Assessment & Management of Cellulitis in the Emergency Department
(Developed at Princess Alexandra Hospital as a collaborative initiative involving Infection Management Services, Internal Medicine, MAPU and Emergency Medicine, March 2012)

**Step 1. Does this patient have cellulitis?**
Important considerations:
- Bilateral cellulitis is rare
- Also consider other alternative diagnoses such as eczema, oedema (with/without blisters), deep/superficial venous thrombosis, chronic venous insufficiency, liposclerosis, vasculitis etc

**Step 2. Classifying this patient’s cellulitis**:

<table>
<thead>
<tr>
<th>Class I:</th>
<th>Class II:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No systemic symptoms/signs AND 2. No significant comorbidity that requires stabilisation or that may complicate resolution of infection AND 3. Within a 48-72 hour window of responding to appropriate oral antibiotic therapy</td>
<td>1. Mild-moderate systemic symptoms/signs OR 2. Otherwise stable comorbidity that may complicate resolution of infection OR 3. Failure of response to 48-72 hours appropriate oral antibiotics</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class III:</th>
<th>Class IV:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Significant systemic symptoms/signs OR 2. Unstable comorbidities (e.g. poorly controlled diabetes, severe peripheral arterial diseases, marked immunosuppression) OR 3. Limb threatening infection</td>
<td>1. Severe systemic signs/symptoms OR 2. Necrotising fasciitis</td>
</tr>
</tbody>
</table>

**Outpatient management with oral antibiotics**
Mark margin of cellulitis with a skin marker

Investigations:
- Swab of exudate (if present)
- Other investigations (as indicated)

Antibiotics:
- IF no immediate-type/severe penicillin hypersensitivity: Dicloxacillin 500 mg orally q6h for 7-10 days
- IF mild penicillin hypersensitivity only: Cephalexin 500 mg orally q6h for 7-10 days
- IF immediate-type/severe beta-lactam hypersensitivity: Clindamycin 450 mg orally q8h for 7-10 days
- For known MRSA colonisation/infection: use Clindamycin (if Clindamycin susceptible, otherwise requires Co-trimoxazole or iv Vancomycin)
- For water or bite-related cellulitis: See Therapeutic Guidelines (Antibiotic) and consult Infectious Diseases

Provide patient information sheet (see page 4), emphasising need for strict limb elevation

Advise patient to follow up with GP within 48-72 hours (with discharge summary).

**Consider for outpatient intravenous antibiotic therapy**
See Step 3, next page

**Inpatient management with iv or oral antibiotics**
Mark margin of cellulitis with a skin marker

Investigations:
- Swab of exudate, blood cultures (if febrile), FBE, CRP, U&E, LFT, others (as indicated)

Treat with regimen appropriate for severity of cellulitis:
- For moderate-severe cellulitis:
  - IF no immediate-type/severe penicillin hypersensitivity: Flucloxacillin 2 g iv q6h
  - IF mild penicillin hypersensitivity only: Cephazolin 2 g iv q8h
  - IF immediate-type/severe penicillin hypersensitivity: Lincomycin 600 mg q6h or Vancomycin 25-30 mg/kg iv load followed by 15 mg/kg iv q12h, adjusted for renal function
- For known MRSA colonised: Use Lincomycin or Vancomycin (as above)
- For necrotising skin/soft tissue infections: See Therapeutic Guidelines (Antibiotic) and consult Infectious Diseases – Needs urgent surgical/orthopaedic consultation for debridement
- For water or bite-related cellulitis: See Therapeutic Guidelines (Antibiotic) and consult Infectious Diseases
- For mild cellulitis: as per Outpatient management with oral antibiotics

Refer patient for admission under General Medicine or Infectious Diseases
Please ensure elevation of affected limb

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Step 3. Assess suitability of patients with Class II cellulitis for outpatient intravenous therapy:

<table>
<thead>
<tr>
<th></th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Is there orbital or facial cellulitis?</td>
<td>☐</td>
</tr>
<tr>
<td>2.</td>
<td>Is there hand involvement?</td>
<td>☐</td>
</tr>
<tr>
<td>3.</td>
<td>Is the cellulitis associated with a diabetic foot ulcer?</td>
<td>☐</td>
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<tr>
<td>4.</td>
<td>Is it associated with exposure to water (e.g. sea, river/creek, lake)?</td>
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<tr>
<td>5.</td>
<td>Is it associated with an animal or human bite?</td>
<td>☐</td>
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<tr>
<td>6.</td>
<td>Is there necrosis or a requirement for surgical debridement?</td>
<td>☐</td>
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<tr>
<td>7.</td>
<td>Is the cellulitis rapidly progressive or the tissue damage extensive (particularly consider the extent on the upper limb)?</td>
<td>☐</td>
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<tr>
<td>8.</td>
<td>Is it associated with critical limb ischaemia?</td>
<td>☐</td>
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<tr>
<td>9.</td>
<td>Does the patient have significant renal dysfunction (e.g. eGFR &lt;30 or concern over deteriorating renal function)?</td>
<td>☐</td>
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<tr>
<td>10.</td>
<td>Is the patient significantly immunocompromised?</td>
<td>☐</td>
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<tr>
<td>11.</td>
<td>Is the patient known to be colonised with MRSA?</td>
<td>☐</td>
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<tr>
<td>12.</td>
<td>Is the patient taking medications that interact with Probenecid (esp. Methotrexate, also caution with sulphonylureas)?</td>
<td>☐</td>
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<tr>
<td>13.</td>
<td>Does the patient report immediate-type/severe beta-lactam allergy?</td>
<td>☐</td>
</tr>
<tr>
<td>14.</td>
<td>Is the patient physically unable to use affected limb or unable to care for themselves (or not able to receive appropriate supportive care)?</td>
<td>☐</td>
</tr>
<tr>
<td>15.</td>
<td>Are there other social circumstances which prohibit discharge or return to PAH outpatient clinic the next day?</td>
<td>☐</td>
</tr>
</tbody>
</table>

If “NO” to all of above

If “YES” to any of above: Follow “Inpatient management” guidelines on 1st page

Admit to SSW
Management in ED-SSW
- MAPU Registrar (Mon-Sun 0800-1800 hrs)
- ED team (Mon-Sun 1800-0800 hrs)

Mark margin of cellulitis with skin marker

Investigations:
- Swab exudate, FBE, UEG, LFT, CRP, others (as indicated)

Antibiotics:
- Cephazolin 2 g iv stat
  PLUS
- Probenecid 1 g orally stat (Notes: if patient participates in competitive sport, Probenecid is a banned masking agent; also consider metoclopramide for significant nausea/vomiting)

Leg elevation

Remove cannula

Organise follow-up:
- Patients being discharged from SSW on daily outpatient iv therapy will be reviewed in MAPU the following day (Mon-Sun) at 1000 hours and timing of future review visits decided on clinical criteria in liaison with the MAPU consultant.
- Treating physician has discretion to decide if HITH or ASIS outreach would be preferable to administer antibiotics at home in cases where daily return to MAPU is not possible or desirable.
  - Medical records will be retained in MAPU after discharge to facilitate ease of review.

Provide patient information sheet (see page 4), and emphasise to patient the need for strict limb elevation
Ongoing outpatient management with intravenous antibiotics (i.e. day 1+ post-SSW discharge)

- Patient to attend MAPU at 1000 (Mon-Sun)
- Perform clinical assessment
- Review pathology results
- Depending upon assessment:
  - Give further dose Cephazolin 2 g iv stat through new peripheral iv cannula PLUS Probenecid 1 g orally stat
  - Change to oral regimen (as per page 1)
  - Admit for intravenous/other therapy as necessary
- Perform further investigations as necessary
- Reinforce need for strict limb elevation
- If >2-3 days’ iv therapy anticipated, liaise with Infectious Diseases as appropriate
Patient information sheet: Cellulitis

Cellulitis is an infection of the skin and subcutaneous tissues (just under the skin) caused by bacteria, usually *Staphylococcus aureus* and streptococci. These bacteria enter broken or normal skin and can spread easily to the tissue under the skin. This causes infection and you will need antibiotics to treat the infection. Cellulitis can affect almost any part of the body. Most commonly, it occurs in areas that have been damaged or inflamed. Anyone, at any age, can develop cellulitis. However, you are at increased risk if you smoke or have diabetes or poor circulation.

**Symptoms of cellulitis:** The range of symptoms can be mild to severe, and can include redness of the skin, warmth, swelling, tenderness or pain in an area of skin, discharge, such as leaking yellow clear fluid or pus.

**Spread of infection:** The infection can spread to the rest of the body. The lymph nodes in the vicinity of the infected area may swell and be noticed as a tender lump in the groin and armpit. You may also have fevers, sweats and vomiting.

**Diagnosis of cellulitis:** Tests may include:
- **A swab** – a swab is taken from the skin and sent to the laboratory for testing. It can take a few days to get a result and your doctor will be advised of the results.
- **Other tests** – such as blood tests.

**Treatment for cellulitis:** Antibiotics are needed to treat the infection. Oral antibiotics directed at both *Staphylococcus aureus* and streptococci are usually adequate for mild cases, but infections that are more serious, intravenous antibiotics will be necessary. This treatment is given in hospital or, sometimes, at home. When the infection improves, you can be changed to antibiotics that can be taken by mouth for a week to 10 days. Most people respond to the antibiotics in 2-3 days and begin to show improvement. It is not uncommon for the redness to initially worsen somewhat before it improves, however any fevers should settle within 2 days. In rare cases, the cellulitis may progress to a serious illness by spreading to deeper tissues.

**Taking care of yourself at home:** It is very important that you:
- Get plenty of rest.
- **Elevate the involved area of the body as high as possible.** *This is vital* and will ease the pain, assist lymphatic drainage, reduce swelling, and help resolve the infection.
- Take painkillers such as paracetamol. Please check the label for how much to take and how often. The pain eases once the infection starts getting better even though the redness and swelling may persist or even worsen.
- Be sure to take the full course of antibiotics.

**Reduce the risk of transmission:** Cellulitis is spread by skin-to-skin contact or by touching infected surfaces. Suggestions on how to reduce the risk of transmission in your household include:
- Wash your hands often.
- Bathe or shower daily.
- Cover any wounds with a gauze dressing rather than a bandaid.

**Follow-up (Important):**

- **If you were discharged home on oral antibiotics:**
  - See your General Practitioner within the next few days to ensure that the infection is settling
  - Take along the Emergency Department Discharge Summary that you were provided with
  - If you are concerned that the infection is worsening or not settling (such as fever not settling or significant worsening of local signs of infection), please see your General Practitioner or return to the Emergency Department

- **If you were discharged home for ongoing intravenous antibiotics and are returning to the hospital:**
  - Present to Medical Assessment and Planning Unit (MAPU) - Building 1, Orange Lifts, Level 1, adjacent to Emergency Department - at 10am the next day for ongoing intravenous antibiotics and assessment
  - Ring 3176 3340 for any queries
  - Other instructions:
If patient will be reviewed next day in MAPU:
• Please attach this sheet to front of medical record AND
• Send to MAPU as soon as possible

MAPU staff:
• Upon receipt of this chart, please leave in Doctors’ Office:
  this patient will be presenting for review tomorrow at 1000 hours

MAPU Registrar:
• When patient presents for assessment/further therapy, please
  o Assess patient as per Cellulitis Algorithm
  o Liaise with MAPU consultant (in-hours) or on-call
general physician (after-hours)