Appropriate respiratory tract infection management in pharmacy

GRIP Guidance
Antimicrobial resistance is a global problem\textsuperscript{1,2}

Increased antibiotic use – specifically overuse/use for minor self-limiting conditions – is a key driver for resistance development\textsuperscript{1}

Appropriate management of acute respiratory tract infections (RTIs) can help counter antibiotic resistance

The majority of RTIs, such as sore throat, are caused by a virus, do not require antibiotics\textsuperscript{3–5} and are non-serious\textsuperscript{6,7}

\textit{A global and national multi-sectoral response is urgently needed to combat the growing threat of AMR*}  
World Health Organization\textsuperscript{2}

\textit{Inappropriate and irrational use of antimicrobial medicines provides favorable conditions for resistant microorganisms to emerge}  
World Health Organization\textsuperscript{2}


*Antimicrobial resistance
The Global Respiratory Infection Partnership (GRIP) is an international group of healthcare professionals consisting of primary care and hospital doctors, microbiologists, pharmacists and researchers.

GRIP members recognise the imminent onset of the post-antibiotic era and note the limited number of new antibiotics in development.

GRIP is committed to reducing inappropriate antibiotic use for RTIs in primary care and the wider community, helping to counteract antibiotic resistance.

The GRIP has formulated a framework for assessment and management options for URTIs, in particular sore throat.

www.GRIP-initiative.com
Explain to patients most RTIs are caused by viruses\textsuperscript{1,2} – antibiotics do not relieve symptoms\textsuperscript{3–5} or prevent complications\textsuperscript{6}

Recommend symptomatic relief options that meet personal needs/preferences\textsuperscript{7}

Alert patients to signs and symptoms requiring doctor consultation\textsuperscript{4}

The pharmacy team has a key role in encouraging patients to self-manage RTIs without antibiotics

\begin{enumerate}
RTI management – what patients need to know

Encouraging symptomatic relief in RTIs
RTIs and antibiotics

- RTIs are the most commonly treated acute problem in primary care\(^1\)
- RTIs are **usually viral** and do not need antibiotics\(^2,3\)
- Distinguishing between a viral or bacterial infection is difficult, when considering physical findings alone\(^4,5\)
  - There is no evidence to support the colour of nasal discharge or phlegm acting as a marker for the prescription of antibiotics\(^6\)
  - Better predictors, such as the absence of cough in sore throat, can help identify bacterial infections\(^7\)
- Most bacterial and viral RTIs are **non-serious** and can resolve **without antibiotics** in 1–2 weeks,\(^8–10\) as the immune system fights the infection
- However, antibiotics are often used for RTIs\(^11,12\)
- Antibiotics can cause side effects (e.g. diarrhoea,\(^9\) vaginal candidiasis\(^13\)) and **may do more harm than good** in most patients
- RTIs can be classified as upper RTIs or lower RTIs\(^14\)

An URTI is a viral or bacterial infection of the nose, sinuses, tonsils, middle ear, larynx or pharynx. 

- **Sinusitis**: inflammation of the sinuses, usually after a common cold.
- **Common cold and influenza**: viral cause, enters through the nasal passages.
- **(Irritant) rhinitis**: inflammation of the nasal mucous membranes, as a result of a virus, causing a runny nose or congestion.
- **Laryngitis**: infection of the larynx, also known as sore throat, and often characterised by hoarseness.
- **Otitis media**: infection of the middle ear often after a common cold, also known as earache.
- **Tonsillitis**: infection of the tonsils, usually caused by a virus.
- **Pharyngitis**: infection of the pharynx, also known as sore throat.
- **Acute cough**: dry and unproductive in the early days of infection as a result of inflammatory response of the upper airways spreading to the larynx, can become productive if inflammation spreads to lower airways.
- **Sinusitis**: inflammation of the sinuses, usually after a common cold.

How long will symptoms last?

From the presence of first symptoms, the duration of an URTI varies

- **Otitis media:** 4 days
- **Sore throat/tonsillitis:** 1 week
- **Common cold:** 1.5 weeks
- **Flu:** 2 weeks
- **Runny nose/nasal congestion:** 1–2.5 weeks
- **Sinusitis:** 2–3 weeks
- **Acute cough:** 3 weeks

Most URTIs are viral\(^1\) and symptomatic relief can help patients feel better\(^2\).

Tailor treatment to individual symptoms and personal preferences with different active ingredients and formulations:\(^3\)–\(^6\)

### Oral formulations, e.g. tablets, liquids, capsules, soluble tablets
- Analgesics for pain (e.g. headache, muscle aches) and fever
- Decongestants/antihistamines for nasal congestion, runny nose and rhinitis
- Suppressants for dry, unproductive coughs, e.g. syrups

### Oral formulations, e.g. lozenges, throat sprays, gargles, demulcents
- Gargles, sprays and lozenges, containing antiseptics or anaesthetics, for sore throat
- Low-dose analgesics/anti-inflammatories to relieve pain and inflammation at the site such as sore throat
- Demulcients in lozenges and syrups for sore throats and/or suppressing dry, unproductive coughs

### Topicals, e.g. gels, patches, drops, nasal sprays
- Gels and patches for muscle aches
- Nasal and ear formulations
  - Decongestants and anticholinergics for nasal congestion and rhinitis
  - Medicated drops for earache

### Tablets are available which contain a combination of active agents (e.g. an analgesic plus a decongestant)

### Powders and liquids are also available with various combinations to treat one or more symptoms of colds/flu

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### Benefits of symptomatic relief: Systemic action

<table>
<thead>
<tr>
<th>Drug class</th>
<th>Examples</th>
<th>Mode of action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analgesics:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-steroidal anti-inflammatory drugs (NSAIDs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analgesics:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ibuprofen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspirin</td>
<td></td>
<td>Inhibits prostaglandin production throughout the body and in the central nervous system (CNS), to relieve pain and reduce fever.</td>
</tr>
<tr>
<td><strong>Analgesics:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(non-NSAID)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paracetamol</td>
<td></td>
<td>Paracetamol thought to act on prostaglandins in the CNS to relieve pain and reduce fever.</td>
</tr>
<tr>
<td>Codeine</td>
<td></td>
<td>Codeine is converted to morphine, a powerful analgesic.</td>
</tr>
<tr>
<td><strong>Decongestants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pseudoephedrine</td>
<td></td>
<td>Constricts swollen nasal blood vessels to reduce swelling and congestion.</td>
</tr>
<tr>
<td>Phenylephrine</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Antihistamines</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorphenamine</td>
<td></td>
<td>Reduces histamine-related congestion and helps drain sinuses, drying up a runny nose, and often used in combination with decongestants. Can also suppress cough and induce drowsiness for nocturnal cough</td>
</tr>
<tr>
<td>Diphenhydramine</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cough suppressants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dextromethorphan</td>
<td></td>
<td>Suppresses the cough reflex to normal levels.</td>
</tr>
<tr>
<td>Codeine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pholcodine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Benefits of symptomatic relief: Local action

<table>
<thead>
<tr>
<th>Drug class</th>
<th>Examples</th>
<th>Mode of action</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSAIDs for sore throat</td>
<td>Flurbiprofen</td>
<td>Inhibits prostaglandin production at the site of pain, to reduce swelling and inflammation and improve swallowing.</td>
</tr>
<tr>
<td></td>
<td>Benzydamine</td>
<td></td>
</tr>
<tr>
<td>NSAIDs for muscle aches</td>
<td>Ibuprofen</td>
<td>Inhibits prostaglandin production at the site of muscle pain to relieve pain.</td>
</tr>
<tr>
<td></td>
<td>Diclofenac</td>
<td></td>
</tr>
<tr>
<td>Decongestants</td>
<td>Oxymetazoline</td>
<td>Oxymetazoline and xylometazoline constrict swollen blood vessels to reduce nasal swelling and congestion; saline irrigation clears mucus and bacteria from the nose.</td>
</tr>
<tr>
<td></td>
<td>Xylometazoline</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Saline</td>
<td></td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>Ipratropium</td>
<td>Reduces the amount of mucus produced in the nose to relieve a runny nose.</td>
</tr>
<tr>
<td>Antiseptic agents for sore throat or earache</td>
<td>Amylmetacresol</td>
<td>Amylmetacresol and dichlorobenzyl alcohol are antibacterial, antiviral and have local anaesthetic properties; cetylpyridinium chloride is antibacterial; Acetic acid and boric acid have antibacterial properties.</td>
</tr>
<tr>
<td></td>
<td>Dichlorobenzyl alcohol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cetylpyridinium chloride</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acetic acid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boric acid</td>
<td></td>
</tr>
<tr>
<td>Anaesthetic agents for sore throat or earache</td>
<td>Benzocaine</td>
<td>Exerts a numbing effect achieved by blocking sensory signals locally.</td>
</tr>
<tr>
<td></td>
<td>Hexylresorcinol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lidocaine</td>
<td></td>
</tr>
<tr>
<td>Demulcents for sore throat</td>
<td>Glycerin</td>
<td>Lubricates the throat to produce a soothing effect; lozenge formulations have a demulcent action.</td>
</tr>
<tr>
<td></td>
<td>Honey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sugar</td>
<td></td>
</tr>
</tbody>
</table>

IN FOCUS

Sore throat management in pharmacy

Encouraging symptomatic relief in RTIs
Key reasons for visiting a HCP for sore throat:

1. To establish the cause of the symptoms
2. To obtain pain relief
3. To gain information on the course of the disease

1. Address patient’s concerns

- Assess patient’s main symptom(s) and concerns
  - Throat pain: 41%
  - Swollen throat: 33%
  - Difficulty swallowing: 31%

- Recognise the symptoms of RTIs, such as sore throat, can be worrying and bothersome for patients

- Provide reassurance on duration and severity of sore throat

  **Approx. 7 days**

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The majority of sore throats are viral (90% in adults), non-serious and self-limiting \(^1,2\)

Bacterial infections can occur in 10% of adult sore throats\(^1\)

Group A β-hemolytic *Streptococci* (GABHS) is the most common bacterial cause of sore throat\(^1\)

Particularly with GABHS infections in high-risk patients, throat infections can lead to complications (e.g. rheumatic fever)\(^3\)

For patients at high-risk of complications, presenting with red flag symptoms, or those who appear severely unwell, referral to a doctor is needed

2 Be vigilant – assess severity

Symptoms that persist without improvement for more than one week (for sore throat), or appear to be getting progressively worse may need doctor consultation

Any of the following red flag symptoms also require further investigation:

• Coughing up blood
• Shortness of breath
• Neck swelling on one side of the neck, not related to the lymph nodes
• Great difficulty swallowing, e.g. unable to swallow food
• Very high temperature (>39°C) or night sweats
• Drooling or muffled voice
• Wheezing sounds when breathing

Be alert to those patients at increased risk of complications:

• Elderly patients aged >65 years or young children <2 years of age or born prematurely
• Immunocompromised patients
• Pre-existing conditions such as diabetes, cystic fibrosis, chronic lung disease and those with HIV
• Specific local populations, such as Aborigines or Torres Strait Islanders in Australia, American Indians or Alaskan natives
• Patients who show signs of being severely unwell

Counsel on effective self-management

Reassure patients

- Sore throat has a low risk of serious problems/complications and can be treated with symptomatic relief products\(^1-^3\)

- As most sore throats are caused by a virus, antibiotics are NOT recommended and may do more harm than good\(^3-^5\)

Recommend symptomatic relief and allow for personal preferences

- Target patient’s main cause of discomfort and aim to reduce the underlying inflammation

- Select medication and formulations that best meet patient’s needs

Advise patients what to do next

- Symptoms should last no longer than 7 days\(^6-^8\)

- If symptoms persist, without improvement for more than one week, the patient is high-risk, or red flag symptoms develop, advise them to visit their doctor\(^2,^9\)

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# Tailoring sore throat treatment

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Local delivery</th>
<th>Relieves pain</th>
<th>Anti-inflammatory effect</th>
<th>Demulcent effect</th>
<th>Low dose, reduced side effect risk*</th>
<th>Note on formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral NSAIDs</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
<td>Slower acting than local treatments³</td>
</tr>
<tr>
<td>Other analgesics</td>
<td>✗</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>Slower acting than local treatments³</td>
</tr>
<tr>
<td>Local NSAID lozenge</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Faster acting than systemic treatments³ Can relieve pain in 2 minutes and last up to 4–6 hours⁸,⁹</td>
</tr>
<tr>
<td>Local NSAID spray/gargle</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>Faster acting than systemic treatments¹; Gargles are often swallowed and the active ingredients do not reach the throat¹¹</td>
</tr>
<tr>
<td>Antiseptic/anaesthetic lozenge</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>Faster acting than systemic treatments³ Lozenges dissolve slowly to release active ingredients³</td>
</tr>
<tr>
<td>Antiseptic/anaesthetic spray/gargle</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
<td>Faster acting than systemic treatments³</td>
</tr>
<tr>
<td>Anaesthetic ear drops</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
<td>Acidic agent preferred for acute early stage disease compared to topical/oral antimicrobial agents⁸</td>
</tr>
<tr>
<td>Cough syrup</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>Provides a cough suppressant (anti-tussive) effect¹³</td>
</tr>
</tbody>
</table>


*The literature available on topical OTC sore throat treatments demonstrates a good safety profile, with only very minor self-limiting adverse effects, such as headaches and coughing being reported.*³
Some patients may ask you about antibiotics.

The pharmacy team has an important role in providing advice on appropriate antibiotic use.

Advise patients that antibiotics won’t help to reduce the severity of symptoms as they don’t offer pain relief or shorten duration of symptoms.\(^1\)

Communicate the duration of the infection and also red flag symptoms.

Highlight to patients that taking an antibiotic can generate resistant bacteria in their body, which survive for up to 12 months; this can make it harder to treat them, and other patients, with serious infections in the future.\(^2\)

Remind patients that antibiotics have side effects.\(^3,4\)

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Summary

1. Address patient’s concerns
2. Be vigilant – assess severity
3. Counsel on effective self-management
Case study

1. Address patient’s concerns
   - 60-year-old, healthy male with sore throat
   - Wants to ease his throat pain with a long-lasting product
   - Wonders if he needs to see a doctor for antibiotics

2. Be vigilant – assess severity
   - Patient: “Symptoms started 2 days ago with a sore throat. I don’t have a cough and my tonsils and temperature appear normal. My glands are a bit swollen though.”
   - John has no red flag symptoms and is not a high-risk patient

3. Counsel on effective self-management
   - Reassure John his symptoms are most likely due to a viral throat infection, which is usually not serious and does not require antibiotics\(^1,2\)
   - Advise John his symptoms usually only last around 7 days\(^3\) – if symptoms persist, without improvement, he should see his local doctor
   - Recommend anti-inflammatory lozenges for long-lasting sore throat relief as requested by John. These can provide local relief at the site of pain and, additionally, reduce swelling and difficulty in swallowing

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Case study

1. Address patient’s concerns

- 23-year-old male with diabetes
- Sore throat with a cough
- Jack does not want to bother his doctor

2. Be vigilant – assess severity

- Patient: “My symptoms started over 2 weeks ago with a sore throat and runny nose. I also have a dry, tickly cough”
- Jack has no red flag symptoms, but his symptoms have lasted more than 2 weeks. Jack is high-risk due to his diabetes

3. Counsel on effective self-management

- Reassure Jack that his symptoms are likely to be due to a respiratory infection, which is usually not serious.
- Advise Jack to see his doctor as his diabetes and extended duration of symptoms put him at a higher risk of complications.
- Recommend symptomatic relief, such as anti-inflammatory lozenges to reduce throat swelling and ease pain and discomfort. A multi-symptom cold and flu product containing an analgesic to relieve sore throat, a decongestant/antihistamine combination for congestion and a cough suppressant for his dry cough may also be recommended. Give advice about product combinations and doses.

Case study

1 Address patient’s concerns
- 27-year-old, healthy female
- Sore throat with a cough
- Priya has come to the pharmacy for an analgesic and also asks if she should see her doctor for antibiotics

2 Be vigilant – assess severity
- Patient: “Symptoms started 3 days ago with a sore throat and a cough, but I’m not coughing up anything. I don’t think my glands are swollen”
- Priya has no red flag symptoms and is not a high-risk patient

3 Counsel on effective self-management
- Reassure Priya her symptoms are likely to be due to a respiratory infection, which is usually viral, not serious and does not require antibiotics\(^1,^2\)
- Recommend medicated lozenges for fast, long-acting local relief at the site of throat pain. A systemic pain relief (e.g. tablets) or a cough suppressant may also be useful.
- Advise Priya symptoms usually last around 7 days.\(^3\) If her symptoms persist without improvement she should see her local doctor

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