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Guidelines on the Management of Cellulitis in Lymphoedema

BRITISH LYMPHOLOGY SOCIETY

LSN THE LYMPHOEDEMA SUPPORT NETWORK
because lymphoedema matters

Working together for those with Lymphoedema

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Originally developed in 2005 by a consensus of experts, it is reviewed annually. The recommendations in this edition are the result of a major revision by members of the British Lymphology Society who are clinical experts in lymphoedema, in collaboration with a microbiology consultant, and with the support of the Lymphoedema Support Network.

This guidance is specifically for health care professionals, however, the LSN produce information about cellulitis aimed at those living with lymphoedema. These can be obtained through the LSN via **www.lymphoedema.org** or Tel: 020 7351 0990.

GUIDELINES ON THE MANAGEMENT OF CELLULITIS IN LYMPHOEDEMA

What is cellulitis?

Cellulitis is an acute spreading infection of the skin and subcutaneous tissues characterised by pain, warmth, swelling and erythema. Cellulitis is sometimes called erysipelas or lymphangitis. It is a common complication of lymphoedema with one study of its prevalence in those attending a specialist lymphoedema centre reporting that 37.6% had experienced at least one episode and 23.3% having had recurrent cellulitis (Vignes et al, 2022). However, in lymphoedema, attacks are variable in presentation and may differ from cellulitis occurring in other clinical situations. Most episodes are believed to be caused by group A streptococci (Cox 2009). However, microbiologists, for example, Chira and Miller (2010), consider Staphylococcus aureus to be the cause in some patients.

Some episodes are accompanied by severe systemic upset, with high fever, rigors and even sepsis; others are milder, with minimal or no fever. Increased swelling of the affected area may occur. Inflammatory markers (CRP, ESR) may be raised. Cellulitis can be difficult to diagnose and to distinguish from other causes of inflammation particularly in the legs e.g. lipodermatosclerosis (See The **BLS Lower Limb Inflammatory Pathway**).

Cellulitis most commonly affects one leg only whereas lipodermatosclerosis more commonly affects both legs.

Although cellulitis in lymphoedema is most common in the limbs, it can occur in other areas of lymphoedema e.g. genital. Treatment may need to be different depending on the site of lymphoedema. The treatment of anogenital cellulitis is addressed in these guidelines. Facial cellulitis could be managed as per the limb cellulitis guidelines unless there is concern about orbital/periorbital involvement at which point referral to hospital for specialist ophthalmology/ENT review is recommended.

A Cochrane review and subsequent partial update concluded that it was not possible to define the best treatment for cellulitis in general based upon existing evidence (Kilburn et al, 2010; Brindle et al, 2019). Furthermore, the appropriate treatment of cellulitis in lymphoedema may differ from cellulitis in other clinical situations.

With this background, this guideline makes recommendations about the use of antibiotics for cellulitis in patients with lymphoedema and advises when admission to hospital is indicated. Prompt treatment is essential to reduce the risk of worsening symptoms and the development of life-threatening conditions such as sepsis and to avoid further damage to the lymphatics of the affected part, which in turn may predispose to repeated attacks.

Who is this guidance for?

This guidance is mainly intended to support primary health care professionals but should also be of value to those working in specialist lymphoedema services. It has been produced by a consensus group (membership listed on page 11) with an annual literature review for new evidence.

What is different in this edition?

The choice of antibiotics to treat and reduce the risk of cellulitis has changed to take into account the WHO AWaRe guidance on antibiotic stewardship (WHO AWaRe 2023). Macrolides are included in the “watch” category and therefore have been moved from the first line alternative to penicillin and been replaced by doxycycline (in “access” category).

1. ACUTE ATTACK OF CELLULITIS

1.1. A decision whether hospital admission is indicated should be based on the level of systemic upset i.e.:

- signs of sepsis (hypotension, tachycardia, severe pyrexia, delirium, tachypnoea or vomiting) are an absolute indication for admission
- continuing or deteriorating systemic signs, with or without deteriorating local signs, after 48hrs of antibiotic treatment
- unresolving or deteriorating local signs, with or without systemic signs, despite trials of first and second line antibiotics

1.2. MANAGEMENT AT HOME

1.2.1. It is essential that the patient's response to treatment is monitored, and the patient should seek further medical attention by the GP, at a walk-in centre or out of hours service if not responding within 48 hours. To establish a baseline to monitor progress, record:

- extent and severity of rash – if possible, mark and date the edge of the erythema (may be difficult in lymphoedema as the rash is often blotchy)
- level of systemic upset
- CRP/ESR/white cell count – these may be helpful in diagnosis and monitoring of treatment
- microbiology of any cuts or breaks in the skin – this should be considered before antibiotics are started

1.2.2. Oral flucloxacillin 500mg – 1g 6-hourly is recommended as the treatment of choice (NICE 2019). (**NB** Current microbiology guidance favours the use of the upper dose (EUCAST, 2025) but gastrointestinal side effects may be more pronounced with this dose and 1g 6-hourly is an 'off-label' dosing schedule).

Although the likely causative organisms of cellulitis in lymphoedema are beta-haemolytic streptococci, microbiologists suggest the use of single agent flucloxacillin for all cellulitis, as this covers both streptococcal and staphylococcal infections. However, from clinical experience, amoxicillin (500mg 8-hourly) can be an effective alternative, e.g. in those who develop side effects with flucloxacillin.

NB Unusual circumstances, e.g. animal bite or lick preceding an attack should be discussed with a local microbiologist. For those with anogenital cellulitis see 1.2.5.

1.2.3. Patients who are allergic to penicillin should be prescribed doxycycline 100mg 12-hourly (see also Section 4).

If allergic to penicillin and unable to have doxycycline then clarithromycin 500mg 12hrly is recommended.

Neither doxycycline nor clarithromycin should be used in pregnancy. Erythromycin (500mg 6-hourly) is preferred if an antibiotic is needed in pregnancy, for example, if there is true penicillin allergy and the benefits of antibiotic treatment outweigh the harms (NICE 2019).

1.2.4. If there is no response or a poor response (unresolving systemic symptoms or worsening inflammation) to oral flucloxacillin (or amoxicillin/doxycycline) after 48 hours, then clindamycin 300mg 6-hourly should be substituted as second line oral treatment. If signs or symptoms deteriorate despite oral flucloxacillin (at any time) consider hospital admission/ IV antibiotics (see 1.1).

1.2.5. Anogenital cellulitis: For those with cellulitis associated with lymphoedema of the anogenital region, flucloxacillin or amoxicillin should be used as first line treatment as the causative organism may be streptococcal. If penicillin allergic, doxycycline should be used (see 1.2.3 -1.2.4).

If not responding to this, then the causative organism may not be streptococcal and co-amoxiclav 625mg 8hrly is recommended. For those allergic to penicillin, co-trimoxazole 960mg 12 hourly and metronidazole 400mg 8 hourly in combination should be used.

If these are unsuccessful, advice from microbiology/local lymphoedema service should be sought.

1.2.6. *Clostridium difficile* infection is a rare but serious complication of treatment with a variety of antibiotics. If this occurs while on antibiotic treatment, then those antibiotics should be stopped **immediately**, and alternatives considered.

1.2.7. Antibiotics should be given for **14 days**. Experience in lymphoedema clinics suggests a significant rate of early recurrence of cellulitis with shorter courses, implying incomplete resolution of the infection. Local community / hospital or NICE guidance may recommend 5 – 7 days of treatment but these may not be specifically aimed at treating cellulitis in lymphoedema.

If recurrence/deterioration occurs soon after completion of a 14-day course, advice should be sought from local microbiology/ specialist lymphoedema service. Longer courses are occasionally needed.

Skin changes e.g. discolouration/ staining may persist for months or longer following severe cellulitis and do not require ongoing antibiotics.

1.2.8. Patients report that rest and elevation are important to help resolve the symptoms of cellulitis.

If wearing the usual compression garment causes pain, then it should be removed but replaced as soon as the affected area is comfortable enough to tolerate it. This should reduce the risk of worsening of the swelling if the garment is left off for a prolonged period e.g. one week. The fit of the compression garment may need to be checked as the area may become more swollen after an episode of cellulitis.

1.2.9. The recommended analgesia is paracetamol. Ibuprofen is an alternative (**NB** It has been suggested previously that non-steroidal anti-inflammatory drugs (NSAIDs) taken at the time of cellulitis may increase the risk of necrotising fasciitis, but a causative link has not been proven. One small RCT (n=48) has demonstrated no benefit of the addition of ibuprofen to IV antibiotics in accelerating the resolution of cellulitis, but no patients developed necrotising fasciitis in this study (Davis et al, 2017).

1.2.10. When the patient is feeling better, a return to normal levels of activity is encouraged.

1.3. PATIENTS ALLERGIC TO PENICILLIN

1.3.1. Because penicillin antibiotics are valuable in the treatment of acute cellulitis, and phenoxymethyl penicillin is known to be effective and safe in prophylaxis against recurrent cellulitis (Dalal et al, 2017), it is important to check the nature of any "penicillin allergy" to confirm it is a true allergy e.g. anaphylaxis/ widespread rash. If penicillin allergy testing and desensitisation is available locally then this should be considered.

1.3.2. Patients who have experienced an anaphylactic reaction to penicillin should not be given antibiotics from the cephalosporin family e.g. cefuroxime, cefotaxime, ceftazidime and cefalexin.

1.4. MANAGEMENT IN HOSPITAL

1.4.1. Choice of antibiotics in hospital is usually made according to local guidelines. Hospital guidelines commonly recommend single agent IV flucloxacillin 2g 6hly, as this is felt to cover both Staph. and Strep. infections (Leman and Mukherjee 2005). Local hospital guidelines will also recommend alternative IV antibiotics for patients allergic to penicillin.

1.4.2. It is still important that those with lymphoedema have a total of at least 2 weeks of antibiotics (IV followed by oral) to treat an acute episode of cellulitis.

1.5. ANTIBIOTICS "IN CASE" ("RESCUE PACK")

1.5.1. The risk of further attacks of cellulitis in lymphoedema is high. It is recommended that patients who have had an attack of cellulitis should carry a two-week supply of a previously effective antibiotic with them particularly when away from home for any length of time, e.g. on holiday (see 1.2.2 – 1.2.4 and 1.3).

1.5.2. Antibiotics should be started **immediately** when familiar symptoms of cellulitis develop but a medical opinion should be sought as soon as possible, to confirm the diagnosis and response to treatment.

1.5.3. Those being treated by specialist lymphoedema services, especially those taking antibiotic prophylaxis, are recommended to inform their service when they have needed to use the "in case" course, so that appropriate review can be planned.

2. PREVENTING OR REDUCING THE FREQUENCY OF EPISODES OF CELLULITIS

2.1. There is evidence that Decongestive Lymphoedema Therapy (DLT) reduces the frequency of attacks (Ko et al, 1998), and that compression reduces the risk of recurrence (Webb et al, 2020). Control of the swelling is therefore important.

Patients undergoing intensive DLT who are known to have suffered cellulitis in the past during intensive DLT may benefit from antibiotic cover in case cellulitis is provoked. This is an uncommon occurrence but, in this group, it is suggested that a therapeutic course of antibiotics is considered for the duration of the intensive treatment.

2.2. Other risk factors for recurrent cellulitis including cracked and / or macerated inter-digital skin, dermatitis, open wounds including leg ulcers, and weeping lymphangiectasia (leaking lymph blisters on the skin surface) should be treated.

Skin care including the use of emollients as part of routine maintenance DLT is recommended to optimise the skin's natural barrier function.

Treatment of inter-digital fungus should be with application of terbinafine cream daily for two weeks. This may be followed by maintenance treatment, providing the skin is unbroken, with alcohol wipes daily.

For more information, see the LSN fact sheet 'Skin Care For People with Lymphoedema'.

2.3. There is evidence that specialist lymphoedema surgery in combination with optimised conservative treatment in carefully selected patients may reduce the frequency of cellulitis (e.g. see Sharkey, 2017).

2.4. There is also evidence that obesity (BMI>30) is a risk factor for the development of cellulitis (Burian et al, 2021) and recurrent episodes. Obesity is known to reduce lymph drainage. We, therefore, recommend weight management in addition to the treatment of oedema in those who are obese.

3. PROPHYLACTIC ANTIBIOTICS

3.1. It is recommended that the decision to commence antibiotic prophylaxis and the duration of use is made in conjunction with the local specialist lymphoedema service (or microbiology if there is no local lymphoedema service).

3.2. In all patients with a history of cellulitis, the risk factors listed in section 2 should be addressed.

3.3. In addition, antibiotic prophylaxis should be considered in patients who have had two or more attacks of cellulitis per year. The following should be taken into account in this decision:

- Were the episodes all bacterial cellulitis?
- Could they have been due to conditions such as acute venous hypertension/ lipodermatosclerosis, which are not bacterial in origin and should be managed with compression etc (see The **BLS Lower Limb Inflammatory Pathway**)
- Were the episodes bacterial cellulitis which were incompletely treated e.g. by multiple short (5-7days) courses of antibiotics? In this situation the symptoms of cellulitis may resolve in a few days but recur after 2-3 weeks. This may reflect an incompletely treated single episode of cellulitis which should be treated with a longer course of antibiotics (at least 2 weeks) and counted as one episode
- Was there a clear, easily reversible cause e.g. athlete's foot/other skin problem? If so, treating this may reduce the risk of further cellulitis and remove the need for antibiotic prophylaxis

3.4. If antibiotic prophylaxis is indicated, phenoxymethylpenicillin 250mg 12-hourly (500mg 12-hourly if BMI ≥ 33, refer to end of document for guide) should be the first choice (Dalal et al, 2017).

For those allergic to penicillin, doxycycline 100mg daily is recommended (see also 1.2.3, 1.3 and section 4). Photo protection (in the form of suncream and sun protective clothing) is recommended for patients taking doxycycline due to an increased tendency to photosensitivity.

If allergic and intolerant of doxycycline clarithromycin 250mg daily is recommended.

3.5. It is recommended that patients requiring antibiotic prophylaxis for anogenital cellulitis should receive phenoxymethylpenicillin (or alternative as above if penicillin allergic) but if this is not effective, trimethoprim 100mg daily taken at night should be used instead.

3.6. Following one year of successful prophylaxis, discontinuation should be considered, particularly if the risk factors described in section 2 have been successfully addressed.

However, if there are ongoing significant risk factors, continuing prophylaxis for a further year should be considered. If there have been no further episodes of cellulitis during this period, antibiotic prophylaxis should be stopped.

Prophylaxis may need to be life-long if relapse occurs after prophylactic antibiotics have been discontinued and there are persistent risk factors. However, ongoing regular review (at least annually, ideally by local specialist lymphoedema services) is still recommended for those on long term prophylaxis. Discontinuation again should be considered if risk factors have improved at any stage.

3.7. It may not be possible to fully prevent further episodes of cellulitis even with prophylactic antibiotics. However, there may be a reduction in the frequency of cellulitis and/or the severity of episodes.

If the response to first line prophylactic antibiotics is inadequate, then alternative strategies including trials of other prophylactic antibiotics e.g. cefalexin 125mg daily or clindamycin 150mg daily may need to be considered. In these circumstances, review by local specialist lymphoedema services and advice from microbiologists is recommended.

There is a need to balance the use of certain antibiotics (e.g. clindamycin, cefalexin) as prophylaxis against the risks of predisposing to *Clostridium difficile* infections and promoting antibiotic resistance. If at any stage with prophylactic antibiotics *Clostridium difficile* occurs, then those antibiotics should be stopped **immediately**.

3.8. It is usual practice to discontinue antibiotic prophylaxis while antibiotics are taken to treat acute cellulitis.

3.9. Patients undergoing surgical procedures such as knee replacement or carpal tunnel surgery in the lymphoedematous region should receive a therapeutic course of antibiotics commenced before surgery (oral or IV as appropriate) as described previously (see points 1.2.2 or 1.2.3) or as indicated by the procedure. This would also include surgery to treat lymphoedema, such as lymphaticovenular anastomosis or lymphoedema liposuction. The antibiotics should begin just before surgery and are usually continued for five to seven days after surgery.

Summary

Type of operation	Previous history	Recommendation
Minor skin surgery	No cellulitis	No antibiotics
	One attack of cellulitis	Single dose of antibiotics
	Recurrent cellulitis	Treatment course of antibiotics
More invasive surgery	No cellulitis	Treatment course of antibiotics
	One attack of cellulitis	Treatment course of antibiotics
	Recurrent cellulitis	Treatment course of antibiotics

3.10. The risk of cellulitis after minor skin surgery e.g. mole removal is believed to be small. For minor skin procedures in people who have previously had cellulitis a single prophylactic dose of antibiotics may be considered by the operating surgeon.

3.11 There is current national/international evidence of no observed resistance to penicillin when prescribed for the treatment of group A streptococci (EUCAST, 2025). The same is not the case for other antibiotics which may be considered for prophylaxis, described above. This may affect the choice of antibiotic and the need for detailed assessment of possible penicillin allergy (see 1.3.1).

4. DRUG INTERACTIONS

4.1. It is recommended that the **prescriber checks individual drug interactions** particularly when prescribing macrolides e.g. clarithromycin and erythromycin. The interaction between macrolides and statins is well recognised and this combination should be avoided.

5. RECOMMENDATIONS FOR THE TREATMENT OF CELLULITIS IN CHILDREN WITH LYMPHOEDEMA

5.1. As in adults, cellulitis in children may present with local symptoms of pain, discomfort, redness or swelling with or without general ill health and malaise. The family or the child may have recognised a pattern in their symptoms which is associated cellulitis developing. It is important to treat early and recognise that those children who present with systemic symptoms of infection or have deteriorating local signs should be seen in hospital and treated with intravenous antibiotics.

5.2. The management of cellulitis in children with lymphoedema should follow the previous sections (1-4) with reference to appropriate documents (e.g. BNFc, NICE 2019) to determine the required antibiotic dose(s). Doxycycline is not recommended in children under 8 years of age. Discussion with local microbiology is recommended if penicillin cannot be used.

SUMMARY OF ANTIBIOTICS FOR THE TREATMENT OF CELLULITIS IN PEOPLE WITH LYMPHOEDEMA

This table summarises the antibiotics recommended in the text. Reference to the relevant sections indicated in each column is important to ensure safe and effective prescribing.

Situation	**Acute cellulitis (treated at home/ oral antibiotics)**	**Anogenital cellulitis associated with anogenital lymphoedema**	**Emergency supply of antibiotics 'in case'/"rescue pack" 14 day supply**	**Prophylaxis to prevent recurrent cellulitis** **For anogenital cellulitis see footnote ****
First-line antibiotics (14 day course, some people may need longer)	Flucloxacillin 500mg – 1g* 6 hourly If flucloxacillin not tolerated, amoxicillin 500mg 8 hourly	Flucloxacillin 500mg – 1g* 6 hourly If flucloxacillin not tolerated, amoxicillin 500mg 8 hourly	Flucloxacillin 500mg – 1g* 6 hourly If flucloxacillin not tolerated, amoxicillin 500mg 8 hourly	Phenoxymethyl-penicillin 250mg twice daily (500mg twice daily if BMI ≥ 33)
If allergic to penicillin (14 day course, some people may need longer)	Doxycycline 100mg 12 hourly. Not to be used in pregnancy	Doxycycline 100mg 12 hourly. Not to be used in pregnancy	Doxycycline 100mg 12 hourly. Not to be used in pregnancy	Doxycycline 100mg once daily. Not to be used in pregnancy
If allergic to penicillin and intolerant of doxycyline (14 day course, some people may need longer)	Clarithromycin 500mg 12 hourly (Erythromycin 500mg 6 hourly in pregnancy)	Clarithromycin 500mg 12 hourly (Erythromycin 500mg 6 hourly in pregnancy)	Clarithromycin 500mg 12 hourly (Erythromycin 500mg 6 hourly in pregnancy)	Clarithromycin 250 mg daily (Erythromycin 250mg 12 hourly in pregnancy)
Second-line antibiotics (if failed to respond to first line antibiotics within 48 hours)	Clindamycin 300mg 6 hourly	Co-amoxiclav 625mg 8 hourly. If allergic to penicillin, co-trimoxazole 960mg 12 hourly AND metronidazole 400mg 8 hourly		Discuss with local specialist lymphoedema service/microbiology (see text 3.6)
Refer to section(s) in document	1.2.2 1.2.3 1.2.4	1.2.5	1.5.1 1.5.2 1.5.3	3.1 - 3.11

***** *the oral dose of 1g flucloxacillin is off-label*

Footnote ** *It is recommended that patients requiring antibiotic prophylaxis for anogenital cellulitis should receive phenoxymethylpenicillin (or alternative as above if penicillin allergic) but if this is not effective, trimethoprim 100mg daily taken at night should be used instead.*

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CONSENSUS PANEL:

The consensus panel is made up of a core group, listed below, plus representatives from the Lymphoedema Support Network (LSN) and British Lymphology Society (BLS). The members include physicians, surgeons and nurses with an interest in lymphology.

- Dr Vaughan Keeley, Consultant Physician in Lymphovascular Medicine, University Hospitals of Derby and Burton NHS Foundation Trust, Derby (Chair), BLS Patron, LSN Chief Medical Advisor
- Professor Peter S. Mortimer, Consultant Dermatologist, St George's University Hospital, London, BLS Patron
- Professor Kristiana Gordon, Consultant in Lymphovascular Medicine/Dermatology, St George's University Hospital, London, BLS Patron, LSN Advisory Team
- Dr Andrew Hughes, Consultant in Palliative Medicine, St Oswald's Hospice, Newcastle, LSN Advisory Team
- Anita Wallace MBE, Former LSN Chair
- Karen Friett, LSN Chief Executive
- Denise Hardy, LSN Nurse Advisor
- Dr Katie Riches, Advanced Practitioner, University Hospitals of Derby and Burton NHS Foundation Trust, Derby, BLS Trustee
- Paula Lawrence, National Lymphoedema Community Educator Lead in Wales/ Lymphoedema Clinical Nurse Manager, Betsi Cadwaladr University Health Board
- Dr Bernard Ho, Locum Consultant Dermatologist, St George's University Hospital, London, BLS Medical Advisor
- Dr Julian Pearce, Consultant Dermatologist, St George's University Hospital, London
- Dr Anusha Panthagani, Consultant in Lymphovascular Medicine/Consultant Dermatologist, University Hospitals of Derby and Burton, LSN Advisory Team

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- Dr Peter Slovak, Consultant Microbiologist, University Hospitals of Derby and Burton NHS Foundation Trust, Derby for his expert advice

BMI approximate calculations (to be used if unable to obtain height and weight)

- At 5 foot 2 inches (1.58m) an individual would have a BMI of >33 if they weighed more than 12 stone 13lbs (82kg).
- At 5 foot 4 inches (1.62m) an individual would have a BMI of >33 if they weighed more than 13 stone 8lbs (86kg).
- At 5 foot 7 inches (1.7m) an individual would have a BMI of >33 if they weighed more than 15 stone (95kg).
- At 5 foot 10 inches (1.78m) an individual would have a BMI of >33 if they weighed more than 16 stone 10lbs (106kg).
- At 6 foot 1 inches (1.86m) an individual would have a BMI of >33 if they weighed more than 17 stone 13lbs (114kg).

About Lymphoedema

Lymphoedema occurs when the lymphatic drainage system fails; chronic oedema is indicative of failure of lymphatic drainage. Both of these terms are used interchangeably to emphasise the need to manage both the initial cause of the chronic oedema and the lymphatic failure concurrently.

About the British Lymphology Society (BLS)

The BLS is a registered charity. By actively promoting professional standards, the study, understanding and treatment of lymphoedema, we strive to reduce the prevalence, severity and impact of lymphoedema and for equitable access to treatment.

www.thebls.com

About the Lymphoedema Support Network

The LSN is the leading patient charity in the UK offering information and support to those living with or affected by lymphoedema. It provides gold standard information in a variety of formats, online and telephone support, active social media presence, as well as working with others to promote equity of care for all people and increased research. The LSN believes that Lymphoedema Matters.

www.lymphoedema.org