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Management of cellulitis:

current practice and research questions

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Submitted: 14 June 2018; **Editor's response:** 28 June 2018; **final acceptance:** 26 July 2018.

DOI: https://doi.org/10.3399/bjgp18X700181

Cellulitis is an acute, painful, and potentially serious infection of the skin and underlying tissue affecting approximately 1 in 40 people per year.[1] Cellulitis presents as a painful, swollen, hot area, sometimes with systemic symptoms. Its impact can be considerable and can result in reduced quality of life and substantial periods of work absence.[2] Cellulitis results in over 100 000 hospital admissions per year in England alone.

Antibiotics are the mainstay of treatment. But antibiotic resistance is a major public health concern, and is a direct consequence of antibiotic use, particularly in primary care. Cellulitis and other soft-tissue infections account for 18% of antibiotic prescriptions outside inpatient hospital care, second only to respiratory conditions.[3] What can be done to safely reduce antibiotic prescribing for cellulitis?

REDUCING MISDIAGNOSIS OF CELLULITIS

The lower limb is most commonly affected by cellulitis and also the site where it is most commonly misdiagnosed. Because of the absence of confirmatory tests, the diagnosis of cellulitis is clinical, although the role of inflammatory markers, such as C-reactive protein, is under investigation. The differential diagnosis for red swollen lower limb includes deep vein thrombosis (DVT), venous eczema, venous insufficiency, lymphoedema, lipodermatosclerosis, and superficial thrombophlebitis.[4] Overdiagnosis and subsequent overtreatment of cellulitis is common: one UK study found that 33% of 635 patients referred to secondary care with cellulitis were incorrectly diagnosed, with other diagnoses mainly being venous eczema, lymphoedema, and lipodermatosclerosis.[5] Conversely, underdiagnosis can also occur, particularly where initial presentation is with flu-like illness rather than red leg.[2]

These 'rules of thumb' may help with diagnosis:[4]

- bilateral red leg is rarely cellulitis, and is much more likely to be a non-infectious condition;
- varicose eczema causes obvious epidermal changes, which helps distinguish it from cellulitis; and
- a leg raise test may be useful: with the patient horizontal, the leg is raised to 45° for 1 to 2 minutes. Cellulitis erythema persists, but usually disappears with other, such as vascular, conditions.

SHORTER COURSES OF ANTIBIOTICS?

Cellulitis is usually treated with a 1-week course of antibiotics (usually high-dose flucloxacillin for 7 days, depending on severity, comorbidity, or site of infection).[6] But many cases appear not to resolve after 1 week and patients receive repeated courses of antibiotics.[7] This may be unnecessary as persisting erythema can be due to inflammation, rather than active infection, but there is little evidence to guide treatment duration.[8]

ORAL OR INTRAVENOUS ANTIBIOTICS?

Similarly, there is little evidence to guide the route of administration, although oral treatments appear at least as good as intravenous.[8] Despite this, National Institute for Health and Care Excellence Clinical Knowledge Summary guidelines suggest that patients with cellulitis who are systemically unwell or who have a comorbidity such as diabetes, obesity, peripheral vascular disease, or chronic venous insufficiency should be referred for either admission or intravenous antibiotics, according to local guidelines.[6] This advice seems to be based on opinion rather than evidence, and patients with comorbidities are commonly managed in primary care unless they are systemically unwell.

PREVENTION OF RECURRENT CELLULITIS WITH PROPHYLACTIC ANTIBIOTICS

Approximately one-third of people with

Box 1. Resources for patients

These websites provide helpful advice, and also suggest preventive strategies:

- NHS Choices (https://www.nhs.uk/conditions/cellulitis/)
  Concise and well-organised information with supporting pictures, including advice to seek urgent medical help for cellulitis. (The suggestion to phone 999 may lead to inappropriate contacts.)
- British Association of Dermatologists (http://www.bad.org.uk)
  Provides useful detailed information but the need to seek urgent medical help is less strongly emphasised.
- 'Patient' (Patient Platform Limited) (https://patient.info/health/cellulitis-and-erysipelas-leaflet)
  Has links to sponsored sites, which may distract users and raise doubts about bias.

cellulitis suffer recurrent episodes and the only proven strategy for preventing this is long-term, low-dose oral penicillin.[9] However, there is little evidence to inform optimal duration of prophylactic treatment, although it appears that antibiotic use may need to continue indefinitely to prevent further recurrence for people with recurrent disease.[9]

PREVENTION OF RECURRENT CELLULITIS WITH NON-ANTIBIOTIC STRATEGIES

In one UK study, 28% of 425 patients with confirmed cellulitis had a concurrent skin disease, commonly eczema or fungal foot disease, which could be treated to reduce risk of recurrence of cellulitis.[5] More research is needed to find effective strategies for prevention, although emollients, or active treatment of fungal foot disease, for conditions known to cause breaks in the skin barrier are likely to be effective. For people with lymphoedema, strategies such as compression hosiery or exercise may be effective.

Most people with cellulitis are unaware that they are at increased risk of recurrence from their cellulitis yet are keen for further information (information available from the authors on request). So, despite the uncertainties, health professionals need to advise patients about skin care and preventive strategies.[2]

Useful resources available for patients are shown in Box 1.

MORE RESEARCH IS NEEDED TO INFORM CELLULITIS MANAGEMENT

Clinicians and people with cellulitis need more research about optimal management of cellulitis and prevention of recurrence. This has been formalised in a recent James Lind Alliance priority-setting partnership in which patients and professionals established the top 10 research priorities for cellulitis.[10] These include:

- What are the best diagnostic criteria for cellulitis?
- Are there tests or tools that can help diagnose and manage cellulitis?
- Do a higher initial dose and/or longer course of antibiotics or intravenous antibiotics aid recovery and prevent recurrence?
- Does rest/elevation compared with exercise/movement of the affected limb aid recovery or prevent recurrence?
- What is the role of compression garments/bandages in treatment and prevention?
- What are the most effective non-antibiotic interventions for the prevention of cellulitis?

SUMMARY

Although evidence gaps remain, there are strong suggestions that consideration of prevention and management of coexisting skin conditions, and provision of good-quality patient information, could all help in more effectively managing and preventing cellulitis.

Provenance

Freely submitted; externally peer reviewed.

Competing interests

The authors have declared no competing interests.

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