Impetigo: antimicrobial prescribing

NICE guideline

Draft for consultation, August 2019

This guideline sets out an antimicrobial prescribing strategy for impetigo. It aims to optimise antibiotic use and reduce antibiotic resistance.

The recommendations in this guideline are for the use of antiseptics and antibiotics to manage impetigo in adults, young people and children. It does not cover diagnosis.

Please note that the scope of this guideline is for adults, young people and children aged 72 hours and over. For treatment of children in the first 72 hours of life, please seek specialist advice.

For managing other skin infections, see our web page on skin conditions.

See a 2-page visual summary of the recommendations, including tables to support prescribing decisions.

Who is it for?

- Healthcare professionals
- Adults, young people and children with impetigo, their parents and carers

The guideline contains:

- the draft recommendations
- the rationales
- summary of the evidence.

Information about how the guideline was developed is on the guideline's page on the NICE website. This includes the full evidence review, details of the committee and any declarations of interest.

Recommendations

1.1 Managing impetigo

Advice to reduce the spread of impetigo

1.1.1 Advise adults, young people and children, and their parents or carers if appropriate, about good hygiene measures to reduce the spread of impetigo to other areas of the body and to other people.

To find out why the committee made the recommendations on advice to reduce the spread of impetigo see the rationales.

Treatment

1.1.2 Offer:

- a topical antiseptic such as hydrogen peroxide 1% cream (applied two to three times a day for 5 to 7 days), **or**
- a topical antibiotic (see recommendations on choice of antibiotic) if a topical antiseptic is not suitable.

for people with localised non-bullous impetigo who are not systemically unwell or at high risk of complications.

1.1.3 Offer a topical or oral antibiotic for people with widespread non-bullous impetigo who are not systemically unwell or at high risk of complications (see recommendations on choice of antibiotic). Take into account:

- that both topical and oral antibiotics are effective at treating impetigo
- the preferences of the person (and their parents or carers, if appropriate), including the practicalities of administration and possible adverse effects
- the person's risk of antimicrobial resistance.

1.1.4 Offer an oral antibiotic (see recommendations on choice of antibiotic) for people:

- with bullous impetigo, **or**
- with impetigo who are systemically unwell or at high risk of complications.

1.1.5 Do not offer combination treatment with a topical and oral antibiotic to treat impetigo.

To find out why the committee made the recommendations on treatment for impetigo see the rationales.

Advice on treatment

1.1.6 Give advice to adults, young people and children with impetigo, and their parents or carers if appropriate, about seeking medical help if symptoms worsen rapidly or significantly at any time, or do not start to improve after completing a course of treatment.

To find out why the committee made the recommendation on advice on treatment for impetigo see the rationales.

Reassessment

1.1.7 Reassess people with impetigo if their symptoms worsen rapidly or significantly at any time or have not improved after completing a course of treatment.

1.1.8 When reassessing people with impetigo, take account of:

- other possible diagnoses, such as cellulitis
- any symptoms or signs suggesting a more serious illness or condition, such as a deeper soft tissue infection
- previous use of topical or oral antibiotics.

1.1.9 For people with impetigo that is worsening or has not improved after treatment with a topical antiseptic, consider:

- a topical antibiotic if the impetigo is localised, **or**
- a topical or oral antibiotic if the impetigo has become widespread (see recommendation 1.1.3).

1.1.10 For people with impetigo that is worsening or has not improved after completing a course of antibiotics (topical or oral), consider:

- an oral antibiotic if this has not been tried already (see the recommendations on choice of antibiotic)
- sending a skin swab for microbiological testing.

1.1.11 For people with impetigo that recurs frequently:

- send a skin swab for microbiological testing, **and**
- consider taking a nasal swab and starting treatment for decolonisation.

1.1.12 If a skin swab has been sent for microbiological testing:

- review the choice of antibiotic when results are available, **and**
- change the antibiotic according to results if symptoms are not improving, using a narrow spectrum antibiotic if possible.

To find out why the committee made the recommendations on reassessment for impetigo see the rationales.

Referral and seeking specialist advice

1.1.13 Refer to hospital:

- people with impetigo and any symptoms or signs suggesting a more serious illness or condition (for example, sepsis)
- people with widespread impetigo who are immunocompromised.

1.1.14 Consider referral or seeking specialist advice on further investigation and management for people with impetigo if they:

- have bullous impetigo, particularly in babies (aged 1 year and under), **or**
- have impetigo that recurs frequently, **or**
- are systemically unwell, **or**
- are at high risk of complications.

To find out why the committee made the recommendations on referral and seeking specialist advice for impetigo see the rationales.

1.2 Choice of antibiotic

1.2.1 When prescribing an antibiotic for impetigo, take account of local antimicrobial resistance data and follow:

- table 1 for adults aged 18 years and over
- table 2 for children and young people under 18 years.

Table 1. Antibiotics for adults aged 18 years and over

Antibiotic[1]	**Dosage and course length**[2]
First choice topical antibiotic[3] **if topical antiseptic not suitable or ineffective**	
Fusidic acid 2%	Apply three times a day for 5 to 7 days
Second choice topical antibiotic[3] **if fusidic acid resistance suspected or confirmed**	
Mupirocin 2%	Apply three times a day for 5 to 7 days
First choice oral antibiotic	
Flucloxacillin	500 mg four times a day for 5 to 7 days
Second choice oral antibiotics if penicillin allergy or flucloxacillin unsuitable	
Clarithromycin	250 mg to 500 mg twice a day for 5 to 7 days
Erythromycin (in pregnancy)	250 mg to 500 mg four times a day for 5 to 7 days

[1] See BNF for appropriate use and dosing in specific populations, for example, hepatic impairment, renal impairment, pregnancy and breast-feeding.

[2] Oral doses are for immediate-release medicines.

[3] Consult local microbiologist before using topical antibiotics in hospital (BNF, July 2019)

1 **Table 2. Antibiotics for children and young people under 18 years**

Antibiotic[1]	Dosage and course length[2]
First choice topical antibiotic[3]	
Fusidic acid 2%	Apply three times a day for 5 to 7 days
Second choice topical antibiotic[3] if fusidic acid resistance suspected or confirmed	
Mupirocin 2%	Apply three times a day for 5 to 7 days
First choice oral antibiotic	
Flucloxacillin	1 month to 1 year, 62.5 mg to 125 mg four times a day for 5 to 7 days 2 to 9 years, 125 mg to 250 mg four times a day for 5 to 7 days 10 to 17 years, 250 mg to 500 mg four times a day for 5 to 7 days
Second choice oral antibiotics if penicillin allergy or flucloxacillin unsuitable	
Clarithromycin	1 month to 11 years: under 8 kg, 7.5 mg/kg twice a day for 5 to 7 days 8 to 11 kg, 62.5 mg twice a day for 5 to 7 days 12 to 19 kg, 125 mg twice a day for 5 to 7 days 20 to 29 kg, 187.5 mg twice a day for 5 to 7 days 30 to 40 kg, 250 mg twice a day for 5 to 7 days 12 to 17 years, 250 mg 500 mg twice a day for 5 to 7 days
Erythromycin (in pregnancy)	8 to 17 years: 250 mg to 500 mg four times a day for 5 to 7 days
[1]See BNF for Children for appropriate use and dosing in specific populations, for example, hepatic impairment, renal impairment, pregnancy and breast-feeding. [2]Oral doses are for immediate-release medicines. The age bands apply to children of average size and, in practice, the prescriber will use the age bands in conjunction with other factors such as the severity of the condition being treated and the child's size in relation to the average size of children of the same age. [3]Consult local microbiologist before using topical antibiotics in hospital (BNF for Children, July 2019)	

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To find out why the committee made the recommendations on choice of antibiotic for impetigo see the rationales.

Terms used in the guideline

Non-bullous impetigo

Impetigo characterised by thin-walled vesicles or pustules which rupture quickly, forming a golden-brown crust (NICE clinical knowledge summary on impetigo).

Bullous impetigo

Impetigo characterised by the presence of fluid-filled vesicles and blisters often with a diameter of over 1 cm which rupture, leaving a thin, flat, yellow-brown crust (NICE clinical knowledge summary on impetigo).

Decolonisation

Use of topical treatments (antiseptic body wash, nasal ointment or a combination of both) and personal hygiene measures to remove the bacteria causing the infection from the body (NICE clinical knowledge summary on boils, carbuncles and staphylococcal carriage).

Rationales

The recommendations in this guideline are based on the evidence identified and the experience of the committee.

Advice to reduce the spread of impetigo

Recommendation 1.1.1

Why the committee made the recommendation

The committee agreed based on its experience that good hygiene measures help reduce the spread of impetigo, both to other areas of the body and to other people. The committee agreed that people with impetigo should be given advice on these and noted that resources are available (see management of impetigo in NICE's clinical knowledge summary on impetigo).

Return to the recommendations.

Treatment

Why the committee made the recommendations

Recommendations 1.1.2 to 1.1.5

The evidence showed that some people with impetigo given a placebo achieved cure or improvement. However, impetigo is highly infectious, and the committee agreed that treatment should be offered to help limit the spread of infection, to hasten recovery and to limit deterioration. A faster recovery will also likely mean a shorter period of exclusion from school, nursery or work.

Different treatment options are appropriate for different people with impetigo. The committee was not able to define localised or widespread impetigo and agreed that this classification should be based on clinical judgement.

The evidence suggested that topical antiseptics are as effective as topical antibiotics. The committee agreed that the evidence indicated that a topical antiseptic is effective, as a large proportion of people given a topical antiseptic achieved cure or improvement. Therefore, they agreed that a topical antiseptic should be offered to people with localised non-bullous impetigo who are not systemically unwell or at high risk of complications. The evidence suggested that topical hydrogen peroxide 1% cream (a topical antiseptic), applied two to three times a day was effective, but the committee agreed that other antiseptics are available and could also be used. The committee agreed by consensus that a topical antiseptic should be used for 5 to 7 days as after this time an improvement in symptoms would be expected and treatment could be stopped.

Overall, the evidence showed that a topical antibiotic was as effective as an oral antibiotic for cure or improvement of impetigo and topical antibiotics may have fewer adverse effects than oral antibiotics. The committee therefore agreed that a topical antibiotic should be offered for people with localised non-bullous impetigo if a topical antiseptic is not suitable. Based on the evidence and its experience, the committee agreed that topical antibiotics would cause fewer adverse effects than oral antibiotics, and it agreed that applying a

topical antibiotic is usually straightforward for people with localised impetigo. The committee discussed its experience of antibiotic resistance with topical antibiotics compared with oral antibiotics. It agreed that the likely increased risk of resistance with topical antibiotics applied to a localised area of impetigo was outweighed by the increased risk of adverse events with oral antibiotics.

Based on its experience, the committee agreed that people with more widespread non-bullous impetigo should be offered either a topical or an oral antibiotic. People with impetigo (or their parents or carers, if appropriate) should discuss with their healthcare professional their preferences, the practicalities of administration, the possible adverse effects and the risk of antimicrobial resistance, which may be increased when there has been previous topical antibiotic use.

There was very limited evidence available on treating people with bullous impetigo (1 study including 48 newborn babies across 4 treatment groups). The committee discussed their experience of treating bullous impetigo and agreed that the presence of bullae may mean that a topical antibiotic is not able to target the infected area. Therefore, the committee agreed that an oral antibiotic was necessary to target all areas of infection and reduce the likelihood of inadequate administration with a topical antibiotic.

No evidence was identified for treating people who are systemically unwell or at higher risk of complications. Based on its experience of current practice and the high risk of harm if topical antibiotics are inadequately administered, the committee agreed that this population should be offered an oral antibiotic. People at higher risk of complications can include, for example, people who are immunocompromised or have coexisting skin conditions.

The evidence suggested that combination treatment with an oral and topical antibiotic was no more effective than a topical antibiotic alone, so the committee agreed that combination treatment should not be offered.

The evidence suggested that oral antibiotics were at least as effective as intramuscular antibiotics and that intramuscular antibiotics were associated

with more adverse events. Therefore, the committee agreed not to make any recommendations on intramuscular route of administration.

For more detail see the summary of the evidence on antibiotics.

Return to the recommendations.

Advice on treatment

Why the committee made the recommendation

Recommendation 1.1.6

Based on its experience, the committee agreed that all people with impetigo (and their parents or carers, if appropriate) should be given advice on when to seek further medical help. This will help to ensure that other possible diagnoses or more serious illnesses are not missed.

Return to the recommendations.

Reassessment

Why the committee made the recommendations

Recommendations 1.1.7 to 1.1.12

The committee agreed on good practice points for the reassessment of people with impetigo whose symptoms have worsened rapidly or significantly, or have not improved with treatment. Based on its experience, the committee agreed that reassessment should include checking for other possible diagnoses and for symptoms or signs suggesting a more serious illness. The committee was aware that use of topical antibiotics is associated with the development of antimicrobial resistance and so previous antibiotic use may be a reason for ineffective topical treatment.

No evidence was identified in people with impetigo that is worsening or has not improved following treatment. The committee agreed that a topical antibiotic should be considered if a topical antiseptic is ineffective for people with localised non-bullous impetigo, to reduce the risk of adverse effects

compared with oral antibiotics. The committee agreed that a topical or an oral antibiotic should be considered for people with impetigo that has become widespread after treatment with a topical antiseptic. This is in line with the recommendations on treatment for people with widespread non-bullous impetigo who are not systemically unwell or at high risk of complications. People with impetigo (or their parents or carers, if appropriate) should discuss with their healthcare professional their preferences, the practicalities of administration, the possible adverse effects and the risk of antimicrobial resistance, which may be increased when there has been previous topical antibiotic use.

The committee agreed that an oral antibiotic should be considered if a topical antibiotic is ineffective. Although there is no evidence that oral antibiotics are more effective than topical antibiotics, the committee agreed by consensus that an oral antibiotic is more likely to target all areas of infection, which may not be adequately targeted by topical antibiotics, and reduces the likelihood of inadequate administration. They also agreed that microbiological testing of an area of infected skin may help to guide antimicrobial prescribing.

The committee agreed that for people with impetigo that recurs frequently, a skin swab should be sent for microbiological testing to determine antimicrobial susceptibility. A nasal swab should also be considered if nasal carriage of *Staphylococcus aureus* is suspected. A nasal or skin (or combination) decolonisation regimen should be considered, based on clinical judgement and microbiological test results, in order to remove the bacteria causing recurrence of infection.

The committee agreed that when results are available from microbiological tests, it is good antimicrobial stewardship to review and change the choice of antibiotic to a narrow-spectrum antibiotic when possible. This includes continuing the same treatment if symptoms are already improving with a narrow-spectrum antibiotic that has shown resistance in microbiological tests.

Return to the recommendations.

Referral and seeking specialist advice

Why the committee made the recommendations

Recommendations 1.1.13 to 1.1.14

Based on its experience, the committee agreed that people with symptoms or signs suggesting a more serious illness or condition, people who are immunocompromised with widespread impetigo and babies (aged 1 year and under) with bullous impetigo may need to be referred to hospital for further assessment and treatment. Sometimes impetigo is difficult to treat (for example, bullous impetigo or in people who have impetigo that recurs frequently) and the committee agreed that referral or specialist advice should be an option.

Return to the recommendations.

Choice of antibiotic

Why the committee made the recommendation

Recommendation 1.2.1

Choice of antibiotic

The evidence showed that fusidic acid is as effective as other topical antibiotics and is associated with fewer adverse events. Based on this evidence, current practice and its experience, the committee agreed that the **first-choice topical antibiotic** in adults, young people and children with non-bullous impetigo when a topical antiseptic is not suitable (including when impetigo is widespread) or has been ineffective is **fusidic acid 2%** (either as a cream or an ointment). Based on the evidence and its experience, the committee agreed that topical antibiotics would cause fewer adverse effects than oral antibiotics. Based on its experience, the committee agreed that fusidic acid resistance rates are higher than for some other antibiotics. However, based on the evidence showing fewer adverse events with fusidic acid compared with another topical antibiotic, the committee agreed that fusidic acid is the most suitable first-choice topical antibiotic. The committee

agreed that the risk of antimicrobial resistance should be considered when offering an antibiotic and that this risk is likely to be low in people with a first episode of impetigo**.**

The **second-choice topical antibiotic** in adults, young people and children with non-bullous impetigo (when a topical antiseptic is not suitable or has been ineffective) and fusidic acid resistance is suspected or confirmed is **mupirocin 2%** (either as a cream or an ointment). The committee based this recommendation on its experience and knowledge of current practice, evidence that mupirocin is as effective as other topical antibiotics for treatment of impetigo and its experience that mupirocin resistance rates are low. It was noted by the committee that there is evidence of increased risks of adverse events with mupirocin compared with fusidic acid.

Based on its experience and knowledge of current practice, the committee agreed that the **first-choice oral antibiotic** in adults, young people and children is **flucloxacillin**. This is a relatively narrow-spectrum penicillin that is effective against *Staphylococcus aureus* and *Streptococcus pyogenes*.

The **second-choice oral antibiotic** in adults, young people and children if penicillin allergy or flucloxacillin is unsuitable is **clarithromycin** or **erythromycin** (in pregnancy). The committee agreed that these antibiotics are effective against the common pathogens that cause impetigo and the evidence indicated that macrolides are as effective as penicillins for treating impetigo.

Course length and dosage

There was very little evidence on antibiotic dosage and course length. Therefore, the recommendations were based on committee experience of current practice and the British National Formulary (BNF). The committee also agreed that the shortest course that is likely to be effective should be prescribed to reduce the risk of antimicrobial resistance and adverse effects. All doses are given as in the BNF. Based on its experience, the committee agreed that the higher dose for flucloxacillin recommended in the BNF is appropriate for treating impetigo.

Current practice is a 5-day course of topical antibiotics. However, the committee was aware that some people may need a longer course so agreed on 5 to 7 days. Because the evidence showed no difference in effectiveness between topical and oral antibiotics, the committee agreed that the course length for oral antibiotics should be the same as for topical antibiotics.

For more details see the summary of the evidence on choice of antibiotic.

Return to the recommendations.

Context

Impetigo is a contagious, bacterial infection of the superficial layers of the skin. The most common bacterial pathogen is *Staphylococcus aureus,* although infection with *Streptococcus pyogenes* or a combination of both pathogens is also seen. Impetigo affects all age groups; however it is most common in young children (NICE Clinical Knowledge Summary on impetigo, 2018).

Summary of the evidence

This is a summary of the evidence, for full details see the evidence review.

Antibiotics

Efficacy of topical antibiotics

The following topical antibiotics were shown to be more effective than placebo for the outcome of cure or improvement:

- mupirocin, in adults, young people and children
- fusidic acid, in children.

Efficacy of oral antibiotics

Phenoxymethylpenicillin was no different compared with placebo in children for the outcome of cure or improvement.

Topical antibiotics compared to antiseptics, steroids or antifungals

There were no differences in clinical effectiveness of the following comparisons for the outcome of cure or improvement:

- topical antibiotic (fusidic acid) compared with a topical antiseptic (hydrogen peroxide) in children
- topical antibiotic (gentamicin) compared with a topical steroid (betamethasone valerate; age not reported)
- topical antibiotic (gentamicin) plus a topical steroid (betamethasone valerate) compared with a topical steroid (betamethasone valerate; age not reported)
- topical antibiotic (mupirocin) compared with a topical antifungal (terbinafine) in children.

Safety of antibiotics

There were no differences in adverse effects for the following comparisons:

- topical mupirocin and placebo in adults, young people and children
- topical fusidic acid and disinfectants in children
- topical mupirocin and antifungals in children.

No safety or tolerability data were reported for the other comparisons.

The evidence for the efficacy and safety of antibiotics is based on 1 systematic review and meta-analysis of randomised controlled trials (RCTs; Koning et al. 2012).

Choice of antibiotics

Topical antibiotics

There were no differences in the clinical effectiveness of the following topical antibiotic comparisons for the outcome of cure or improvement:

- topical mupirocin compared with topical fusidic acid in adults, young people and children

- topical mupirocin compared with topical neomycin in children and young people
- topical mupirocin compared with topical polymyxin B plus neomycin (population not reported).

Some differences were seen for cure or improvement for other topical antibiotic comparisons:

- topical fusidic acid was more effective than topical neomycin plus bacitracin in children
- topical gentamicin was more effective than topical neomycin in adults, young people and children.

There were no differences in adverse effects between topical mupirocin compared with topical polymyxin B plus neomycin (age not reported).

The incidence of skin rash was increased with topical mupirocin compared with topical fusidic acid in adults, young people and children.

No safety or tolerability data were reported for the other comparisons.

Oral antibiotics

There were no differences in the clinical effectiveness of the following oral antibiotic comparisons for the outcome of cure or improvement:

- oral macrolides compared with oral penicillins in adults, young people and children
- oral erythromycin compared with oral amoxicillin in children
- oral azithromycin compared with oral erythromycin in adults, young people and children
- oral cefalexin compared with oral cefadroxil in children and young people
- oral cefalexin compared with oral erythromycin in children or oral azithromycin in adults
- oral cefaclor compared with oral azithromycin or oral co-amoxiclav in children

- oral cefadroxil compared with oral flucloxacillin in adults, young people and children.

Some differences were seen for cure or improvement for other antibiotic comparisons:

- oral erythromycin was more effective than phenoxymethylpenicillin in children
- oral co-amoxiclav was more effective than oral amoxicillin in children and young people
- oral cefalexin was more effective than oral phenoxymethylpenicillin in children.

There were no differences in adverse effects for the following oral antibiotic comparisons:

- oral co-amoxiclav compared with oral amoxicillin in children and young people
- oral cefalexin compared with oral azithromycin in adults
- oral cefaclor compared with oral azithromycin in children
- oral cefaclor compared with co-amoxiclav in children.

Some differences were seen in adverse effects for other oral antibiotic comparisons:

- there were more incidences of diarrhoea in children taking oral erythromycin compared with oral amoxicillin
- there were more incidences of stomach ache, rash, fever or vomiting but fewer incidents of diarrhoea in adults, young people and children taking oral cefadroxil compared with oral flucloxacillin.

No safety or tolerability data were reported for the other comparisons.

Dual antibiotics

Oral plus topical antibiotics compared with topical antibiotics

There were no differences in the clinical effectiveness of the following antibiotic comparisons in children for the outcome of cure or improvement:

- oral cefdinir plus topical tetracycline compared with topical tetracycline
- oral minomycin plus topical tetracycline compared with topical tetracycline
- oral fosfomycin plus topical tetracycline compared with topical tetracycline.

The evidence for choice of antibiotics is based on 1 systematic review and meta-analysis of RCTs (Koning et al. 2012).

Course length

Shorter course antibiotics compared with longer course antibiotics

A 3 day course of oral co-trimoxazole was no different compared with a 5 day course of oral co-trimoxazole for treatment success in children.

The evidence for course length of antibiotics is based on 1 non-inferiority RCT (Bowen et al. 2014).

Route of administration

Topical antibiotics compared with oral antibiotics

There were no differences in the clinical effectiveness of the following antibiotic comparisons for the outcome of cure or improvement:

- topical mupirocin compared with oral erythromycin in adults, young people and children
- topical mupirocin compared with oral cefalexin in children with impetigo, or in adults, young people and children with secondary impetigo
- topical mupirocin compared with oral ampicillin (age not reported)
- topical fusidic acid compared with oral erythromycin in newborn babies (aged 3 to 14 days) with bullous impetigo

- topical chloramphenicol compared with oral erythromycin in newborn babies (aged 3 to 14 days) with bullous impetigo.

Oral erythromycin was more effective than topical neomycin plus bacitracin for the outcome of cure or improvement in newborn babies (aged 3 to 14 days) with bullous impetigo.

Topical mupirocin was no different compared with oral cefalexin for adverse effects in children.

Topical mupirocin was associated with fewer gastrointestinal adverse events than oral erythromycin in adults, young people and children.

No safety or tolerability data were reported for the other comparisons.

Intramuscular antibiotics compared with oral antibiotics

Intramuscular ceftriaxone was no different compared with oral cefadroxil for cure in children.

Oral co-amoxiclav was non-inferior to intramuscular benzylpenicillin for treatment success in children.

Intramuscular benzylpenicillin was associated with more adverse events than co-trimoxazole in children.

The evidence for route of administration of antibiotics is based on 1 systematic review and meta-analysis of RCTs (Koning et al. 2012), and 2 RCTs (Al-Samman et al. 2014 and Bowen et al. 2014).

Other considerations

Medicines safety

To reduce the risk of antimicrobial resistance, topical fusidic acid should not be used for longer than 10 days and local microbiology advice should be sought before using it in hospital (BNF, July 2019).

About 10% of the general population claim to have a penicillin allergy; this is often because of a skin rash that occurred while taking a course of penicillin as a child. Fewer than 10% of people who think they are allergic to penicillin are truly allergic. See the NICE guideline on drug allergy: diagnosis and management for more information.

People with a history of immediate hypersensitivity to penicillins may also react to cephalosporins and other beta-lactam antibiotics (BNF, July 2019).

Macrolides should be used with caution in people with a predisposition to QT interval prolongation (BNF, July 2019).

See the summaries of product characteristics for information on contraindications, cautions, drug interactions and adverse effects of individual medicines.

Medicines adherence

- Medicines adherence may be a problem for some people taking antibiotics that need frequent dosing or longer treatment duration (see the NICE guideline on medicines adherence).

Resource implications

- Recommended antibiotics are available as generic formulations. See Drug Tariff for costs.

See the evidence review for more information.