines
- mast-cell stabilizers (cromolyn)
- dual-acting agents.

Topical corticosteroid and immunosuppression may be adopted for severe non-infectious conjunctivitis (e.g., Atopic Keratoconjunctivitis, Vernal Keratoconjunctivitis)

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**NON-HERPETIC VIRAL MANAGEMENT**

Observation without tx strongly recommended

- Self-limiting nature of viral infections
- Topical and oral antivirals unlikely useful
- Focus on symptomatic relief: artificial tears, antihistamines, cold compresses

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**NON-HERPETIC VIRAL MANAGEMENT**

Preventative measures

Highly contagious!

- Frequent hand-washing
- Meticulous disinfection of medical instruments
- Isolation of conjunctivitis patients

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**VIRAL CONJUNCTIVITIS: STEROID USE**

Topical steroids usually **NOT** recommended

- Indications: membrane formation and sub-epithelial infiltration → severe photophobia and decreased vision.
- Use can prolong viral shedding + increase intraocular pressure.

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**BACTERIAL CONJUNCTIVITIS:**

**Observation is strongly recommended**

- Unless...chlamydial or gonococcal infection is suspected.
- For these SYSTEMIC antibiotics are needed.
- Chlamydial: oral azithromycin or doxycycline
- Gonococcal: systemic ceftriaxone + azithromycin (for presumed chlamydia coinfection)

\*\*Tx for neonates is distinct from children and adults

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**KEY TAKEAWAYS**

**RHINITIS & SINUSITIS**

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**RHINITIS & SINUSITIS**

INCS are primary monotherapy for persistent AR

INCS preferred over LTRAs for initial mod/severe AR

INCH + INAH combination may be considered for mod/severe AR/NAR resistant to monotherapy

CRSwNP treatment may include INCS, Biologics and ASA desensitization (for AERD pts) → combination therapy is often needed.

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KEY TAKEAWAYS CONJUNCTIVITIS

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GAPS AND FUTURE DIRECTIONS

Always rule out serious red eye conditions first (red flags: decreased vision, severe pain, painful pupillary reaction)

Viral conjunctivitis is the most common cause: observation and symptomatic relief are generally recommended

Reserve antibiotics for high-risk bacterial etiologies ie, chlamydial and gonococcal infection

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THANK YOU

LAUREN FINE, MD, FAAAAI

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