TARGET

Keep Antibiotics Working

# Clinical decision making for skin infections: From Group A Strep to insect bites

TARGET Antibiotics Webinar

17 March 2026


17/3/2026

Image obtained from: Dermnetnz.og - https://dermnetnz.org/imagedetail/8051-cellulitis

# Introductions – TARGET and RCGP


Dr Donna Lecky


Emily Cooper


Catherine Hayes


Ming Lee


Emily Whitehorne


Julie Brooke


Liam Clayton

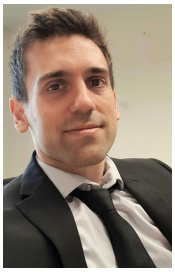

Joseph Besford


Camilla Stevenson

17/3/2026

We would first like to highlight some of the amazing TARGET and RCGP team who are responsible for the work that underpins the TARGET toolkit.

# Introductions – Speakers and Panellists



**Dr Yannis Gourtsoyannis**
Consultant in Infectious Diseases and Medical Microbiology, Royal Free NHS Foundation Trust

Speaker and Panellist

**Dr Daisy Woolham**
Higher specialty trainee registrar in Infectious Diseases and Medical Microbiology, Royal Sussex County Hospital; Honorary Clinical Fellow, UKHSA; Visiting Researcher, Brighton and Sussex Medical School

Panellist

**Dr Theresa Lamagni**
Epidemiologist, Head of Gram-Positive Section, UKHSA

Panellist

**Dr Graham Duce**
GP, Audlem Medical Practice

Cheshire Place GP AMS Lead

Panellist

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Next a big thank you to our speakers and panellists for supporting this event

I will ask them to turn on their cameras and introduce themselves now

*(panellists introduce themselves)*

# Learning Objectives

1. Understand the diagnosis and management of cellulitis and insect bites based on NICE prescribing guidance.
2. Discuss the role of the GP in cases of Group A Strep infection.
3. Explore how to improve antibiotic prescribing and action planning for skin infections and provide safety netting advice.

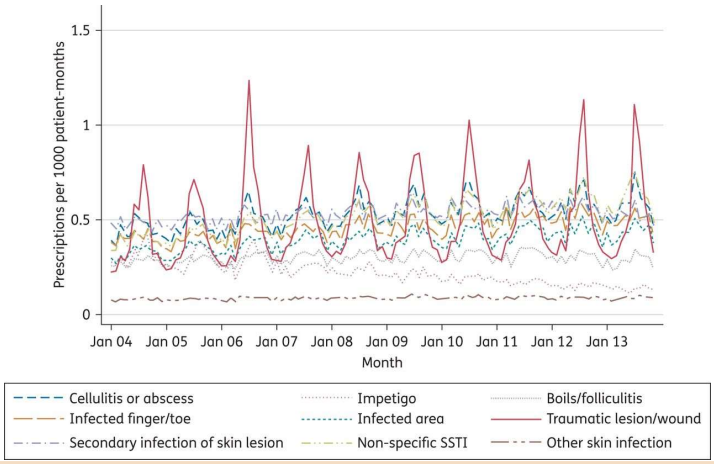
# Prescribing for skin infections

## 10% of antibiotic prescriptions in primary care

**17.6%** of first prescriptions were followed by a subsequent antibiotic prescription within 28 days

**1999 – 2020**
Hospital admission rates due to skin infections increased from 530 to 828 per 100,000 population (**56.1% rise**)

Flucloxacillin prescribing by diagnostic category: 2004-2013

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Gulliford et al. 2020, Francis et al. 2016, Samannodi 2022

Presenter Talk

Skin infections account for about 10% of antibiotics prescriptions in primary care (1).

Graph - Highest flucloxacillin prescribing were for secondary infection of skin condition (10.2%), cellulitis (10%), non-specific SSTI (9.5%), and infected trauma/wound(red line, 9.2%). Note that there is marked seasonality for traumatic infections – these are primarily insect bites (2).

About 18% of patients who were prescribed flucloxacillin, received a second antibiotic within 28 days following initial prescription, highlighting potential concerns such as under-dosing, or treatment non-response (2). Research also reported a substantial increase in hospital admission rates due to skin infections (3). Taken together, it suggests a need to emphasize appropriate antibiotic prescribing to address treatment failures and prevent AMR.

**Presenter Notes**
Statistic based on THIN database, between 2002-2017, analysis included 10.1 million registered patients. For analysis on antibiotic prescribing, dataset included 706 family practices with 6541195 person-years of follow up. A total of 4371715

antibiotic prescriptions between 2002 and 2017. of which 54% were coded indications – 10% for skin infections(1).

Research looking at flucloxcillin prescribing (2004-2013), identified 1 678 403 patients who received 3 114 366 prescriptions for flucloxacillin in 3 110 348 consultations over the 10 year period. The most frequent diagnostic categories were secondary infection of skin condition (10.2%), cellulitis or abscess (10.0%), non-specific SSTI (9.5%) and infected trauma/wound (9.2%). A very small proportion (0.3%) of prescriptions had codes for infections of other systems (osteomyelitis, urinary tract infections or respiratory tract infections) associated with them. Younger (0–4 years) and older (60+) age (compared with the reference category of 20–59 years), having a diagnosis of cellulitis or abscess or having no Read code (compared with having a code that did not indicate an infection) and being prescribed 500 mg tablets (compared with 250 mg tablets) were all associated with a 10% or more increase in the odds of having a subsequent antibiotic prescription within the next 28 days (2)

Hospital admission rate based on Data from the Patient Episode Database for Wales (PEDW) and the Hospital Episode Statistics (HES) database in England for the years between April 1999 and April 2020. Only codes for various skin infections and diseases were used. Hospital admissions for all causes increased overall by 78.8%, from 276,464 in 1999 to 494,433 in 2020, representing an increase in hospital admission rate of 56.1% (from 530.23 (95% CI 528.26–532.20) in 1999 to 827.92 (95% CI 825.62–830.22) per 100,000 people in 2020, $p \leq 0.05$). The most prevalent diagnoses were disorders of the skin's appendages, infections of the skin and subcutaneous tissue, and other disorders of the skin and subcutaneous tissue.

References


1. Gulliford MC, Sun X, Charlton J, et al. Serious bacterial infections and antibiotic prescribing in primary care: cohort study using electronic health records in the UK. BMJ Open 2020;10:e036975. doi:10.1136/ bmjopen-2020-036975
2. Nick A. Francis, Kerenza Hood, Ronan Lyons, Christopher C. Butler, Understanding flucloxacillin prescribing trends and treatment non-response in UK primary care: a Clinical Practice Research Datalink (CPRD) study, *Journal of Antimicrobial Chemotherapy*, Volume 71, Issue 7, July 2016, Pages 2037–2046, https://doi.org/10.1093/jac/dkw084
3. Samannodi, Mohammed. 2022. "Hospital Admissions Related to Infections and Disorders of the Skin and Subcutaneous Tissue in England and Wales" *Healthcare* 10, no. 10: 2028. https://doi.org/10.3390/healthcare10102028

# Prescribing for skin infections

Cohort study of 10 practices (n=355)
Antibiotics prescribed to 75% of those who presented to GP with insect bite (69.3% oral, 3.7% topical).

Data from 5 national real-time syndromic surveillance on bites requiring healthcare
During summer months, insect bites (all arthropods) were estimated to contribute to a weekly median of:

~4000 GP consultations
750 calls to remote advice services
700 emergency department visits
1300 GP out-of-hours attendance

**Table 4.** Antibiotics used at first consultation for insect bites 1st April–30th September inclusive 2021.

| Antibiotic at the first consultation with GPc | Numbers | Percentage of total cohort (355)% |
|---|---|---|
| Flucloxacillin | 202 | 56.9 |
| Clarithromycin | 20 | 5.6 |
| Doxycycline | 10 | 2.8 |
| Co-amoxiclav | 9 | 2.5 |
| Amoxicillin | 3 | 0.8 |
| Clindamycin | 2 | 0.6 |
| **Total oral antibiotics** | **246** | **69.3** |
| Topical fusidic acid | 12 | 3.4 |
| Topical mucipirin | 1 | 0.3 |
| Other (not listed if topical or oral) | 6 | 1.7 |
| **Total oral or topical antibiotics** | **265** | **74.7** |
| No antibiotic | 86 | 24.2 |
| No entry | 4 | 1.1 |

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Wilcock et al. 2023, Newitt et al. 2016

**Presenter Talk**
Looking specifically at insect bites, about 75% of those presenting to GP about an insect bite are being prescribed an antibiotic.
Flucloxacillin is the main oral antibiotic making up 81.1% of oral prescriptions (11 prescriptions were made at subsequent consultations). Only 24.2% of patients were not offered antibiotics at first consultation (1)

Understanding how to manage insect bites appropriately is crucial as insect bites represent a significant seasonal burden contributing to a high workload for clinicians during the summer months (2)

**Presenter Notes**
1. This study was based in 10 general practices in England and Wales looking at prescribing between April and September 2021, had a combined practice list of 161,346 patients, which yielded 355 insect bite consultations.
2. Estimation of burden on clinician workload based on 5 syndromic surveillance systems in England between 2000 and 2013

**References**
1. Jane Wilcock, Kamila Hawthorne, Joanne Reeve, Clare Etherington, Katharine Alsop, Joanna Bircher, Douglas McKechnie, Stephen Granier, Daniel Newport,

Simon Wright, James Larcombe, Chinonso Ndukauba, Nitharnie Anastasius, Are insect bites responsible for the rise in summer flucloxacillin prescribing in United Kingdom general practices?, *Family Practice*, Volume 40, Issue 5-6, October/December 2023, Pages 753–759, https://doi.org/10.1093/fampra/cmad051

2. NEWITT S, ELLIOT AJ, MORBEY R, et al. The use of syndromic surveillance to monitor the incidence of arthropod bites requiring healthcare in England, 2000–2013: a retrospective ecological study. *Epidemiology and Infection*. 2016;144(11):2251-2259. doi:10.1017/S0950268816000686

# Clinical Scenario: Insect Bites

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**Presenter Notes:**
*These cases are examples that can be printed out and discussed in pairs or groups, or with the group as a whole.*
*Allow the participants to discuss the case for 2 minutes and specifically ask several different people what they would do and /or prescribe*

Image from:
https://commons.wikimedia.org/wiki/File:BienenstichApisMelliferaMellifera.jpg

# Clinical Scenario 1

**Scott, 42, went canoeing on a river**

- Concerned with a large red area on calf which appeared yesterday.
- Thinks he was bitten/stung but did not see what caused it.
- Itchy and 3 cm in diameter

O/E No temperature, appears well
PMH: Asthma, no drug allergies


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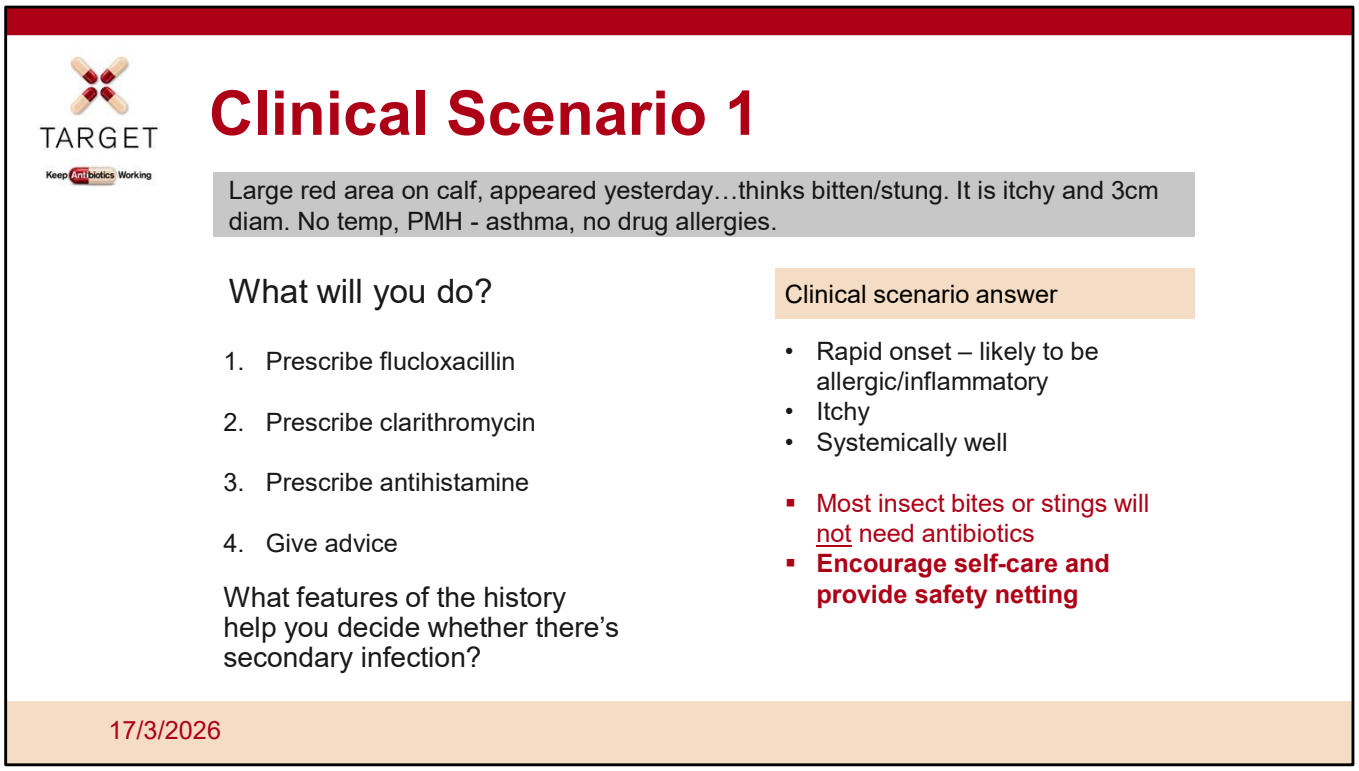
**Presenter Notes**
*Ask the audience to consider the attached clinical scenario and possible treatment options*

**Images from:**
https://dermnetnz.org/imagedetail/19190-insect-bite




*This slide is animated, click to reveal answer, and click again for further information*

**Presenter Talk**

Patient should not be prescribed any antibiotics as patient is systemically well, the area of concerned had a rapid onset which is likely an inflammatory response. Most insect bites can mimic cellulitis where it looks infected but usually not, most will not need antibiotics. Instead, encourage self-care (e.g. avoid scratching) and make sure you provide safety netting such as what to look out for that might suggest an infection is developing (i.e. when symptom worsen rapidly or significantly at any time or they become systematically unwell)

**Presenter Notes**

*Do not offer an antibiotic if there are no symptoms or signs of infection. Skin redness and itching are common and may last for up to 10 days. Be aware that people may wish to consider oral antihistamines (in people aged over 1 year) to help relieve itching, even though there is uncertainty about their effectiveness. [NICE NG182]*

**NICE rationale for recommendations**

*Although biting insects can carry bacteria on their mouthparts, most infected bites are likely to be secondary bacterial infections that arise from scratching the bite lesion. Symptoms and signs of infection most likely indicate cellulitis and should be treated with antibiotics in line with NICE guidance for cellulitis and erisypelas.*

*No evidence was found for other self-care treatments that are often used in practice (such as topical corticosteroids, topical antihistamines and analgesics). However, studies published before the year 2000 that compared these treatments were not included in the literature search*. [NICE NG182 Guideline rationale]

**Slide References**

(1) NICE. Insect Bites and Stings: antimicrobial prescribing NG182 2020 [Available from: https://www.nice.org.uk/guidance/ng182 ]

# Diagnosis and risk factors

- Rapid onset skin reaction is likely to be an inflammatory reaction rather than an infection.
- Most insect bites or stings will not need antibiotics. Oral antihistamines can be considered to relieve itching, however there is uncertainty about its effectiveness.
- Check type and severity of insect bite e.g local inflammatory/allergic reaction, look out for erythema migrans (bullseye rash), symptoms or signs of an infection, a systemic reaction

17/3/2026

NICE NG182 2020

**Presenter Talk**
This slide is to help highlight signs and symptoms insect bites and stings to aid with diagnosis and management.

**Presenter Notes**

*Do not offer an antibiotic if there are no symptoms or signs of infection. Skin redness and itching are common and may last for up to 10 days. Be aware that people may wish to consider oral antihistamines (in people aged over 1 year) to help relieve itching, even though there is uncertainty about their effectiveness. [NICE NG182]*

**NICE rationale for recommendations**
*Although biting insects can carry bacteria on their mouthparts, most infected bites are likely to be secondary bacterial infections that arise from scratching the bite lesion. Symptoms and signs of infection most likely indicate cellulitis and should be treated with antibiotics in line with NICE guidance for cellulitis and erisypelas.*

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*studies published before the year 2000 that compared these treatments were not included in the literature search*. [NICE NG182 Guideline rationale]

**Slide References**

(1) NICE. Insect Bites and Stings: antimicrobial prescribing NG182 2020 [Available from: https://www.nice.org.uk/guidance/ng182 ]

# When to seek specialist advice

Refer to hospital if patient have symptoms suggesting a more serious condition e.g. systemic allergic reaction.

Consider referral or seeking specialist advice if:

- Patient is systematically unwell
- Severely immunocompromised and have signs of infection
- Previous systemic allergic reaction to the same insect bite/sting
- Sting/bite is in the mouth, throat or around the eyes
- It has been caused by an unusual or exotic insect
- They have fever or persisting lesions associated with a bite or sting that occurred while travelling outside the UK.

NICE NG182 2020

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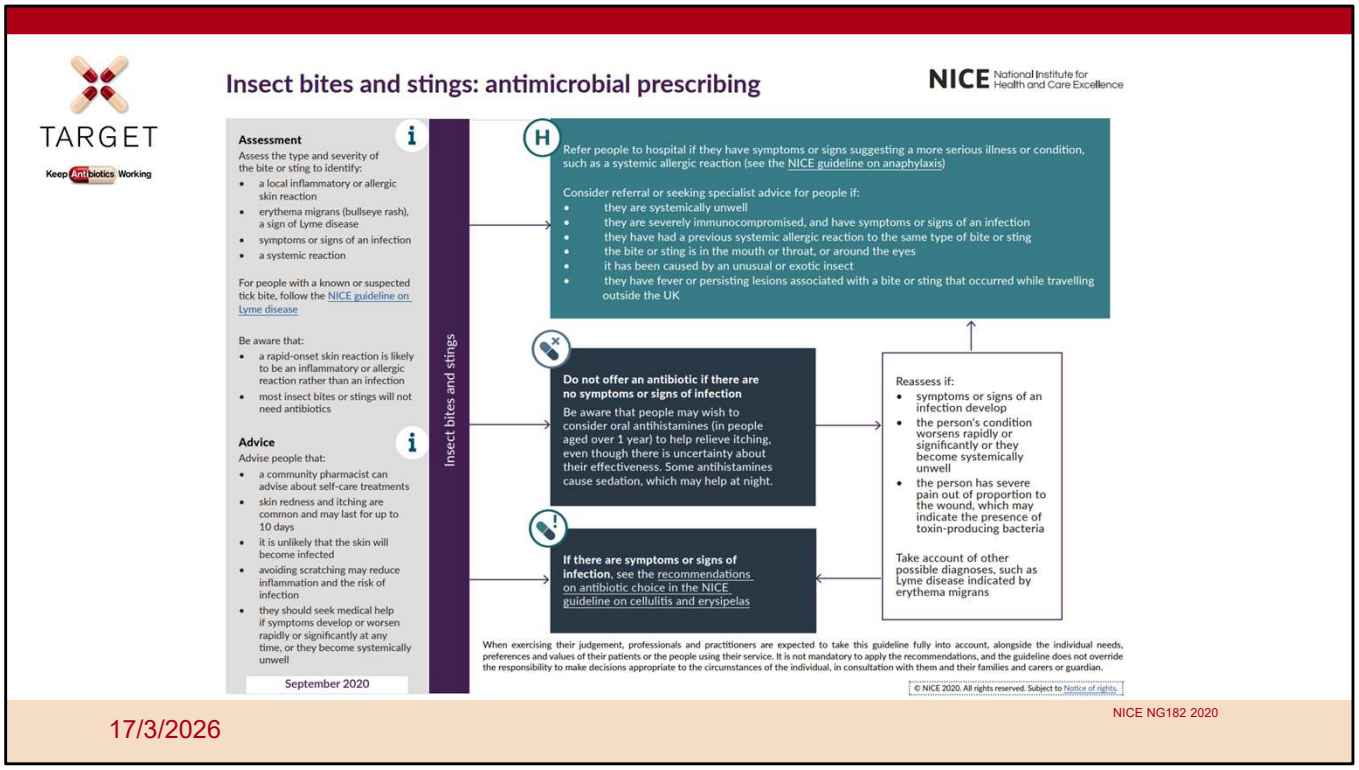
Presenter Talk:
Here we highlight when to seek specialist advice.

Following NICE guidelines, you should seek specialist advice when patient has any symptoms suggesting a more serious illness

Slide references
(1) NICE. Insect Bites and Stings: antimicrobial prescribing NG182 2020 [Available from: https://www.nice.org.uk/guidance/ng182 ]

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NICE NG182 2020

Presenter Talk:
Alongside the guidance document, NICE developed a visual summary for antimicrobial prescribing for insect bites and stings. It is a quick reference tool designed to support clinical decisions. Again, it emphasises that most insect bites and stings do not require antibiotics and guides you on steps to take in cases such as a systemic allergic reaction and when you think there are signs of infection.

Slide references
(1) NICE. Insect Bites and Stings: antimicrobial prescribing NG182 2020 [Available from: https://www.nice.org.uk/guidance/ng182 ]

# Safety netting advice

**Advice & reassessment:**

- Skin redness and itching can last up to 10 days
- Avoid scratching – scratching may increase inflammation and risk of infection
- Strategies to ease symptoms
  - Put an ice pack wrapped in cloth on the bite or sting for at least 20 mins if it is swollen
  - Keep the area raised
  - Take pain killers such as paracetamol or ibuprofen if the sting is painful
- Advice patient to seek medical help/reassess if:
  - Symptoms worsen rapidly
  - There are signs of infection
  - They have severe pain out of proportion to the wound

NICE NG182 2020

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**Presenter Talk**

This slide contains some safety netting advice to help with management.

**Slide references**

(1) NICE. Insect Bites and Stings: antimicrobial prescribing NG182 2020 [Available from: https://www.nice.org.uk/guidance/ng182 ]
(2) NHS. Insect Bites and stings [Available from: https://www.nhs.uk/conditions/insect-bites-and-stings/]

# Resources for patients

NHS.UK

## Overview
Insect bites and stings

Overview
Treatment

Insect bites or stings are not usually serious and get better in a few days. But sometimes they can become infected or cause a serious allergic reaction.

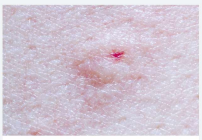
Bites from some insects can also cause illnesses, such as Lyme disease from ticks, scabies from mites, and malaria from mosquitoes in certain parts of the world.

### Symptoms of an insect bite or sting

The main symptoms of an insect bite or sting are:

- pain where you were bitten or stung
- a small, swollen lump on the skin

The lump may look red. It may be more difficult to see on black or brown skin, but you should be able to feel it.



There may be a mark on your skin where you were bitten or stung.

Anaphylaxis UK

anaphylaxis UK
A brighter future for people with serious allergies

### Insect sting allergy

Allergic reactions to insect stings are usually mild, causing pain and swelling where you were stung. Occasionally, they can cause symptoms that affect the whole body which can sometimes lead to anaphylaxis. If you have ever had a reaction you're worried about, visit your GP.

What is an insect sting allergy?

Anyone stung by a bee or wasp is likely to have a painful swelling where they were stung. This is not a sign of an allergic reaction and for most people, a sting is not dangerous.

Some people have an allergic reaction to the venom in the sting. This causes more swelling than usual but tends to be mild. Any swelling of greater than 10 cm is referred to as a large local reaction. For a small number of people, allergic reactions can be systemic which means they affect whole body systems, for example widespread swelling, a drop in blood pressure or breathing difficulties.

Systemic allergic reactions can be life-threatening. This is known as anaphylaxis. If you know you are at risk of a serious reaction, the idea of being stung can be frightening, but there are steps you can take to reduce the risks and help you feel more confident. This includes getting medical advice, carrying prescribed medication, and taking care to avoid being stung.

Who is at risk?

Anyone can become allergic to an insect sting. You are more at risk of a serious allergy if you are stung often or have multiple stings. Beekeepers, for example, are more at risk of serious reactions. People with a rare condition called mastocytosis are also at higher risk.

Having other allergies such as hay fever or food allergies does not put you at higher risk of a serious allergy to insect stings.

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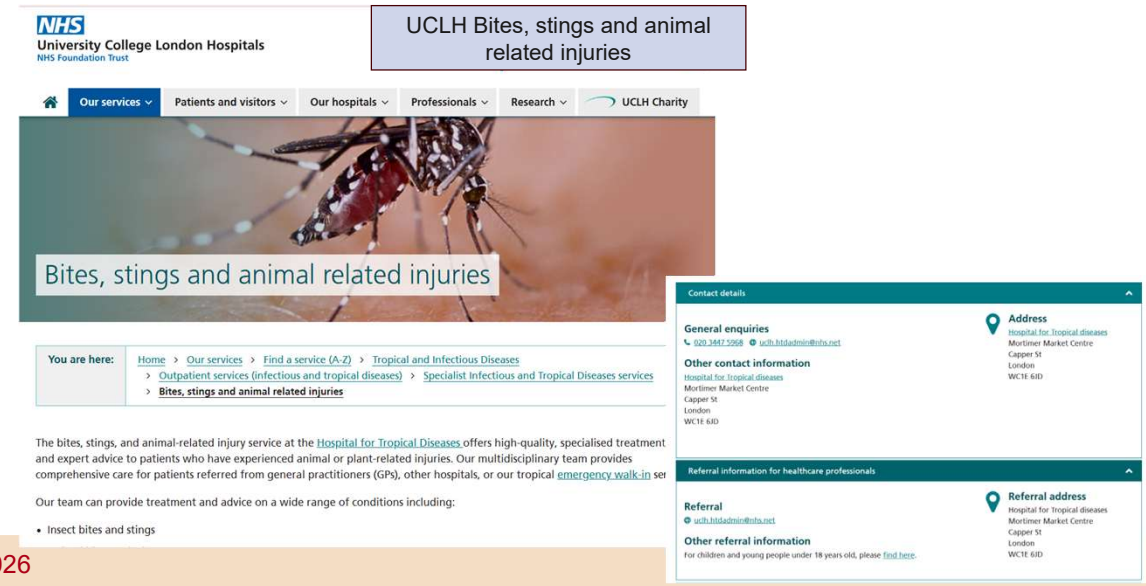
**Presenter Talk**

Here are some resources that maybe useful as a tool for patients to better understand their symptoms.

https://www.anaphylaxis.org.uk/fact-sheet/insect-sting-allergy-the-facts/
https://www.nhs.uk/conditions/insect-bites-and-stings/

# Resources for HCP

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**Presenter Talk**

If your patient deteriorates and have exhausted all known options based on your local guidelines, you may consider a referral to the University College London Hospitals ' bites, stings and animal related injuries service. They are a national service.
Example of referrals previously received include long periods of infection, patient not responding to antibiotics, patients bitten by rare insects (relative to insects/animals commonly seen).

(1) https://www.uclh.nhs.uk/our-services/find-service/tropical-and-infectious-diseases/htd-outpatient-services/specialist-services-hospital-tropical-diseases/bites-stings-and-animal-related-injuries

# Clinical Scenario: Cellulitis

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**Presenter Notes:**
*These cases are examples that can be printed out and discussed in pairs or groups, or with the group as a whole.*
*Allow the participants to discuss the case for 2 minutes and specifically ask several different people what they would do and /or prescribe.*

**Slide References**
(1) Image: Cellulitis – picture obtained with patient consent

# Clinical scenario 2

**83-year old male, Fred, lives at home with wife:**

A warm red swollen and painful left lower leg, and now covers a 15cm area

No apparent injury, noted some fungal nail disease and maceration between toes

O/E Temp 37.7, 95kg weight

PMHx: Ischaemic heart disease, atrial fibrillation, hypertension, type 2 diabetes


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**Presenter Notes**

*Ask the audience to consider the attached clinical scenario and possible treatment options*

**Slide References**

(1) Image: Cellulitis of the left leg [Available from: https://dermnetnz.org/imagedetail/11534-cellulitis]

# Clinical scenario 2

What antibiotic and course length would you give?

1. Flucloxacillin, 5 days
2. Flucloxacillin, 7 days
3. Clarithromycin, 7 days
4. Clarithromycin, 10 days

**Clinical scenario answer**

- Flucloxacillin, 500mg to 1g, QID, 5-7 days recommended
- A longer course (up to 14 days in total) may be needed based on clinical assessment.
- Skin takes time to return to normal, full resolution at 5 - 7 days is not expected.

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*This slide is animated, click to reveal answer, and click again for further information*

**Presenter Talk**

We have established that an antibiotic will be prescribed but what course length would be appropriate?
(In this case study the patient is diabetic)
The answer is either Flucloxacillin, 5 or 7 days (flucloxacillin is first line). However, a longer course may be recommended based on clinical assessment.
Flucloxacillin has poor oral bioavailability and in people with cellulitis or erysipelas who could have impaired circulation (such as people with diabetes or venous insufficiency), a higher (off label) dose of up to 1 g four times a day may be needed to adequately treat the infection.

**Presenter Notes**

***Evidence for cellulitis course length, 5 – 7 days***

*NICE reviewed the evidence for Antibiotic course length in adults with cellulitis or erysipelas in their antimicrobial prescribing guideline NG141. The evidence for antibiotic course length in adults with cellulitis comes from 1 systematic review (Hanretty et al 2018) and 1 systematic review and meta-analysis (Kilburn et al 2010).*

**Slide References**

(1) NICE. Cellulitis and erysipelas: antimicrobial prescribing NG141 2019 [Available from: https://www.nice.org.uk/guidance/ng141.]
(2) Hanretty, A.M. and Gallagher, J.C. (2018), Shortened Courses of Antibiotics for Bacterial Infections: A Systematic Review of Randomized Controlled Trials. Pharmacotherapy, 38: 674-687.
(3) Kilburn SA, Featherstone P, Higgins B, Brindle R. Interventions for cellulitis and erysipelas. Cochrane Database Syst Rev. 2010;2010(6):Cd004299.

# Diagnosis and risk factors

- **Usually unilateral**. Bilateral leg cellulitis is very rare, and diagnosis needs to be reconsidered.
- **Acute onset**: red, painful, hot, swollen, and tender skin, that spreads rapidly, fever & malaise
- **Check for skin break/organism entry site** e.g. wound/trauma, macerated skin, fungal skin infection, concomitant skin disorder

**Other risk factors & comorbidities which may complicate or delay resolution of infection:**

- Oedema, venous insufficiency, obesity
- Diabetes
- Peripheral vascular disease
- Immunosuppression


*See CKS for further information*

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**Presenter Talk**

This slide is to help highlight signs and symptoms of cellulitis to aid with diagnosis and therefore appropriate antibiotic prescribing.
Also to highlight risk factors that may complicate the infection

**Presenter Notes**

*NICE doesn't stratify treatment according to severity. (1)*

- *Class I — there are no signs of systemic toxicity and the person has no uncontrolled comorbidities.*
- *Class II — the person is either systemically unwell or systemically well but with a comorbidity (for example peripheral arterial disease, chronic venous insufficiency, or morbid obesity) which may complicate or delay resolution of infection*
- *Class III — the person has* ***significant systemic upset, such as acute confusion, tachycardia, tachypnoea, hypotension,*** *or unstable comorbidities that may interfere with a response to treatment, or a limb-threatening infection due to vascular compromise.*
- *Class IV — the person has sepsis or a severe life-threatening infection, such as necrotizing fasciitis*

*Consider underlying comorbidities (such as diabetes mellitus) that predispose to*

*infection*

**Slide References**

(1) NICE CKS. Cellulitis - acute 2023 [Available from: https://cks.nice.org.uk/topics/cellulitis-acute/.]

(2) Image: Cellulitis [Available from: https://dermnetnz.org/image-catalogue/bacterial-skin-infection-images?stage=Live]


Presenter Talk:
Here we highlight when to seek specialist advice.

Following NICE guidelines, you should seek specialist advice when patient has any symptoms suggesting a more serious illness such as orbital cellulitis, osteomyelitis etc...

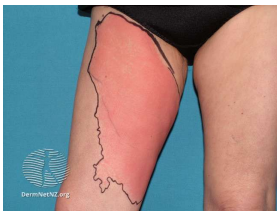
Slide references
(1) NICE. Cellulitis and erysipelas: antimicrobial prescribing NG141 2019 [Available from: https://www.nice.org.uk/guidance/ng141.]

# Cellulitis Management

Most common causative pathogens *Streptococcus pyogenes* (Group A streptococcus) and *Staphylococcus aureus,* therefore flucloxacillin first line

- Penetrating injury
- Exposure to water-borne organisms
- Infection acquired outside UK

Consider swab if skin broken, or there is a risk of uncommon pathogen.



Consider marking extent with single-use surgical marker pen

Manage infection first, then underlying conditions, including:

- Diabetes (ensuring sugars are in range during active infections is important),
- Venous insufficiency,
- Fungal nail disease
- Eczema and
- Oedema

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**Presenter Talk**

For management of cellulitis you can (1):

1. Consider swabbing if there is evidence of a penetrating injury and risk of exposure to an uncommon pathogen (water-borne or infection acquired outside of UK)
2. Use a surgical pen to mark the outline of the extent of infection for future comparison
3. Manage infections first, then underlying conditions

Prompts – Might want to say no need to give dual treatment with Pen V also. It was historic practice to give both Pen V for GAs and fluclox for Staph aureus

**Presenter Notes**

*Less common organisms include: beta haemolytic streps incl. G (which can also cause necrotizing fasciitis), C and B, Streptococcus pneumoniae, Haemophilus influenzae, Gram negative bacilli and anaerobes*

*Risk for atypical organisms (2):*

- ***profound immunosuppression***
- *animal or human bites*
- ***intravenous drug use*** *(including skin-popping*
- *sea or freshwater exposure (to broken skin) including* ***pools and spas***
- *exposure to animals, fish, or reptiles*

**Slide References**


(1) NICE. Cellulitis - acute 2023 [Available from: https://cks.nice.org.uk/topics/cellulitis-acute/].

(2) NICE. 2019. Cellulitis and erysipelas: antimicrobial prescribing [ Available from: https://www.nice.org.uk/guidance/ng141]

(3) Sullivan T, de Barra E. Diagnosis and management of cellulitis. Clinical Medicine. 2018;18(2):160-3.

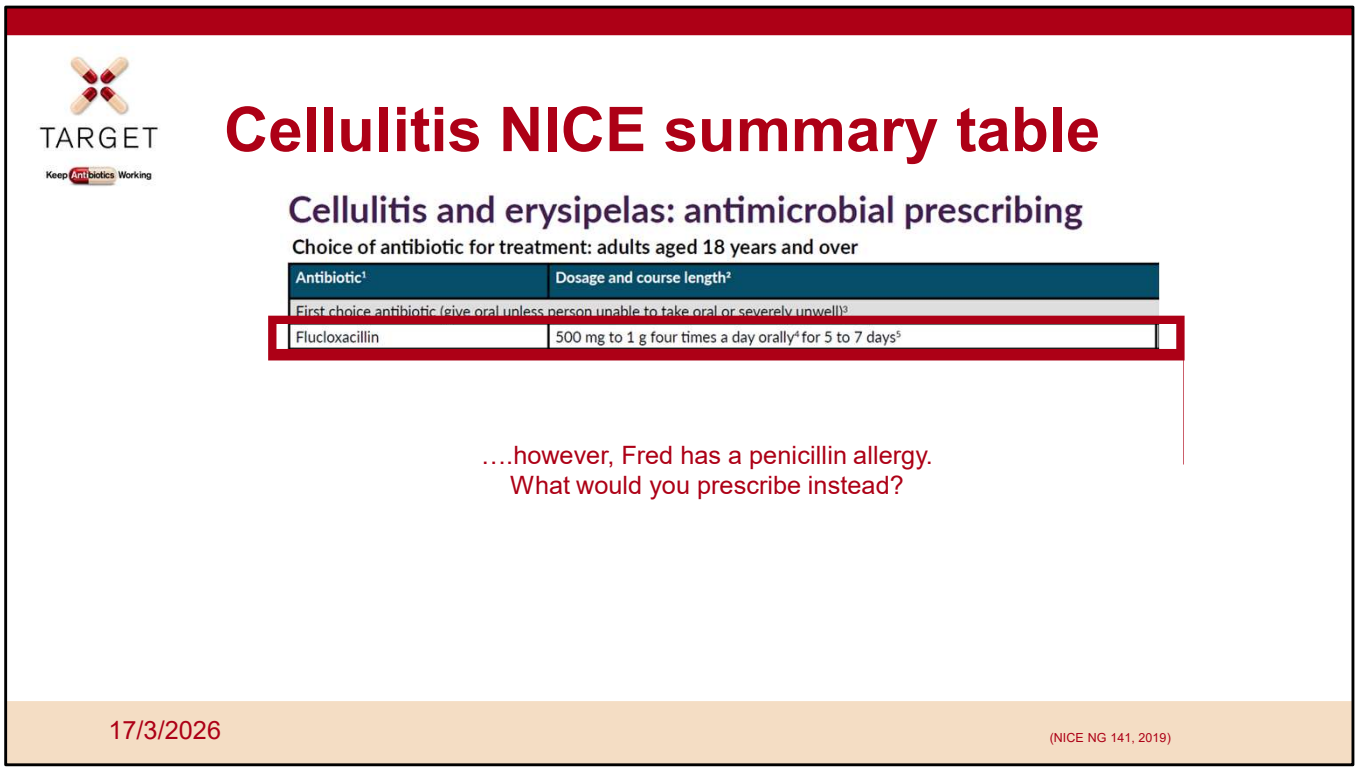
(4) Image: Cellulitis {Available from: https://dermnetnz.org/topics/cellulitis]

(5) Image: Cellulitis following abrasion {Available from: https://commons.wikimedia.org/wiki/File:Cellulitis_following_abrasion.jpg}

(6) Image: Abrasion cause by sliding fall on concrete {Available from: https://commons.wikimedia.org/wiki/File:Hand_Abrasion_-_2_days_22_hours_12_minutes_after_injury.JPG}

(7) Swimming and plane picture from MS PowerPoint Stock Images

# Cellulitis NICE summary table




*This slide is animated, click to reveal answer*

**Presenter Talk**

*This slide provides opportunity for discussion about what factors influence prescribers decision for what they prescribe given that NICE give some scope around dose and duration.*

Here we have the NICE summary table for cellulitis antimicrobial prescribing
As previously discussed, Flucloxacillin (500mg to 1g 5-7 days) is the first-choice antibiotic.

Remember Fred? You find out that he has a penicillin allergy, what would you prescribe instead?

*Click on animation….*

Alternative first choice antibiotics if penicillin allergy include clarithromycin and doxycycline, erythromycin is only recommended in pregnancy. Erythromycin causes intolerable gastrointestinal side effects. It remains first line in pregnancy due to

experience of drug.

If infection is near the eyes or nose there are different recommendations with first choice as co-amoxiclav or clarithromycin with metronidazole if penicillin allergy.

**Presenter Notes**

*Guideline rationale : "oral antibiotics should be used in preference to intravenous antibiotics where possible. Intravenous antibiotics should only*

*be used for people who are severely ill, unable to tolerate oral treatment, or where oral treatment would not provide adequate coverage or tissue penetration"*

*Remember to check the BNF for considerations if someone has renal/hepatic impairment. And consider prescribing differences for obese patients.*

**Slide References**

(1) NICE. Cellulitis and erysipelas: antimicrobial prescribing NG141 2019 [Available from: https://www.nice.org.uk/guidance/ng141.]

# Complications

- **Necrotizing fasciitis:**
  - Destructive, severe, rapidly progressive soft tissue infection
  - Involves the deep subcutaneous tissues and fascia (and occasionally muscles), which is characterized by extensive necrosis and gangrene of the skin and underlying structures.
  - *Signs and symptoms can vary*:
    - Intense pain disproportionate to skin damage
    - Anaesthesia (loss of feeling) over the site of infection
    - Oedema and erythema
  - Group A streptococcus is a major causative agent in necrotizing fasciitis.
  - Rapid progression, skin discolouration , crepitus, bulla, gangrene
  - **Suspected necrotizing fasciitis is a medical emergency requiring immediate hospital admission**
  - Refer – IV antibiotics & surgical debridement
- **Myositis: inflammation of muscle due to infection.**
- **Sepsis (potentially fatal).**
- **Subcutaneous abscesses.**
- **Post-streptococcal nephritis**

17/3/2026

(NICE NG 141, 2019)

**Presenter Talk**

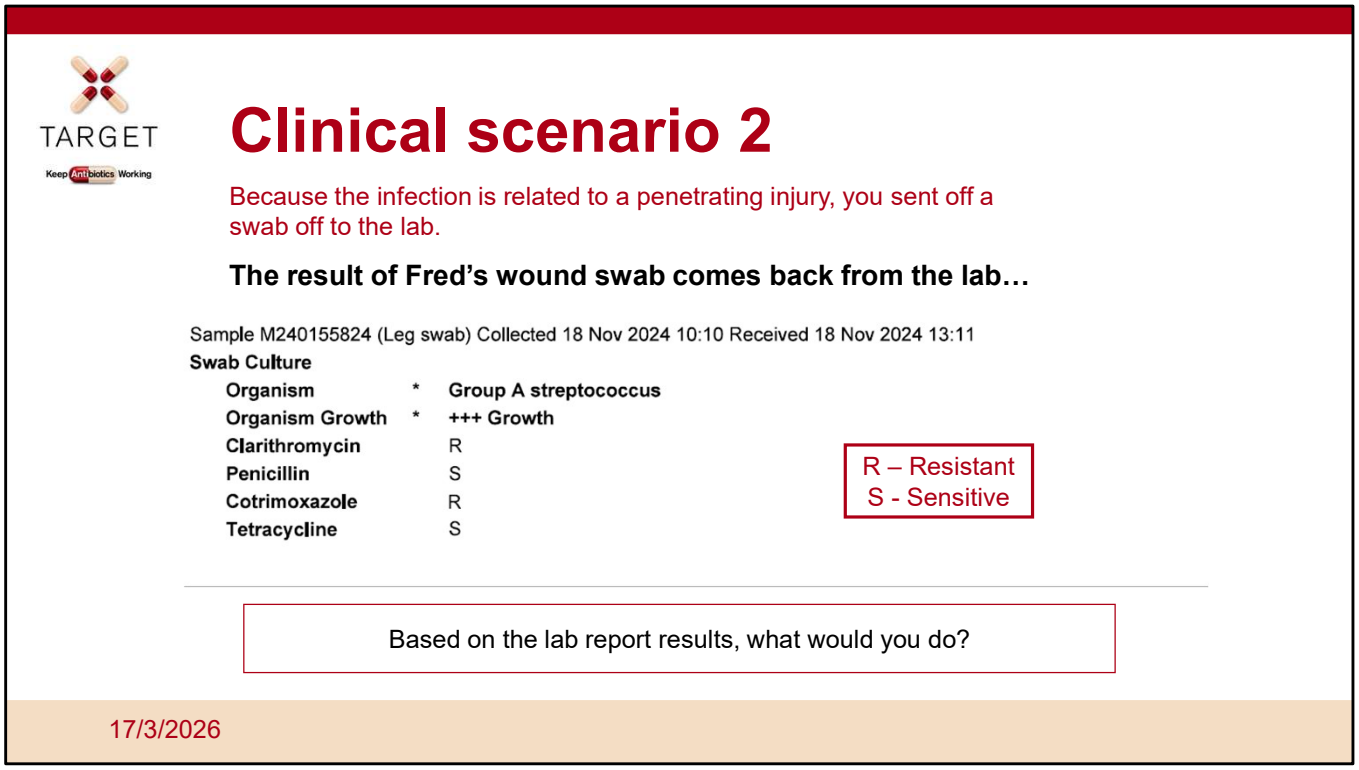
Here we highlight a range of acute complications of cellulitis

**Slide References**


(1) NICE. Cellulitis - acute 2023 [Available from: https://cks.nice.org.uk/topics/cellulitis-acute/.]

(2) CDC. Type II Necrotizing Fasciitis 2022 [Available from:https://www.cdc.gov/group-a-strep/hcp/clinical-guidance/necrotizing-fasciitis.html?CDC_AAref_Val=https://www.cdc.gov/groupastrep/diseases-hcp/necrotizing-fasciitis.html]

(3) BMJ Best Practice. 2025. Necrotising fasciitis [Available from: https://bestpractice.bmj.com/topics/en-gb/3000241]



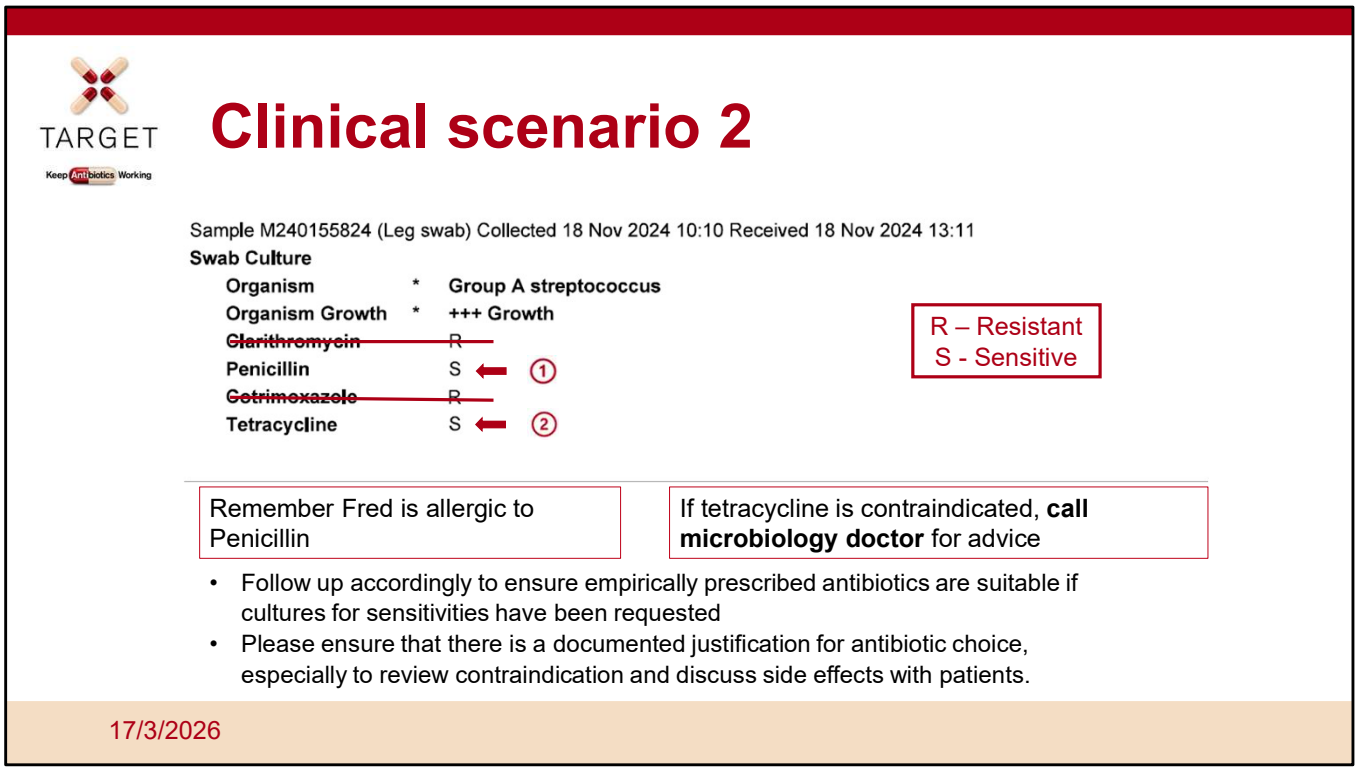

**Presenter Talk**

Because the infection is related to a penetrating injury, you sent off a swab off to the lab.

Remember Fred is taking Clarithromycin because he has an allergy to penicillin.

Based on this lab report, what would you do?

*Answer on next slide*




*This slide is animated, click twice to reveal answers*

**Presenter Talk**

Based on this report the GAS strain is resistant to Clarithromycin and Cotrimoxazole. Penicillin would be your first choice followed by Tetracycline. However, Fred is allergic to Penicillin.

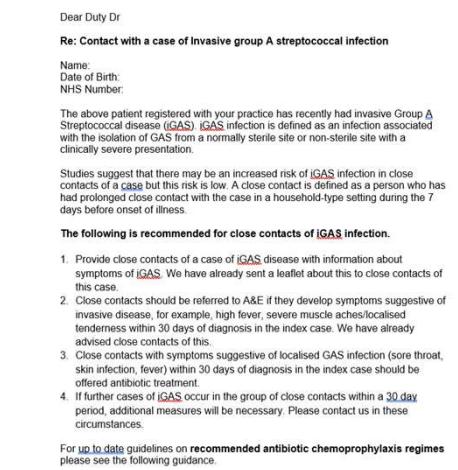
Because of the resistance to clarithromycin you will need to change the antibiotic. Because of the penicillin allergy(slide 8), your next line of treatment would be Tetracycline which will be Doxycycline (5-7 days): 200mg on first day then 100mg once a day orally.

- Please ensure that there is a documented justification for antibiotic choice, especially for contraindication.

If tetracycline is contraindicated, you will need to **call microbiology doctor** for advice

If cultures for sensitivities are requested, please follow up accordingly to ensure empirically prescribed antibiotics remain suitable.

# Clinical scenario 2



Dear Duty Dr

**Re: Contact with a case of Invasive group A streptococcal infection**

Name:
Date of Birth:
NHS Number:

The above patient registered with your practice has recently had invasive Group A Streptococcal disease (iGAS). iGAS infection is defined as an infection associated with the isolation of GAS from a normally sterile site or non-sterile site with a clinically severe presentation.

Studies suggest that there may be an increased risk of iGAS infection in close contacts of a case but this risk is low. A close contact is defined as a person who has had prolonged close contact with the case in a household-type setting during the 7 days before onset of illness.

**The following is recommended for close contacts of iGAS infection.**

1. Provide close contacts of a case of iGAS disease with information about symptoms of iGAS. We have already sent a leaflet about this to close contacts of this case.
2. Close contacts should be referred to A&E if they develop symptoms suggestive of invasive disease, for example, high fever, severe muscle aches/localised tenderness within 30 days of diagnosis in the index case. We have already advised close contacts of this.
3. Close contacts with symptoms suggestive of localised GAS infection (sore throat, skin infection, fever) within 30 days of diagnosis in the index case should be offered antibiotic treatment.
4. If further cases of iGAS occur in the group of close contacts within a 30 day period, additional measures will be necessary. Please contact us in these circumstances.

For up to date guidelines on **recommended antibiotic chemoprophylaxis regimes** please see the following guidance.

Fred deteriorates and is admitted to hospital. → Local Health Protection Team notified as suspecting iGAS infection

iGAS is a **notifiable disease**

**The iGAS infection was confirmed and close contact(s) of Fred presents to your practice with a letter from the Health Protection Team requesting for antibiotic prophylaxis.**

17/3/2026

*This slide is animated, click to reveal clinical scenario*

**Presenter talk:**

Unfortunately, Fred deteriorates and has been admitted to hospital. The local health protection team is notified as hospital staff suspects that Fred has an iGAS infection. To note that, iGAS is a notifiable disease.

The local Health Protection Team contacted his contacts and provided them with letters. The next day, they call your practice requesting for prophylaxis. What do you do?

# Clinical scenario 2

Close contacts

| | | |
|---|---|---|
| Laura, Fred's wife<br>78 years old<br>Living together | Fred's niece<br>35 years old<br>Pregnant (38 weeks)<br>Stayed over for a week | Fred's son,<br>40 years old<br>Stayed over for a week<br>Symptoms of sore throat |

## What do you do?

17/3/2026

**Presenter Talk**

Prompt – Definition of close contact - "Close contact is defined as someone who has had prolonged close contact with the case in a household -type setting during the 7 days before diagnosis of iGAS infection. Examples include those living and/or sleeping in the same household, pupils in the same dormitory, intimate partners, or university students sharing a kitchen in a hall of residence. Consider contacts who provide nursing care (district nurses, health visitors)."

# iGAS infection

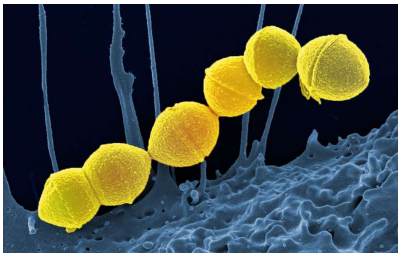
**Invasive Group A Strep (iGAS) infection:** when bacteria get to parts of body where bacteria are usually not found, such as blood or muscle
Severe iGAS diseases include *necrotizing fasciitis* and *streptococcal toxic shock syndrome*

**If chemoprophylaxis is required…**

Offer antibiotic chemoprophylaxis promptly (within 24 hours, and preferably the same day) to high-risk contacts, without screening. Identified individuals should be isolated for the first 24 hours.

High risk contacts

- older persons (≥75 years)
- pregnant women ≥37 weeks
- women within 28 days of giving birth (post-partum)
- neonates (up to 28 days old)
- individuals who develop chickenpox with active lesions within 7 days prior to diagnosis of iGAS infection in the index case or within 48 hours after commencing antibiotics by the iGAS case, if exposure ongoing



17/3/2026

**Presenter Talk:**

Group A streptococcus (GAS), also referred to as Strep A is a common bacterium. Lots of us carry it in our throats and on our skin and it doesn't always result in illness. However, GAS does cause a number of infections, some mild and some more serious.
Milder infections caused by GAS include scarlet fever, impetigo, cellulitis and pharyngitis. These can be easily treated with antibiotics.
The most serious infections linked to GAS come from invasive group A strep, known as iGAS.

iGAS can happen when a person has sores or open wounds that allow the bacteria to get into the tissue, breaches in their respiratory tract after a viral illness, or in a person who has a health condition that decreases their immunity to infection. When the immune system is compromised, a person is more vulnerable to invasive disease (1).

iGAS is managed in hospital, with local health protection teams providing support in identifying source and preventing spread. However, there might be instances where primary care will be asked to support. For example, prescribing chemoprophylaxis for close contacts in the community. Chemoprophylaxis should be offered to high-

risk contacts promptly (2).

Here are some evidence that underpinned the selection of high-risk groups [for summary see (3)] :

•For **elderly couples aged 75 and over**, you would need to treat **82 people** with antibiotics to prevent **just one** secondary infection (4).
•For **mothers and their newborn babies**, you would need to treat **50 people** to prevent **one** secondary infection (4).
•Elevation in postpartum risk of iGAS infection, over **80-fold increased within the first 3-4 weeks postpartum** compared to other women aged 15 to 44, with **particularly high risk during each of the first 3 days after childbirth** (400x higher than background risk) (5,6)
•Chickenpox is a known risk factor for development of iGAS infection in children, with the highest risk 5 days after onset of rash (range 4 to 14 days) (7)

**Slide References**


(1) UK Health Security Agency, 2024. Group A Streptococcus. [Available from: https://www.gov.uk/government/collections/group-a-streptococcal-infections-guidance-and-data#guidance-for-professionals]
(2) UK Health Security Agency, 2023. Invasive group A streptococcal disease: managing close contacts in community settings. [Available from: https://www.gov.uk/government/publications/invasive-group-a-streptococcal-disease-managing-community-contacts]
(3) Watts V, Usdin M, Mearkle R, Sriskandan S, Cordery R, Millership S, Saliba V, Edmundson C, Pai A, Brown CS, Balasegaram S. Antibiotic chemoprophylaxis for close contacts of invasive group A streptococcus in community settings: Evidence review. Journal of Infection. 2025 Mar 13:106468. [Available from: https://www.sciencedirect.com/science/article/pii/S0163445325000623]
(4) Mearkle R, Saavedra-Campos M, Lamagni T, Usdin M, Coelho J, Chalker V, et al. Household transmission of invasive group A Streptococcus infections in England: a population-based study, 2009, 2011 to 2013. Euro surveillance: 2017;22(19):pii=30532 [Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC5476984/]
(5) Leonard A, Wright A, Saavedra-Campos M, Lamagni T, Cordery R, Nicholls M, et al. Severe group A streptococcal infections in mothers and their newborns in London and the South East, 2010-2016: assessment of risk and audit of public health management. BJOG : an international journal of obstetrics and gynaecology. 2019;126(1):44-53. [Available from: https://pubmed.ncbi.nlm.nih.gov/30070056/]

(6) Lamagni T, Guy RL, Sriskandan S, Decraene V, Brown CS. Improving maternal outcomes through early recognition, rapid notification and investigation of iGAS infection. Lancet Microbe https://doi.org/10.1016/S2666-5247(23)00186-6

(7) Laupland KB, Davies HD, Low DE, Schwartz B, Green K, McGeer A. Invasive group A streptococcal disease in children and association with varicella-zoster virus

infection. Ontario Group A Streptococcal Study Group. Pediatrics. 2000;105(5):E60. [Available from: https://pubmed.ncbi.nlm.nih.gov/10799624/]

Image: https://ukhsa.blog.gov.uk/2022/12/05/group-a-strep-what-you-need-to-know/

# If chemoprophylaxis is required…

DRAFT pending publication

Please refer to the latest UKHSA close contact guidance

**Table 2. Choice of agent for chemoprophylaxis¥**

| Group | Drug | Duration |
|---|---|---|
| **First line** | | |
| Child (jncluding neonates) | Phenoxymethylpenicillin (Penicillin V) | 10 days |
| Adult (including pregnant) | Phenoxymethylpenicillin (Penicillin V) | 10 days |
| **Second line (penicillin allergy)** | | |
| Birth to 6 months | Clarithromycin*^ | 10 days |
| 6 months to adult | Azithromycin*^ | 5 days |
| | Clarithromycin*^ | 10 days |
| Pregnant | Erythromycin*^& | 10 days |

* Where susceptibilities are available, these should be reviewed to ensure the prescribed agent remains active

^ Clinicians should check for potential significant interactions with other prescribed medications

& Erythromycin is the preferred macrolide for choice in pregnancy, followed by azithromycin and clarithromycin. Order preference is due to experience with the drugs in pregnancy, rather than any signal of harm

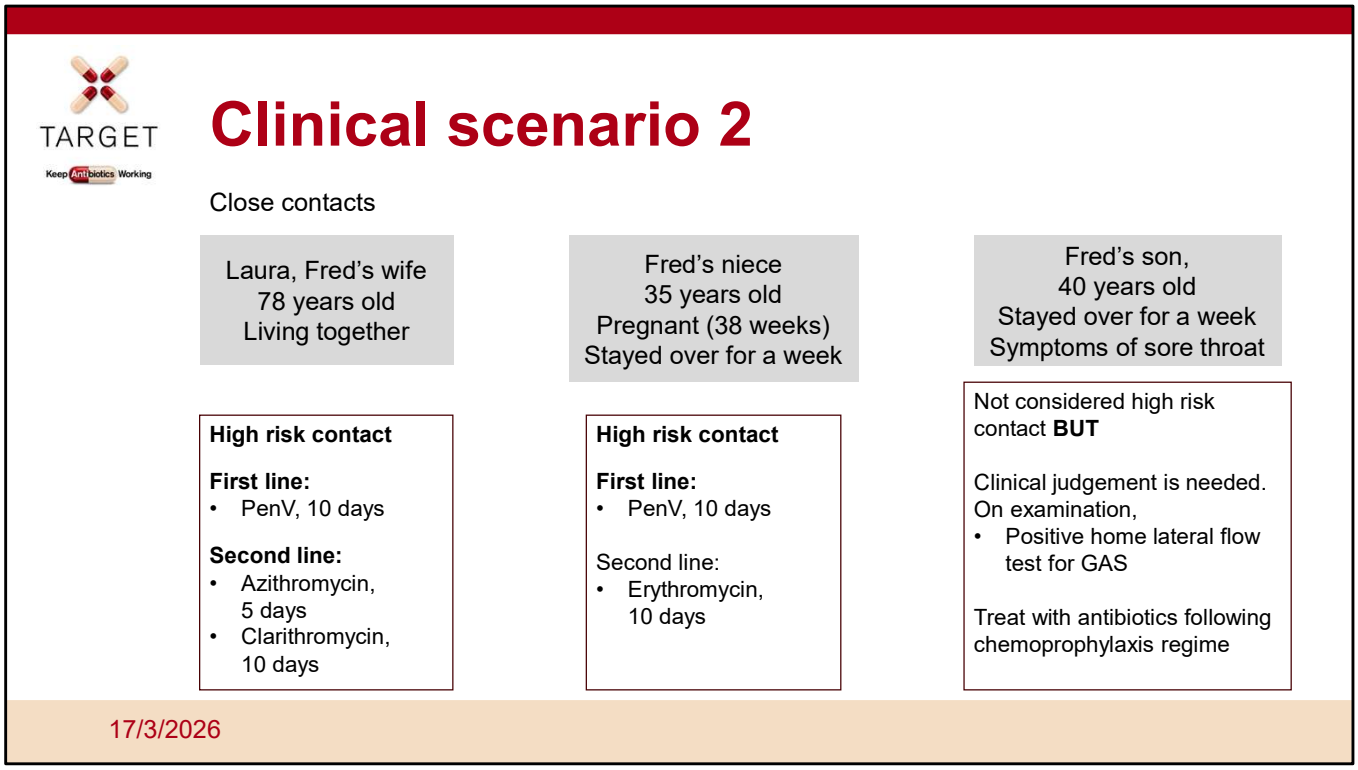
17/3/2026

**Presenter talk:**

Based on latest guidance, the first line for chemoprophylaxis is Pen V for 10 days, however, it is important to note that management guidance will depend on local resistance patterns.
Please check with the medicines optimisation team to confirm what should be prescribed.

**Slide References**

(1) UK Health Security Agency. 2023., UK guidelines for the for the management of contacts of invasive group A streptococcus (iGAS) infection in community settings. [Available from: https://www.gov.uk/government/collections/group-a-streptococcal-infections-guidance-and-data#guidance-for-professionals]




*This slide is animated, click for the answers for each contact*

**Presenter talk:**

Laura is 78 years old, making her a high-risk contact.
Based on latest guidance, the first line for chemoprophylaxis is Pen V for 10 days, however, it is important to note that management guidance will depend on local resistance patterns.
Please check with the medicines optimisation team to confirm what should be prescribed.

Fred's niece who is pregnant visited him and stayed for a week, and has now contacted you regarding antibiotic prophylaxis. Fred's daughter under the high-risk group as pregnant, hence offer antibiotic prophylaxis as soon as possible.

Fred's son, who is 40 years old, stayed for a week prior to the hospital admission and now presents with a sore throat, visits your practice. Fred's son, does not fall under the high-risk category, hence you will need to rely on your clinical judgement and assess whether to prescribe antibiotics. He did a home test for GAS and it came back positive. You should treat with antibiotics following the chemoprophylaxis regime.

*If any close contacts with signs and symptoms of GAS infection are identified, they should be clinically assessed and treated with antibiotics as indicated (same as chemoprophylaxis regime)*

Prompt –There are 2 types of contact we worry about in iGAS 1. SYMPTOMATIC CONTACT- these are people who are not in a high risk category BUT have got symptoms suggestive of GAS infection. Therefore this may progress to iGAS and they need assessment and treatment. 2. HIGH RISK CONTACTS - These people are at increased risk of developing iGAS if they have been in close prolonged contact with someone who has iGAS. So they should be given abx EVEN IF THEY DO NOT HAVE SYMPTOMS

**Slide References**

(1) UK Health Security Agency. 2023., UK guidelines for the for the management of contacts of invasive group A streptococcus (iGAS) infection in community settings. [Available from: https://www.gov.uk/government/collections/group-a-streptococcal-infections-guidance-and-data#guidance-for-professionals]
(2) https://www.england.nhs.uk/long-read/direct-to-consumer-point-of-care-in-vitro-diagnostic-devices-for-group-a-streptococcal-infections/

# Conditions misidentified as cellulitis

## Venous eczema and lipodermatosclerosis

*Examination, varying severity:*

- **Hyperpigmentation** (haemosiderin)
- **Venous eczema** red, itchy, flaky, +/- pain, blisters, swelling
- **Lipodermatosclerosis** from chronic inflammation and fibrosis:
  - **Acute lipodermatosclerosis** (sclerosing panniculitis) - painful inflammation above ankles
  - **Chronic lipodermatosclerosis** painful, hardened, tight, 'inverted champagne bottle

***Advice:***

- ❑ Keep active, weight loss, leg elevation, emollient
- ❑ Compression stockings (after excluding arterial insufficiency)
- ❑ Acute flares – topical corticosteroid

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**Presenter Talk**

This slide and the previous highlights conditions often misidentified for cellulitis
Self care is important and advice includes elevation, keep physically active , weight loss if high BMI
And do not use compression stocking if active cellulitis (1)

**Presenter Notes**

*NHS website info excellent (2)*
*CKS varicose eczema/lipodermato (3)*
*DVT (4)*

*Venous insufficiency*

- ***Risks**: Immobility, obesity, VVs, previous DVT*
- ***Symptoms**: heaviness, aching, swelling, and itching, typically worse at end of day, relieved by leg elevation*

*DVT*

- ***Risks** –previous DVT, cancer, >60yr old, obesity,*
- ***Symptoms**: Unilateral localised pain, tenderness, skin changes, which include oedema, redness, and warmth, and vein distension.*

**Slide References**

(1) National Wound Care Strategy Programme. Recommendations for Lower Limb Ulcers. 2020. [Available from: https://www.nationalwoundcarestrategy.net/wp-content/uploads/2021/04/Lower-Limb-Recommendations-WEB-25Feb21.pdf]

(2) NHS. Varicose eczema 2019 [Available from: https://www.nhs.uk/conditions/varicose-eczema/.

(3) NICE CKS. Venous eczema and lipodermatosclerosis 2022 [Available from: https://cks.nice.org.uk/topics/venous-eczema-lipodermatosclerosis/.

(4) NICE CKS. Deep vein thrombosis 2022 [Available from: https://cks.nice.org.uk/topics/deep-vein-thrombosis/.

(5) Image: Cellulitis mimic – picture obtained with patient consent

(6) Image: Venous Insufficiency - James Heilman MD – Creative commons

# Conditions misidentified as cellulitis

**Venous eczema and lipodermatosclerosis**

*Venous skin changes can be caused by:*

- **Venous insufficiency:** due to venous valve incompetence or impaired calf muscle pump
- **Deep vein thrombosis**: Can have unilateral presentation and be related to venous insufficiency


17/3/2026

**Presenter Talk**

This slide and next highlights conditions often misidentified for cellulitis
Self care is important and advice includes elevation, keep physically active , weight loss if high BMI
And do not use compression stocking if active cellulitis (1)

**Presenter Notes**

*NHS website info excellent (2)*
*CKS varicose eczema/lipodermato (3)*
*DVT (4)*

*Venous insufficiency*

- ***Risks**: Immobility, obesity, VVs, previous DVT*
- ***Symptoms**: heaviness, aching, swelling, and itching, typically worse at end of day, relieved by leg elevation*

*DVT*

- ***Risks** –previous DVT, cancer, >60yr old, obesity,*
- ***Symptoms**: Unilateral localised pain, tenderness, skin changes, which include oedema, redness, and warmth, and vein distension.*

**Slide References**

(1) National Wound Care Strategy Programme. Recommendations for Lower Limb Ulcers. 2020. [Available from: https://www.nationalwoundcarestrategy.net/wp-content/uploads/2021/04/Lower-Limb-Recommendations-WEB-25Feb21.pdf]

(2) NHS. Varicose eczema 2019 [Available from: https://www.nhs.uk/conditions/varicose-eczema/.

(3) NICE CKS. Venous eczema and lipodermatosclerosis 2022 [Available from: https://cks.nice.org.uk/topics/venous-eczema-lipodermatosclerosis/.

(4) NICE CKS. Deep vein thrombosis 2022 [Available from: https://cks.nice.org.uk/topics/deep-vein-thrombosis/.

(5) Image: Cellulitis mimic – picture obtained with patient consent

(6) Image: Venous Insufficiency - James Heilman MD – Creative commons

# Special considerations

**Skin infection can look different on different skin tones**

→ Increased role of indicators such as tenderness, heat, and swelling

**Higher risk of invasive infection in vulnerable patients such as people who inject drugs**

→ Early treatment of skin infections
→ Consider previous microbiology
→ Provide harm reduction tips for safer drug use

17/3/2026

**Presenter Talk**

When assessing a patient for cellulitis, it is important to note that skin infection can look different on different skin tones. Consider other indicators other than redness. DermNetNz can be a good resource.

People who inject drugs have higher risk of skin infections and invasive infections. Treat early and consider previous microbiology when treating. Provide patients with harm reduction tips to prevent infection.

References


(1) Sanchez DP, Tookes H, Pastar I, Lev-Tov H. Wounds and Skin and Soft Tissue Infections in People Who Inject Drugs and the Utility of Syringe Service Programs in Their Management. Adv Wound Care (New Rochelle). 2021 Oct;10(10):571-582. doi: 10.1089/wound.2020.1243. Epub 2021 Jun 14. PMID: 33913781; PMCID: PMC8312019.

(2) Stewardson AJ, Davis JS, Dunlop AJ, Tong SYC, Matthews GV. How I manage severe bacterial infections in people who inject drugs. Clin Microbiol Infect. 2024 Jul;30(7):877-882. doi: 10.1016/j.cmi.2024.01.022. Epub 2024 Feb 3. PMID: 38316359.


Image from: https://www.nhs.uk/conditions/cellulitis/

# Safety netting advice

**Advice & reassessment:**

- Skin will take time to return to normal after finishing the antibiotics, however recurrence of cellulitis is common
- Advice patient to seek medical help/reassess if:
  - The patient cannot tolerate/take the prescribed antibiotics
  - Do not start to improve in 2 to 3 days or worsen rapidly or significantly at any time
    - The patient is very unwell, has severe pain, or redness or swelling
    - Showing signs or symptoms of sepsis

***Refer to hospital's acute medical team for further assessment*** *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.*

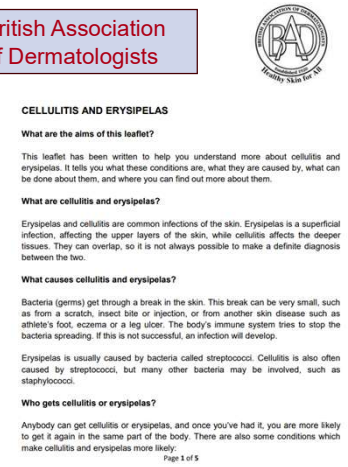
17/3/2026

**Presenter Talk**

This slide contains some safety netting advice to help with management.

# Resources for patients

British Association of Dermatologists



CELLULITIS AND ERYSIPELAS

**What are the aims of this leaflet?**

This leaflet has been written to help you understand more about cellulitis and erysipelas. It tells you what these conditions are, what they are caused by, what can be done about them, and where you can find out more about them.

**What are cellulitis and erysipelas?**

Erysipelas and cellulitis are common infections of the skin. Erysipelas is a superficial infection, affecting the upper layers of the skin, while cellulitis affects the deeper tissues. They can overlap, so it is not always possible to make a definite diagnosis between the two.

**What causes cellulitis and erysipelas?**

Bacteria (germs) get through a break in the skin. This break can be very small, such as from a scratch, insect bite or injection, or from another skin disease such as athlete's foot, eczema or a leg ulcer. The body's immune system tries to stop the bacteria spreading. If this is not successful, an infection will develop.

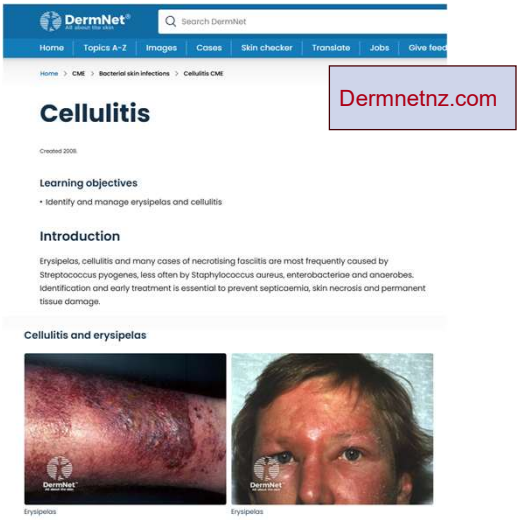
Erysipelas is usually caused by bacteria called streptococci. Cellulitis is also often caused by streptococci, but many other bacteria may be involved, such as staphylococci.

**Who gets cellulitis or erysipelas?**

Anybody can get cellulitis or erysipelas, and once you've had it, you are more likely to get it again in the same part of the body. There are also some conditions which make cellulitis and erysipelas more likely:

Page 1 of 5

Dermnetnz.com

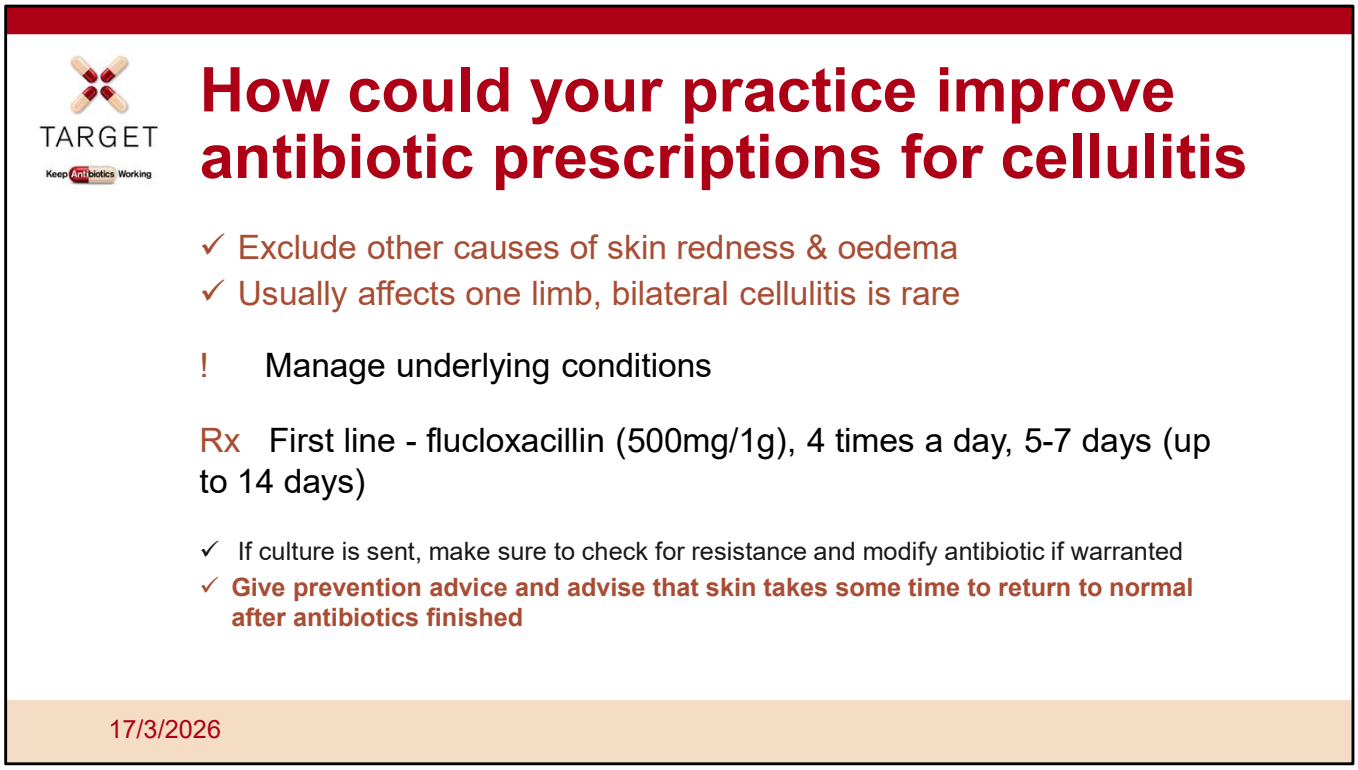



17/3/2026

**Presenter Notes**

Here are some resources that maybe useful as a tool for patients to better understand their diagnosis.
Leaflet from British Association of Dermatologist (no images):
https://www.bad.org.uk/pils/cellulitis-and-erysipelas/
Resource from dermnetnz.com (with images):
https://dermnetnz.org/cme/bacterial-infections/cellulitis

These resources provide information to help patients understand more about cellulitis and erysipelas, i.e. what these conditions are, what they are caused by, what can be done about them, and where they can find out more about them.




**Presenter Talk**

**To summarise the key points:**

- Exclude other causes of skin redness & oedema
- Look for site of entry e.g. skin break
- Usually affects one limb, bilateral cellulitis is rare
- It is important to manage underlying conditions
- And the first line antibiotic is flucloxacillin (500mg/1g), 4 times a day, 5-7 days (up to 14 days)

**Presenter Notes**

*Possible discussion points:*

1. *In your experience do people get repeated courses of antibiotic for cellulitis*
2. *Study BJGP by Teasdale (1) found approx. 2/3 people surveyed reported receiving no information about cause or prevention of recurrence. (also important to name condition)*

**Slide References**

(1) Teasdale E, Lalonde A, Muller I, Chalmers J, Smart P, Hooper J, et al. Patients' understanding of cellulitis and their information needs: a mixed-methods study in primary and secondary care. British Journal of General Practice. 2019;69(681):e279-e86.

(2) Image: Cellulitis {Available from: https://dermnetnz.org/topics/cellulitis]

# Clinical Scenario: Skin infections Action Planning next 12 months

**Agree actions, who, when and how:**

1. Promote use of UKHSA/NICE or local antimicrobial / management of infection guidelines by all in practice.
2. Undertake an audit of antibiotics for skin infections such as flucloxacillin and co-amoxiclav.
3. Encourage consistent message from different staff and when patients re-attend.
4. Make use of TARGET toolkit.

17/3/2026

**Presenter Notes**

*Here is a list of suggestions for action planning. You may wish to add any suggested by the audience*

# Acknowledgements

Many thanks to:

- Mariyam Mirfenderesky – Consultant in Infectious Diseases and Medical Microbiology, IOS Team, UKHSA
- Daisy Woolham – Higher specialty trainee registrar in Infectious Diseases and Medical Microbiology, Royal Sussex County Hospital; Honorary Clinical Fellow, UKHSA; Visiting Researcher, Brighton and Sussex Medical School.
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- Graham Duce - GP, Audlem Medical Practice; Cheshire Place GP AMS Lead
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- Catherine Searle – Principal Public Health Scientist, IOIG Team, UKHSA
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