

Appropriate respiratory tract infection management in pharmacy



Antibiotic resistance – a global issue

- ☉ Antimicrobial resistance is a **global problem**^{1,2}
- ☉ Increased antibiotic use – specifically overuse/use for minor self-limiting conditions – is a **key driver for resistance** development¹
- ☉ 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**³⁻⁵ and are **non-serious**^{6,7}

“ *A global and national multi-sectoral response is urgently needed to combat the growing threat of AMR** ”

World Health Organization²

“ *Inappropriate and irrational use of antimicrobial medicines provides favorable conditions for resistant microorganisms to emerge* ”

World Health Organization²

1. Goossens H, et al. *Lancet*. 2005;365:579–587. 2. World Health Organization. Factsheet No 194. <http://www.who.int/mediacentre/factsheets/fs194/en/> 3. Hildreth CJ, et al. *JAMA*. 2009;302:816. 4. Van Gageldonk-Lafeber AB, et al. *Clin Infect Dis*. 2005;41:490–497. 5. Worrall GJ. *Canadian Family Physician*. 2007;53:1961–1962. 6. Arroll B, Kenealy T. *Cochrane Database Syst Rev*. 2005;(3). CD000247. 7. Spinks A, et al. *Cochrane Database Syst Rev*. 2006;(4) CD000023.

*Antimicrobial resistance

How can the GRIP help?

- 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



The pharmacy team as antibiotic educators

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



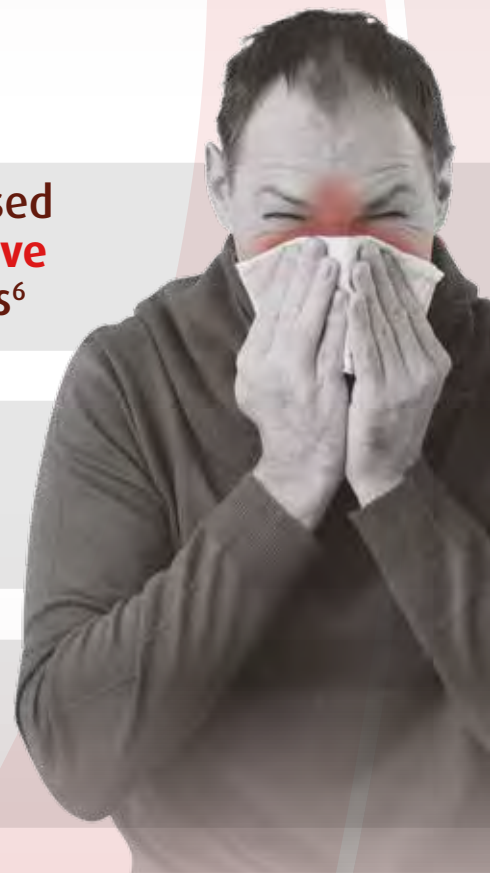
Explain to patients most RTIs are caused by viruses^{1,2} – **antibiotics do not relieve symptoms³⁻⁵** or prevent complications⁶



Recommend symptomatic relief options that **meet personal needs/preferences⁷**



Alert patients to signs and symptoms requiring doctor consultation⁴





**RTI management –
what patients need to know**

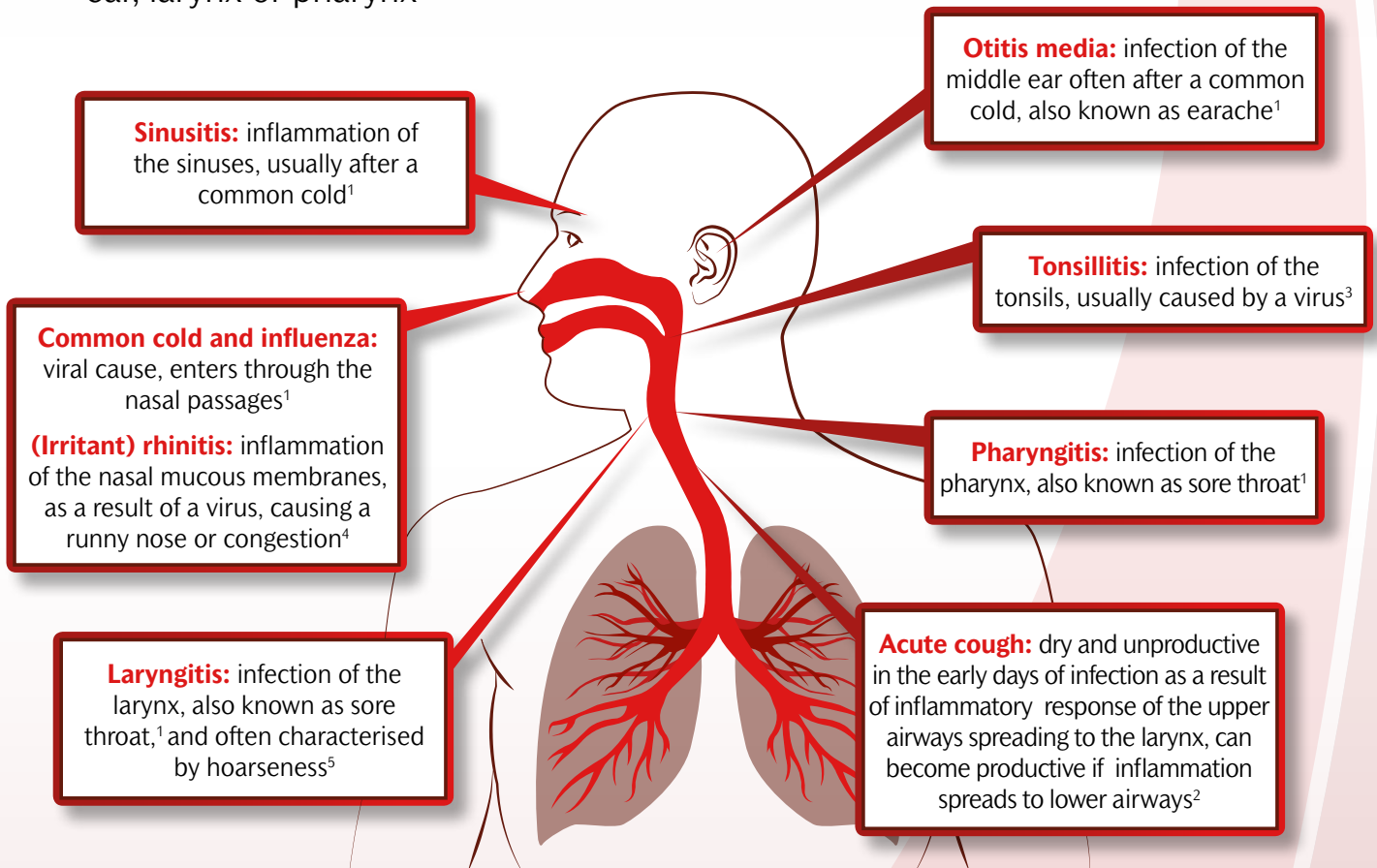
**Encouraging symptomatic
relief in RTIs**

RTIs and antibiotics

- RTIs are the most commonly treated acute problem in primary care¹
- 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 antibiotics⁶
 - Better predictors, such as the absence of cough in sore throat, can help identify bacterial infections⁷
- 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 candidiasis¹³) and **may do more harm than good** in most patients
- RTIs can be classified as upper RTIs or lower RTIs¹⁴


What is an URTI?

- An URTI is a viral or bacterial infection of the nose, sinuses, tonsils, middle ear, larynx or pharynx^{1,2}



How long will symptoms last?

- From the presence of first symptoms, the duration of an URTI varies¹⁻⁴



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

What will improve symptoms?

- Most URTIs are viral¹ 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

Systemic relief

- » **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

Local relief

- » **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
 - Demulcents 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

Multi-symptom remedies

- » **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**

Benefits of symptomatic relief: Systemic action

Drug class	Examples	Mode of action
Analgesics: non-steroidal anti-inflammatory drugs (NSAIDs)	Ibuprofen Aspirin	Inhibits prostaglandin production throughout the body and in the central nervous system (CNS), ¹ to relieve pain and reduce fever ²
Analgesics: (non-NSAID)	Paracetamol Codeine	Paracetamol thought to act on prostaglandins in the CNS to relieve pain and reduce fever ³ Codeine is converted to morphine, a powerful analgesic ⁴
Decongestants	Pseudoephedrine Phenylephrine	Constricts swollen nasal blood vessels to reduce swelling and congestion ^{5,6}
Antihistamines	Chlorphenamine Diphenhydramine	Reduces histamine-related congestion and helps drain sinuses, ⁶ drying up a runny nose, and often used in combination with decongestants. Can also suppress cough ⁷ and induce drowsiness for nocturnal cough
Cough suppressants	Dextromethorphan Codeine Pholcodine	Suppresses the cough reflex to normal levels ^{7,8}

Benefits of symptomatic relief: Local action

Drug class	Examples	Mode of action
NSAIDs for sore throat	Flurbiprofen Benzydamine	Inhibits prostaglandin production ¹ at the site of pain, to reduce swelling and inflammation and improve swallowing ²⁻⁴
NSAIDs for muscle aches	Ibuprofen Diclofenac	Inhibits prostaglandin production at the site of muscle pain to relieve pain ⁵
Decongestants	Oxymetazoline Xylometazoline Saline	Oxymetazoline and xylometazoline constrict swollen blood vessels to reduce nasal swelling and congestion; ⁶ saline irrigation clears mucus and bacteria from the nose ⁷
Anticholinergics	Ipratropium	Reduces the amount of mucus produced in the nose to relieve a runny nose ⁸
Antiseptic agents for sore throat or earache	Amylmetacresol Dichlorobenzyl alcohol Cetylpyridinium chloride Acetic acid Boric acid	Amylmetacresol and dichlorobenzyl alcohol are antibacterial, antiviral and have local anaesthetic properties; ⁹ cetylpyridinium chloride is antibacterial; ¹⁰ Acetic acid and boric acid have antibacterial properties ¹¹
Anaesthetic agents for sore throat or earache	Benzocaine Hexylresorcinol Lidocaine	Exerts a numbing effect achieved by blocking sensory signals locally ¹²⁻¹⁵
Demulcents for sore throat	Glycerin Honey Sugar	Lubricates the throat to produce a soothing effect; ¹⁰ lozenge formulations have a demulcent action ¹⁰

1. Sefia E, et al. Annual Scientific Meeting of the British Pain Society (poster) 2007. 2. Blagden M, et al. *Int J Clin Pract.* 2002;56:95-100. 3. Benrimoj SI, et al. *Clin Drug Invest* 2001;21:183-93.4. Watson N, et al. *Int J Clin Pract.* 2000;54:490-6. 5. Rainsford KD. *Int J Clin Pract Suppl.* 2013;178:9-20. 6. Taverner D, Latte GJ. *Cochrane Database Syst Rev.* 2007;(1) CD001953. 7. Yeung DF, et al. *UTMJ.* 2011;88:84-87. 8. AlBalawi ZH, et al. *Cochrane Database Syst Rev.* 2011;(7). CD008231. 9. Wade AG, et al. *BMC Family Practice.* 2011;12:6. 10. Oxford JS, et al. *Int J Clin Pract.* 2011;65:524-530. 11. Osguthorpe JD, Nielsen DR. *Am Fam Physician.* 2006;74(9):1510-6. 12. McNally D, et al. *J Pharm Sci.* 2012;15:281-94. 13. Bolt P, et al. *Arch Dis Child.* 2008;93(1):40-4. 14. Buchholz V, et al. Naunyn Schmiedebergs Arch Pharmacol. 2009;380(2):161-8. 15. Priestley T. *Curr Drug Targets CNS Neurol Disord.* 2004;3(6):441-56.



**IN
FOCUS**

**Sore throat management
in pharmacy**

**Encouraging symptomatic
relief in RTIs**

1, 2, 3 for sore throat: Background

- Key reasons for visiting a HCP for sore throat:¹



To establish the cause of the symptoms



To obtain pain relief



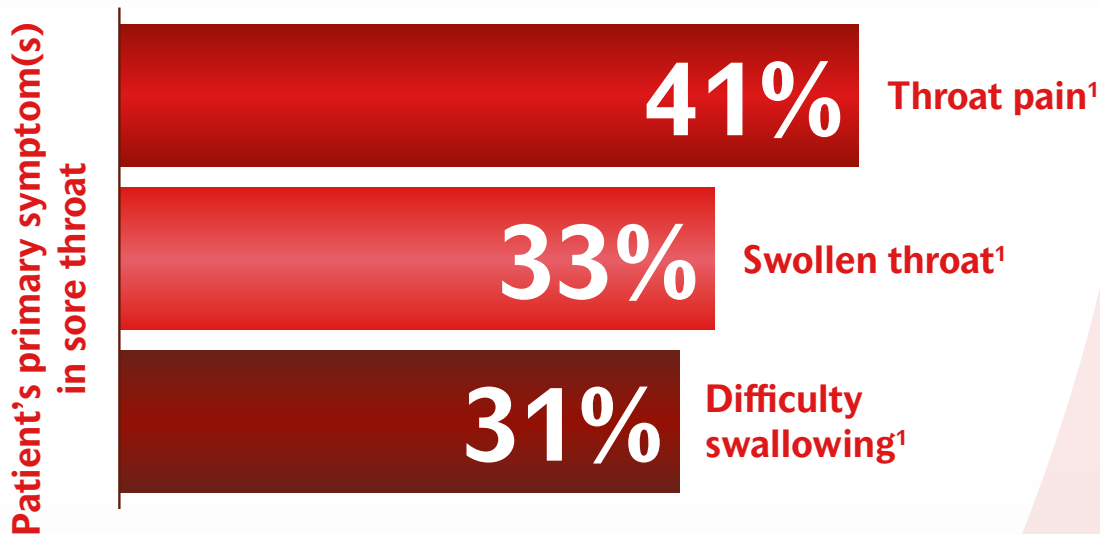
To gain information on the course of the disease



1 Address patient's concerns



- Assess patient's main symptom(s) and concerns



- 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 days²⁻⁴

2 Be vigilant – assess severity

- 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 throats¹
- Group A β -hemolytic *Streptococci* (GABHS) is the most common bacterial cause of sore throat¹
- 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 consultation¹

Any of the following red flag symptoms also require further investigation:¹⁻³

- **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:⁴⁻⁶

- **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**

3 Counsel on effective self-management



Reassure patients

- ☞ Sore throat has a low risk of serious problems/complications and can be treated with symptomatic relief products¹⁻³
- ☞ As most sore throats are caused by a virus, antibiotics are NOT recommended and may do more harm than good³⁻⁵

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 days⁶⁻⁸
- ☞ 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}

Tailoring sore throat treatment

Formulation	Local delivery	Relieves pain	Anti-inflammatory effect	Demulcent effect	Low dose, reduced side effect risk*	Note on formulation
Oral NSAIDs	X	✓ ^{1,2}	✓	X	X	Slower acting than local treatments ³
Other analgesics	X	✓ ^{4,5}	X	X	X	Slower acting than local treatments ³
Local NSAID lozenge	✓	✓ ⁶⁻⁹	✓ ^{7,8}	✓ ^{6,7}	✓ ⁶⁻⁹	Faster acting than systemic treatments. ³ Can relieve pain in 2 minutes and last up to 4–6 hours ^{8,9}
Local NSAID spray/gargle	✓	✓ ¹⁰	✓ ¹⁰	X	✓ ¹⁰	Faster acting than systemic treatments ¹ Gargles are often swallowed and the active ingredients do not reach the throat ¹¹
Antiseptic/anaesthetic lozenge	✓	✓ ¹²	X	✓ ¹²	✓ ¹²	Faster acting than systemic treatments ³ Lozenges dissolve slowly to release active ingredients ³
Antiseptic/anaesthetic spray/gargle	✓	✓ ^{3,14}	X	X	✓ ³	Faster acting than systemic treatments ³
Anaesthetic ear drops	✓	✓ ¹⁵	X	X	✓ ³	Acidic agent preferred for acute early stage disease compared to topical/oral antimicrobial agents ⁸
Cough syrup	✓	X	X	✓ ³	✓	Provides a cough suppressant (anti-tussive) effect ¹³

1. Burian M, Geisslinger G. *Pharmacol Ther.* 2005;107(2):139–154. 2. Rainsford KD. *Int J Clin Pract Suppl.* 2013;178:9–20. 3. Oxford JS, et al. *J Clin Pract.* 2011;65(5): 524–530. 4. Graham GG, Scott KF. *Am J Ther.* 2005;12:46–55. 5. Derry S, et al. *Cochrane Database Syst Rev.* 2010;(4) CD008099. 6. Blagden M, et al. *Int J Clin Pract.* 2002;56:95–100. 7. Watson N, et al. *Int J Clin Pract.* 2000;54:490–6. 8. Benrimoj SJ, et al. *Clin Drug Invest* 2001;21:183–93. 9. Schachtel B, et al. *Int J Clin Pharm.* 2012;34:143–258.;71:375–80. 10. Passali D, et al. *Clin Ther.* 2001;23:1508–1518. 11. Limb M, et al. *Int J Clin Pract.* 2009; 63: 606–12. 12. Wade AG, et al. *BMC Family Practice.* 2011;12:6. 13. De Blasio F, et al. *Cough.* 2011;7(1):7. 14: Buchholz V, et al. *Naunyn Schmiedebergs Arch Pharmacol.* 2009;380(2):161–8. 15: Prasad S, Ewigman B. *J Fam Pract.* 2008 ;57(6):370–3.

*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

Antibiotic use and pharmacies

- ➊ Some patients may ask you about antibiotics
- ➋ The pharmacy team has an important role in providing advice on **appropriate antibiotic use**
- ➌ Advise patients that antibiotics **won't help to reduce the severity of symptoms** as they don't offer pain relief or shorten duration of symptoms¹
- ➍ Communicate the duration of the infection and also red flag symptoms
- ➎ 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 future²
- ➏ Remind patients that **antibiotics have side effects**^{3,4}

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



John

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 days³ – 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

Case study



Jack

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 serious¹
- 🕒 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



Priya

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