



National Prescribing Service Limited

**Case study 58 report:
Antibiotics and
respiratory tract illness
— thinking of patient-
centred care**



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ABN 61 082 034 393 | Level 7/418A Elizabeth Street Surry Hills NSW 2010 | PO Box 1147 Strawberry Hills 2012
Phone: 02 8217 8700 | Fax: 02 9211 7578 | email: info@nps.org.au | web: www.nps.org.au

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The information contained in this material is derived from a critical analysis of a wide range of authoritative evidence. Any treatment decision based on this information should be made in the context of the clinical circumstances of each patient. Declarations of interest have been sought from all commentators.

Case study 58

Antibiotics and respiratory tract illness – thinking of patient-centred care

Scenario

Brenda is a 25-year-old marketing executive. She presents to you today worried about her cough and hoarse voice, as she has to give a presentation to her company board next week. She developed symptoms of cough with mucopurulent sputum, rhinitis, mild fever and malaise 5 days ago. She used 'cough lollies' for her symptoms and felt 'a bit better'. Currently she complains of cough without paroxysm and a hoarse voice. She denies any sputum production or wheeze, or contact with anyone suffering from pertussis.

Brenda is single and lives with her parents. She is a non-smoker and drinks alcohol only at social functions. She underwent a tonsillectomy at age 13. She denies any history of asthma. She has no history of renal or hepatic disease and no known drug allergies. Her family history is unremarkable. Currently, she is not taking any medication.

On examination, she looks anxious. Her blood pressure is 126/84 mmHg, pulse 90 beats/min, respiratory rate 15/min and temperature 37.8 °C. There is no cervical lymphadenopathy or cyanosis. Throat examination reveals no exudates. Respiratory examination reveals no chest wall tenderness and auscultation reveals normal breath sounds. There were no other significant findings.

1. Brenda is worried about her symptoms and requests an antibiotic prescription. She says she was prescribed an antibiotic for similar symptoms in the past and felt better after taking it.

a) Would you recommend an antibiotic for Brenda at this visit?

Yes No

b) Why/why not?

c) If yes, please specify:

Medication

Dose

Frequency

Duration

2. a) Would you recommend any over-the-counter medication(s) for Brenda's symptoms?

Yes No

b) Why/why not?

c) If yes, please specify:

Medication

Dose

Frequency

Duration

_____	_____	_____	_____
_____	_____	_____	_____

3. What advice will you give Brenda about non-pharmacological strategies to manage her current condition?

4. a) A few months later, Brenda presents to you complaining of a respiratory tract infection. What signs and symptoms would make you suspicious that she may have pneumonia this time?

_____	_____
_____	_____

b) The most common cause of community acquired pneumonia in Australia is *Streptococcus pneumoniae*. Recommend two antibiotics to treat pneumonia due to this organism.

Summary of results

At the time of publication, 1015 responses were received. This report summarises responses from 200 general practitioners.

Case synopsis

Brenda is a 25-year-old marketing executive who complains of persistent cough and hoarse voice. She gives a recent history of cough with mucopurulent sputum, rhinitis, fever and malaise. She has no history of asthma and is a non-smoker. Her current BP is 126/84 mmHg, pulse 90/min, respiratory rate 15/min and temperature 37.8 °C. Respiratory examination reveals no chest wall tenderness and normal breath sounds. There were no other significant findings. (See page 3 for more details.)

Prescribing an antibiotic

- 93.0% of respondents would not recommend antibiotic for Brenda.
- 57% of respondents who recommended an antibiotic for Brenda suggested using it for her current symptoms, while 43% suggested a delayed prescription if her symptoms get worse. Reasons for not recommending an antibiotic included the viral nature of the illness (65.6%), that antibiotics would not affect her current symptoms (37%), and that her illness would resolve spontaneously (11%).
- Amoxicillin was the preferred drug of choice for Brenda.

Over-the-counter (OTC) preparations

- 68.0% of respondents would recommend OTC preparations for Brenda.
- OTC preparations were recommended for relief of her symptoms (69%) and for fever (33%). Main reasons for not recommending OTC preparations were due to lack of evidence (92%), and that her illness would resolve spontaneously (8%).
- Choices for OTC preparation included paracetamol (77%), codeine preparations (10%), FESS nasal spray (10%), cough lozenges (7%) and ibuprofen (7%). The preferred duration of OTC preparation use was between 2 days and 1 week.
- The preferred dosage regimen for paracetamol included 1000 mg four times a day (56%) and 500 mg four times a day (17%).

Non-pharmacological therapy

- Advice on non-pharmacological therapy included:
 - taking adequate rest (57%)
 - maintaining adequate hydration (55%)
 - steam inhalations (29%)

Signs and symptoms suggestive of pneumonia

- Clinical examination findings identified by respondents that may indicate that Brenda is suffering from pneumonia include:
 - crepitations/rales (37%)
 - tachypnoea (28%)
 - clinical lung signs (not specified) (23%)
 - bronchial breath sounds (19%)
 - dullness on percussion in chest region (12%)

- Symptoms suggested by respondents that may indicate Brenda is suffering from pneumonia include:
 - high fever ≥ 38 °C (92%)
 - respiratory distress (58%)
 - presence of constitutional symptoms (46%)
 - cough (productive or non-productive) (41%)
- Amoxicillin (36%), roxithromycin (17%) and phenoxymethylpenicillin (15%) were the more commonly recommended antibiotics for the treatment of pneumonia caused by *Streptococcus pneumoniae*.

Results in detail

Prescribing an antibiotic

93% of respondents would not recommend an antibiotic for Brenda, whereas 7% would recommend an antibiotic. Table 1 summarises the reasons.

Table 1: Reasons for recommending or not recommending antibiotic	
Reasons for recommending antibiotic	% of respondents (n = 14)
Her current symptoms need an antibiotic	57.1
Only conditional if her symptoms get worse in next few days	42.9
Reasons for not recommending antibiotic	% of respondents* (n = 186)
It is a viral infection with no signs or symptoms of bacterial infection	65.6
Her current symptoms do not require antibiotic therapy	37.1
Her current illness is likely to resolve on its own	10.7
Antibiotics are not indicated	8.6
More risks than benefits in using antibiotic	5.9
'Wait and see' prescribing	2.1

* Respondents may have more than one response

Preferred antibiotic choices of respondents is summarised in Table 2.

Table 2: Antibiotic choices in respondents who would recommend an antibiotic		
Medication/dosage	Time to next review (days)	% of respondents (n = 14)
Amoxycillin 500 mg three times daily	5–10	64.5
Amoxycillin 250 mg three times daily	5	7.1
Phenoxymethylpenicillin 500 mg twice daily	7	7.1
Amoxycillin 500 mg/ clavulanic acid 125 mg twice daily	5	7.1
Clarithromycin 250 mg twice daily	7	7.1
Roxithromycin 150 mg twice daily	5	7.1



Practice points

- In 70% of patients who present with cough as the main symptom, acute respiratory tract infection is the main cause of the illness.¹ Most cases (more than 90%) of acute respiratory tract infections are due to non-bacterial causes.¹
- Presence of purulent sputum is not predictive of bacterial infection.² Green or yellow sputum production is indicative of inflammatory reaction and does not imply bacterial infection.³
- Most acute respiratory tract infection symptoms usually resolve within a week, but some (e.g., cough) may stay for 3–4 weeks.⁴ Patients who perceive their symptoms as being severe or feel they are prolonged are more likely to consult a GP⁵; 20% of patients revisit their GP for the same symptoms in a month's time.⁶
- Do not prescribe an antibiotic for acute cough. Antibiotics only shorten illness by 1 day but are associated with adverse effects (e.g. diarrhoea, rash).^{7,8}

- Consensus guidelines suggest antibiotics should be prescribed to patients who are systemically very unwell, are immunocompromised or have significant comorbidities.⁴
- Provide advice to reduce antibiotic use (see Box 1 below).

Box 1 Advice to reduce antibiotic use⁹

- Reassure the patient by providing information on the natural course of illness and time for resolution.
- Emphasise the risks of unnecessary antibiotics such as side effects and potential for developing resistant organisms
- Discourage use of antibiotics from others or using antibiotics left over from a previous infection
- Recommend specific symptomatic therapy
- Listing symptoms that warrant a return visit
- Provide patient education materials

- Provide appropriate self-care information by using NPS developed symptomatic management pad. (http://www.nps.org.au/__data/assets/pdf_file/0020/72155/Upper_respiratory_tract_infection.pdf)

Over-the-counter preparations

Sixty-eight per cent of respondents would recommend an OTC preparation for Brenda (most commonly paracetamol). Table 3 summarises the reason for their responses.

Table 3: Reasons for recommending or not recommending OTC preparations	
Reasons for recommending OTC preparations	% of respondents* (n = 136)
To relieve her current symptoms	73.5%
Relief of her fever	33.1%
Others [†]	2.2%
Reasons for not recommending OTC preparations	% of respondents* (n = 64)
No evidence of their efficacy in her illness	92.2%
Her illness would settle on its own	7.8%
Advise non-pharmacological therapy	4.7%
Adverse effects due to cough remedies	4.7%

* Respondents may have more than one response;

† Includes that OTC preparations are inexpensive, help boost immunity and have fewer side effects.

Preferred OTC choices are summarised in Table 4.

Table 4: OTC choices		
Medication	Time to next review (in days)	% of respondents* (n = 136)
Paracetamol	2–10	77.2%
Codeine preparations	3–7	10.3
FESS	As required	9.6
Lozenges	As required	7.3
Ibuprofen	5–7	6.6
OTC preparations (not specified)	3	5.9
Pseudoephedrine/bromhexine	2–5	4.4
Sore throat gargles	2–7	3.7
Antihistamine	5	1.5
Zinc and vitamin C	10	1.5

* Respondents may have more than one response

Table 5 summarises dosage regimens specified for paracetamol (the most common OTC prescribed).

Table 5: Paracetamol dosage regimen	
Dosage regimen	% of respondents (n = 105)
1000 mg four times daily	56.2
500 mg four times daily	17.1
1000 mg three times daily	7.6
500 mg three times daily	6.7
Not specified	6.7
1000 mg as required	2.9
Others*	2.8

*Includes 1000 mg twice daily, 500 mg twice daily and 500 mg as required.



Practice points

- There is no good evidence for the effectiveness of OTC cough and cold medicines.¹⁰
- Level I studies suggest that codeine does not have an effect in suppressing cough.¹¹ Studies also suggest that there is some evidence of benefit with antihistamines but there are associated side effects such as sedation.¹²
- Do not use beta₂ agonists to alleviate cough in acute bronchitis. A Cochrane review suggests no significant differences in daily cough scores or in the number of patients still coughing after seven days.¹³
- Studies suggest that zinc¹⁴, vitamin C¹⁵ and echinacea¹⁶ provide marginal efficacy in the treatment of common cold symptoms.
- The Therapeutic Goods Administration advises that cough and cold medicines should not be given to infants aged under 2 years.¹⁷

Non-pharmacological therapy

Respondents were asked about the non-pharmacological strategies they would advise Brenda to use. This is summarised in Table 6.

Table 6: Non-pharmacological strategies	
Strategy	% of respondents* (n = 200)
Adequate rest	57.5
Maintain adequate hydration	55.0
Steam inhalations	29.0
Rest her voice	16.5
Reassure her illness would likely to resolve on its own	14.0
Warm saline gargles	13.5
Prevent spread of infections to other	9.5
Avoid smoke/alcohol	9.0
Review if her condition worsens	8.5
Maintain healthy and regular diet	6.5
Maintain personal hygiene	5.5
Advice about the adverse effects of using OTC preparations	3.5
Maintain physical activity	2.0
Others [†]	2.0

* Respondents may have more than one response

† Includes acupuncture and use of NPS resources



Practice points

- Most patients who mention antibiotics during consultation do not mean to be prescribed one¹⁸ and their satisfaction is not related to antibiotic prescription.¹⁹
- Manage patient expectations by providing information on the expected course of illness, advising about appropriate symptomatic relief (see Box 2) and providing a list of symptoms that may require a return visit.

Box 2: Guidance on appropriate symptomatic relief

Advise:

- adequate rest
- use of analgesics (paracetamol or ibuprofen) for headache, fever or muscle ache.
- use of saline solution or steam inhalations²⁰ to help clear mucus and ease chest tightness
- use of honey and lemon, as they are simple to use and cheapest²¹

Signs and symptoms suggestive of pneumonia

Respondents were asked to list signs and symptoms that may indicate that Brenda has a pneumonia when she presents with a respiratory tract infection few months later. Table 7 summarises the signs and symptoms of pneumonia.

Table 7: Signs and symptoms in pneumonia	
	% of respondents* (n = 200)
Signs	
Crepitations/rales	37.0
Tachypnoea	28.0
Clinical lung signs (not specified)	23.0
Bronchial breath sounds	18.5
Dullness on percussion	11.5
Tachycardia	10.5
Decreased O ₂ saturation	4.5
Cyanosis	3.5
Others [†]	1.5
Symptoms	
High fever $\geq 38^{\circ}\text{C}$	92.0
Respiratory distress	58.0
Constitutional symptoms	46.0
Cough (productive or non-productive)	41.0
Chest pain	29.0
Chills/rigor	13.5

* Respondents may have more than one response

† Includes elevated erythrocyte sedimentation rate and chest X-ray findings

Table 8 summarises the recommended antibiotics for treating pneumonia due to *Streptococcus pneumoniae*.

Table 8: Antibiotic choices to treat pneumonia due to <i>Streptococcus pneumoniae</i>	
	% of respondents* (n = 200)
Penicillins	
Phenoxymethylpenicillin	14.5
Benzyl penicillin	3.2
Amoxicillin	35.8
Ampicillin	0.3
Amoxicillin with clavulanic acid	5.2
Cephalosporins	
Cephalexin	2.2
Ceftriaxone	0.5
Cefaclor	1.3
Cefurixime	1.7
Not specified	1.0
Macrolides	
Erythromycin	9.5
Roxithromycin	17.0
Clarithromycin	2.5
Azithromycin	0.3
Not specified	1.5
Others	
Doxycycline	2.8
Moxifloxacin	0.2
Vancomycin	0.3
Clindamycin	0.2



Practice points

- *Streptococcus pneumoniae* is the most common cause of community-acquired pneumonia (CAP).²²
- In patients with cough and sputum production, absence of signs (see Box 3 for details) reduce the likelihood of pneumonia and may eliminate the need for chest radiography.

Box 3: Findings likely to suggest pneumonia⁸

- Heart rate > 100 beats/min
- Respiratory rate > 24 breaths/min
- Oral body temperature of >38°C
- Chest findings of focal consolidation, egophony, or fremitus

- A high degree of clinical suspicion is necessary in patients who are elderly and have comorbidities.²³ The factors listed in Box 4 increases the risk of community-acquired pneumonia.

Box 4: Factors increasing risk of CAP²⁴

- | | |
|---|---|
| <ul style="list-style-type: none">• Age >50 years• Alcoholism• Asthma• Chronic obstructive pulmonary disease• Dementia• Heart failure | <ul style="list-style-type: none">• Immunosuppression• Seizure disorders• Indigenous background• Institutionalisation• Smoking• Stroke |
|---|---|

- Use the pneumonia severity index (PSI) to identify severity of illness and need for hospitalisation.²⁵ An online PSI calculator is available at www.debug.net.au/pharmacy/calculator.html
- Consider outpatient treatment with antibiotics in patients with lower risk (PSI class I and II); patients with higher risk (PSI class III–V) require hospital admission.²⁵ See Box 5 for details of antibiotic treatment of PSI class I and II CAP.

Box 5: Treatment for CAP (PSI class I and II)²³

Amoxicillin 1 g orally, 8 hourly for 7 days

Plus (for treating atypical causes) either:

Doxycycline 200 mg orally, for the first dose, 100 mg per day for a further 5 days

OR

Roxithromycin 300 mg, daily for 5 days

OR

Clarithromycin 250 mg orally, 12-hourly for 7 days

Commentary 1

Key points

- Antibiotics are not appropriate for viral upper respiratory tract infection (URTI) and contribute to increasing rates of antibiotic resistance in the community.
- Patients with viral URIs may benefit from taking simple analgesia for pain and discomfort, but it is not appropriate to use these agents purely for lowering temperature.
- Symptoms that suggest a more serious infection such as pneumonia include dyspnoea, chest pain, productive cough and rigors.
- Signs that suggest pneumonia include tachypnoea, tachycardia, dullness to percussion and bronchial breath sounds.
- Although *Streptococcus pneumoniae* is the most common cause of CAP in Australia, the proportion of cases due to this organism appears to be falling.
- Simple beta-lactams such as intravenous benzylpenicillin or oral amoxicillin are the most appropriate agents to target the pneumococcus but should generally be combined with doxycycline or a macrolide in treating patients with CAP.

Case scenario

The description of Brenda's initial symptoms clearly suggests a URTI. The key features to support this diagnosis are the presence of rhinitis and hoarse voice. In addition, her low respiratory rate and normal chest auscultation findings are reassuring and make a lower respiratory tract infection very unlikely.

Based on this assessment, it would not be appropriate to prescribe antibiotics for her at this initial assessment. It would be appropriate to explain that antibiotics only work for bacterial infections. Although she believes that previous similar illnesses did improve with antibiotic therapy, it should be pointed out that their natural history is for recovery after a few days, regardless of treatment.

OTC preparations have a limited role in treating URIs. Certainly painkillers such as paracetamol or non-steroidal anti-inflammatory drugs (NSAIDs) can have a role for this. A point of contention is their use purely as an antipyretic. The presence of a fever in response to an infection is generally beneficial in that it stimulates the immune system and impairs function of some micro-organisms. Thus it is inappropriate to use these medications purely to lower the temperature in a patient who feels otherwise well. They should be reserved to treat pain or discomfort.

OTC preparations have little or no role. Nasal decongestants work briefly but often become less effective after a short period and do not alter the duration of symptoms. Some can interact with medications for depression and anxiety, blood pressure and epilepsy, as well as being riskier with certain comorbidities. Cough suppressants and expectorants have very limited efficacy and some medications contain combinations of these, which makes no sense at all. In general, the limited benefit of these medications is outweighed by both their cost and their potential for adverse outcomes.

Non-pharmacological therapy such as rest and adequate hydration are appropriate. In this era of pandemic H1N1 influenza, resting at home is also important to reduce the secondary spread of viral respiratory tract infections. Steam inhalation is sometimes helpful, provided that it can be performed without risk of burns, particularly to young children.

Diagnosis of pneumonia

At the time of Brenda's return several months later, there are certain features that can help to diagnose a more serious infection such as pneumonia. Suggestive symptoms include rigors, dyspnoea, chest discomfort and the new production of purulent, rusty or blood-stained sputum. Episodes of confusion and even hypothermia can also signify more severe disease but are more often seen in elderly patients. Fever, arthralgias, myalgias and

anorexia do not really help to differentiate a viral infection such as influenza from a bacterial pneumonia.²⁶

Signs to look for that suggest pneumonia include tachypnoea and tachycardia. Chest examination may reveal dullness to percussion, the presence of crackles or bronchial breath sounds. However, the clinical diagnosis of pneumonia is rarely accurate and chest X-ray is important to confirm the diagnosis.²⁶

Aetiology of pneumonia

Although the most common aetiology of CAP remains *Streptococcus pneumoniae*, this organism caused only 14% of cases in Australian adults with CAP in a recent study.²⁷ Other common causes are *Mycoplasma pneumoniae*, respiratory viruses and *Haemophilus influenzae*.²⁷

Although much has been published about the increasing rates of antibiotic resistance in isolates of *S. pneumoniae*, there remains a large variety of treatment choices for this pathogen. The vast majority of clinical isolates remain susceptible to beta-lactams such as intravenous benzylpenicillin or oral amoxicillin or ampicillin. The addition of clavulanic acid to amoxicillin

does not offer a clinical advantage in the patient with a pneumococcal infection and the very broad spectrum and greater rate of side effects seen with the combination drug makes amoxicillin a better choice. Oral penicillin has less of a role because of poorer absorption. In the penicillin-allergic patient, ceftriaxone, cefotaxime, cephalexin or cefuroxime are reasonable choices, although it is worth noting that for empirical therapy, cephalexin is a poor choice, as it has little or no activity against any other bacterial respiratory pathogens.

Approximate resistance rates for macrolides such as azithromycin and roxithromycin are 25%, for doxycycline 20%, and clindamycin 15%.²⁸ For the patient with immediate anaphylaxis to penicillins, respiratory fluoroquinolones such as moxifloxacin are active, although concerns about their very broad spectrum antibacterial activity and their associations with increasing rates of very resistant Gram-negative pathogens and very virulent strains of *Clostridium difficile* means that other agents should be used when possible.²⁹⁻³¹ Other agents active against pneumococcus include vancomycin, teicoplanin, carbapenems, piperacillin with tazobactam, and linezolid.

Commentary 2

Key points

- This is a very common presentation in general practice, with the difficult problem familiar to all GPs of reconciling the patient's expectations with the GP's clinical judgment
- Antibiotics are a non-renewable resource threatened by rising bacterial resistance. In contexts where antibiotic prescribing for self-limiting illnesses has fallen, so has bacterial resistance.
- While receipt of an antibiotic is a predictor of satisfaction, the strongest predictor of patient satisfaction in this type of consultation is that the patient understood the rationale behind the doctor's management plan, whether an antibiotic is given or not.
- Doctors who feel they should be 'doing something' in this type of consult have access to a number of evidence-based strategies to reduce symptoms.

Case scenario

The problem of diagnosis

This presentation has many features pointing to a viral respiratory tract infection. Brenda's symptoms suggest involvement of most of her upper respiratory tract from her nose (rhinitis) to her throat and larynx (hoarse voice and cough) which is less likely for a bacterial infection. The time frame is consistent with a virus and the case study indicates that this is not early pertussis; there is no paroxysm or pertussis contact.

Several indications for antibiotics in the context of upper respiratory tract infections (URTIs) depend on socioeconomic factors such as overcrowding, poverty and education level. Rheumatic fever and post-streptococcal glomerulonephritis, for example, are much more common in Aboriginal or Torres Strait Islander populations.

However, Brenda is employed and there is no suggestion of overcrowding. Nothing in her medical history, such as recurrent tonsillitis (at least not since surgery) indicates a need for antibiotics. Her examination findings are reassuring and do not meet the NICE guidelines for antibiotics in URTIs.³² Specifically, her observations are normal except for a low-grade fever, there is no lymphadenopathy, no exudates on her pharynx and no signs of consolidation in her lungs. The time course of this illness makes an atypical pneumonia very unlikely without any other features to recommend this diagnosis.

Are antibiotics indicated?

The overwhelming majority of GPs did not think antibiotics were indicated for this presentation and most made this decision on the basis that it was a viral rather than bacterial infection. Fortunately for this presentation, there is a systematic review (Level I evidence) indicating that antibiotics make no difference to the symptoms of those presenting with the common cold or acute purulent rhinitis.³³ Indeed, this review did find that antibiotics were more likely to cause adverse effects.³³

Most GPs in this survey preferred not to prescribe a treatment that has not been shown to work and has a reasonable chance of causing diarrhoea, vomiting or rash. Additionally, most antibiotic prescribing occurs in general practice and the rise of resulting community bacterial resistance has been established.^{34–36} The findings of this survey are in line with results showing that Australian GPs were prescribing antibiotics for 40 per 100 URTI problems in 2002–03 compared with 58 per 100 in 1990–91.³⁷ Antibiotic resistance has been shown to be lower in European countries with lower antibiotic use³⁸ and falls as antibiotic use falls.^{39,40}

A small number of respondents in this survey advocated a delayed prescription of antibiotics.

This is usually employed as a way of maintaining patient satisfaction while reducing antibiotic consumption. In the systematic review we undertook on this topic, delayed antibiotics do result in reduced prescription compared with immediate antibiotics. However, a strategy of 'no antibiotics' when they don't appear needed seems the most straightforward option and does not send mixed messages to patients.

While doctors cannot always tell what is a bacterial infection and what is not, patients have been shown to be even less equipped for this decision. 'No antibiotics' results in the least antibiotic consumption and patients are still satisfied with the consultation.⁴¹

How to deal with patient expectations?

Doust and Del Mar note that medicine is a human activity entailing ritual, custom and the expectations of doctors, patients and society. Doctors who have spent their lives training to alleviate suffering sometimes find it difficult to just alleviate symptoms when faced with self-limiting disease.⁴²

In one study in general practice, perceived patient pressure was the strongest predictor of whether doctors undertook an examination, investigations or wrote prescriptions. Two more surprising outcomes of this research were that doctors felt there was little or no need for up to half of these activities and that patients in this study actually were not presenting with the agenda the doctor thought they were.⁴³

In the case of the upper respiratory tract infection consultation, general practitioners would be wise to explore the patient's agenda and may be surprised to learn that while some will want a prescription for antibiotics, many others will want reassurance or a medical certificate.

Over-the-counter preparations and non-pharmacological alternatives

Most respondents favoured over the counter (OTC) preparations, especially for fever. Options that may help include aspirin, paracetamol and ibuprofen.⁴⁴ Published studies of echinacea

suggest that it reduces cold symptoms by 1.5 days, with minimal side effects.¹⁶ Single-dose oral decongestants also improve symptoms⁴⁵ and some study results favour humidified air or heat for the common cold but are equivocal in others, making this a possible treatment option with minimal side effects.²⁰

Zinc¹⁴ and vitamin C⁴⁶ may have small effects but the evidence is not convincing. For antihistamines, the evidence is mixed, with some evidence of benefit but also side effects such as sedation.¹² Codeine was commonly recommended by doctors in this survey but there is little information about its ability to suppress cough and there has not been a study that supports its use, with at least one that says it has no effect.¹¹ There are mixed results for nasal saline (FESS nasal spray) but a recent study in children indicates it may reduce symptoms, time off work and antibiotic prescribing.⁴⁷

A systematic review examining the adage, 'Drink plenty of fluids' found this strategy lacked an evidence base,⁴⁸ although adequate hydration advocated by many doctors in this survey seems a reasonable goal.

While OTC preparations for cough do not seem to cause harm, they do not appear to suppress cough either⁴⁹ and I advise my patients not to spend money on them. Only 9.5% suggested stopping the spread to others. One would hope this figure would increase with the advent of the swine flu pandemic.

Pneumonia

Responses here are consistent with studies indicating that patients presenting with a respiratory infection with radiological changes indicating pneumonia usually will have fever, sputum, cough and coarse crackles. These four clinical features have a sensitivity of 91.7% and specificity of 92.7% as a diagnostic test for pneumonia. Chest pain was not as reliable at predicting pneumonia.⁵⁰

The antibiotic guidelines for community-acquired pneumonia were updated in 2006 and recommend assessing pneumonia severity using an index. Low-risk patients can be treated in the community using amoxicillin PLUS either roxithromycin, clarithromycin or doxycycline.²⁵

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