INTRANASAL CORTICOSTEROIDS

<table>
<thead>
<tr>
<th>Generic Drug</th>
<th>Indications</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budesonide</td>
<td>• Seasonal &amp; perennial allergic rhinitis, nasal polyposis</td>
<td>64 mcg/dose</td>
</tr>
<tr>
<td></td>
<td>• Treatment &amp; prevention of nasal polyps</td>
<td>naso spray</td>
</tr>
<tr>
<td></td>
<td><strong>Adults &amp; children 6 years and older:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rhinitis: 2 sprays into each nostril once daily in the morning or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nasal polyps: 2 sprays twice daily</td>
<td></td>
</tr>
<tr>
<td>Fluticasone</td>
<td>• Prophylaxis &amp; treatment of seasonal &amp; perennial allergic rhinitis</td>
<td>50 mcg/dose</td>
</tr>
<tr>
<td></td>
<td>• Treatment of associated sinus pain &amp; pressure</td>
<td>naso spray</td>
</tr>
<tr>
<td></td>
<td><strong>Adults/adolescents (≥12 years):</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2 sprays in each nostril once daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Maximum daily dose: 4 sprays in each nostril</td>
<td></td>
</tr>
<tr>
<td>Mometasone</td>
<td>• Symptomatic treatment associated with ARS &amp; treatment of nasal polyps</td>
<td>50 mcg</td>
</tr>
<tr>
<td></td>
<td><strong>Allergic Rhinitis (adults &amp; children over 12 years):</strong></td>
<td>aqueous naso</td>
</tr>
<tr>
<td></td>
<td>• 100 mcg/day (2 sprays) to each nostril once daily</td>
<td>spray</td>
</tr>
<tr>
<td></td>
<td>• Maximum 200 mcg (4 sprays) once daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reduce to 50 mcg (1 spray) once daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Acute Rhinosinusitis:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2 sprays in each nostril twice daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 400 mcg/day</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Nasal polyphosis:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 2 sprays twice daily (total 400 mcg/day)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reduced to 2 sprays each nostril once daily when symptoms are adequately controlled</td>
<td></td>
</tr>
</tbody>
</table>

ANTIBIOTICS

<table>
<thead>
<tr>
<th>Generic Drug</th>
<th>Recommended Dosage</th>
<th>Special Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin</td>
<td>500/125 mg PO q8hr</td>
<td>Preferred antibiotics in ABRS, Penicillin allergy, infectious mononucleosis, renal impairment</td>
</tr>
<tr>
<td>Clavulanic acid</td>
<td>875/125 mg PO q12hr</td>
<td>Preferred antibiotics in ABRS, Penicillin allergy, infectious mononucleosis, gastrointestinal disease (e.g. colitis), renal impairment</td>
</tr>
<tr>
<td>Cefuroxime</td>
<td>250-500 mg PO q8hr</td>
<td>Penicillin allergy, gastrointestinal disease (e.g. colitis), renal impairment</td>
</tr>
<tr>
<td>axetil</td>
<td>500-875 mg PO q12hr</td>
<td>Penicillin allergy, gastrointestinal disease (e.g. colitis), renal impairment</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>500 mg PO q24hr</td>
<td>Prolonged QT interval (disease or co-administration of drugs that prolong QT interval or proarrythmic conditions), myasthenia gravis, severe renal (require dose adjustment) &amp; hepatic impairment</td>
</tr>
<tr>
<td>Clarithromycin</td>
<td>250 - 500 mg PO q12hr</td>
<td>Penicillin allergy, gastrointestinal disease (e.g. colitis), renal impairment</td>
</tr>
<tr>
<td></td>
<td>250 mg PO q12hr</td>
<td>Coronary artery disease, prolonged QT interval (disease or co-administration of drugs that prolong QT interval or proarrythmic conditions), myasthenia gravis, severe renal (require dose adjustment) &amp; hepatic impairment</td>
</tr>
</tbody>
</table>

MANAGEMENT OF RHINOSINUSITIS IN ADOLESCENTS AND ADULTS
KEY MESSAGES

1. Rhinosinusitis is a common health problem characterised by mucosal inflammation of the nose & paranasal sinuses.
2. Important risk factors for rhinosinusitis are active & passive smoking, family history, asthma & gastroesophageal reflux disease.
3. In acute rhinosinusitis (ARS), the duration of symptoms is <12 weeks.
4. Majority of ARS cases are viral in origin, with only 0.5 - 2.0% are complicated by bacterial infection.
5. Anterior rhinoscopy should be performed as part of clinical assessment of suspected ARS in primary care setting.
6. Plain radiography has no role in the routine management of rhinosinusitis.
7. Endoscopically-directed middle meatal culture should be used in diagnosing acute bacterial rhinosinusitis (ABRS) & chronic rhinosinusitis (CRS), instead of nasal swab culture.
8. Intranasal corticosteroids & nasal saline irrigation are the mainstay treatment of rhinosinusitis.
9. Antibiotic should be considered in patients with severe ARS.
10. Surgery is indicated for ARS with orbital or intracranial complications & CRS not responding to optimal medical therapy.

This Quick Reference provides key messages & a summary of the main recommendations in the Clinical Practice Guidelines (CPG) Management of Rhinosinusitis in Adolescent and Adults.

Details of the evidence supporting these recommendations can be found in the above CPG, available on the following websites:

Ministry of Health Malaysia: www.moh.gov.my
Academy of Medicine Malaysia: www.acadmed.org.my
Malaysian Society of Otorhinolaryngologists Head & Neck Surgeons: www.msohns.com

CLINICAL PRACTICE GUIDELINES SECRETARIAT
Malaysian Health Technology Assessment Section (MaHTAS)
Medical Development Division, Ministry of Health Malaysia
Level 4, Block E1, Precint 1,
Federal Government Administrative Centre 62590
Putrajaya, Malaysia
Tel: 603-8883 1228
E-mail: htamalaysia@moh.gov.my
Clinical Diagnosis

- Inflammation of the nose & paranasal sinuses characterised by two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):
  - ± facial pain/pressure
  - ± reduction or loss of smell

**AND at least one of the following:**

- Endoscopic signs of:
  - nasal polyps, &/or
  - mucopurulent discharge primarily from middle meatus &/or
  - oedema/mucosal obstruction primarily in middle meatus

- CT changes:
  - mucosal changes within the ostiomeatal complex &/or sinuses

- Past medical history of CRS (medically-diagnosed)

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**Increased in symptoms after 5 days or persistent symptoms after 10 days with less than 12 weeks duration**

**Acute Rhinosinusitis**

- Increase in symptoms after 5 days
- Persistent symptoms after 10 days

**Signs of potential acute bacterial rhinosinusitis:**

- At least 3 of:
  - Discoloured discharge
  - Severe local pain
  - Fever
  - Elevated ESR/CRP
  - Double sickening* (*: becoming worse again after initial recovery)
Management of ARS for Primary Care & Non-Otorhinolaryngology (ORL) Centre

Presence of ≥2 symptoms one of which should be nasal obstruction or purulent/greenish nasal discharge ± facial pain, headache ± smell disturbance
Examination: anterior rhinoscopy

**Management of ARS for ORL Centre**

- Referral from primary care and non-ORL centre
- Moderate ARS with no improvement of symptoms after 14 days of treatment
- Severe ARS with no improvement of symptoms within 3 days
- ARS with orbital or intracranial complications

1. Nasal endoscopy
2. Culture and sensitivity
3. Symptomatic relief
4. Topical corticosteroids
5. Oral antibiotics

**Management of ARS for Primary Care & Non-Otorhinolaryngology (ORL) Centre**

- No
  - Presence of ≥2 symptoms one of which should be nasal obstruction or purulent/greenish nasal discharge ± facial pain, headache ± smell disturbance
  - Examination: anterior rhinoscopy
  - Symptoms increasing after 5 days or persistent after 10 days
    - Common cold
      - Treat accordingly
    - Mild* ARS
      - VAS = 0 to 3
      - Symptomatic relief medication**
      - No improvement after 10 days or worsening after 5 days
      - Topical steroid
      - No improvement after 14 days treatment
        - Consider referral to specialist
    - Symptomatic relief medication** + topical steroid
    - Severe* ARS
      - VAS >7 to 10
      - Symptomatic relief medication** + topical steroid + consider antibiotic***
      - Improvement within 3 days
      - No improvement after 10 days or worsening after 5 days
      - Consider referral to specialist

3. CT and/or MRI scan
4. Culture and sensitivity
5. Symptomatic relief
6. Topical corticosteroids
7. Intravenous antibiotics
8. Consider surgery if medical therapy fails after 48 hours

* based on visual analogue score (VAS)
** may include analgesics, nasal saline irrigation & decongestants
*** at least 3 of:
- purulent/greenish nasal discharge
- fever
- severe local pain
- “double sickening”
- elevated erythrocyte sedimentation rate/C-reactive protein
Management of ARS for ORL Centre

Referral from primary care and non-ORL centre

Moderate ARS with no improvement of symptoms after 14 days of treatment

1. Nasal endoscopy
2. Culture and sensitivity
3. Symptomatic relief
4. Topical corticosteroids
5. Oral antibiotics

Severe ARS with no improvement of symptoms within 3 days

1. Hospital admission
2. Nasal endoscopy
3. CT and/or MRI scan
4. Culture and sensitivity
5. Symptomatic relief
6. Topical corticosteroids
7. Intravenous antibiotics
8. Consider surgery if medical therapy fails after 48 hours

ARS with orbital or intracranial complications

1. Hospital admission
2. Nasal endoscopy
3. CT and/or MRI scan
4. Culture and sensitivity
5. Symptomatic relief
6. Topical steroids
7. Intravenous antibiotics and/or surgery

Prescription of antibiotics:

- Symptomatic relief
- Medication
- Topical steroids
- Intravenous antibiotics

**Note:** Based on visual analogue score (VAS)
Management of CRS for Primary/Secondary/Tertiary Care

Presence of ≥2 symptoms (duration ≥12 weeks):
One of which should be nasal obstruction or purulent/greenish nasal discharge
± facial pain, headache
± smell disturbance
Examination: anterior rhinoscopy
(plain X-ray is NOT recommended)

Topical steroids
Nasal irrigation

Re-evaluate after 4 weeks

Yes

Improvement of symptom(s)

Continue therapy

No

Refer to ORL specialist

History & investigations
- Nasal endoscopy
- Skin Prick Test for allergy
- Consider other diagnosis and predisposing factors e.g. bronchial asthma, smoking, etc

Treatment
- Topical steroids
- Nasal irrigation
- Short-term oral steroids
- Consider oral antibiotic as immunomodulator (if serum IgE is low or normal)

Yes

Improvement of symptom(s)

No

CT scan of paranasal sinuses

Consider endoscopic sinus surgery

Continue follow-up with ORL centres:
- Topical steroids
- Nasal irrigation
- Short-term oral steroids

Continue follow-up with ORL centres:
- Topical steroids
- Nasal irrigation
- Short-term oral steroids
Rhinosinusitis is a common health problem characterised by mucosal inflammation of the nose and paranasal sinuses.

**Acute Rhinosinusitis (ARS)**
- Duration of symptoms is <12 weeks.
- Majority of ARS cases are viral in origin, with only 0.5-2.0% complicated by bacterial infection.
- Antibiotic should be considered in patients with severe ARS.
- Plain radiography has no role in the routine management of rhinosinusitis.
- Endoscopically-directed middle meatal culture should be used in diagnosing acute bacterial rhinosinusitis (ABRS) and chronic rhinosinusitis (CRS), instead of nasal swab culture.
- Examination: anterior rhinoscopy ± smell disturbance.

**Chronic Rhinosinusitis (CRS)**
- Presence of ≥2 symptoms (duration ≥12 weeks):
  - ± reduction or loss of smell
  - ± facial pain/pressure
  - ± nasal blockage/obstruction/secretions
  - ± noise
  - ± frontal headache
  - ± oedema/mucosal obstruction primarily in middle meatus
  - ± nasal polyps
  - ± toothache
  - ± nasal congestion

**Indications of Referral to ORL Centre**

<table>
<thead>
<tr>
<th>Indication of Referral</th>
<th>ACUTE RHINOSINUSITIS</th>
<th>CHRONIC RHINOSINUSITIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early referral*:</td>
<td>persistent of symptoms despite optimal therapy</td>
<td>severe pain or swelling of the sinus areas (lower threshold for immune-compromised patients e.g. uncontrolled diabetes, end stage renal failure, HIV)</td>
</tr>
<tr>
<td>Urgent referral**:</td>
<td>periorbital oedema/ erythema</td>
<td>Addition of topical corticosteroids to antibiotics</td>
</tr>
<tr>
<td></td>
<td>displaced globe</td>
<td>Addition of oral corticosteroids to antibiotics</td>
</tr>
<tr>
<td></td>
<td>double vision</td>
<td>Saline irrigation</td>
</tr>
<tr>
<td></td>
<td>ophtalmoplegia/ restricted eye movement</td>
<td>Oral antihistamine added in allergic patients</td>
</tr>
<tr>
<td></td>
<td>reduced visual acuity</td>
<td>Analgesics</td>
</tr>
<tr>
<td></td>
<td>severe frontal headache</td>
<td>Decongestants</td>
</tr>
<tr>
<td></td>
<td>forehead swelling</td>
<td>Mucolytics</td>
</tr>
<tr>
<td></td>
<td>neurological manifestation e.g. meningitis, altered consciousness, seizure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>seplicaemia</td>
<td></td>
</tr>
</tbody>
</table>

**Summary Treatment & Recommendations For Adults With RS**

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotic</td>
<td>Yes in ABRS</td>
</tr>
<tr>
<td>Topical steroids</td>
<td>Yes, mainly in post-viral ARS</td>
</tr>
<tr>
<td>Addition of topical corticosteroids to antibiotics</td>
<td>Yes in ABRS</td>
</tr>
<tr>
<td>Addition of oral corticosteroids to antibiotics</td>
<td>No</td>
</tr>
<tr>
<td>Saline irrigation</td>
<td>Yes</td>
</tr>
<tr>
<td>Oral antihistamine added in allergic patients</td>
<td>Yes</td>
</tr>
<tr>
<td>Analgesics</td>
<td>Yes, in viral and post-viral ARS</td>
</tr>
<tr>
<td>Decongestants</td>
<td>Yes</td>
</tr>
<tr>
<td>Mucolytics</td>
<td>No</td>
</tr>
</tbody>
</table>
## Medication Dosage, Indications & Special Precautions in RS

### Intradanasal Corticosteroids

<table>
<thead>
<tr>
<th>Generic Drug Name</th>
<th>Recommended Dosage</th>
<th>Special Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budesonide 64 mcg/dose nasal spray</td>
<td>250 - 500 mg PO q8hr x 5 - 10 days or 500 - 875 mg PO q12hr x 5 - 10 days</td>
<td>Preferred antibiotics in ABRS, Penicillin allergy, infectious mononucleosis, renal impairment</td>
</tr>
<tr>
<td>Fluticasone propionate 50 mcg/dose nasal spray</td>
<td>250 - 500 mg PO q12hr x 5 - 10 days</td>
<td>Penicillin allergy, gastrointestinal disease (e.g. colitis), renal impairment</td>
</tr>
<tr>
<td>Mometasone furoate 50 mcg aqueous nasal spray</td>
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<td></td>
</tr>
</tbody>
</table>

### Antibiotics

<table>
<thead>
<tr>
<th>Generic Drug Name</th>
<th>Recommended Dosage</th>
<th>Special Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin &amp; Clavulanic acid</td>
<td>500/125 mg PO q8hr x 5 - 7 days or 875/125 mg PO q12hr x 5 - 7 days</td>
<td>Preferred antibiotics in ABRS, Allergy to beta-lactam antibiotics, infectious mononucleosis</td>
</tr>
<tr>
<td>Cefuroxime axetil</td>
<td>250 - 500 mg PO q12hr x 5 - 10 days</td>
<td>Penicillin allergy, gastrointestinal disease (e.g. colitis), renal impairment</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>500 mg PO q24hr x 3 days</td>
<td>Prolonged QT interval (torsades de pointes, congenital long QT syndrome, bradyarrhythmias, uncompensated heart failure, drugs that prolong QT interval or proarrhythmic conditions), myasthenia gravis, renal &amp; hepatic impairment</td>
</tr>
<tr>
<td>Clarithromycin</td>
<td>ABRS: 250 - 500 mg PO q12hr x 7 - 14 days CRS: 250 mg PO q12hr</td>
<td>Coronary artery disease, prolonged QT interval (disease or co-administration of drugs that prolong QT interval or proarrhythmic conditions), myasthenia gravis, severe renal (require dose adjustment) &amp; hepatic impairment</td>
</tr>
</tbody>
</table>

## Management of Rhinosinusitis in Adolescents and Adults

- **Ministry of Health Malaysia**
- ** Malaysian Society of Otorhinolaryngologist & Head & Neck Surgeons (MS-HNS)**
- **Academy of Medicine Malaysia**

**Indications**

- Seasonal & perennial allergic rhinitis, nasal polyposis
- Treatment & prevention of nasal polyposis
- Prophylaxis & treatment of seasonal & perennial allergic rhinitis
- Treatment of associated sinus pain & pressure
- Symptomatic treatment associated with ARS & treatment of nasal polyposis

**Dosage**

- Adults & children 6 years and older:
  - **Rhinitis:** 2 sprays into each nostril once daily in the morning or (1 spray into each nostril twice daily)
  - **Nasal polyposis:** 2 sprays twice daily
- Adults/adolescents (≥12 years):
  - 2 sprays in each nostril once daily
  - Maximum daily dose: 4 sprays in each nostril
- Allergic Rhinitis (adults & children over 12 years):
  - 100 mcg/day (2 sprays) to each nostril once daily
  - Maximum 200 mcg (4 sprays) once daily
  - Reduce to 50 mcg (1 spray) once daily when control achieved

**Acute Rhinosinusitis**:

- 2 sprays in each nostril twice daily (total 400 mcg/day)

**Nasal polyposis**

- 2 sprays in each nostril twice daily (total 400 mcg/day)
- reduced to 2 sprays each nostril once daily when symptoms are adequately controlled