Management of Cellulitis in Adults in Primary Care

Cellulitis: An acute, spreading, pyogenic inflammatory infection of the lower dermis and subcutaneous tissues.

Presentation of Symptoms of Cellulitis

- **Minimum Diagnostic Criteria:** Redness, Warmth, Pain +/- Oedema +/- Dysfunction.
- Acute onset, usually affects one limb, largely unilateral, with smooth, indistinct borders.
- Fever, malaise, nausea, shivering, and rigours may accompany or precede skin changes.
- In severe cases blisters, ulcers, lymphangitis, and spreading lymphoedema may occur. Systemic features including fever, hypotension, and tachycardia may be present.

Factors Suggestive of Cellulitis over Other Diagnoses: Trauma and pain in the affected area, rapid progression, immunosuppression, previous Cellulitis episodes, systemic symptoms (e.g. fever), new travel or outdoor exposure, and predisposing co-morbidities e.g. obesity and peripheral vascular disease.

Factors Suggestive of Alternative Diagnoses:

- A symmetric or diffusely scattered pattern indicates an alternative condition.
- A chronic, slowly progressive course and a history of unsuccessful treatment with usually effective antibiotics are strong indicators of conditions other than Cellulitis.

Physical Examination	Note the extent/location of erythema, oedema, warmth, and tenderness so that progression/resolution with treatment can be monitored. Draw around the affected areas with an indelible felt tip pen if available or biro. Assess for the following
Crepitus	Gas forming infections suggestive of anaerobic infections/ necrotising fasciitis.
Fluctuance	Indicates fluid and a possible abscess needing incision and drainage
Necrosis	Occurs with insect bites or group B Streptococcal infections
Purpura	Occurs in sepsis and disseminated intravascular dissemination, (especially with Streptococcal infection)
Bullae	Occurs in impetigo caused by Staphylococci or Cellulitis caused by *Vibrio vulnificus* or *Streptococcus pneumoniae*
Lymphangitis	Inflammation of the lymphatic vessels. A physical exam, which includes feeling the lymph nodes and looking for signs of injury around swollen lymph nodes. *Symptoms include: Chills, Enlarged and tender lymph nodes (glands) - usually in the elbow, armpit, or groin, Fever, General ill feeling (malaise), Headache, Loss of appetite, Muscle aches, Red streaks from the infected area to the armpit or groin (may be faint or obvious), Throbbing pain along the affected* area. Indicates severe infection – refer urgently.
Infection Depth	Superficial infections e.g. Erysipelas, Impetigo, Folliculitis, Foruncles, and Carbuncles are located in at the epidermal layer. Cellulitis reaches into the dermis. Deeper infections cross the subcutaneous tissue and become fasciitis.
Microbiological Examination	• Antibiotics must be started empirically **before** microbiology results come back. • Only take swabs if patient has open cellulitis wounds skin breach or blister fluids or is a high-risk patient.

General Management of Cellulitis in Primary Care

- Use Paracetamol first-line for management of pain or fever.
- Drink fluids to prevent dehydration.
- Elevate the leg for comfort and to relieve leg oedema.
- Use non-compression support bandages only. Compression stockings should **not** be used.
- Adhesive dressings should not be applied to infected lesions

Management of Patients with Cellulitis and Abscesses

Cellulitis associated with an abscess requires surgical drainage to remove the infection source, and to ensure optimal antibiotic penetration.

Management of Cellulitis in Previous or Current MRSA Positive Patients/ In Butchers/ Fish Handlers/ Patients Exposed to Unchlorinated Fresh or Salt Water/ Animal or Human Bites

- Discuss with the Microbiology department in Milton Keynes General Hospital.
- Please see Empirical Guidelines for advice on the management of dog, cat or human bites

Management of All Other Patients with Confirmed Diagnosis of Cellulitis – Asses Clinical Severity and Treatment Options– Based on Eron Classification and High-Risk Patient Groups.				
Class	**Systemic Illness**	**Co-Morbidities**	**High-Risk Patients** Patients with co-morbidities listed below are high-risk. They should be managed with input from **secondary care.**	**Community or Hospital Management**
I	No signs of systemic toxicity	All co-morbidities stable.	• Peripheral Vascular Disease, • Obesity, • Venous Insufficiency, • Immunodeficiency, • Diabetic Foot, • Peripheral Neuropathy, • Periorbital cellulitis - **urgent referral to ophthalmology team**	Manage in Primary care. All high-risk patients managed with input from secondary care
II	May or may not have systemic illness. **If systemic signs, rapidly deteriorating patients, high-risk disease or patients – urgent hospital admission**	Peripheral vascular disease, obesity, venous insufficiency, immunodeficiency, asplenia, peripheral neuropathy present even if stable. Any unstable co-morbidities present.	• Systemic illness (fever, acute confusion, tachycardia, tachypnea, hypotension). • Co-morbidities that impairs healing. • Severe/rapidly deteriorating Cellulitis • Cellulitis lesions greater than 9% of body surface area. • Diagnosis is uncertain or complex. • Patients <1 years or elderly frail. • Severe lymphoedema. • Cellulitis of the hands. • Periorbital cellulitis – **urgent referral to ophthalmology team.** • Unresolving/deteriorating local signs, with/without systemic signs, despite trials of 1st and 2nd line antibiotics. • Recurrent cellulitis.	Hospital admission – Potentially urgent in high-risk cases.
III	Significant systemic illness – confusion, tachycardia tachypnea hypotension	All patients must be managed in secondary care regardless of co-morbidity.	N/A	Urgent hospital admission by ambulance
IV	Sepsis syndrome; or severe life threatening infection such as Necrotising fasciitis	All patients must be managed in secondary care regardless of co-morbidity.	N/A	Urgent hospital admission by ambulance

Recommended Antibiotic Treatment of Cellulitis Appropriate to Manage in Primary Care			
Clinical Presentation	**First Line Antibiotic Therapy**	**Second Line Antibiotic Therapy**	**Antibiotic Therapy in Penicillin Allergic Patients**
Typical Cellulitis	Flucloxacillin 500mg QDS for 7 days. If slow response a further 7 days.	Clarithromycin 500mg BD for 7 days. If slow response a further 7 days.	Clarithromycin 500mg BD for 7 days. If slow response a further 7 days.
Typical Cellulitis – pus forming	Flucloxacillin 500mg QDS for 7 days. If slow response a further 7 days.	Clarithromycin 500mg BD for 7 days. If slow response a further 7 days.	Clarithromycin 500mg BD for 7 days. If slow response a further 7 days.
Facial Cellulitis	Co-Amoxiclav 625mg TDS for 7 days. If slow response a further 7 days.	Clindamycin 300mg-450mg QDS for 7 days. If slow response a further 7 days*	Clarithromycin 500mg BD for 7 days. If slow response a further 7 days.
**** Stop if diarrhoea occurs and consider alternative antibiotics.***			

Poor Responders after 48 Hours in Primary Care

If there is poor response (unresolving inflammation, spreading cellulitis, infection progression etc.) after 48 hours – assess if patient would benefit from being managed in secondary care. If safe then initiate 2nd line antibiotics.

Non-Responders in Primary Care

There may be an increase in erythema in the first 24-48 hours possibly due to toxin release. Further clinical deterioration should prompt consultation with Tissue Viability, Dermatology and /or Microbiology.
TVN Tel 01908 554582 Fax 01908 232303, Dermatology 01908 500092, Microbiology 01908 243106

Potential Alternative Diagnoses- List is not Exhaustive	
Condition	**Factors that Differentiate Cellulitis from Condition**
Gouty Arthritis	Disease is typically monoarticular and predominantly affects the lower extremity, usually the first metatarsophalangeal joint or knee. Diagnosed by presence of urate crystals in aspirates of joint fluid.
Lipodermatoslcerosis	Chronic disease, the legs are non-tender, skin will be bound-down, and leg diameter will sharply decrease from knee to ankle.
Contact Dermatitis	Confined to areas where allergen contacted the skin, except with airborne allergens
Deep Vein Thrombosis (DVT)	Unilateral leg oedema, warmth, erythema, fever. Tenderness along involved veins & engorgement of superficial veins helps diagnosis of cellulitis
Hypersensitivity or Adverse Reaction	Exposure to allergen/drug/dressing; pruritus; absence of fever or pain. Healing is usually associated with residual hyperpigmentation.
Lymphoedema	Mostly unilateral and non-pitting, often in obese people. Ask if recent lymph node dissection or an injury in affected leg?
Necrotising fasciitis/Gangrene	Severe pain; swelling; rapid progression; systemic signs (hypotension, tachycardia, fever); skin crepitus; erythema; bullae; ulcers; necrosis; ecchymosis, greyish/discoloured wound drainage. Pain extends past margin of infection and is disproportionate to physical findings. Refer these patients to secondary care urgently by ambulance.
Papular urticaria	Papules/plaques very pruritic but not painful. Biopsy may be needed, though the history may be sufficient. Ask patient about any recent bites, recent activities e.g. outdoor sports, contact with pets etc.
Pyoderma gangrenosum	Ulceration of the legs; history of inflammatory bowel disease
Stasis Dermatitis (Varicose Eczema)	Chronic disease, generally bilateral with crusting, scaling, and pruritus. Often pitting oedema and an absence of pain or fever.
Lower Leg Venous Oedema.	Palpable swelling caused by an increase in interstitial fluid volume. Caused by venous insufficiency and heart failure.
Carcinoma Erysipelatoides	An inflammatory carcinoma. Cancer cells invade the cutaneous lymph vessels. Absence of fever and leucocytosis indicates disease is NOT cellulitis

Management of Cellulitis in Lymphoedema Only
Treatment of Cellulitis in Lymphoedema may differ from conventional Cellulitis.

- **Microbiology:** Common pathogens include Group A Streptococci and Staphylococcus aureus.
- **Symptoms:** Some episodes are accompanied by severe systemic upset, with high fever and rigors; others are milder, with minimal or no fever. Increased swelling of the affected area may occur. Prompt treatment is essential to avoid further damage to lymphatics.
- **Risk Stratification:** The risk stratification of Cellulitis in Lymphoedema is as above.
- **General Management:** Bed rest and elevation of the affected limb is essential. Avoid compression garments during the acute attack.
- **Antibiotic Management:** Amoxicillin 500mg TDS is treatment of choice unless Staph aureus is suspected e.g. folliculitis, pus formation, or crusting, in this setting use Flucloxacillin 500mg QDS.
- **Second Line Antibiotics:** If there is no or poor response (unresolving inflammation or disease progression) after 48 hours, assess if patient still safe to manage in primary care. If safe, start clindamycin 300mg 6-hourly
- **Penicillin Allergic Patients:** Use Erythromycin 500mg 6-hourly or Clarithromycin 500mg 12-hourly.
- **Duration of Antibiotic Therapy:** Continue until all signs of acute inflammation have resolved, (may be 1-2 months, the course must not be less than 14 days after the first clinical response is observed. Skin changes e.g. discolouration / staining may persist for months following severe cellulitis but do not necessarily require ongoing antibiotics.)
- **Re-occurrence of Cellulitis in Lymphoedema:** Risk of reoccurrence is high. Patients with regular re-occurrence of cellulitis due to worsening Lymphoedema should carry a 2-week supply of antibiotics.
    - **First-Line:** Amoxicillin 500mg tds
    - **First-Line in Penicillin Allergy:** Clarithromycin 500mg bd.
    - Antibiotics should be started **immediately** familiar symptoms of cellulitis develop but a medical opinion should be sought as soon as possible.
- **Reducing Re-occurrence of Cellulitis in Lymphoedema:** Decongestive lymphatic therapy (DLT) reduces the frequency. DLT can cause a re-occurrence of Cellulitis. If this has happened in the past during DLT of reoccurrence of Cellulitis - patients may benefit from antibiotic cover to reduce the risk.
- Patients who have not experienced previous episodes of Cellulitis during DLT therapy do not need any antibiotic cover.
- For patients on long-term prophylactic antibiotics for the prevention of Cellulitis - therapeutic course of antibiotics should be prescribed for the duration of the DLT treatment.
- Patients undergoing surgical procedures on the lymphoedematous region should receive pre-procedure therapeutic course of antibiotics commenced before surgery as indicated by the procedure.

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