The Practitioner

Tackling upper respiratory tract infections

Manoharan A, Winter J. Tackling upper respiratory tract infections.
Practitioner 2010: 254 (1734): 25–28

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Practitioner
Medical Publishing Ltd

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FIGURE 1
Acute pharyngitis with redness extending onto the soft palate and uvula

How should illness severity be assessed?

UPPER RESPIRATORY TRACT INFECTION (URTI) REFERS TO A WIDE RANGE OF ACUTE illnesses that affect the upper respiratory tract. URTIs are the most common reason for general practice consultations.[1] On average adults suffer two to three such infections per year.[2]

The upper respiratory tract includes the external nose, nasal cavity, pharynx, larynx and sinuses. During an infection, all these areas may be affected either simultaneously or at different times. Terms such as rhinitis, rhinosinusitis, nasopharyngitis, pharyngitis, laryngitis and epiglottitis denote the specific sites of inflammation. The common cold is probably best defined as a viral infection that primarily affects the nasal mucosa.

Which patients require antibiotics?

CLINICAL SYNDROMES

The diagnosis of a URTI is fairly straightforward and is usually a self-diagnosis. However, when assessing a patient with a URTI in general practice it is important to recognise which patients may require antibiotics, further investigations and/or hospital referral.

Which patients should be referred?

The common cold is typically characterised by nasal discharge and congestion, sneezing, sore throat and cough. Symptoms may last up to 14 days with an average of 7 to 11 days' duration.[3,4] Viruses causing the common cold include rhinoviruses, adenoviruses, coronaviruses, parainfluenza viruses, respiratory syncytial viruses and enteroviruses.[5]

Fever, fatigue, myalgia and headache are more common but »

Table 1

Seasonal variation of upper respiratory tract pathogens

Virus	Season
Rhinovirus	Spring, summer and early autumn
Coronavirus	Winter and early spring
Enterovirus	Summer and early autumn
Adenovirus	All year round but most common late winter, spring and early summer
Influenza virus	Late autumn and winter
Human metapneumovirus	All year round but peaks in winter

Table 2

Potential serious complications of URTIs

URTI	Complications
Group A streptococcal pharyngitis	Suppurative complications – peritonsillar, retropharyngeal abscesses, rheumatic fever, acute glomerulonephritis
Sinusitis	Orbital cellulitis, subperiosteal abscess, orbital abscess, frontal and maxillary osteomyelitis, subdural abscess, meningitis and brain abscess
Epiglottitis	Death due to sudden airway obstruction

not specific symptoms of an influenza infection.[6]

Most URTIs occur during autumn and winter but they can occur all year round (see table 1, above).[7]

Group A streptococcus is the most common bacterial cause of acute pharyngitis accounting for approximately 5-10% of cases in adults.[8, 9] Several studies have attempted to differentiate between group A streptococcal and viral causes based on the clinical features.

A systematic review has shown that the Centor scoring system (see box 1, below) may help categorise the patient's risk for group A streptococcal infection.[10]

Other organisms that may cause acute pharyngitis include:[11]

- Coxsackie virus A
- Epstein-Barr virus – infectious mononucleosis
- Cytomegalovirus
- Human immunodeficiency virus – as part of the primary infection
- Non-group A streptococci
- *Corynebacterium diphtheriae* - rare in the developed world
- *Neisseria gonorrhoeae*
- *Arcanobacterium haemolyticum*
- *Mycoplasma pneumoniae* – isolated from patients with symptomatic pharyngitis and controls, significance unclear
- *Chlamydia pneumoniae* - may occur as an isolated URTI or with pneumonia

Box 1

The Centor scoring system

The Centor score gives one point each for:

- tonsillar exudate
- tender anterior cervical lymph nodes
- history of fever
- absence of cough

The likelihood of group A streptococcal infection increases with an increasing score. The score can be used to assist the decision about whether to prescribe an antibiotic.

'URTI may cause infections of adjacent structures such as the middle ear, lower respiratory tract and central nervous system'

Acute rhinosinusitis is an infection of the nasal cavity and paranasal sinuses. Patients with acute sinusitis have pain over the affected sinus, maxillary toothache, nasal discharge and congestion. It is difficult to distinguish viral from bacterial infections. Persistent (longer than 10 days) or worsening symptoms (after five to seven days) usually suggest a bacterial infection.[4, 12] However, treatment with antibiotics cannot be justified even if symptoms persist.[13] Common bacterial pathogens in adults include *Streptococcus pneumoniae* and *Haemophilus influenzae*.[14]

Epiglottitis is an acute inflammation of the supraglottic region with inflammation of the epiglottis, vallecula, arytenoids and aryepiglottic folds. Since the introduction of Haemophilus influenzae type b (Hib) vaccine, the occurrence in children has decreased dramatically. The ratio of incidence in children to adults has also dropped. The incidence rates in adults remain constant, with a mean value of 1.9 cases/100,000/year.[15] Adults with acute epiglottitis may present with symptoms such as sore throat, fever, odynophagia/dysphagia and muffled voice and have features suggestive of upper airway obstruction such as drooling and stridor.

POTENTIAL COMPLICATIONS

URTIs although annoying to the patient are usually benign and self-limiting. However, URTI may cause infections of adjacent structures such as the middle ear, lower respiratory tract and central nervous system. Potential complications of certain URTIs are listed in table 2, above left. Complications of influenza infection will be discussed later.

The NICE guideline on antibiotic prescribing for self-limiting respiratory tract infections in primary care, recommends immediate antibiotics or further investigation and/or management in the following patients who are at risk of complications: [16]

- Systemically very unwell
- Features suggestive of serious illness and complications (particularly pneumonia, mastoiditis, peritonsillar abscess, peritonsillar cellulitis, intraorbital or intracranial complications)
- Pre-existing comorbidities - patients with significant heart, lung, renal, liver or neuromuscular disease, immunosuppression, cystic fibrosis, and young children who were born prematurely
- Older than 65 years with acute cough and two or more of the following, or older than 80 years with acute cough and one or more of the following:

- Hospitalisation in the previous year
- Type 1 or type 2 diabetes
- History of congestive heart failure
- Current use of oral glucocorticoids

The British Thoracic Society has published specific guidelines for the management of patients with an influenza-like illness during

Table 3

Severity assessment used to determine the management of influenza-related pneumonia in patients in the community (CRB-65 score)[6]

CRB-65 score	Recommended action
0	Likely suitable for home treatment
1 or 2	Consider hospital referral, especially score of 2
3 or 4	Urgent hospital referral
Any score in the presence of bilateral chest signs of pneumonia	Consider hospital referral

Score 1 point for each feature present:
Confusion (Mental test score of ≤ 8, or new disorientation in person, place or time)
Respiratory rate ≥ 30/min
Blood pressure (SBP < 90 or DBP < 60 mmHg)
Age > **65** years

Table 4

The evidence for home treatments/interventions in URTI

Treatment/intervention	Evidence of benefit
Vitamin C	No conclusive benefit based on current evidence[20]
Nasal decongestants	Reduced nasal congestion and subjective symptoms[21]
Zinc	Inconclusive. No strong evidence[22]
Saline nasal irrigation	Limited benefit in terms of symptom duration, days off work. Small trials[23]
OTC medications for acute cough	Conflicting results. No good evidence for or against[24]
NSAIDs	Reduced pain and discomfort[25]
Antihistamines	Reduced symptoms of runny nose and sneezing[26]
Echinacea	Various preparations. Conflicting results. May reduce duration and severity of symptoms[27]

an influenza pandemic.[6]

Pneumonia, either primary viral (rare) or secondary bacterial (common), is the most common complication of influenza in adults. Patients complaining of new or worsening dyspnoea should be carefully assessed for signs of pneumonia. If pneumonia is diagnosed, severity should be assessed using an assessment tool such as the CRB-65 score and appropriate treatment and/or referral carried out (see table 3, above).[17,18]

Other influenza-related complications are uncommon and there are no specific criteria to assess severity or recommend admission.

COMMUNITY MANAGEMENT

Self-management

Most URTIs are self-managed. A UK study of 516 women aged 20-44 years found that only one in 18 episodes of sore throat led to a general practice consultation.[19] Patients who do seek consultations often benefit from reassurance, education and instructions for symptomatic home treatment. The evidence for benefits of home treatment/interventions is shown in table 4, above.

Antibiotics

A large proportion of antibiotic prescribing in primary care is for respiratory tract infections.[28] There was a 44% reduction in antibiotic prescribing for respiratory tract infections between 1994 and 2000. The larger part of this reduction was due to lower consultation rates rather than a decrease in prescribing by GPs.[29] Antibiotics are frequently prescribed for resolving symptoms and to prevent complications. Patients' expectations have a significant influence on prescribing, even when their doctor judges that antibiotics are not indicated.[30]

There are certain at-risk groups who require immediate antibiotics or further evaluation (see section above on assessing severity and potential complications).[16] Antibiotics should also be considered for patients with three or more Centor criteria. In other cases (acute otitis media, acute sore throat/pharyngitis/acute tonsillitis, common cold, acute rhinosinusitis or acute cough/acute bronchitis), NICE advocates a no prescribing or delayed prescribing strategy. Patients' or carers' concerns and expectations should always be addressed first. It is important to explain the natural history of the illness and duration.[16]

'Antibiotics should be considered for patients with three or more Centor criteria'

When a no prescribing or delayed prescribing strategy is employed. NICE recommends the following approach:[16]

- Reassure the patient that antibiotics are not needed straightaway. Explain that antibiotics will make little difference to the symptoms and may cause side effects such as diarrhoea, vomiting and rash
- Offer a clinical review if the condition worsens or persists
- Give advice about using the delayed prescription if symptoms do not improve or get worse
- Advise the patient to come back if symptoms worsen despite the use of the delayed prescription

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key points

SELECTED BY

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URTIs are the most common reason for general practice consultations. On average adults suffer two to three such infections per year. When assessing a patient with a URTI in general practice it is important to recognise which patients may require antibiotics, further investigations and/or hospital referral.

Fever, fatigue, myalgia and headaches are more common but not specific symptoms of an influenza infection. Pneumonia, either primary viral (rare) or secondary bacterial (common), is the most common complication of influenza in adults. Patients complaining of new or worsening dyspnoea should be carefully assessed for signs of pneumonia.

Group A streptococcus is the most common bacterial cause of acute pharyngitis accounting for approximately 5–10% of cases in adults. Acute rhinosinusitis is an infection of the nasal cavity and paranasal sinuses. Patients with acute sinusitis have pain over the affected sinus, maxillary toothache, nasal discharge and congestion. It is difficult to distinguish viral from bacterial infections.

URTI may cause infections of adjacent structures such as the middle ear, lower respiratory tract and central nervous system.

NICE recommends immediate antibiotics or further investigation and/or management in the following patients who are at risk of complications:

- systemically very unwell
- features suggestive of serious illness and complications
- pre-existing comorbidities
- older than 65 years with acute cough and two or more of the following, or older than 80 years with acute cough and one or more of the following: hospitalisation in the previous year; diabetes; history of congestive heart failure; current use of oral glucocorticoids.

Antibiotics should also be considered for patients with three or more Centor criteria. In other cases (acute otitis media, acute sore throat/pharyngitis/acute tonsillitis, common cold, acute rhinosinusitis or acute cough/acute bronchitis) NICE advocates a no prescribing or delayed prescribing strategy.

Most URTIs are self-managed. Patients who do seek consultations often benefit from reassurance, education and instructions for symptomatic home treatment.

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Useful information

NICE has produced information for patients with respiratory tract infections.
CG69 Respiratory tract infections: understanding NICE guidance
www.nice.org.uk

Patient UK has patient information leaflets on sore throats and other conditions
www.patient.co.uk