NICE National Institute for Health and Care Excellence

NICE Pathways

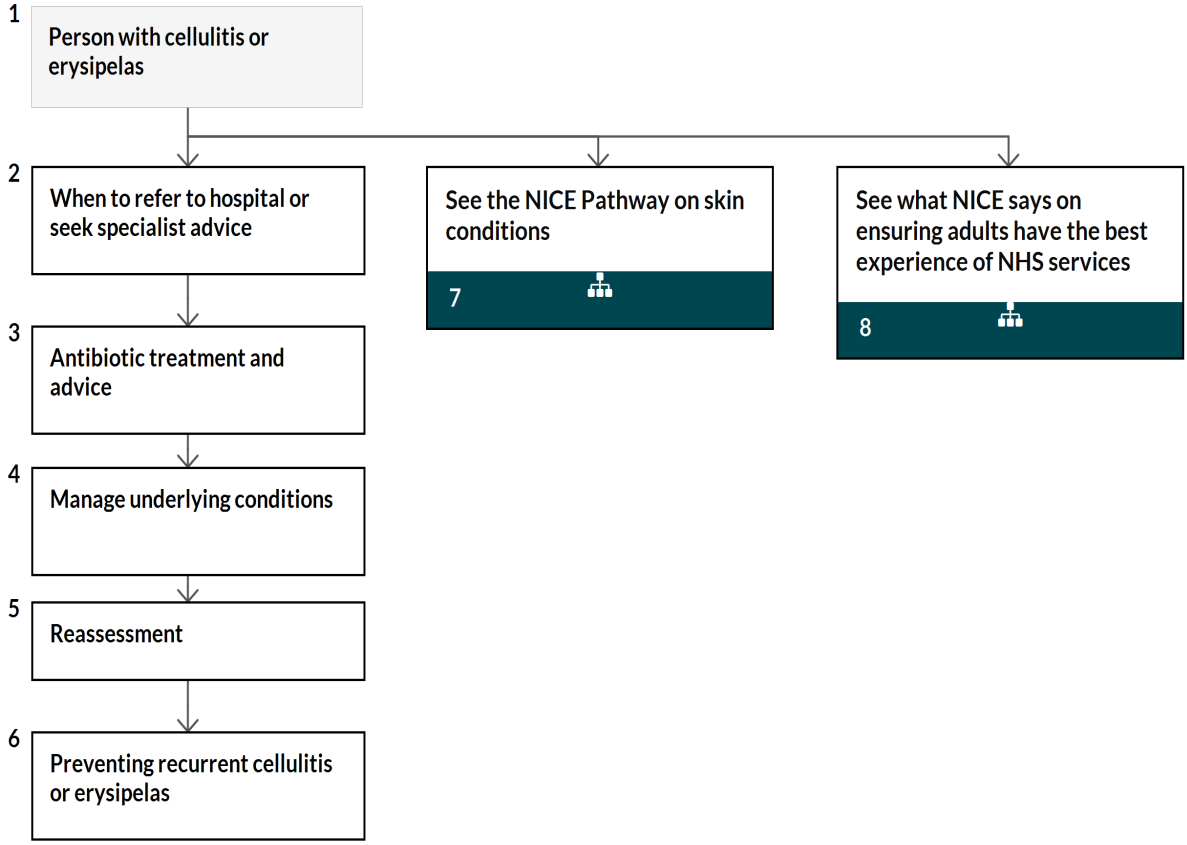
Cellulitis and erysipelas – antimicrobial prescribing overview

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/cellulitis-and-erysipelas-antimicrobial-prescribing
NICE Pathway last updated: 30 October 2020

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



1 Person with cellulitis or erysipelas

No additional information

2 When to refer to hospital or seek specialist advice

Refer people to hospital if they have any symptoms or signs suggesting a more serious illness or condition, such as orbital cellulitis, osteomyelitis, septic arthritis, necrotising fasciitis or sepsis.

Consider referring people with cellulitis or erysipelas [See page 8] to hospital, or seek specialist advice, if they:

- are severely unwell **or**
- have infection near the eyes or nose (including periorbital cellulitis) **or**
- could have uncommon pathogens, for example, after a penetrating injury, exposure to water-borne organisms, or an infection acquired outside the UK **or**
- have spreading infection that is not responding to oral antibiotics **or**
- lymphangitis **or**
- cannot take oral antibiotics (exploring locally available options for giving intravenous antibiotics at home or in the community, rather than in hospital, where appropriate).

NICE has produced a visual summary on antimicrobial prescribing for cellulitis and erysipelas.

NICE has published a clinical knowledge summary on cellulitis - acute. This practical resource is for primary care professionals (it is not formal NICE guidance).

Rationale

See the NICE guideline to find out why we made these recommendations.

3 Antibiotic treatment and advice

Antibiotic treatment

To ensure that cellulitis and erysipelas [See page 8] are treated appropriately, exclude other causes of skin redness such as:

- an inflammatory reaction to an immunisation or an insect bite **or**

- a non-infectious cause such as chronic venous insufficiency.

Consider taking a swab for microbiological testing from people with cellulitis or erysipelas to guide treatment, but only if the skin is broken **and**:

- there is a penetrating injury **or**
- there has been exposure to water-borne organisms **or**
- the infection was acquired outside the UK.

Before treating cellulitis or erysipelas, consider drawing around the extent of the infection with a single-use surgical marker pen to monitor progress. Be aware that redness may be less visible on darker skin tones.

Offer an antibiotic for people with cellulitis or erysipelas. When choosing an antibiotic (see tables on antibiotics for children and young people under 18 years [See page 8] and antibiotics for adults aged 18 years and over [See page 16]), take account of:

- the severity of symptoms
- the site of infection (for example, near the eyes or nose)
- the risk of uncommon pathogens (for example, from a penetrating injury, after exposure to water-borne organisms, or an infection acquired outside the UK)
- previous microbiological results from a swab
- the person's MRSA status if known.

Give oral antibiotics first line if the person can take oral medicines, and the severity of their condition does not require intravenous antibiotics.

If intravenous antibiotics are given, review by 48 hours and consider switching to oral antibiotics if possible.

NICE has produced a visual summary on antimicrobial prescribing for cellulitis and erysipelas.

NICE has published a clinical knowledge summary on cellulitis - acute. This practical resource is for primary care professionals (it is not formal NICE guidance).

See the NICE Pathways on antimicrobial stewardship and medicines optimisation.

Advice

When prescribing antibiotics for cellulitis or erysipelas, give advice about:

- possible adverse effects of antibiotics
- the skin taking some time to return to normal after the course of antibiotics has finished
- seeking medical help if symptoms worsen rapidly or significantly at any time, or do not start to improve within 2 to 3 days.

NICE has written information for the public on antimicrobial prescribing for cellulitis and erysipelas.

Rationale

See the NICE guideline to find out why we made these recommendations.

4 Manage underlying conditions

Manage any underlying condition that may predispose to cellulitis or erysipelas [See page 8], for example:

- diabetes
- venous insufficiency
- eczema
- oedema, which may be an adverse effect of medicines such as calcium channel blockers.

See the NICE guideline to find out why we made this recommendation.

NICE has produced a visual summary on antimicrobial prescribing for cellulitis and erysipelas.

See the NICE Pathways on diabetes and eczema.

5 Reassessment

Reassess people with cellulitis or erysipelas [See page 8] if symptoms worsen rapidly or significantly at any time, do not start to improve within 2 to 3 days, or the person:

- becomes systemically very unwell **or**
- has severe pain out of proportion to the infection **or**
- has redness or swelling spreading beyond the initial presentation (taking into account that some initial spreading may occur, and that redness may be less visible on darker skin tones).

When reassessing people with cellulitis or erysipelas, take account of:

- other possible diagnoses, such as an inflammatory reaction to an immunisation or an insect bite, gout, superficial thrombophlebitis, eczema, allergic dermatitis or deep vein thrombosis
- any underlying condition that may predispose to cellulitis or erysipelas, such as oedema, diabetes, venous insufficiency or eczema
- any symptoms or signs suggesting a more serious illness or condition, such as lymphangitis, orbital cellulitis, osteomyelitis, septic arthritis, necrotising fasciitis or sepsis
- any results from microbiological testing
- any previous antibiotic use, which may have led to resistant bacteria.

Consider taking a swab for microbiological testing from people with cellulitis or erysipelas if the skin is broken and this has not been done already.

If a swab has been sent for microbiological testing:

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

NICE has produced a visual summary on antimicrobial prescribing for cellulitis and erysipelas.

Rationale

See the NICE guideline to find out why we made these recommendations.

6 Preventing recurrent cellulitis or erysipelas

Do not routinely offer antibiotic prophylaxis to prevent recurrent cellulitis or erysipelas [See page 8]. Give advice about seeking medical help if symptoms of cellulitis or erysipelas develop.

For adults who have had treatment in hospital, or under specialist advice, for at least 2 separate episodes of cellulitis or erysipelas in the previous 12 months, specialists may consider a trial of antibiotic prophylaxis. Involve the person in a shared decision by discussing and taking account of:

- the severity and frequency of previous symptoms
- the risk of developing complications
- underlying conditions (such as oedema, diabetes or venous insufficiency) and their management

- the risk of resistance with long-term antibiotic use
- the person's preference for antibiotic use.

When choosing an antibiotic for prophylaxis (specialists should follow the table on antibiotic prophylaxis for adults 18 years and over [See page 19]), take account of any previous microbiological results and previous antibiotic use.

When antibiotic prophylaxis is given, give advice about:

- possible adverse effects of long-term antibiotics
- returning for review within 6 months
- seeking medical help if symptoms of cellulitis or erysipelas recur.

Review antibiotic prophylaxis for recurrent cellulitis or erysipelas at least every 6 months. The review should include:

- assessing the success of prophylaxis
- discussing continuing, stopping or changing prophylaxis (taking into account the person's preferences for antibiotic use and the risk of antimicrobial resistance).

Stop or change the prophylactic antibiotic to an alternative if cellulitis or erysipelas recurs (see antibiotic treatment and advice [See page 3] for treatment of acute infection).

NICE has produced a visual summary on antimicrobial prescribing for cellulitis and erysipelas.

Rationale

See the NICE guideline to find out why we made these recommendations.

7 See the NICE Pathway on skin conditions

See Skin conditions

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

See Patient experience in adult NHS services

Infections of the tissues under the skin (subcutaneous), which usually result from contamination of a break in the skin. Both conditions are characterised by acute localised inflammation and oedema, with lesions more superficial in erysipelas with a well-defined, raised margin (World Health Organization 2018).

Infections of the tissues under the skin (subcutaneous), which usually result from contamination of a break in the skin. Both conditions are characterised by acute localised inflammation and oedema, with lesions more superficial in erysipelas with a well-defined, raised margin (World Health Organization 2018).

Antibiotics for children and young people under 18 years

Antibiotic[1]	Dosage and course length[2]	
Children under 1 month		
Antibiotic choice based on specialist advice		
Children aged 1 month and over		
First-choice antibiotic (give oral unless person unable to take oral or severely unwell)[3]		
Flucloxacillin[4]	1 month to 1 year, 62.5 mg to 125 mg four times a day orally for 5 to 7 days[5] 2 to 9 years, 125 mg to 250 mg four times a day orally for 5 to 7 days[5] 10 to 17 years, 250 mg	**or** 1 month to 17 years, 12.5 mg to 25 mg/kg four times a day IV (maximum 1 g four times a day)[6]

	to 500 mg four times a day orally for 5 to 7 days[5]	
Alternative first-choice antibiotics for penicillin allergy or if flucloxacillin unsuitable (give oral unless person unable to take oral or severely unwell)[3]		
Co-amoxiclav (not in penicillin allergy)[7]	1 to 11 months, 0.25 ml/kg of 125/31 suspension three times a day orally for 5 to 7 days[5] (dose doubled in severe infection) 1 to 5 years, 0.25 ml/kg or 5 ml of 125/31 suspension three times a day orally for 5 to 7 days[5] (dose doubled in severe infection) 6 to 11 years, 0.15 ml/kg or 5 ml of 250/62 suspension three times a day orally for 5 to 7 days[5] (dose doubled in severe infection) 12 to 17 years, 250/125 mg or 500/125 mg three times a day orally for 5 to 7 days[5]	**or** 1 to 2 months, 30 mg/kg twice a day IV[6] 3 months to 17 years, 30 mg/kg three times a day IV (maximum 1.2 g three times a day)[6]

Clarithromycin	1 month to 11 years: Under 8 kg, 7.5 mg/kg twice a day orally for 5 to 7 days[5] 8 to 11 kg, 62.5 mg twice a day orally for 5 to 7 days[5] 12 to 19 kg, 125 mg twice a day orally for 5 to 7 days[5] 20 to 29 kg, 187.5 mg twice a day orally for 5 to 7 days[5] 30 to 40 kg, 250 mg twice a day orally for 5 to 7 days[5] 12 to 17 years: 250 to 500 mg twice a day orally for 5 to 7 days[5]	**or** 1 month to 11 years, 7.5 mg/kg twice a day IV (maximum 500 mg per dose)[6] 12 to 17 years, 500 mg twice a day IV[6]
Erythromycin (in pregnancy)	8 to 17 years, 250 to 500 mg four times a day orally for 5 to 7 days[5]	
First-choice antibiotic if infection near the eyes or nose[8] (consider seeking specialist advice; give oral unless person unable to take oral or severely unwell)[3]		

Co-amoxiclav[7]	1 to 11 months, 0.25 ml/kg of 125/31 suspension three times a day orally for 7 days[5] (dose can be doubled in severe infection) 1 to 5 years, 0.25 ml/kg or 5 ml of 125/31 suspension three times a day orally for 7 days[5] (dose can be doubled in severe infection) 6 to 11 years, 0.15 ml/kg or 5 ml of 250/62 suspension three times a day orally for 7 days[5] (dose can be doubled in severe infection) 12 to 17 years, 250/125 mg or 500/125 mg three times a day orally for 7 days[5]	**or** 1 to 2 months, 30 mg/kg twice a day IV[6] 3 months to 17 years, 30 mg/kg three times a day IV (maximum 1.2 g three times a day)[6]
Alternative first-choice antibiotics if infection near the eyes or nose[8] for penicillin allergy or if co-amoxiclav unsuitable (consider seeking specialist advice; give oral unless person unable to take oral or severely unwell)[3]		
Clarithromycin	1 month to 11 years: Under 8 kg, 7.5 mg/kg twice a day orally for 7	**or** 1 month to 11 years, 7.5 mg/kg twice a day IV (maximum 500 mg per dose)[6]

	days[5] 8 to 11 kg, 62.5 mg twice a day orally for 7 days[5] 12 to 19 kg, 125 mg twice a day orally for 7 days[5] 20 to 29 kg, 187.5 mg twice a day orally for 7 days[5] 30 to 40 kg, 250 mg twice a day orally for 7 days[5] 12 to 17 years: 250 to 500 mg twice a day orally for 7 days[5]	12 to 17 years, 500 mg twice a day IV[6]
with (if anaerobes suspected): Metronidazole	1 month, 7.5 mg/kg twice a day orally for 7 days[5] 2 months to 11 years, 7.5 mg/kg three times a day orally (maximum per dose 400 mg) for 7 days[5] 12 to 17 years, 400 mg	**or** 1 month, loading dose 15 mg/kg, then (after 8 hours) 7.5 mg/kg three times a day IV[6] 2 months to 17 years, 7.5 mg/kg three times a day IV (maximum per dose 500 mg)[6]

	three times a day for 7 days[5]	
Alternative choice antibiotics for severe infection[9]		
Co-amoxiclav[7]	1 to 11 months, 0.25 ml/kg of 125/31 suspension three times a day orally for 7 days[5] (dose can be doubled) 1 to 5 years, 0.25 ml/kg or 5 ml of 125/31 suspension three times a day orally for 7 days[5] (dose can be doubled) 6 to 11 years, 0.15 ml/kg or 5 ml of 250/62 suspension three times a day orally for 7 days[5] (dose can be doubled) 12 to 17 years, 250/125 mg or 500/125 mg three times a day orally for 7 days[5]	**or** 1 to 2 months, 30 mg/kg twice a day IV[6] 3 months to 17 years, 30 mg/kg three times a day IV (maximum 1.2 g three times a day)[6]
Cefuroxime	1 month to 17 years, 20 mg/kg three times a day IV (maximum 750 mg per dose), can be increased to 50 to 60 mg/kg three or four times a day IV (maximum 1.5 g per dose)[6]	
Clindamycin	1 month to 17 years, 3	**or** 1 month to 17 years, 3.75 to 6.25 mg/kg four

	to 6 mg/kg four times a day orally (maximum per dose 450 mg) for 7 days[5]	times a day IV, increased if necessary, in life-threatening infection to 10 mg/kg four times a day IV (maximum per dose 1.2 g); total daily dose may alternatively be given in three divided doses (maximum per dose 1.2 g)[6]
Antibiotics to be added if suspected or confirmed MRSA **infection (combination therapy with an antibiotic listed above)[9]**		
Vancomycin[10,11]	1 month to 11 years, 10 to 15 mg/kg four times a day IV, adjusted according to serum vancomycin concentration[6] 12 to 17 years, 15 to 20 mg/kg two or three times a day IV (maximum 2 g per dose), adjusted according to serum vancomycin concentration[6]	
Teicoplanin[10,11]	1 month, initially 16 mg/kg for one dose, then (after 24 hours) 8 mg/kg once a day IV[6] 2 months to 11 years, initially 10 mg/kg every 12 hours for 3 doses, then 6 to 10 mg/kg once a day IV[6] 12 to 17 years, initially 6 mg/kg every 12 hours for three doses, then 6 mg/kg once a day IV[6]	
Linezolid (if vancomycin or teicoplanin cannot be used; specialist use only)[11,12]	1 month to 11 years, 10 mg/kg three times a day orally (maximum 600 mg per dose) 12 to 17 years, 600 mg twice a day orally	**or** 1 month to 11 years, 10 mg/kg three times a day IV (maximum 600 mg per dose)[6] 12 to 17 years, 600 mg twice a day IV[6]

[1] See BNF for children for appropriate use and dosing in specific populations, for example, hepatic impairment, renal impairment, pregnancy and breastfeeding, and administering intravenous (or, where appropriate, intramuscular) antibiotics.

[2] 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 and the child's size in relation to the average size of children of the same age. Oral doses are for immediate-release medicines.

[3] Give oral antibiotics first line if the child or young person can take oral medicines, and the severity of their symptoms does not require intravenous antibiotics.

[4] If flucloxacillin oral solution is not tolerated because of poor palatability, consider capsules (see Medicines for Children leaflet on helping your child to swallow tablets).

[5] A longer course (up to 14 days in total) may be needed based on clinical assessment. However, skin does take some time to return to normal, and full resolution of symptoms at 5 to 7 days is not expected.

[6] If intravenous antibiotics are given, review by 48 hours and consider switching to oral antibiotics if possible for the appropriate course length.

[7] Co-amoxiclav 400/57 suspension may also be considered to allow twice daily dosing (see BNF for children for dosing information).

[8] Infection around the eyes or the nose (the triangle from the bridge of the nose to the corners of the mouth, or immediately around the eyes including periorbital cellulitis) is of more concern because of risk of a serious intracranial infection.

[9] Other antibiotics may be appropriate based on microbiological results and specialist advice.

[10] See BNF for children for information on therapeutic drug monitoring.

[11] See BNF for children for information on monitoring of patient parameters.

[12] Not licensed in children and young people under 18 years, so use would be off label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

Antibiotics for adults aged 18 years and over

Antibiotic[1]	Dosage and course length[2]	
First-choice antibiotic (give oral unless person unable to take oral or severely unwell)[3]		
Flucloxacillin	500 mg to 1 g four times a day orally[4] for 5 to 7 days[5]	**or** 1 to 2 g four times a day IV[6]
Alternative first-choice antibiotics for penicillin allergy or if flucloxacillin unsuitable (give oral unless person unable to take oral or severely unwell)[3]		
Clarithromycin	500 mg twice a day orally for 5 to 7 days[5]	**or** 500 mg twice a day IV[6]
Erythromycin (in pregnancy)	500 mg four times a day orally for 5 to 7 days[5]	
Doxycycline	200 mg on first day, then 100 mg once a day orally for 5 to 7 days in total[5]	
First-choice antibiotic if infection near the eyes or nose[7] (consider seeking specialist advice; give oral unless person unable to take oral or severely unwell)[3]		

Co-amoxiclav	500/125 mg three times a day orally for 7 days[5]	**or** 1.2 g three times a day IV[6]
Alternative first-choice antibiotics if infection near the eyes or nose[7] for penicillin allergy or if co-amoxiclav unsuitable (consider seeking specialist advice; give oral unless person unable to take oral or severely unwell)[3]		
Clarithromycin	500 mg twice a day orally for 7 days[5]	**or** 500 mg twice a day IV[6]
with metronidazole	400 mg three times a day orally for 7 days[5]	**or** 500 mg three times a day IV[6]
Alternative choice antibiotics for severe infection		
Co-amoxiclav	500/125 mg three times a day orally for 7 days[5]	**or** 1.2 g three times a day IV[6]
Cefuroxime	750 mg to 1.5 g three or four times a day IV[6]	
Clindamycin	150 to 300 mg four times a day (can be increased to 450 mg four times a day) orally for 7 days[5]	**or** 600 mg to 2.7 g daily IV in two to four divided doses, increased if necessary in life-threatening infection to 4.8 g daily (maximum per dose 1.2 g)[6]
Ceftriaxone (only for ambulatory care[8])	2 g once a day IV[6]	
Antibiotics to be added if MRSA **infection is suspected or confirmed (combination therapy with an antibiotic listed above)[8]**		

Vancomycin[9,10]	15 to 20 mg/kg two or three times a day IV (maximum 2 g per dose), adjusted according to serum vancomycin concentration[6]	
Teicoplanin[9,10]	Initially 6 mg/kg every 12 hours for three doses, then 6 mg/kg once a day IV[6]	
Linezolid (if vancomycin or teicoplanin cannot be used; specialist use only)[10]	600 mg twice a day orally	**or** 600 mg twice a day IV[6]

[1] See BNF for appropriate use and dosing in specific populations, for example, hepatic impairment, renal impairment, pregnancy and breastfeeding, and administering intravenous (or, where appropriate, intramuscular) antibiotics.

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

[3] Give oral antibiotics first line if the person can take oral medicines, and the severity of their symptoms does not require intravenous antibiotics.

[4] The upper dose of 1 g four times a day would be off-label. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's Good practice in prescribing and managing medicines and devices for further information.

[5] A longer course (up to 14 days in total) may be needed based on clinical assessment. However, skin does take some time to return to normal, and full resolution of symptoms at 5 to 7 days is not expected.

[6] If intravenous antibiotics are given, review by 48 hours and consider switching to oral antibiotics if possible for the appropriate course length.

[7] Infection around the eyes or the nose (the triangle from the bridge of the nose to the corners of the mouth, or immediately around the eyes including periorbital cellulitis) is of more concern because of risk of a serious intracranial complication.

[8] Other antibiotics may be appropriate based on microbiological results and specialist advice.

[9] See BNF for information on therapeutic drug monitoring.

[10] See BNF for information on monitoring of patient parameters.

Antibiotic prophylaxis for adults 18 years and over

Antibiotic prophylaxis[1,2]	Dosage[3]
First choice	
Phenoxymethylpenicillin	250 mg twice a day
Alternative first choice for penicillin allergy	
Erythromycin	250 mg twice a day
Consult local microbiologist for alternative antibiotics	

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

[2] Choose antibiotics according to recent microbiological results where possible. Avoid using the same antibiotic for treatment and prophylaxis.

[3] Doses given are by mouth using immediate release medicines, unless otherwise stated.

Glossary

MRSA

(meticillin resistant *Staphylococcus aureus*)

Sources

Cellulitis and erysipelas: antimicrobial prescribing (2019) NICE guideline NG141

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.