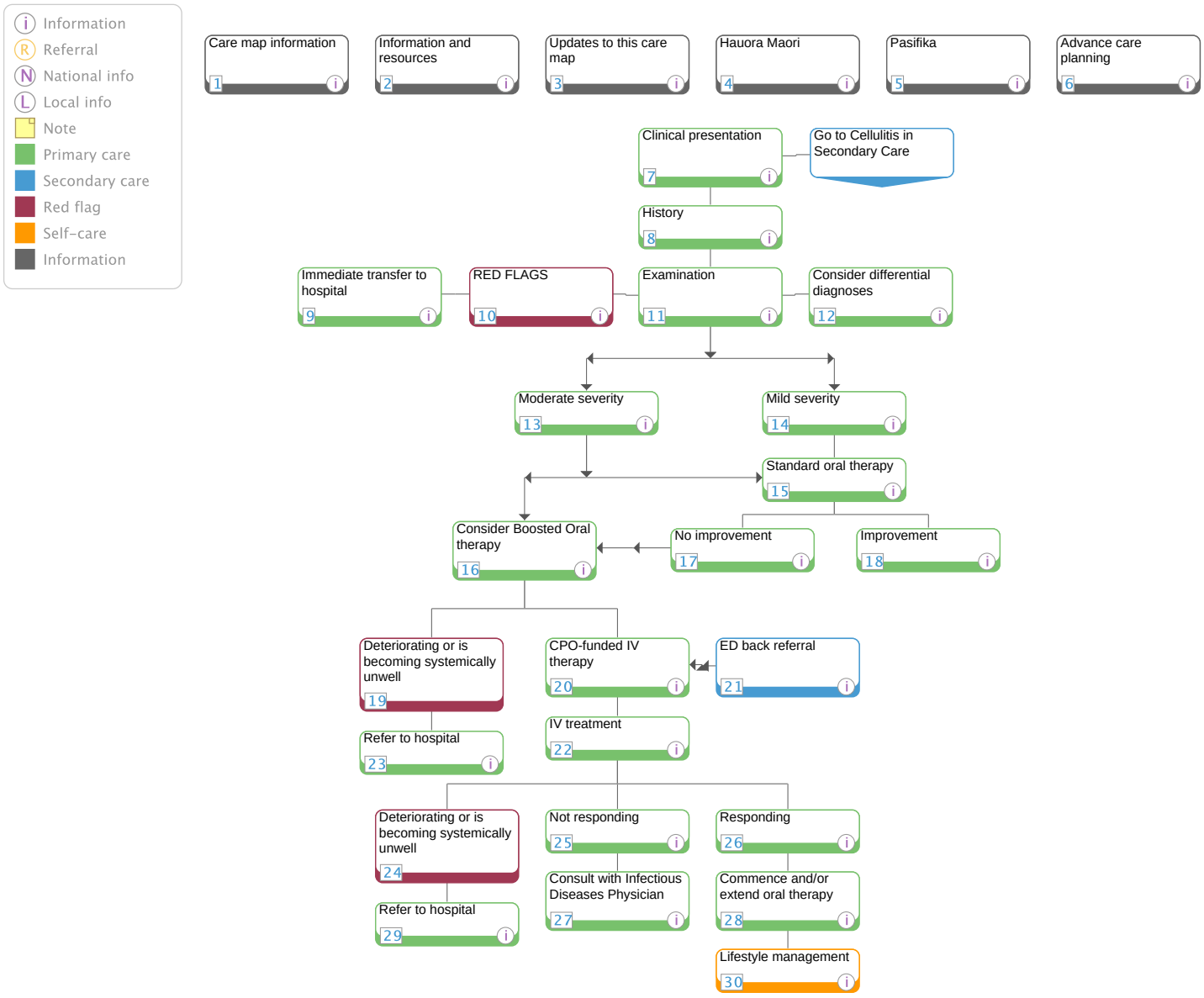
Cellulitis in Adults

Medicine > Infectious diseases > Cellulitis



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Cellulitis in Adults

1 Care map information

Quick info:

In Scope:

- covers the diagnosis and management of:
  - bacterial cellulitis
  - erysipelas in primary care
- adults 15 years of age and over

Out of Scope:

- management of bacterial cellulitis and erysipelas in secondary care
- diabetic foot infections - refer to diabetic foot pathway penetrating wounds
- bites
- post-operative surgical wounds
- abscesses
- children under 15 years of age

Definition:

- cellulitis is an acute bacterial infection of the dermis and subcutaneous tissue [1]:
  - Erysipelas is a form of cellulitis caused by streptococcal infection of the dermis, with:
    - marked superficial inflammation
    - typically affecting the face or extremeties with a sharply demarcated, raised edge
  - the lower limbs are the most common sites affected by cellulitis [2] and erysipelas, but other areas can be affected
    - i.e. the ears, trunk, fingers, and toes

Aetiology:

- cellulitis around wound infections is commonly caused by:
  - *Staphylococcus aureus*
  - ß-haemolytic streptococci
  - bacteroides species
  - anaerobic cocci
  - most common infective organisms in adults are *Staphylococcus aureus* and Streptococci (especially *Staphylococcus pyogenes* [2])
  - cellulitis due to *Streptococcus pneumoniae* may also occur in patients with underlying conditions such as alcoholism, Diabetes Mellitus, intravenous drug abuse, or Systemic Lupus Erythematosus

Risk factors:

- lymphoedema
- leg ulcer
- venous eczema
- insect bite
- Tinea Interdigitale
- traumatic wounds
- damage to local venous or lymphatic drainage systems, which can bring about recurrent cellulitis
- obesity
- immunosuppression
- Tinea Pedis (athlete's foot)
- previous episodes
- leg oedema
- Diabetes Mellitus (DM)
- intravenous (IV) drug use

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- alcoholism

References:

[1] BPAC NZ, *Cellulitis: skin deep and spreading across New Zealand*, Best Practice Journal, Issue 68, June 2015
[2] Clinical Resource Efficiency Support Team (CREST), *Guidelines on the Management of Cellulitis in Adults*, Belfast, 2005

2 Information and resources

Quick info:

Resources for patients and carers:

- Cellulitis: What to Expect
- Cellulitis IV Treatment handout

3 Updates to this care map

Quick info:

Date of publication: September 2016
Reviewed and republished: December 2017
Date of next review: December 2019

This care map has been developed in line with consideration to evidenced based guidelines. For further information on contributors and references please see the Pathway's Provenance Certificate.
NB: This information appears on each page of this care map.

4 Hauora Maori

Quick info:

Maori are a diverse people and whilst there is no single Maori identity, it is vital practitioners offer culturally appropriate care when working with Maori whanau. It is important for practitioners to have a baseline understanding of the issues surrounding Maori health. This knowledge can be actualised by (not in any order of priority):

- considering the importance of introductions ('whanungatanga') - a process that enables the exchange of information to support interaction and meaningful connections between individuals and groups. This means taking a little time to ask where this person is from or to where they have significant connections
- asking Maori people if they would like their whanau or significant others to be involved in assessment and treatment
- asking Maori people about any particular cultural beliefs they or their whanau have that might impact on assessment and treatment of the particular health issues

Maori health services

HBDHB contracts Maori health providers to deliver community based nursing and social support services. A referral to one of these providers may assist Maori people to feel more comfortable about receiving these services.

Central Hawke's Bay:

Central Health
Cnr Herbert & Ruataniwha Streets, Waipukurau
Phone: 06 858 9559 Fax: 06 858 9229
Email: reception@centralhealth.co.nz
Referral Form

Hastings:

Te Taiwhenua o Heretaunga
821 Orchard Road, Hastings 4156

Phone: 06 871 5350 Fax: 06 871 535
Email: taiwhenua.heretaunga@ttoh.iwi.nz
Referral Form

Kahungunu Health Services (Choices)
500 Maraekakaho Road, Hastings
Phone: 06 878 7616
Email: kahungunu@paradise.net.nz
Referral Form

Napier:
Te Kupenga Hauora
5 Sale Street, Napier
Phone: 06 835 1840
Email: info@tkh.org.nz
Referral Form

Wairoa:
Kahungunu Executive (no website)
65 Queen Street, Wairoa 4108
Phone: 06 838 6835 Fax: 06 838 7290
Email: kahu-exec@xtra.co.nz

Secondary care Maori Health Services:
Hawke's Bay DHB - Te Wahanga Hauora Maori Health Services
Phone: 06 878 8109 ext. 5779, 06 878 1654 or 0800 333 671 Email: admin.maorihealth@hawkesbaydhb.govt.nz

Further Information
Practitioners should be versed in the knowledge of:

- historical overview of legislation that impacted on Maori well-being
- Maori models of health, such as Te Whare Tapa Wha and Te Wheke when working with Maori whanau
- national Maori Health Strategies:
  - Mai Maori Health Strategy 2014-2019 - Full file or Summary diagram
  - He Korowai Oranga: Maori Health Strategy - sets the Government's overarching framework to achieving the best health outcomes for Maori
- local Hawke's Bay health sector's strategies and initiatives for improving Maori health and wellbeing

Cultural Competency Training
Training is available through the Hawke's Bay DHB to assist you to better understand Maori culture and to better engage with Maori people. Contact the coordinator
Email: education@hbdhb.govt.nz to request details of the next courses.

5 Pasifika

Quick info:

Pacific people value their culture, language, families, education and their health and wellbeing. Many Pacific families have a religious affiliation to a local church group.
The Pacific people are a diverse and dynamic population:

- more than 22 nations represented in New Zealand
- each with their own unique culture, language, history, and health status
- share many similarities which we have shared with you in order to help you work with Pacific people more effectively

- for many families language, cost and access to care are barriers

Pacific ethnic groups in Hawke's Bay include Samoa, Cook Islands, Fiji, Tonga, Niue, Tokelau, Kiribati and Tuvalu. Samoan and Cook Island groups are the largest and make up two thirds of the total Pacific population. There is a growing trend of inter-ethnic relationships and New Zealand born Pacific populations.

Acknowledge The FonaFale Model (Pacific model of health) when working with Pacific people and families.

General guidelines when working with Pacific people and families (information developed by Central PHO, Manawatu):

- Cultural protocols and greetings
- Building relationships with your Pacific people
- Involving family support and religion during assessments and in the hospital
- Home visits

Hawke's Bay-based resources:

- HBDHB interpreting service website **or** phone 06 8788 109 ext.. 5805 (no charge for the hospital; charges may apply for community-based translations) **or** contact coordinator at interpreting@hbdhb.govt.nz
- Pacific Navigation Services Ltd
  Phone: 027 971 9199
- services to assist Pacific people to access healthcare (SIA)
- Improving the Health of Pacific People in Hawke's Bay - Pacific Health action Plan

Ministry of Health resources:

- Ala Mo'ui Pathways to Pacific Health and wellbeing 2014-2018
- Primary Care for Pacific people: a Pacific and health systems approach
- Health education resources in Pacific languages (links to a web page where you can download resources)

6 Advance care planning

Quick info:

Advance Care Planning:

Advance Care Planning is a voluntary process of discussion and shared planning for future health care. It involves the person who is preparing the plan, and usually involves family/whanau and health care professionals.

Advance Care Plan:

An Advance Care Plan is the outcome of Advance Care Planning. It is formulated by the person and sets out their views about care towards the end of their life. It may also include views about medical care and a wide range of other matters. An Advance Care Plan may include an Advance Directive.

Advance Directive:

An Advance Directive is a statement a person makes about their medical care in the future and becomes effective if a person ceases to be competent to make decisions for themselves. An Advance Directive is legally binding if made in appropriate circumstances.

Competency and Advance Care Planning:

Competent people have the right to make autonomous decisions that as medical professionals we may regard as imprudent, and sometimes such decisions are a reflection of the person's longstanding personality, beliefs or lifestyle. This right is described in the Health and Disability Consumers Rights Acts.

According to ACP - A Guide for the NZ Health Care Workforce - "in the context of ACP, competency relates to an individual's ability to make a decision regarding their own health care (that is, competence at decision-making or decision-capacity). At a minimum, decision making capacity requires the ability to understand and communicate, to reason and deliberate, and the possession of a set of values".

Helpful websites:

- The code of rights
- Advance care planning guide Ministry of Health
- Advance care planning resources

7 Clinical presentation

Quick info:

Symptoms and signs:

- acute onset:
  - affected area of skin is red, hot, painful, tender, and swollen
  - inflammation is initially localised but may spread
  - cellulitis usually affects one limb
  - blisters or bullae may develop over infected area
  - red streaks leading from area of infection may indicate lymphangitis
- sepsis is suggested by systemic symptoms:
  - malaise
  - fever
  - nausea
  - rigors
  - sweats

NB: if clinical signs are bilateral, consider alternative diagnoses, as bilateral cellulitis is rare [2].

If person has presented at emergency department of hospital, follow "Cellulitis in Secondary Care" pathway.

References:

[2] Clinical Resource Efficiency Support Team (CREST), *Guidelines on the Management of Cellulitis in Adults*, Belfast, 2005

8 History

Quick info:

History:

- previous infection in same area
- period of skin discomfort prior to onset of erythema
- speed of progression
- period of systemic symptoms:
  - malaise
  - fever
  - nausea
  - shivering
  - rigors
- any skin trauma, ulcers or bites
- assess for co-morbidities:
  - previous episodes
  - recent surgery to affected area
  - chronic venous insufficiency
  - oedema and lymphoedema
  - lymphatic or vascular surgery
  - obesity
  - Diabetes Mellitus (DM)
  - immunosuppression
  - intravenous (IV) drug use
  - skin breakdown, especially venous leg ulcers
  - pain out of context with the clinical impression of infection may be an indication of necrotising fasciitis
- ask if other family members have similar problems

9 Immediate transfer to hospital

Quick info:

Fax referral to emergency department and transfer person immediately to hospital. If there is special information to be conveyed, contact triage nurse via switchboard 06 8788109 extn 2623.

On discharge, see CPO Hospital Discharge Pathway

10 RED FLAGS

Quick info:

Contact triage nurse via switchboard 06 8788109 extn 2623 and immediately transfer to ED:

- significant systemic upset:
  - acute confusion
  - tachycardia
  - tachypnoea
  - hypotension
  - cold sepsis
  - hypothermia (blunted immune response in the elderly)
- or unstable co-morbidities
- or limb-threatening infection due to vascular compromise
- sepsis syndrome (SIRS criteria)
- or severe life-threatening infection such as necrotising fasciitis

Consider urgent referral/consultation for admission to hospital for the following:

- compartment syndrome
- post operative surgical wounds
- severe systemic illness, e.g. fever, or nausea, and vomiting
- co-morbidity that may complicate or delay healing
  - e.g. peripheral vascular disease, chronic venous insufficiency, morbid obesity, immunosuppression, intravenous drug use
- periorbital infection
- patients with suspected necrotising fasciitis
- cellulitis that has spread from an adjacent structure (e.g. osteomyelitis) or through the blood (bacteraemia) is a serious concern

Generalised signs of necrotising fasciitis or myonecrosis can be indistinguishable from cellulitis, but are strongly suggested by:

- dusky purple or black discolouration
- tense oedema
- cutaneous numbness
- skin necrosis with or without crepitus
- pain - out of proportion to clinical signs

11 Examination

Quick info:

When examining the affected area, consider the following:

- look for signs of systemic toxicity:
  - pyrexia
  - tachycardia
  - tachypnoea
  - hypotension or organ hypoperfusion, e.g. new confusion

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- examine infected area, looking particularly for:
  - extent of inflammation
  - erythema and oedema
  - raised skin temperature
  - blue or purple discolouration
  - sloughing
  - blistering
  - necrosis
  - rapid progression (if previously examined):
- look for focal point of infection
- disproportionately high or low levels of pain relative to physical findings may be an indication of necrotising fasciitis
- palpate regional lymph nodes
- assess for overlying sensation and check distal pulses - alteration in these may indicate necrotising fasciitis or compartment syndrome
- an abscess if present and is suitable for surgical drainage
  - this should be performed or referred for this to be performed at the hospital

NB: if clinical signs are bilateral, consider alternative diagnoses, as bilateral cellulitis is rare.

12 Consider differential diagnoses

Quick info:

Consider the following:

- varicose eczema
- deep vein thrombosis (DVT), refer to Deep Vein Thrombosis care map
- peripheral vascular disease
- panniculitis / vasculitis
- oedema and venous insufficiency

Less common conditions that may present with similar signs and symptoms to cellulitis include:

- necrotising fasciitis (see Red Flags)
- gangrene
- acute gout
- adverse drug reactions
- compartment syndrome
- osteomyelitis or septic arthritis
- stings and bites

13 Moderate severity

Quick info:

For patients with moderate cellulitis, oral therapy should be considered as a first option:

- mild systemic illness (temperature <38, P<90, Systolic BP >100, resp. rate <20)
- or systemically well but with a co-morbidity such as:
  - peripheral vascular disease
  - chronic venous insufficiency
  - morbid obesity
  - poorly controlled diabetes

14 Mild severity

Quick info:

Minor severity:

- no signs of systemic toxicity
- no uncontrolled co-morbidities

These patients are suitable for oral therapy initially and hence would not activate a Coordinated Primary Options (CPO) episode.

Clear education is required about the condition and the use of oral antibiotics medicines to ensure ongoing concordance with medicines:

- Cellulitis: What to Expect

Ensure rest and elevation.

15 Standard oral therapy

Quick info:

Antibiotic Treatment - First Choice:

- Flucloxacillin 500mg - 1g, four times daily, for seven days

OR (if penicillin-related rash)

- Cefalexin 500mg, four times daily, for seven days

Antibiotic Treatment - (if type 1 penicillin allergy):

- Erythromycin ethinyl succinate 800mg bd for seven days, OR
- Roxithromycin 150mg, bd or 300mg daily, for seven days

OR (if MRSA present)

- Co-trimoxazole 160+800mg (two tablets), twice daily, for five - seven days, OR
- Clindamycin 450mg TDS (authorisation from Infectious Disease physician needed)

16 Consider Boosted Oral therapy

Quick info:

Boosted Antibiotic Treatment:

Consider using probenecid in combination with antibiotics.

- Probenecid 500mg three times daily for seven days **WITH** Flucloxacillin 1g, three times daily, for seven days

OR

- Probenecid 500mg three times daily for seven days **WITH** Cefalexin 1g, three times daily, for seven days

17 No improvement

Quick info:

Follow-up is required if no improvement or deterioration after 48-72 hours:

- boosted oral therapy - move to boosted oral therapy in moderate severity

18 Improvement

Quick info:

Remind:

- reinforce need to complete antibiotics
- rest and elevate

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Prevention

Advise the person that prevention of cellulitis includes taking good care of any break in the skin. This can be done by informing the person to:

- use own towel and soap
- make sure that any cuts, grazes or bites are kept clean
- keep good hand hygiene
- maintain healthy diet and proper exercise
- wash the wound daily with soap and water
- keep the wound covered with a plaster or dressing
- ensure plaster or dressing is changed if it becomes wet or dirty
- watch for signs of infection. Redness, pain and drainage all signal possible infection and the need for medical evaluation
- update tetanus status:
  - high risk wounds: animal, human bites and puncture injuries

Diabetic Patients

People with diabetes and those with poor circulation need to take extra precautions to prevent skin injury. Good skin care measures include the following:

- inspect your feet daily. Regularly check your feet for signs of injury so you can catch infections early
- moisturise your skin regularly. Lubricating your skin helps prevent cracking and peeling
- trim your fingernails and toenails carefully. Take care not to injure the surrounding skin
- protect your hands and feet
- wear sturdy, well-fitting shoes or slippers
- avoid walking barefoot in areas, for example, in garages, on a littered beach, or in the woods
- promptly treat infections on the skin's surface (superficial), such as athlete's foot. Superficial skin infections can easily spread from person to person

Preventing recurrent cellulitis

People who experience frequently recurring cellulitis, such as those with lymphoedema, may consider a trial of prophylactic antibiotics (e.g. amoxycillin 500mg bd or doxycycline 100mg od) on a long-term basis. This must be seen as an option of last resort, as long-term antibiotics are not without obvious risks.

20 CPO-funded IV therapy

Quick info:

Suitability for CPO-funded IV management includes:

- Hawke's Bay resident
- pain level under control
- general health especially cognitive capacity is suitable
- social circumstances are supportive of CPO IV therapy
- access to a telephone 24/7
- agrees to home elevation of affected limb (patient handout)

If the person has a history of immediate penicillin hypersensitivity, specialist advice is required. Genuine hypersensitivity will also necessitate discussion with the on-call infectious diseases physician - phone 06 8734812 or 027 7654459 (Mon-Fri 8am-5pm).

Exclusions:

- complex diabetic foot infections
- eGFR <35
- BMI >40 or weight >150kg, discussion with Infectious Diseases physician is encouraged

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- non-Hawke's Bay residents
- type 1 hpersensitivity (immediate) allergy to any β-lactam antibiotic

Note:

- refer to Community IV Therapy Service if patient unable to access practice for IV therapy. Refer through CPO IV Referral in Outbox document
- transport available through Hastings Taxis if patient requires transport to general practice for IV therapy. Provide CPO number to Taxi company

21 ED back referral

Quick info:

See ED back referral for Cellulitis.

22 IV treatment

Quick info:

IV Treatment Guideline under CPO Cellulitis Pathway Continue therapy for three days.

Discontinue oral antibiotics while on IV treatment. Orals should be re-started once IV treatment it completed.

Information regarding IV Therapy Patients:

- Probenecid Infomation Sheet
- Cellulitis IV treatment patient handout

Provider Checklist:

- mark area with washable marker pen
- prescribe analgesia if appropriate
- consider referral in the first instance to an Accident and Medical Centre *if the patient is currently receiving care under Coordinated Primary Options (CPO)* for IV administration over the weekend or after hours (consider timing of doses and adjust accordingly (+/- 2 hours)
- consider referral to District Nursing Service if unable to manage wound or if the patient does not have good access to their general practice (i.e. are immobile, particularly those patients with lower limb cellulitis or those patients that live rurally)
- provide patient with information about cellulitis
- consider taking baseline blood tests (FBC, creatinine) - particularly for elderly and high-risk patients

23 Refer to hospital

Quick info:

Contact triage nurse via switchboard 06 8788109 extn 2623 and immediately transfer to hospital.

On discharge, see CPO Hospital Discharge Pathway

25 Not responding

Quick info:

Consider extending IV therapy for a further three days if not responding. Consider blood tests for FBC and creatinine to help guide management, particularly for elderly or high-risk patients. Do not exceed more than six days without consultation with Infectious Diseases physician.

Consider alternative diagnoses.

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26 Responding

Quick info:

Persistent or progressive redness in the first 24 hours does not indicate failed treatment. Improvement is indicated by:

- wrinkling of the skin
- reduced pain
- decreased swelling

As long as the global clinical picture is of a well patient, prescribe oral antibiotics. Repeat education regarding limb elevation to assist recovery.

27 Consult with Infectious Diseases Physician

Quick info:

Discuss with Infectious Diseases Physician if patient not improving for guidance on future treatment - phone 06 8734812 or 027 7654459 (Mon-Fri 8am-5pm).

28 Commence and/or extend oral therapy

Quick info:

Continue with oral therapy following IV therapy. Either use "Boosted Antibiotic Treatment" or "Antibiotic Treatment - No Probenecid" protocols below.

Boosted Antibiotic Treatment

Consider using probenecid in combination with antibiotics:

- Probenecid 500mg three times daily for seven days WITH Flucloxacillin 1g, three times daily, for seven days

OR

- Probenecid 500mg three times daily for seven days WITH Cefalexin 1g, three times daily, for seven days

Antibiotic Treatment - No Probenecid

- Flucloxacillin 500mg, four times daily, for seven days

OR (if flucloxacillin not tolerated)

- Cefalexin 500mg, four times daily, for seven days

Antibiotic Treatment - Alternatives:

- Roxithromycin 150mg, bd or 300mg daily, for seven days

OR (if MRSA present)

- Co-trimoxazole 160+800mg (two tablets), twice daily, for five - seven days

29 Refer to hospital

Quick info:

Transfer to hospital and contact AAU on-call physician 06 8734812 or 027 7654459 (Mon-Fri 8am-5pm). Out of hours contact triage nurse via switchboard 06 8788109 extn 2623.

On discharge, see CPO Hospital Discharge Pathway

30 Lifestyle management

Quick info:

Prevention

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- use own towel and soap
- make sure that any cuts, grazes or bites are kept clean
- keep good hand hygiene
- maintain healthy diet and proper exercise
- wash the wound daily with soap and water
- keep the wound covered with a plaster or dressing
- ensure plaster or dressing is changed if it becomes wet or dirty
- watch for signs of infection. Redness, pain and drainage all signal possible infection and the need for medical evaluation
- update tetanus status:
  - high risk wounds: animal, human bites and puncture injuries

Diabetic Patients

People with diabetes and those with poor circulation need to take extra precautions to prevent skin injury. Good skin care measures include the following:

- inspect your feet daily. Regularly check your feet for signs of injury so you can catch infections early
- moisturize your skin regularly. Lubricating your skin helps prevent cracking and peeling
- trim your fingernails and toenails carefully. Take care not to injure the surrounding skin
- protect your hands and feet
- wear sturdy, well-fitting shoes or slippers
- avoid walking barefoot in areas, for example, in garages, on a littered beach, or in the woods
- promptly treat infections on the skin's surface (superficial), such as athlete's foot. Superficial skin infections can easily spread from person to person

Preventing recurrent cellulitis

People who experience frequently recurring cellulitis, such as those with lymphoedema, may consider a trial of prophylactic antibiotics (e.g. amoxycillin 500mg bd or doxycycline 100mg od) on a long-term basis. This must be seen as an option of last resort, as long-term antibiotics are not without obvious risks.

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Cellulitis Provenance Certificate – for review and republication

Overview

This document describes the provenance of Hawke's Bay District Health Board's **Cellulitis** Pathway. It was developed March-April 2016 and first published in September 2016. A review of the Pathway was completed in October 2017 and was re-published in December 2017. Further review of this pathway is due in December 2019.

The Collaborative Clinical Pathways programme is one initiative stemming from the *Transform and Sustain* agenda. The main aims of CCP are to:

- → Identify opportunities to improve how health and disability care is planned and delivered within the district to improve patient access to a wider range of health services that are both closer to home and reduce avoidable hospital admissions.
- → Provide health professionals throughout the Hawke's Bay district with best practice, evidence-based clinical pathways that are available at the point of care.

Outcomes we expect to achieve include faster access to definitive care, improved health equity and outcomes, better value from publically-funded resources, and better patient experience through clear expectations, improved access and greater health literacy. These outcomes are clearly aligned to the NZ healthcare *Triple Aim* and *Better, Sooner, More Convenient* policy directions.

Editorial methodology

This Pathway was based on high-quality information and known Best Practice guidelines from New Zealand and around the world including Map of Medicine editorial methodology. It was developed by individuals with front-line clinical experience (see Contributors section of this document) and has undergone consultation to gain feedback and input from the wider clinical community.

Map of Medicine Pathways are constantly updated in response to new evidence. Continuous evidence searching means that Pathways can be updated rapidly in response to any change in the information landscape. Indexed and grey literature is monitored for new evidence, and feedback is collected from users year-round. The information is triaged so that important changes to the information landscape are incorporated into the Pathways through the quarterly publication cycle.

An update to this Pathway is scheduled for 12 months after first publication. However, feedback is welcomed at any time, with important updates added at the earliest opportunity within the Map of Medicine publishing schedule (the third Friday of each month).

References

This Pathway has been developed according to the Map of Medicine editorial methodology. Its content is based on high-quality guidelines and practice-based knowledge provided by contributors with front-line clinical experience. Feedback on this Pathway was received from stakeholders during a consultation process.

1	BPAC NZ, *Cellulitis: skin deep and spreading across New Zealand*, Best Practice Journal, Issue 68, June 2015
2	Clinical Resource Efficiency Support Team (CREST*), Guidelines on the Management of Cellulitis in Adults*, Belfast, 2005

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Disclaimers