



TARGET

Keep Antibiotics Working

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

TARGET Antibiotics Webinar

17 March 2026



Introductions – TARGET and RCGP



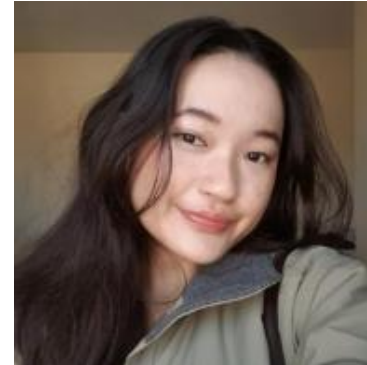
Dr Donna Lecky



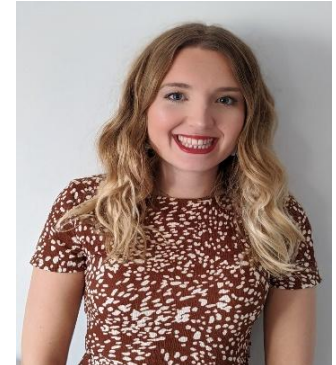
Emily Cooper



Catherine Hayes



Ming Lee



Emily Whitehorne



Julie Brooke



Liam Clayton



Joseph Besford



Camilla Stevenson

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



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

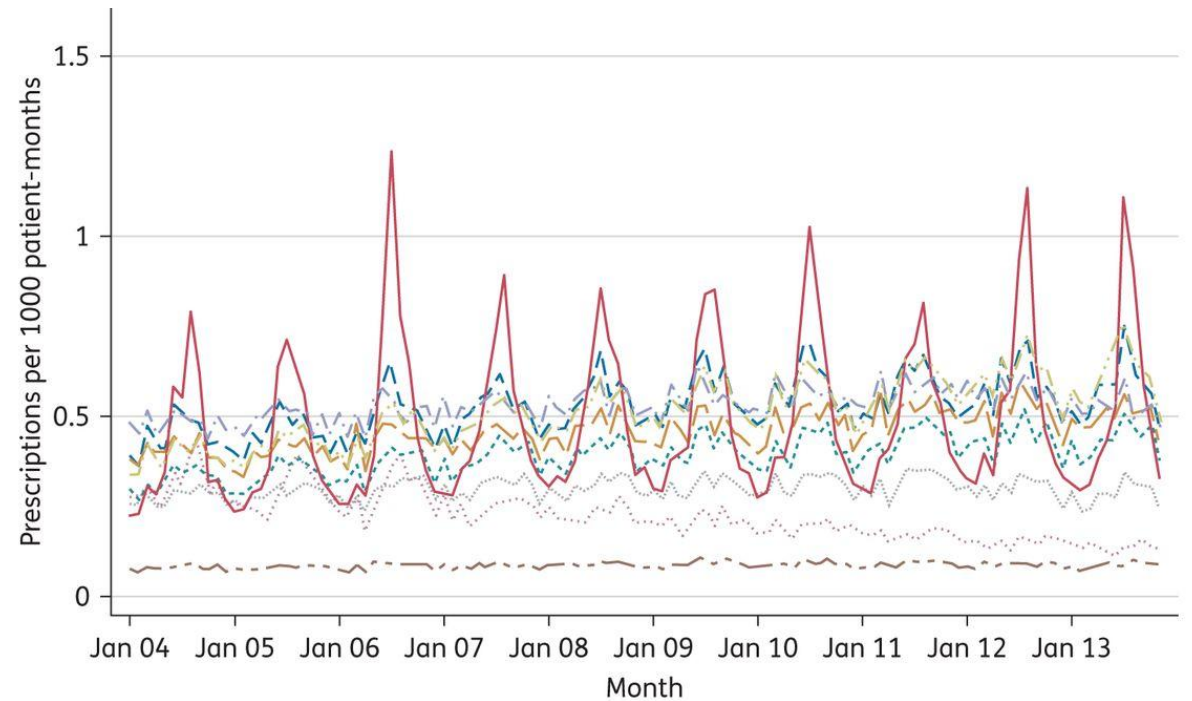
10% of antibiotic prescriptions in primary care

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



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 GPs	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 mupirocin	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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Clinical Scenario: Insect Bites



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



Clinical Scenario 1

Large red area on calf, appeared yesterday...thinks bitten/stung. It is itchy and 3cm diam. No temp, PMH - asthma, no drug allergies.

What will you do?

1. Prescribe flucloxacillin
2. Prescribe clarithromycin
3. Prescribe antihistamine
4. Give advice

What features of the history help you decide whether there's secondary infection?

Clinical scenario answer

- Rapid onset – likely to be allergic/inflammatory
- Itchy
- Systemically well
- **Most insect bites or stings will not need antibiotics**
- **Encourage self-care and provide safety netting**

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

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.

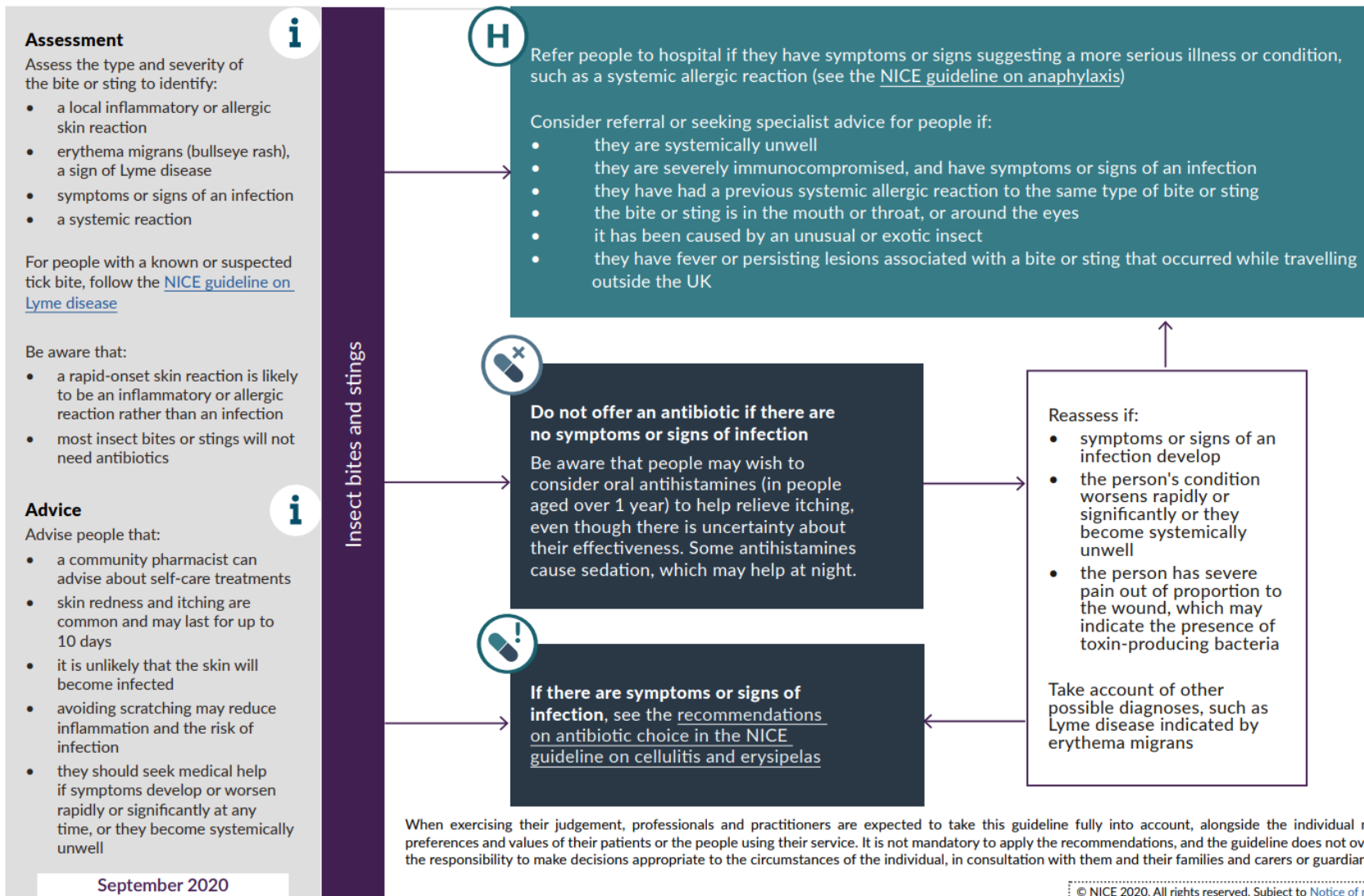


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Insect bites and stings: antimicrobial prescribing

NICE National Institute for Health and Care Excellence



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

Resources for patients

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.

NHS.UK



Anaphylaxis UK

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.

Resources for HCP

UCLH Bites, stings and animal related injuries



Bites, stings and animal related injuries

You are here: [Home](#) > [Our services](#) > [Find a service \(A-Z\)](#) > [Tropical and Infectious Diseases](#)
 > [Outpatient services \(infectious and tropical diseases\)](#) > [Specialist Infectious and Tropical Diseases services](#)
 > [Bites, stings and animal related injuries](#)

The bites, stings, and animal-related injury service at the [Hospital for Tropical Diseases](#) offers high-quality, specialised treatment and expert advice to patients who have experienced animal or plant-related injuries. Our multidisciplinary team provides comprehensive care for patients referred from general practitioners (GPs), other hospitals, or our tropical [emergency walk-in](#) service.

Our team can provide treatment and advice on a wide range of conditions including:

- Insect bites and stings

Contact details

General enquiries
 ☎ 020 3447 5968 ✉ uclh.htdadmin@nhs.net

Other contact information
[Hospital for Tropical diseases](#)
 Mortimer Market Centre
 Capper St
 London
 WC1E 6JD

Address
[Hospital for Tropical diseases](#)
 Mortimer Market Centre
 Capper St
 London
 WC1E 6JD

Referral information for healthcare professionals

Referral
 ✉ uclh.htdadmin@nhs.net

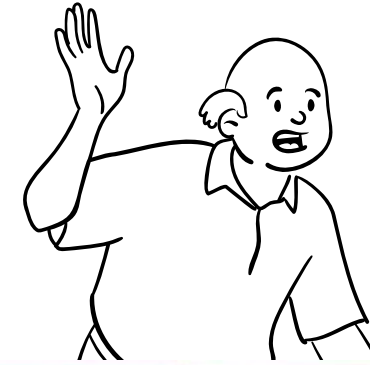
Other referral information
 For children and young people under 18 years old, please [find here](#).

Referral address
[Hospital for Tropical diseases](#)
 Mortimer Market Centre
 Capper St
 London
 WC1E 6JD

Clinical Scenario: Cellulitis



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



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.

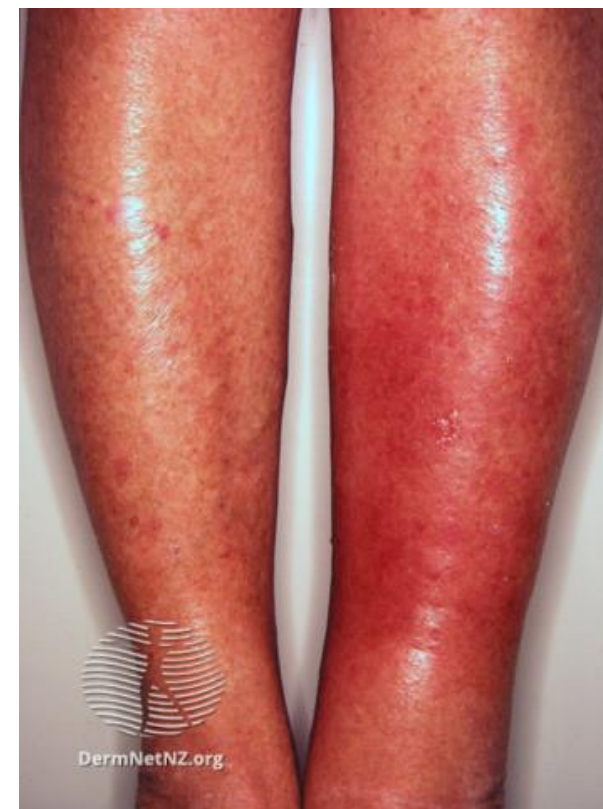
Diagnosis and risk factors

- **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

When to seek specialist advice

- 1.1.13 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.
- 1.1.14 Consider referring people with cellulitis or erysipelas 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).

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

Cellulitis NICE summary table

Cellulitis and erysipelas: antimicrobial prescribing

Choice of antibiotic for treatment: 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

....however, Fred has a penicillin allergy.
What would you prescribe instead?

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**



Clinical scenario 2

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

The result of Fred's wound swab comes back from the lab...

Sample M240155824 (Leg swab) Collected 18 Nov 2024 10:10 Received 18 Nov 2024 13:11

Swab Culture

Organism	*	Group A streptococcus
Organism Growth	*	+++ Growth
Clarithromycin		R
Penicillin		S
Cotrimoxazole		R
Tetracycline		S

R – Resistant
S - Sensitive

Based on the lab report results, what would you do?

Clinical scenario 2

Sample M240155824 (Leg swab) Collected 18 Nov 2024 10:10 Received 18 Nov 2024 13:11

Swab Culture

Organism	*	Group A streptococcus
Organism Growth	*	+++ Growth
Clarithromycin	R	
Penicillin	S	← ①
Cotrimoxazole	R	
Tetracycline	S	← ②

R – Resistant
S - Sensitive

Remember Fred is allergic to Penicillin

If tetracycline is contraindicated, **call microbiology doctor** for advice

- Follow up accordingly to ensure empirically prescribed antibiotics are suitable if cultures for sensitivities have been requested
- Please ensure that there is a documented justification for antibiotic choice, especially to review contraindication and discuss side effects with patients.

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.

Clinical scenario 2

Close contacts

Laura, Fred's wife
78 years old
Living together

Fred's niece
35 years old
Pregnant (38 weeks)
Stayed over for a
week

Fred's son,
40 years old
Stayed over for a week
Symptoms of sore throat

What do you do?



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iGAS infection

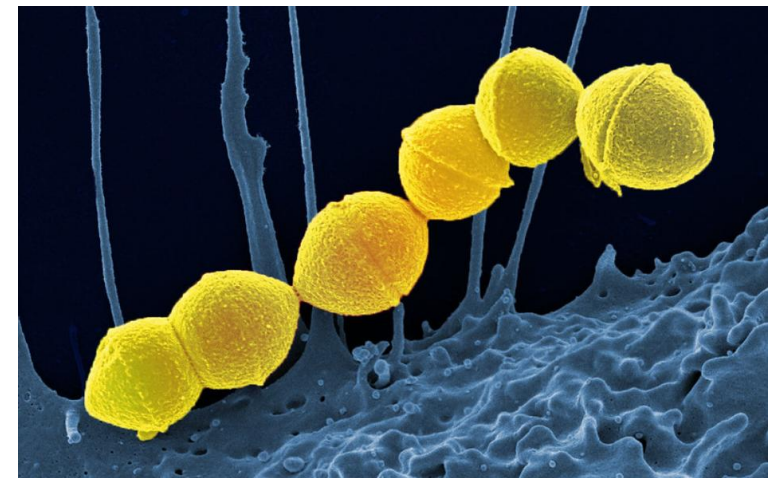
Invasive Group A Strep (iGAS) infection: when bacteria get to parts of body where bacteria are usually not found, such as blood or muscle
Severe iGAS diseases include *necrotizing fasciitis* and *streptococcal toxic shock syndrome*

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



If chemoprophylaxis is required...

DRAFT pending publication

Table 2. Choice of agent for chemoprophylaxis[‡]

Please refer to the latest [UKHSA close contact guidance](#)

Group	Drug	Duration
First line		
Child (including 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

Clinical scenario 2

Close contacts

Laura, Fred's wife
78 years old
Living together

High risk contact

First line:

- PenV, 10 days

Second line:

- Azithromycin,
5 days
- Clarithromycin,
10 days

Fred's niece
35 years old
Pregnant (38 weeks)
Stayed over for a week

High risk contact

First line:

- PenV, 10 days

Second line:

- Erythromycin,
10 days

Fred's son,
40 years old
Stayed over for a week
Symptoms of sore throat

Not considered high risk
contact **BUT**

Clinical judgement is needed.

On examination,

- Positive home lateral flow
test for GAS

Treat with antibiotics following
chemoprophylaxis regime



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

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



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



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.

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:



Home > CME > Bacterial skin infections > Cellulitis CME

Cellulitis

Created 2008.

Learning objectives

- Identify and manage erysipelas and cellulitis

Introduction

Erysipelas, cellulitis and many cases of necrotising fasciitis are most frequently caused by *Streptococcus pyogenes*, less often by *Staphylococcus aureus*, enterobacteriae and anaerobes. Identification and early treatment is essential to prevent septicaemia, skin necrosis and permanent tissue damage.

Dermnetnz.com

Cellulitis and erysipelas



Erysipelas



Erysipelas



How could your practice improve antibiotic prescriptions for cellulitis

- ✓ Exclude other causes of skin redness & oedema
- ✓ Usually affects one limb, bilateral cellulitis is rare

! Manage underlying conditions

Rx First line - flucloxacillin (500mg/1g), 4 times a day, 5-7 days (up to 14 days)

- ✓ If culture is sent, make sure to check for resistance and modify antibiotic if warranted
- ✓ **Give prevention advice and advise that skin takes some time to return to normal after antibiotics finished**



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.



Acknowledgements

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- Theresa Lamagni – Epidemiologist, Head of Gram-Positive Section, UKHSA
- Graham Duce - GP, Audlem Medical Practice; Cheshire Place GP AMS Lead
- Alex Kew – Consultant in Infectious Diseases and Microbiology, University College Hospital London
- Catherine Searle – Principal Public Health Scientist, IOIG Team, UKHSA
- Leigh Sanyaolu – Academic GP Fellow, Cardiff University
- Nehal Draz – Consultant Microbiologist, East Suffolk and North Essex NHS FT
- Christina Petridou - Consultant in Infectious Diseases and Microbiology, UKHSA