

# Rhinosinusitis

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## Background

### About rhinosinusitis

- *Rhinosinusitis has largely replaced the term 'sinusitis'.*
- *Rhinosinusitis is inflammation of the paranasal sinuses and nasal cavity. Rhinitis and sinusitis usually co-exist.*
- *Acute and chronic rhinosinusitis are defined by the duration of symptoms: acute < 12 weeks or chronic ≥ 12 weeks.*
- *The aetiology and management of acute rhinosinusitis and chronic rhinosinusitis are quite different.*

#### *Acute rhinosinusitis (ARS)*

- *ARS is usually triggered by a viral upper respiratory tract infection, which resolves within 7 to 10 days.*
- *This can be classified as:*
  - *Acute viral rhinosinusitis (common cold)*
  - *Acute post-viral rhinosinusitis*
  - *Acute bacterial rhinosinusitis*
- *The most commonly implicated bacteria are streptococcus pneumonia, haemophilus influenzae, and moraxella catarrhalis.*

*Chronic rhinosinusitis (CRS) is an inflammatory condition involving the paranasal sinuses and the linings of the nasal cavity that lasts for ≥ 12 weeks:*

- *It may follow an acute episode of rhinosinusitis.*
- *There is an association with adult onset asthma.*
- *CRS is further divided into those patients who have nasal polyps and those without polyps (more common). This is determined by endoscopic or CT examination, and the management is different.*

### Red flags

- Severe systemic symptoms or severe frontal headache
- Periorbital or facial cellulitis
- Diplopia, altered visual acuity, or reduce eye movements
- Immunocompromised patient and systemically unwell
- Sinonasal malignancy

## Assessment

1. Assess **symptoms** to determine type of sinusitis.

### Symptoms

*Acute rhinosinusitis (ARS) (lasts for < 12 weeks) and can be divided into:*

- *Acute viral rhinosinusitis (lasts < 10 days) with nasal blockage or congestion or nasal discharge, plus one of:*
  - *Facial pressure or pain or headache*
  - *Reduced smell (adults)*
  - *Cough (children)*
- *Acute post-viral rhinosinusitis where symptoms follow acute viral rhinosinusitis and either increase after 5 days or persist for < 12 weeks.*
- *Acute bacterial rhinosinusitis with:*
  - *Purulent secretion in the nose*
  - *Fever > 38°C*
  - *Severe local pain (predominantly unilateral)*
  - *Deterioration after early improvement in initial milder illness.*

*Chronic rhinosinusitis (lasts for ≥ 12 weeks) with nasal blockage or congestion or nasal discharge, plus one of:*

- *Facial pain or pressure*
- *Reduction or loss of smell (adults)*
- *Cough (children)*

2. Check for allergic symptoms (allergic rhinitis), e.g., sneezing, watery nasal discharge, nasal itching, itchy watery eyes.

3. Conduct a **targeted examination** to exclude:

### Targeted examination

- *Temperature*
- *Assessment of facial pain (on palpation and bending forwards)*
- *Nasal examination for discharge, polyposis, swelling, foreign body*
- *Assessment of eye pain, movements, and acuity if indicated*
- *Dental examination*
- *Palpation of temporomandibular joint (TMJ)*

### Red flags

- *Severe systemic symptoms or severe frontal headache*
- *Periorbital or facial cellulitis*
- *Altered visual acuity or diplopia*
- *Reduced eye movements with or without reduced level of consciousness secondary to cavernous sinus thrombosis or orbital apex syndrome*
- *Immunocompromised patient and systemically unwell*
- *Sinonasal malignancy:*
  - *Unilateral nasal obstruction with haemoserous discharge*

- Recent onset of Horner's syndrome
- Paraesthesia in the skin of cheek, maxillary gingiva, or hard palate

- **Mid-segmental facial pain**

## Mid-segmental facial pain

This condition has different names, e.g. facial pain syndrome or idiopathic facial pain, but this is the internationally recognised term.

- This is a common condition, which is often confused with rhinosinusitis by both doctors and patients. It is associated with:
  - soft tissue tenderness and pain
  - minimal nasal symptoms (an important symptom to help distinguish from rhinosinusitis).
- Education plays a key role in management.
- Chronic rhinosinusitis or other conditions may need to be excluded to make this diagnosis.
- Consider a 3 to 6 months trial of low-dose tricyclic antidepressants.

- temporomandibular disorder (TMD) or dental pain
- **nasal foreign body**

## Nasal foreign body

Suspect a nasal foreign body in children with a new onset unilateral nasal discharge.

- migraine or headache.
4. Investigations are not usually required:
- Plain X-rays of sinuses are not used.
  - CT sinus scans are indicated only if patients are symptomatic despite 3 months of medical management.
  - If suppurative complications are suspected, CT scans are done by the assessing emergency department.
  - There is no role for bacterial swabs.

## Management

### Delayed prescribing

If acute respiratory tract infections, give a script to be filled if symptoms deteriorate coupled with information on symptomatic treatment and clear instructions on when it is appropriate to start the antibiotics.<sup>1</sup>

1. If **red flags (see above)**, arrange [immediate ENT referral or admission](#).
2. Provide education about the condition, expected duration of symptoms, and management options.
3. Advise smoking cessation.

4. If allergic symptoms, use short-term antihistamines or long-term topical nasal steroids, or both if severe.
5. If mid-segmental facial pain is diagnosed, consider low-dose tricyclic antidepressant.
6. Manage further according to nature:

### **Acute rhinosinusitis (ARS)**

- 1) If **viral ARS** lasting < 10 days:

#### **Viral ARS**

*Lasts < 10 days, with nasal blockage or congestion or nasal discharge, plus one of:*

- *facial pressure or pain or headache*
- *reduced sense of smell in adults*
- *cough in children.*

- provide symptomatic relief e.g., analgesics, **nasal saline irrigation, nasal decongestant sprays.**

#### **• Nasal decongestant sprays**

- *Readily available over the counter e.g., Oxymetazoline, Xylometazoline.*
- *Cause vasoconstriction and hence decongestion of the nasal mucosa. Will temporarily improve nasal airflow. This will improve symptoms and aid in penetrance of nasal steroid sprays and irrigation.*
- *If used regularly for more than 4 to 5 days, the nose will become dependant on theses sprays. This worsens symptoms and causes ongoing obstruction (a common condition – named rhinitis medicamentosa).*
- *Ensure you counsel your patients to only use these preparations sparingly.*

#### **• Nasal saline irrigation**

Use to reduce post-nasal drainage, remove secretions, and rinse away allergens and irritants.

Use before intranasal topical steroids.

Preparations:

- If adult, use commercial saline rinse preparations
  - If child, use nasal drops or spray.
  - If using a home-made saline solution, dissolve 1/2 teaspoon salt and 1/4 teaspoon baking soda in 250 mL of warm water and pour into a commercially purchased sinus rinse bottle or pot. Provide [patient information](#).
- advise there is no evidence of benefit from oral decongestants, antihistamines, or steam inhalation.

- 2) If post-viral ARS, where the symptoms increase > 5 days after an episode of acute viral rhinosinusitis:
- provide symptomatic relief e.g., analgesics, **nasal saline irrigation (see above)**, **nasal decongestant sprays (see above)**.
  - advise there is no evidence of benefit from oral decongestants, antihistamines, or steam inhalation.
  - start **topical nasal steroids** and use until the symptoms resolve.

## Topical nasal steroids

- *Beneficial in both ARS (viral and bacterial) and chronic rhinosinusitis (CRS) to relieve symptoms.*
    - *Full response may take 2 to 3 weeks. Explain this to patient, otherwise compliance will be poor.*
    - *It is important to use long term if CRS and after sinus surgery.*
    - *Review patient's technique for using intranasal steroid spray.*
  - *Mometasone furoate (Nasonex) – 2 sprays in each nostril daily.*
  - *Ciclesonide (Omnanis) – 2 sprays in each nostril daily.*
  - *Budesonide (Rhinocort) 2 sprays in each nostril twice daily.*
  - *Fluticasone propionate (Flixonase) – 2 sprays in each nostril daily.*
  - *Beclomethasone (Beconase) 50 microgram – 2 sprays in each nostril twice daily.*
  - *Azelastine plus fluticasone propionate (Dymista) – 1 spray into each nostril, twice daily.*
- ensure topical nasal decongestant use is discontinued in ARS.
  - consider whether there may be a bacterial cause.

3). If **acute bacterial rhinosinusitis**:

## Acute bacterial rhinosinusitis

Symptoms include:

- *purulent secretion in the nose.*
  - *fever > 38°C.*
  - *severe local pain (predominantly unilateral).*
  - *deterioration after early improvement in initial milder illness.*
- provide symptomatic relief e.g., analgesics, **nasal saline irrigation (see above)**, **nasal decongestant sprays (see above)**.
  - start **topical nasal steroids (see above)** and use until the symptoms resolve.
  - start **antibiotics**.

## Antibiotics

- *Consider one of the following:*
  - *amoxicillin:*
    - *Adults – 500 mg three times a day for 7 days*

- Children – 50 to 80 mg/kg/day divided into 3 doses
  - doxycycline: Aged > 12 years only – 100 mg twice a day for 7 days
  - erythromycin: Adults – 400 mg three times a day for 7 days
- advise oral steroids are not indicated unless known pre-existing chronic rhinosinusitis with polyps.
- 4) If recurrent acute bacterial rhinosinusitis e.g., ≥ 4 episodes per year:
  - manage as chronic rhinosinusitis.
  - arrange [urgent or routine ENT referral](#) if unresponsive to medical treatment.

### **Chronic rhinosinusitis (CRS)**

- 1). Modify and treat any **underlying causes**.

#### **Underlying causes**

- Allergic rhinitis
- Rhinitis medicamentosa – prolonged use of nasal decongestion sprays
- Adult onset asthma
- Smoking
- Irritants and pollutants
- Immunodeficiency
- Defects in mucociliary clearance
- Viral infections
- Systemic diseases
- Dental infections

- 2). **Educate** about CRS, which is important for compliance.

#### **Chronic rhinosinusitis (CRS) education**

*CRS is a complex inflammatory disorder with mucosal inflammation rather than a simple infectious process or anatomic problem.*

- Recovery of normal mucociliary function (and, subsequently, resolution of the blockage sensation and postnasal drip sensation) may take months.
- Management aims at reducing symptoms and improving quality of life.

- 3) Initiate long-term use of **nasal saline irrigation (see above)** and **topical nasal steroids (see above)** and re-evaluate after 4 weeks:
  - If improvement, continue with treatment.
  - If no improvement, start **long course of antibiotics**.

#### **Long course of antibiotics**

- Use either of:
  - doxycycline 100 mg daily for 4 to 6 weeks
  - roxithromycin 150 mg daily for 4 to 6 weeks.
- These are used for both antibacterial and anti-inflammatory properties.

- Consider a short course of oral steroids. There is only evidence of benefit in patients with **polyps**.

## Polyps

- *Polyps may form in the nasal cavity or paranasal sinuses.*
- *Unless large, nasal polyps may be difficult to detect in primary care and are diagnosed endoscopically or on CT.*
- *Swollen nasal turbinates (pink in colour, similar to the rest of the nasal mucosa, and sensitive to touch) can be mistaken for nasal polyps (usually a grey or white colour).*

- 4). If 3 months of medical management has been trialed and failed, consider arranging [urgent or routine ENT referral](#) for further investigations and consideration for **endoscopic sinus surgery**.

## Endoscopic sinus surgery

- *Surgery attempts to restore sinus ventilation and drainage, which can help resolve mucosal disease.*
- *Surgery must be followed by medical management to control the inflammatory process, otherwise the symptoms will return.*

- 5). Continue long-term nasal saline irrigation and topical nasal steroids. This is particularly important after surgery, otherwise the symptoms will return.

- 6). For acute exacerbations, use a 10 to 14 day course of antibiotics.

## Referral

- If **red flags**, arrange [immediate ENT referral or admission](#).

## Red flags

- Severe systemic symptoms or severe frontal headache
- Periorbital or facial cellulitis
- Altered visual acuity or diplopia
- Reduced eye movements with or without reduced level of consciousness secondary to cavernous sinus thrombosis or orbital apex syndrome
- Immunocompromised patient and systemically unwell
- Sinonasal malignancy:
  - Unilateral nasal obstruction with haemoserous discharge
  - Recent onset of Horner's syndrome
  - Paraesthesia in the skin of cheek, maxillary gingiva, or hard palate

- Consider arranging [urgent or routine ENT referral](#) if symptoms have a major impact on quality of life and:
  - recurrent acute rhinosinusitis unresponsive to medical treatment and either of:
    - > 4 episodes in 1 year
    - 2 to 3 episodes per year over 3 years.
  - chronic rhinosinusitis where 3 months of medical management has been trialled and failed.
  - difficulty making a diagnosis when a patient has chronic nasal, sinus, or forehead symptoms.

## Information

### For health professionals

#### Further information

NCBI (US) – [EPOS 2012: European Position Paper on Rhinosinusitis and Nasal Polyps 2012. A Summary for Otorhinolaryngologists.](#)

### For patients

- HealthInfo – [Nasal Saline Rinse](#)
- Patient:
  - [Acute Sinusitis](#)
  - [Chronic Sinusitis](#)

## Sources

### References

1. Sargent, L, McCullough, A, Del Mar, C, Lowe, J. [Professional Is Australia ready to implement delayed prescribing in primary care? A review of the evidence.](#) Aust Fam Physician. 2016 Sep;45(9):688-690.

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