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Common Infections.

A Medicines Optimisation
Antibiotic Prescribing Guide.



NHS
Stoke-on-Trent
Clinical Commissioning Group



NHS
North Staffordshire
Clinical Commissioning Group

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Introduction:

Common Infections- Medicines Optimisation

Why do we want to review antibiotics?¹ - *Key messages to the General Public*

It is NOT about NOT prescribing antibiotics. Antibiotics are lifesaving in some circumstances and significantly often reduce morbidity.

Dilemma:

- Infectious illness remains a major global threat to health.
- Antibiotic resistance is an alarming threat to modern healthcare.

How can we help?

Use our diagnostic skills to target antibiotic use to maximise benefits and minimise growing risk from resistance. Be prudent with antibiotics to protect their benefits for our children and grandchildren.

It's about better targeted antibiotic prescribing:

1. People who are more likely to have a serious bacterial infection or develop complications from a less serious infection.
2. People who are not at such high risk but whose signs and symptoms indicate a more serious infection.

What do NICE say?²

After carrying out a clinical assessment and diagnosis is confirmed, which rules out risk factors and the prescriber deems an antibiotic is not required at this consultation, the prescriber should negotiate the following with the patient:

**Receive self-help advice
& OTC medication advice**

Adopt a Delayed Prescription Strategy:^{1,2}

A delayed prescription, with instructions, can either be given to the person or their parent/carer, or left at an agreed location (such as the practice reception) to be collected at a later date.

Offer reassurance that antibiotics are not usually needed because they are likely to make little difference to symptoms and they may have adverse effects (for example, diarrhoea, vomiting, and rash), and can contribute to antibiotic resistance.

Advise that antibiotics should be started if symptoms are not starting to settle within the timeframe you expect to see for the named condition or if there is a significant worsening of symptoms at any time.

Advise the person to re-consult if symptoms persist despite completing a course of antibiotics or if there is a significant worsening of symptoms at any time.

Delayed antibiotics, by instruction (verbal or printed message) or post-dated, can be read coded as follows:

EMIS LV and Web, Vision – 8BPO

SystemOne – XaKYH

Complication rates for URTIs are low:¹

Greater than **4000** patients without *risk* factors presenting with sore throat, OM or other URTI symptoms would have to be treated to prevent **1** case of quinsy, mastoiditis or pneumonia respectively.

When to Consider an Immediate Antibiotic Prescription:²

- If the patient is systemically unwell.
- If the patient has signs and symptoms 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 (including young children born prematurely).

Acute Otitis Media

Consider whether antibiotics are required:³

- For most people presenting with suspected acute otitis media (AOM), advise a no antibiotic prescribing strategy (would expect to see improvement by 4 days) or a delayed antibiotic prescribing strategy.
- For children younger than 3 months of age with AOM, have a low threshold for admitting or the prescribing of antibiotics.

Consider an immediate antibiotic prescription for:³

- Children younger than 2 years of age with bilateral AOM or
- Children with perforation and/or discharge in the ear canal (otorrhoea) associated with AOM or
- People who are systemically very unwell e.g. fever or vomiting (but who do not require admission), or with recurrent infection or
- People at high risk of serious complications because of significant heart, lung, renal, liver, or neuromuscular disease, immunosuppression, or cystic fibrosis, and young children who were born prematurely.
- Young children born prematurely.
- People whose symptoms of AOM have already lasted for 4 days or more and are not improving.

Cochrane Evidence Based Medicine (NNT-numbers needed to treat / NNH-numbers needed to harm):¹

NNT = 16 children to prevent 1 suffering ear pain

But

NNH = 24 children will experience an adverse drug reaction with antibiotics- vomiting, diarrhoea, rash, fungal infection.

General Information:¹

- Only 1 in 4 children will benefit from antibiotics unless symptoms as above.
- 80% of children presenting with OM recover without antibiotic treatment.

Local Advice:⁴

- **If a decision is made to prescribe an antibiotic** – amoxicillin capsules 500mg every 8 hours for 5-7 days : child up to 10 years – amoxicillin – refer to BNF or Children’s BNF for dose
- **Treatment failures** – co-amoxiclav dose according to BNF or Children’s BNF
- **If patient allergic to penicillin** – clarithromycin tablets 500mg every 12 hours for 7 days : child up to 10 years – refer to Children’s BNF and dose according to body weight.

(See the Antimicrobial Prescribing Guidelines in General Practice 2012 for full details on local advice- this is only a brief resume)

Acute Sore Throat/ Pharyngitis /Tonsillitis

Most sore throats are viral and self-limiting and resolve in 3 days in 40% of patients and one week in 85% of patients.⁴

Using a Delayed Antibiotic Prescribing Strategy:³

- Usually the patient should be advised to use the antibiotic prescription only if their condition has deteriorated or not improved after 3 days.

Centor Criteria:^{1,3}

The Centor criteria were developed to predict bacterial infection (GABHS) in people with acute sore throat.

The four Centor criteria are:

1. Presence of tonsillar exudate.
2. Presence of tender anterior cervical lymphadenopathy or lymphadenitis.
3. History of fever.
4. Absence of cough.

The presence of three or four of these clinical signs (Centor score 3 or 4) suggests that the person may have GABHS (40–60% chance) and may benefit from antibiotics treatment.

The absence of three or four of these signs suggests that the person is unlikely to have an infection (80% chance), and antibiotics treatment is unlikely to be necessary.

General Information:¹

- Serious complications like rheumatic fever and mastoiditis are extremely rare and are not a routine to routinely prescribe antibiotics.
- Glandular fever- important differential diagnosis to rule out.

Local Advice:⁴

- **If a decision is made to prescribe an antibiotic** – phenoxymethylpenicillin tablets 500mg every 12 hours for 7 days.
- **If patient allergic to penicillin** – clarithromycin tablets 500mg every 12 hours for 7 days.

(See the Antimicrobial Prescribing Guidelines in General Practice 2012 for full details on local advice- this is only a brief resume)

Acute Sinusitis

Consider whether antibiotics are required:¹

- **Acute sinusitis** is usually triggered by a viral upper respiratory tract infection.
- It is estimated that only about one third of people will subsequently develop a bacterial infection.
- Sinusitis is one of the most common reasons a healthcare professional will prescribe an antibiotic.

Management:³

The natural course of the infection takes 2.5 weeks to resolve (that is, longer than a common cold).

When should I prescribe an antibiotic for acute sinusitis?³

Consider an immediate antibiotic prescription if they are:

- Systemically unwell, or
- At high risk of complications because of a pre-existing comorbidity.

Delayed Prescription Strategy:³

Consider a delayed prescribing strategy for all other people, especially if symptoms are causing significant discomfort (such as marked pain or profuse, purulent discharge).

Antibiotic Effectiveness and Harms:¹

- There is some evidence from RCTs that antibiotics are of limited benefit in the treatment of sinusitis, with between 7 and 14 people requiring treatment for 1 person to benefit (NNT 7–14), depending mainly on the initial accuracy of diagnosis.
- There is similar evidence of antibiotic effectiveness in the treatment of children.
- However, there is some evidence that the likelihood of harms occurring due to adverse effects is in a similar range.

Local Advice:⁴

Mostly viral.

Sinusitis disease has been shown to be present in 90% of patients with a common cold. However, it usually resolves or markedly improves in 2 to 3 weeks and only 30 to 40% of patients with clinically suspected sinusitis have a bacterial infection.

Doxycycline 100mg, 2 stat on the first day followed by 100mg daily for a further 6 days.

Allergy to doxycycline: clarithromycin 500mg every 12 hours for 5 to 7 days.

(See the Antimicrobial Prescribing Guidelines in General Practice 2012 for full details on local advice- this is only a brief resume)

Acute Bronchitis/ Cough

General Information:¹

- If previously healthy, usually viral.
- More likely to be a bacterial infection if a smoker or suffers from COPD.

Presentation:³

- Dry cough becoming productive with tight chest and discomfort behind the sternum, wheezing and SOB.
- Sputum- yellow/ green.
- Mild fever.
- Wheeze with occasional crackles.

What do NICE say?²

Immediate Rx and/or further investigation and/or management should be offered if patient:

- Systemically unwell OR has signs and symptoms suggestive of serious illness and/or complications
- High risk of serious complications because of pre-existing co-morbidities (heart & lung especially)
- **>65 years** with acute cough and ≥ 2 of:
 - Hospitalisation in previous year
 - DM type 1 or 2
 - CHF
 - Concurrent po glucocorticoids
- **>80 years** with acute cough and ≥ 1 of:
 - Hospitalisation in previous year
 - DM type 1 or 2
 - CHF
 - Concurrent po glucocorticoids

When to prescribe an antibiotic (as above and..)^{1,3}

- Antibiotics are not indicated in people who are otherwise well. Explain why antibiotics are not necessary, giving written information if necessary.
- Consider prescribing antibiotics for people who have a pre-existing condition that impairs their ability to deal with infection or is likely to deteriorate with acute bronchitis. This includes people:
 - Who are over 75 years of age, with fever.
 - With chronic obstructive pulmonary disease (COPD).
 - With heart failure.
 - Who are immunocompromised, including people with cancer or insulin dependent diabetes.

Complication rates for LRTIs are higher compared to URTIs.¹

Greater than **4000** patients without risk factors presenting with sore throat, OM or other URTI symptoms would have to be treated to prevent **1** case of quinsy, mastoiditis or pneumonia respectively.

BUT for LRTI:

NNT = **39** patients to prevent **1** case of pneumonia after chest infection in people **≥ 65 years** compared to NNT **119** patients aged **16- 64 years**

Management:³

- Otherwise healthy adults improve on their own within 4 to 8 days.
- Provide self-care advice. For most people, adequate hydration, analgesia, and comfort measures are adequate. People who smoke should be encouraged to quit and given the necessary support and treatment to do so.
- Antibiotics are not routinely indicated.

A Delayed Antibiotic Prescribing Strategy:^{1,2,3}

- A delayed antibiotic prescribing strategy for people with acute bronchitis can be considered where it is felt safe not to prescribe antibiotics immediately.
- Reassure the person that antibiotics are not needed immediately as they will make little difference to symptoms, and may have adverse effects.
- Advise the person to use the delayed prescription if symptoms do not settle or get significantly worse.
- Advise the person about the need for review if symptoms get significantly worse despite using the delayed prescription.

Basis for considering a delayed prescription strategy for people with acute bronchitis who are otherwise well:³

A potential advantage of the delayed prescribing strategy is that it offers a safety net for the small proportion of people with acute bronchitis who develop complications or whose symptoms worsen significantly. A person with acute bronchitis may also prefer to have a delayed prescription rather than no prescription at all, and this could help to maintain the doctor-patient relationship.

Local Advice:⁴

Acute Bronchitis – most cases are viral, therefore routine antibiotic use is not recommended in otherwise healthy patients with a cough and/or purulent sputum. **Consider antibiotics if any of the following are present:**

- Breathlessness, increased sputum volume and development of significant purulent sputum and chest signs on examination.
- Patient has reduced resistance to infection
- There is co-existing illness such as COPD, asthma, congestive heart failure or diabetes
- There is a history of persistent mucopurulent cough
- There is significant clinical deterioration.

If antibiotics are indicated, treat as per acute exacerbation of COPD⁴ (see next page) or for children first line is amoxicillin³ providing no allergy to penicillin is noted.

Co-amoxiclav is more likely than amoxicillin to cause antibiotic-associated diarrhoea and *C. Difficile* infection (CDI) and should be **avoided** in patients at more risk of CDI:⁴

- Aged > 65yrs
- On proton-pump inhibitors
- Recent hospitalisation

(See the Antimicrobial Prescribing Guidelines in General Practice 2012 for full details on local advice- this is only a brief resume)

Acute Exacerbation of COPD

Management:³

1. Self-management plan may be in place.
2. Add a spacer device and increase usual SA bronchodilator (doubling dose or increase frequency).
3. Rx prednisolone 30mg od 7 to 14 days.
4. Rx antibiotic if patient presents with:
 - a. More purulent sputum
 - b. Clinical signs of pneumonia

Ruling out pneumonia:³

- High fever
- Shaking/ chills
- Cough with phlegm not improving or worsening
- SOB with normal daily activities
- CP with breathing/ cough
- Feeling suddenly worse after cold/flu

In older adults, symptoms can be milder and may not have fever especially if patient suffers from COPD. The patient may experience sudden changes to mental health.

Local Advice:⁴

Recommended treatment for acute exacerbations of COPD

1st Line treatment – doxycycline capsules 100mg – 2 capsules on the 1st day then 1 capsule daily for a further 4 days

If patient allergic to doxycycline – clarithromycin tablets 250mg every 12 hours for 5 days (increased in severe infection to 500mg every 12 hours for up to 14 days)

Recommended treatment for pneumonia

1st Line treatment – amoxicillin capsules 500mg every 8 hours for 7 days

If suspected atypical pneumonia or patient allergic to penicillin – clarithromycin 500mg every 12 hours for 7 – 14 days

Doxycycline has replaced amoxicillin as 1st line for COPD as it is thought to be less likely to be followed by *C. Difficile* associated disease. Amoxicillin is still highly active against the pneumococcus, hence it is still 1st line for pneumonia

(See the Antimicrobial Prescribing Guidelines in General Practice 2012 for full details on local advice- this is only a brief resume)

Urinary Tract Infections

General Information:⁵

- Approximately 10-20% of women need further treatment due to the 3/7 day antibiotic treatment failure within 30 days.
- 50% risk of a UTI for a woman in their lifetime.
- Most likely to be a simple UTI (female)- i.e. 25 year old female presenting with dysuria without vaginal discharge or irritation.
- 25% of young women will get better without the need for antibiotics.

Complications if untreated- looking for at risk patients:¹

Can cause renal disease including end stage renal failure/ gram –ve septicaemia

Management:³

Female with suspected cystitis (simple UTI diagnostic criteria):

- Without antibiotics, symptoms can be expected to resolve in 4–9 days.
- With antibiotics, symptoms can be expected to resolve in 3–8 days.
- On average, antibiotics shorten the duration of symptoms by about a day.

Relieve symptoms with paracetamol or ibuprofen — do not recommend urine alkalinizing agents or cranberry products.³

Basis for recommendation

There is insufficient evidence to recommend the use of:

Urine alkalinizing agents (such as potassium citrate or bicarbonate): the CKS found no controlled trials of urine alkalinizing agents. One observational study found no relationship between symptoms of cystitis and urine pH.

Cranberry products: a Cochrane systematic review found no good evidence to support the use of cranberry juice or other cranberry products for treating acute UTIs.

If cystitis symptoms are mild:³

- Dipstick test the urine to guide treatment decisions.
- Discuss not using an antibiotic, especially if the urine dipstick test is negative for nitrites and leucocyte esterase and blood.
- Have a lower threshold for offering an antibiotic if there are risk factors for persistent infection, recurrent infection, or treatment failure.
- If there are concerns about not taking an antibiotic, offer a delayed antibiotic prescription to be dispensed if the symptoms become worse, or last more than 48 hours.

- Advise the woman to seek medical attention if she develops a high fever or becomes systemically unwell.

If cystitis symptoms are moderate or severe:³

- Offer an antibiotic.
- Do not dipstick test the urine, as the decision to offer an antibiotic is not influenced by urine dipstick test results. Even if the tests for nitrite, and leucocyte esterase, and blood are all negative, an antibiotic should still be offered.
- If the woman prefers not to take an antibiotic, offer a delayed antibiotic prescription to be dispensed if the symptoms become worse, or last more than 48 hours.

Local Advice:⁴

Recommended treatment for uncomplicated lower UTI

First episode, non-pregnant – trimethoprim 200mg every 12 hours for 3 days (women) or 7 days (men) : alternative - nitrofurantoin 50mg every 6 hours with food for 3 days in women. No need to send MSU for C&S.

Recurrent infection, non-pregnant – co-amoxiclav tablets 500/125mg every 8 hours for 3 days (women) or 7-14 days (men) : alternative and further guidance, refer to prescribing guidelines (ref 4).

(See the Antimicrobial Prescribing Guidelines in General Practice 2012 for full details on local advice- this is only a brief resume)

References:

1. *NPC Key Therapeutic Topics. Antibiotic Prescribing: July 2011.*
2. *Prescribing of antibiotics for self limiting respiratory tract infections in adults and children in primary care. Nice Clinical Guideline 69: July 2008.*
3. *NICE Clinical Knowledge Summaries. www.cks.nice.org.uk: accessed July- August 2013.*
4. *North Staffordshire Antimicrobial Prescribing Guidelines in General Practice 2012: version 1.0.*
5. *North Staffordshire CCG Antibiotic Prescribing Quiz.*