NICE National Institute for Health and Care Excellence

NICE Pathways

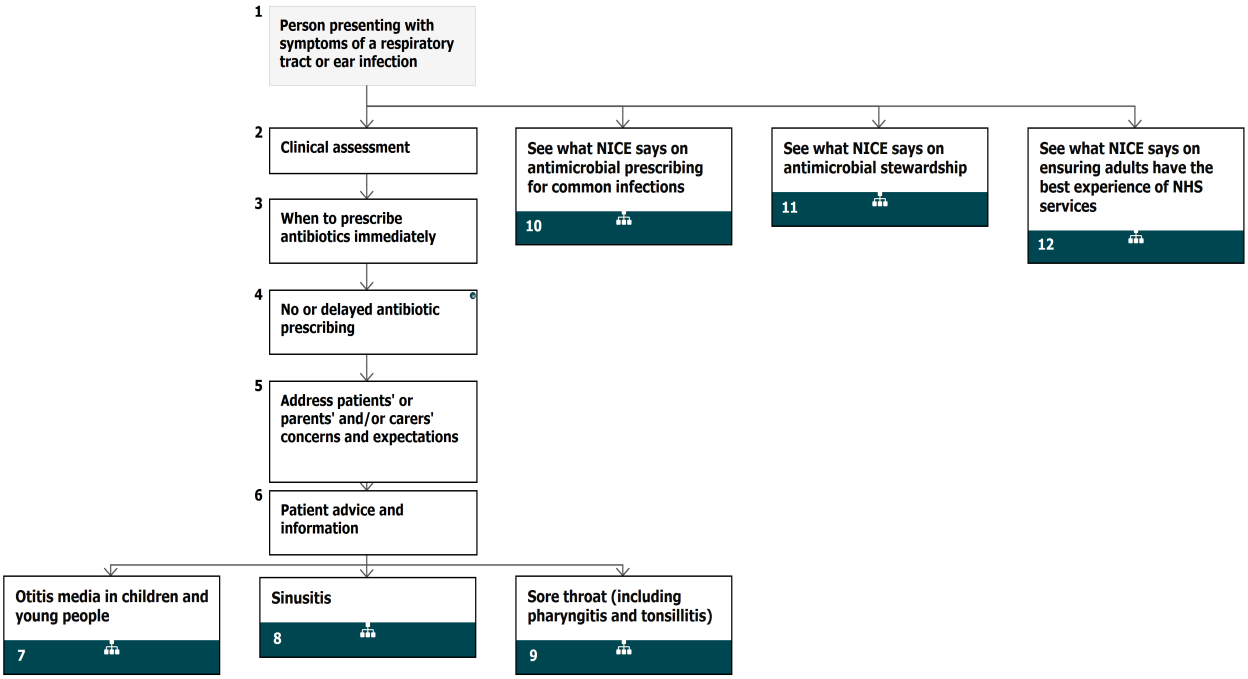
Self-limiting respiratory tract and ear infections – antibiotic prescribing overview

NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

http://pathways.nice.org.uk/pathways/self-limiting-respiratory-tract-and-ear-infections-antibiotic-prescribing
NICE Pathway last updated: 23 May 2018

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



1 Person presenting with symptoms of a respiratory tract or ear infection

No additional information

2 Clinical assessment

At the first face-to-face contact in primary care, including walk-in centres and emergency departments, adults and children (3 months and older) presenting with a history suggestive of the following conditions should be offered a clinical assessment:

- acute otitis media
- acute sore throat/acute pharyngitis/acute tonsillitis
- common cold
- acute rhinosinusitis
- acute cough/acute bronchitis.

The clinical assessment should include a history (presenting symptoms, use of over-the-counter or self medication, previous medical history, relevant risk factors, relevant comorbidities) and, if indicated, an examination to identify relevant clinical signs.

For information about fever in children younger than 5 years, see what NICE says on fever in under 5s.

NICE has published clinical knowledge summaries on:

- chest infections – adult
- common cold
- cough
- otitis media – acute
- sinusitis
- sore throat – acute.

These practical resources are for primary care professionals (they are not formal NICE guidance).

NICE has published medtech innovation briefings on:

- FebriDx for C-reactive protein and Myxovirus resistance protein A testing in primary care
- Alere Afinion CRP for C-reactive protein testing in primary care
- QuikRead go for C-reactive protein testing in primary care.

Meningitis

If meningitis is suspected, see what NICE says on bacterial meningitis and meningococcal septicaemia in under 16s.

Pneumonia

If pneumonia is suspected, see what NICE says on pneumonia.

Sepsis

If sepsis is suspected, see what NICE says on sepsis.

Tuberculosis

If tuberculosis is suspected, see what NICE says on tuberculosis.

3 When to prescribe antibiotics immediately

An immediate antibiotic prescription and/or further appropriate investigation and management should only be offered to patients (both adults and children) in the following situations:

- if the patient is systemically very unwell
- if the patient has symptoms and signs suggestive of serious illness and/or complications (particularly pneumonia, mastoiditis, peritonsillar abscess, peritonsillar cellulitis, intraorbital and intracranial complications)
- if the patient is at high risk of serious complications because of pre-existing comorbidity. This includes patients with significant heart, lung, renal, liver or neuromuscular disease, immunosuppression, cystic fibrosis, and young children who were born prematurely
- if the patient is older than 65 years with acute cough and two or more of the following criteria, or older than 80 years with acute cough and one or more of the following criteria:
    - hospitalisation in previous year
    - type 1 or type 2 diabetes
    - history of congestive heart failure
    - current use of oral glucocorticoids.

For these patients, the no antibiotic prescribing strategy and the delayed antibiotic prescribing strategy should not be considered.

Depending on clinical assessment of severity, patients in the following subgroups can also be considered for an immediate antibiotic prescribing strategy (in addition to a no antibiotic or a delayed antibiotic prescribing strategy):

- bilateral acute otitis media in children younger than 2 years
- acute otitis media in children with otorrhoea
- acute sore throat/acute pharyngitis/acute tonsillitis when three or more Centor criteria are present.

See what NICE says on pneumonia and medicines optimisation.

4 No or delayed antibiotic prescribing

No antibiotic prescribing

A no antibiotic prescribing strategy or a delayed antibiotic prescribing strategy should be agreed for patients with the following conditions:

- acute otitis media
- acute sore throat/acute pharyngitis/acute tonsillitis
- common cold
- acute rhinosinusitis
- acute cough/acute bronchitis.

When the no antibiotic prescribing strategy is adopted, patients should be offered:

- reassurance that antibiotics are not needed immediately because they are likely to make little difference to symptoms and may have side effects, for example, diarrhoea, vomiting and rash
- a clinical review if the condition worsens or becomes prolonged.

Delayed antibiotic prescribing

When the delayed antibiotic prescribing strategy is adopted, patients should be offered:

- reassurance that antibiotics are not needed immediately because they are likely to make little difference to symptoms and may have side effects, for example, diarrhoea, vomiting and rash

- advice about using the delayed prescription if symptoms are not starting to settle in accordance with the expected course of the illness or if a significant worsening of symptoms occurs
- advice about re-consulting if there is a significant worsening of symptoms despite using the delayed prescription.

A delayed prescription with instructions can either be given to the patient or left at an agreed location to be collected at a later date.

Quality standards

The following quality statement is relevant to this part of the interactive flowchart.

1. Antimicrobial stewardship

5 Address patients' or parents' and/or carers' concerns and expectations

Patients' or parents'/carers' concerns and expectations should be determined and addressed when agreeing the use of the three antibiotic prescribing strategies (no prescribing, delayed prescribing and immediate prescribing).

6 Patient advice and information

For all antibiotic prescribing strategies, patients should be given:

- advice about the usual natural history of the illness, including the average total length of the illness (before and after seeing the doctor):
  - acute otitis media: 4 days
  - acute sore throat/acute pharyngitis/acute tonsillitis: 1 week
  - common cold: 1.5 weeks
  - acute rhinosinusitis: 2.5 weeks
  - acute cough/acute bronchitis: 3 weeks
- advice about managing symptoms, including fever (particularly analgesics and antipyretics). For information about fever in children younger than 5 years, see what NICE says on fever in under 5s.

NICE has written information for the public on respiratory tract infections (self-limiting): prescribing antibiotics.

7 Otitis media in children and young people

See Self-limiting respiratory tract and ear infections – antibiotic prescribing / Otitis media – antibiotic prescribing

8 Sinusitis

See Self-limiting respiratory tract and ear infections – antibiotic prescribing / Sinusitis – antibiotic prescribing

9 Sore throat (including pharyngitis and tonsillitis)

See Self-limiting respiratory tract and ear infections – antibiotic prescribing / Sore throat (including pharyngitis and tonsillitis) – antibiotic prescribing

10 See what NICE says on antimicrobial prescribing for common infections

See Antimicrobial prescribing for common infections

11 See what NICE says on antimicrobial stewardship

See Antimicrobial stewardship

12 See what NICE says on ensuring adults have the best experience of NHS services

See Patient experience in adult NHS services

Choice of antibiotic

- Based on evidence of no major differences in clinical effectiveness between classes of antibiotics, the committee agreed that the choice of antibiotic should largely be driven by minimising the risk of resistance.
- The committee recognised the need to balance a person's need for antibiotics against their risk of developing a resistant organism following antibiotic treatment. The committee was aware of evidence that the risk of resistance to amoxicillin is increased following a course of amoxicillin. The effect is greatest in the month immediately after treatment but may persist for up to 12 months.
- The committee discussed that, if an antibiotic is needed to treat an infection that is not life-threatening, a narrow-spectrum antibiotic should generally be first choice. Indiscriminate use of broad-spectrum antibiotics creates a selective advantage for bacteria resistant even to these 'last-line' broad-spectrum agents, and also kills normal commensal flora leaving people susceptible to antibiotic-resistant harmful bacteria such as *C. difficile*. For infections that are not life-threatening, broad-spectrum antibiotics need to be reserved for second-choice treatment when narrow-spectrum antibiotics are ineffective.
- Based on evidence, their experience and resistance data, the committee agreed to recommend the narrow-spectrum antibiotic **phenoxymethylpenicillin** as the first choice. Phenoxymethylpenicillin has a narrower spectrum of activity than amoxicillin and its use will have the lowest risk of resistance, while having equivalent microbiological activity to amoxicillin. The committee agreed that organisms causing acute sinusitis that are resistant to phenoxymethylpenicillin are also likely to be resistant to amoxicillin.
- The dosage of phenoxymethylpenicillin 500 mg four times a day agreed for adults (with corresponding usual doses in children), is lower than that used in studies in the evidence review, but dose formulations to give these higher doses are not available in the UK.
- Based on evidence, their experience and resistance data, the committee agreed to recommend co-amoxiclav as the first-choice antibiotic for people presenting at any time who are systemically very unwell, have symptoms and signs of a more serious illness or condition, or are at high-risk of complications. These people are more likely to have an infection that is resistant to phenoxymethylpenicillin. Co-amoxiclav is a broad-spectrum antimicrobial that combines a penicillin (amoxicillin) with a beta-lactamase inhibitor, making it active against beta-lactamase-producing bacteria that are resistant to amoxicillin alone. The dosage of 500/125 mg three times a day for adults (with corresponding usual doses in children) was used in studies in the evidence review.
- Based on evidence, their experience and resistance data, the committee agreed to recommend the following alternative first-choice antibiotics for use in penicillin allergy or phenoxymethylpenicillin intolerance:
    - **doxycycline** (a tetracycline; adults and young people over 12 years only). The dosage of doxycycline 200 mg on the first day, then 100 mg once a day for a further 4 days was used in studies in the evidence review.
    - **clarithromycin** (or **erythromycin** in pregnancy), which are macrolides. The dosage of clarithromycin 500 mg twice a day for adults (with corresponding usual

- – doses in children) was used in studies in the evidence review. No studies of erythromycin were included in the evidence review, so the committee discussed and agreed a dosage of 250mg to 500 mg four times a day or 500mg to 1000 mg twice a day.
- Based on evidence, their experience and resistance data, the committee agreed to recommend **co-amoxiclav** as the second-choice antibiotic for use only if symptoms get worse on a first-choice antibiotic taken for at least 2 to 3 days. People with suspected bacterial infection who do not respond to a first-choice antibiotic may be more likely to have an infection that is resistant to phenoxymethylpenicillin or a viral infection, and if their condition is worsening they should be reviewed. The dosage of 500/125 mg three times a day for adults (with corresponding usual doses in children) was used in studies in the evidence review and is appropriate for people in whom first-line treatment has failed.

For more information see choice of antibiotic in the NICE antimicrobial guideline on sinusitis (acute): antimicrobial prescribing.

Back-up antibiotic prescription

prescription given in a way to delay the use of an antibiotic, and with advice to only use it if symptoms worsen or don't improve within a specified time; the prescription may be given during the consultation (which may be a post-dated prescription) or left at an agreed location for collection at a later date

NSAID

non-steroidal anti-inflammatory drug

Off label

a medicine with an existing UK marketing authorisation that is used outside the terms of its marketing authorisation, for example, by indication, dose, route or patient population

Sources

Respiratory tract infections (self-limiting): prescribing antibiotics (2008) NICE guideline CG69

Your responsibility

Guidelines

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to

have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Medical technologies guidance, diagnostics guidance and interventional procedures guidance

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.