Cellulitis
Diagnosis and Management in the Community
Evidence Based Guidelines

N.B. Staff should be discouraged from printing this document. This is to avoid the risk of out of date printed versions of the document. The Intranet should be referred to for the current version of the document.

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Contents

1. Executive Summary

Cellulitis in adults is a common medical condition that currently takes up a large number of occupied bed days in acute hospitals. It represents an important healthcare issue with substantial resource and financial implications for the National Health Service (Pheonix et al 2012). In the past it has been standard practice to hospitalise patients with a diagnosis of **class ll** cellulitis. The development of intermediate care services and Community Resource Teams (CRT) has provided the opportunity to treat patients diagnosed with **class ll** cellulitis safely and effectively within the community setting therefore preventing unnecessary admission.

These guidelines have been developed to:

- To ensure patients with cellulitis receive best practice in the treatment and appropriate monitoring of their condition
- To provide a systematic classification of patients with cellulitis
- To identify patients who are suitable for IV antibiotic therapy in the community
- Identify risk factors for recurrent cellulitis and address appropriately

2. Aims

The aim of these guidelines is to provide guidance, for safe and effective practice, to clinicians, ANP's and registered nurses (RN) on the diagnosis and treatment of Class l and Class ll cellulitis in the community.

3. Responsibilities

All healthcare professionals are responsible for their own actions and must exercise their own clinical judgement at all times.

Any decision to vary from the agreed ABHB procedures and guidelines should be documented in the patients notes and care plan including the reason for variance and subsequent action taken.

All healthcare professionals have responsibility to ensure they the necessary training and competencies to implement this guideline.

4. Scope of policy

Guidelines have been produced in order to support the clinician and the Advanced Nurse Practitioner (ANP) to identify, assess, treat and follow up class l and class ll cellulitis safely and effectively in the community. Class III and IV cellulitis patients require admission.

5. Definition of terms

Erysipelas and cellulitis are both due to infection of the skin. Erysipelas is a superficial infection of the skin, while cellulitis extends deeper into the tissues (British Association of Dermatologists 2012).

The Clinical Resource Efficiency Support Team (CREST 2005) defines cellulitis as

" *a spreading bacterial infection of the dermis and subcutaneous tissues"*

Eron (2000) devised the following classification of skin and soft tissue infections to aid diagnosis, treatment and admission decisions:

Class I: Patients have no signs of systemic toxicity, have no uncontrolled co-morbidities and can usually be managed with oral antimicrobials.

Class II: Patients are either systemically ill or systemically well but with a co-morbidity such as peripheral vascular disease, chronic venous insufficiency or morbid obesity, which may complicate or delay resolution of their infection.

Class III: Patients may have a significant systemic upset such as acute confusion, tachycardia, tachypnoea and hypotension or may have unstable co-morbidities that may interfere with a response to therapy or have a limb threatening infection due to vascular compromise.

Class IV: Patients have sepsis syndrome or severe life threatening infection such as necrotising fasciitis (NF)

(Presenting signs of NF are often non-specific and may resemble celllulitis. It is a rapidly progressive and destructive soft tissue infection that involves the subcutaneous tissue and fascia – leading to skin necrosis)

For lymphodema patients please refer to CREST (2008) guidelines for the diagnosis, assessment and management of lymphodema.

6. Diagnosis

A clinical assessment of the patient is required to establish diagnosis and severity based on local and systemic signs, history and investigations to enable correct classification.

A diagnosis and classification of cellulitis must be made and documented in the patients records by the appropriate medical/nursing practitioner e.g. GP, Community Advanced Nurse Practitioner. Assessment must include the following:

6.1 Clinical History:

- Previous episodes
- Duration of present episode
- Symptoms of fever
- Itching
- History of local lesions, insect bites, indwelling device, IV drug abuse, injury
- History of other predisposing factors e.g. diabetes, lymphodema, immunosuppression
- Social and domestic circumstances
- Pain Score using visual analogue scale (VAS)
- Identify and address predisposing risk factors

6.2 Clinical Examination:

- Outline visual margin of cellulites with indelible marker to allow subsequent clinical assessment of progress.
- Baseline observations
- Peripheral pulse palpation
- Wells Score
- Signs of Sepsis (Severe pyrexia, tachycardia, hypotension, confusion, tachypnoea, vomiting)
- Please see Appendix 1.

6.3 Local Clinical Presentation:

- Unilateral or bilateral (please note bilateral cellulitis is very uncommon (CREST 2005).
- Eczematous or cellulitic or both
- Assess erythema (extent and heat)
- Evidence of deep vein thrombosis
- Lymphangitis, tender regional lymphadenopathy

6.4 Predisposing causes:

- Lymphoedema, ulcer, lypodermatosclerosis, varicose veins
- Toe web scaling suggestive of candida or tinea
- Injury including insect bites
- Indwelling device
- Incontinence
- Sleeping in chair

6.5 Complicating clinical conditions:

- Underlying malignancy
- Cardiac failure
- MRSA
- Liver or renal failure
- Diabetes
- Immunodeficiency
- Peripheral vascular disease
- Lymphoedema

6.6 Laboratory Investigations (CKS 2012, Crest 2005):

- Swab for causal organisms if skin integrity is broken
- Urinalysis
- CRP
- FBC
- LFT
- U&E
- Glucose

Although non-specific, nearly all patients have a raised white cell count and elevated ESR or CRP. Normal results make a diagnosis of cellulitis less likely (CREST 2005).

6.7 Differential Diagnosis:

- Varicous eczema/infected/wet eczema
- DVT
- Acute liposclerosis
- Unilateral/bilateral lower limb oedema with secondary blistering
- Lymphoedema
- Chronic lower limb venous insufficiency
- Vasculitis
- Necrotising fascitis

7. INCLUSION CRITERIA FOR IV THERAPY IN THE COMMUNITY

Patient presenting with:

- Clinical signs of cellulitis diagnosed as Class ll as per ERON`S Classification (see Appendix ll)
- 18 years or older
- Having capacity to give consent and to understand and adhere to the treatment plan.
- Has access to a telephone at home in case of emergency.
- Is safe to remain at home with input from family/carers as needed.

8. EXCLUSION CRITERIA FOR IV THERAPY IN THE COMMUNITY

- Patients presenting with Class lll and IV.
- Unstable co-morbidities that may interfere with a response to IV therapy.
- Limb threatening infection due to vascular compromise.
- Facial / peri-orbital cellulites.
- Known IV drug users: Risk assessment to be completed prior to referral being accepted.
- PREGANACY
- Unstable diabetes requiring a sliding scale of insulin.
- Immunocromprimised patients
- Unable to mobilise/carry out activities of daily living with or without support.
- Lymphangitis

9. CRITERIA FOR ADMISSION TO HOSPITAL

- Increase in severity of cellulites i.e. rise to ERON`S classlll / lV
- Extension of cellulitis beyond marked areas.
- Clinical signs of developing septicaemia
- Signs of rapid deterioration/necrosis
- Lack of appropriate response to treatment

10. MANAGEMENT

- Ensure patient meets criteria for home treatment of cellulitis.
- Consent to be obtained as per ABHB policy
- Lead clinician must be clearly identified
- Clear evidence of assessment, diagnosis and Eron (2000) classification of cellulitis is essential.
- Evidence that differential diagnosis has been considered
- Risk of repeated episodes of cellulitis are considered in order reduce risk of reoccurrence.
- Ensure the appropriate investigations are undertaken and acted upon appropriately.
- A clear patient care plan is put in place, which includes patient care information. Ensure adequate analgesia is prescribed.
- Management of pyrexia
- Consideration of hydration
- Consideration of appropriate skin care
- Cellulitis indicator charts are completed daily.
- Treatment to be evaluated as per patient response to treatment. This should include variances from care plan.
- Ensure appropriate long-term management plan is in place to effectively manage lower limb oedema e.g. suitable compression following appropriate vascular assessment.
- Ensure relevant ABHB polices are adhered to throughout patient journey.
- Complete audit / Variance

11. Treatment

Class I

Not previously treated with antibiotics for the same complaint:

- Prescribe oral antibiotics as per guidelines, extended course usually required (CREST 2005).
- Give patient information leaflet on Cellulitis

Aneurin Bevean Health Board recommended antibiotic regime for treatment of class1 cellulitis in the community

oral dose	**Flucloxacillin PO 500mg – 1g four times a day.**		**<u>Penicillin allergy</u>** **Clarithromycin PO 500mg bd**

Class II

Aneurin Bevean Health Board recommended antibiotic regime for treatment of class 2 cellulitis in the community

Adults or elderly patients with normal renal function.

	Treatment	**Duration**	**Penicillin allergy**
IV	**One single IV injection of 400mg Teicoplanin* on first day then 200mg Teicoplanin daily.**	**For 3 – 4 days**	**N/A**
Step down oral dose – See ABHB oral switch policy	**Flucloxacillin PO 500mg – 1g four times a day.**	**For 7 – 14 days**	**Clarithromycin PO 500mg bd**

* Dose is determined by weight (85kgs + requires higher dose see SPC)
* Adults and patients with renal insufficiency dosage is determined by creatinine clearance

12. Criteria for antibiotic step down:

- Less intense erythema
- Falling inflammatory markers (CRP should be checked where clinical improvement is not conclusive).
- Reduction in pain
- Pyrexia settling
- Co-morbidities stable

Please refer to ABHB antibiotic switch policy.

Relevant ABHB policies:

- IV Medicines administration
- Adult Antibiotic Intravenous to Oral Switch (IVOS) Policy
- Antibiotic Automatic Stop date policy
- Diagnosis and Management of Deep venous Thrombosis
- Consent policy

13. References

British Association of Dermatologists: Cellulitis and Erysipelas www.bad.org.uk Last Accessed 9/01/13

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Clinical Efficiency Support Team 2005 *Guidelines on the Management of Cellulitis* in Adults Central Medical Advisory Committee Belfast

Clinical Resource Efficiency Support Team 2008 *Guidelines for the diagnosis, assessment and management of Lymphodema.* Medical Advisory Committee Belfast

Eron L J (2000) Infections of the skin and soft tissues: Outcome of a classification scheme. ***Clinical infectious Disease*** 31, 2, 87

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This policy has undergone an equality impact assessment screening process using the toolkit designed by the NHS Centre Equality & Human Rights. Details of the screening process for this policy are available from the policy owner.

Appendix 1

Clinical Examination Guide

- Bilateral/Unilateral
- Evidence of DVT
- Lymphangitis, tender regional lymphadenopathy
- Establish margin of cellulitis with indelible marker
- Eczematous or cellulitic or both
- Record skin temperature and erythema
- Pitting/non pitting oedema
- Haemosidrin staining
- Athletes foot
- Record blood pressure, pulse, temp, resps
- Signs of septicaemia (severe pyrexia, tachycardia, hypotension, confusion, tachyponea, vomiting).
- Measure both legs around widest part of calf, compare measurements
- Record Wells score
- Record pain score

Differential diagnosis and Working diagnosis

- Consider:
- Venous and lymphatic disorders:
- Oedema and venous insufficiency
- DVT and thrombophlebitis
- Vasculitis
- Varicose eczema
- Peripheral Vascular disease
- Compartment syndrome (urgent referral required)
- Eczema
- Urticaria
- Rheumatalogical disorders
- Necrotising fasciitis

Investigations:

U+E, FBC, CRP, random Glucose, LFT, wound swab if exudate present, urinalysis

Management/Treatment Plan

- Establish patient meets inclusion criteria
- Establish class of cellulitis
- Antibiotic therapy
- Appropriate skin management
- Analgesia
- Consider nutrition and hydration requirements
- Risk assessments
- Daily assessment to monitor response

Appendix 2 Patient Information Sheet

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 both due to infection of the skin. Erysipelas is a superficial infection of the skin, while cellulitis extends deeper into the tissues. It is often difficult to tell how deep an infection is, so the treatment of cellulitis and erysipelas is the same. These infections can develop quickly and need to be treated with antibiotics as soon as possible; therefore, if you have a recurrence you should seek medical advice as quickly as possible.

What causes cellulitis and erysipelas?

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

Erysipelas is typically caused by bacteria called beta-hemolytic streptococci. Cellulitis is also often caused by streptococci, but many other germs may be involved.

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 site. There are also some conditions which make cellulitis and erysipelas more likely:

- Athlete's foot (fungal infection of the skin between the toe webs)
- Cuts in the skin, leg ulcers and pressure sores
- Insect bites
- Intravenous drug use
- Swollen limbs due to the veins or lymphatic vessels not working well
- Increased body weight
- Poorly controlled diabetes
- An impaired immune system, e.g. due to illness or immunosuppressive medication

Are cellulitis and erysipelas hereditary?

No.

What are the symptoms of cellulitis and erysipelas?

Symptoms may develop quite quickly. You may feel generally unwell and feverish with a high temperature and shivers. This feeling may start a few hours or a day before the skin changes become visible. The affected patch of skin will become sore, swollen, warm, and red, and blisters may form. The nearest lymphatic glands may become swollen and tender. The area of affected skin may gradually enlarge.

Cellulitis is most common on the lower leg and erysipelas on the legs and face, but any area of skin can be affected.

What do cellulitis and erysipelas look like?

An area of redness develops and enlarges, often slowly with an ill-defined edge in cellulitis, and more suddenly with a sharp edge in erysipelas, where the affected skin can feel tense due to swelling. With time, blisters may develop, which can be filled with fluid or blood. As the blister top comes off, a raw area of skin can be seen. In severe cases, areas of skin may turn purple or black.

How will cellulitis and erysipelas be diagnosed?

Cellulitis and erysipelas are diagnosed by the typical appearance and symptoms. A skin swab or blood tests may be taken to try to identify the bacteria in the laboratory; however bacteria identification is not always possible.

Are cellulitis and erysipelas serious?

The severity of cellulitis and erysipelas can range from mild to severe. This will depend on how large the red area is, which part of the body is affected (e.g. erysipelas of the face is more serious) and if there are any aggravating health problems (see above). These skin infections can also lead to complications:

- Septicemia (bacteria spreading through the blood, making the person ill)
- Abscess (a collection of pus in the affected area)
- Infection spreading to deeper tissues, like the muscle or bone
- Long-term swelling of the affected site due to lymphatic vessel damage
- Predisposition to further episodes of cellulitis or erysipelas at the same site

Can cellulitis and erysipelas be cured?

Yes, provided that treatment is given early. The treatment aims to prevent the complications listed above.

What is the treatment for cellulitis and erysipelas?

An oral antibiotic must be given as early as possible, and continued for about 14 days. If not improving higher doses and longer courses may be required. More severe cellulitis and erysipelas may need to be treated with antibiotic injections or infusions in hospital.

As long as the affected area is red, swollen and hot, it should be rested and raised. In cellulitis or erysipelas of the leg, the foot should ideally be rested higher than the hip to allow gravity to reduce the swelling.

It is important that underlying breaks in the skin, for example due to athletes foot or eczema, are treated to prevent repeated episodes of cellulitis. Your doctor may prescribe topical medication for this. Any leg swelling after the skin infection has settled should ideally be treated with compression stockings until the swelling has gone.

If there are repeated episodes of cellulitis or erysipelas, the doctor may suggest long-term antibiotic treatment to try to prevent the skin infection.

Self Care (What can I do?)

- See your doctor as early as possible if you think you are getting another attack of erysipelas or cellulitis. If the attacks become frequent, it may be worth asking your doctor to give you an extra prescription for an antibiotic, which you can keep at home and take as soon as you notice any of the warning symptoms.
- You should follow advice about skin care to reduce breaks in the skin.
- Support stocking, leg elevation and weight loss can help any remaining swelling of your legs.

Where can I get more information about cellulitis?

http://emedicine.medscape.com/article/781412-overview
http://www.dermnet.org.nz/bacterial/cellulitis.html

Where can I get more information about erysipelas?
www.emedicine.com/emerg/topic172.htm (includes photographs)
www.dermnetnz.org/dna.strept/erys.html (includes photographs)
This leaflet aims to provide accurate information about the subject and is a consensus of the views held by representatives of the British Association of Dermatologists: its contents, however, may occasionally differ from the advice given to you by your doctor.

This leaflet has been assessed for readability by the British Association of Dermatologists' Patient Information Lay Review Panel

Appendix 3

Cellulitis Audit Form

Age:
Gender:
Source of referral;
Is this a reoccurrence of cellulits
Is it the same site/limb
Diagnosis on referral
Comprehensive assessment documented
Evidence of management plan
Differential diagnosis recorded by CRT
Classification of cellulitis identified by CRT
Has patient received appropriate antibiotic therapy? **Please state antibiotic prescribed**
Duration of treatment:
Outcome of treatment:
Did patient require admission? If so why.
Total number of visits by CRT
Other Information

Date
Signature

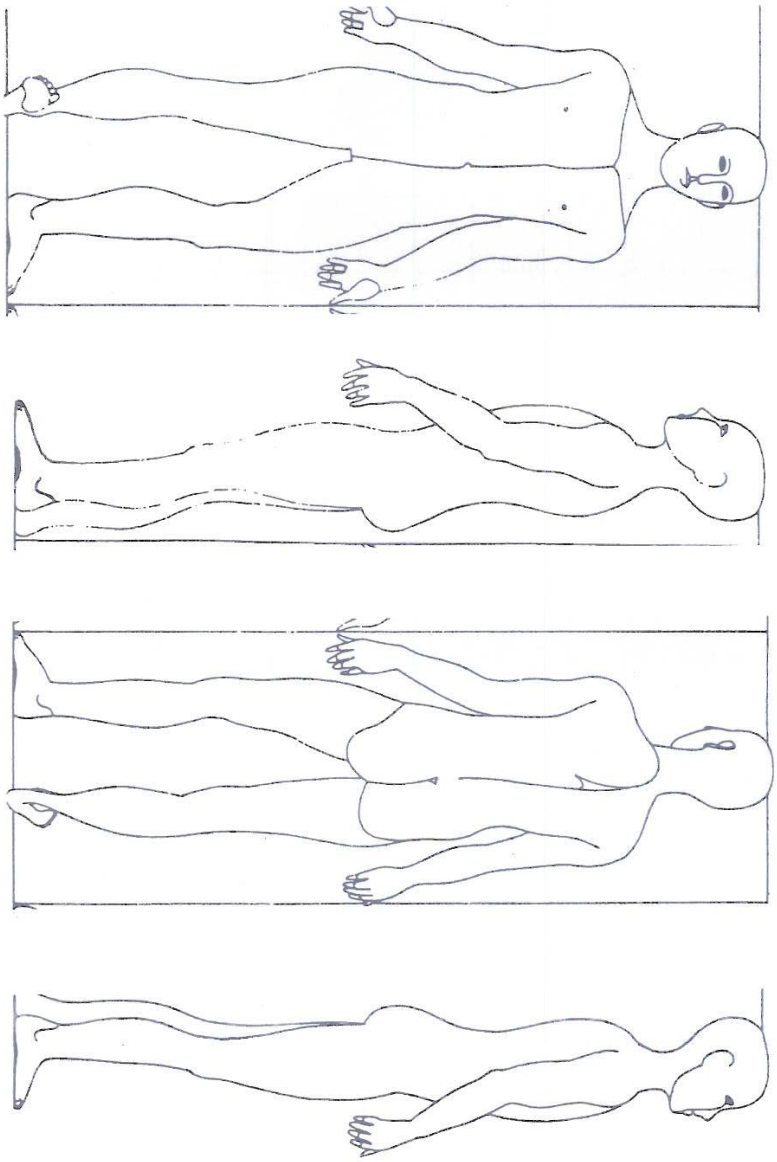
Primary Care Cellulitis Pathway

Cellulitis Chart

Name:- ..... **Date of Birth:-** .....

Oral or IV medication:- .....

Date														
Visit No														
Temperature														
Blood Pressure														
Pulse														
BM														
Vomiting?														
Swab of area taken?														
Pain (ie, on movement, at rest)														
Hot to touch?														
Colour of cellulitis														
Spread outside of marked area or reduced in size														
Weight bearing?														
Signature														



Primary Care Cellulitis Pathway

Community Resource Team

Cellulitis Discharge Summary

Patient Name: DOB:	GP
Address:	
Completed by Contact Number:	Date

Date of referral	
Examination and diagnosis	
Treatment	
Future management required	
Other	