### DIABETIC FOOT ULCER

#### Key Points:
- Antibiotic therapy is to treat infection, NOT heal ulcers
- Infection specialist advice should be sought if any uncertainty.
- Empirical antibiotic choice and dose is dependent upon: severity of infection, clinical suspicion of causative organism, availability of previous culture results, patient drug tolerances/toxicities, comorbid factors.
- Samples for microbiology should be obtained from all ulcers prior to initiation of antibiotic therapy.
- Targeted therapy based on good microbiological sampling is always preferred when available.
- Empiric therapy directed at *Pseudomonas aeruginosa* is usually unnecessary except for patients with risk factors for true infection with this organism
- All doses assume normal renal and hepatic function. Dose adjustments are not required for age.

<table>
<thead>
<tr>
<th>Severity (likely infecting organism)</th>
<th>MILD (MSSA, Streptococci, MRSA)</th>
<th>MODERATE (MSSA, Streptococci, enterobacteriaceae, obligate anaerobes, MRSA)</th>
<th>SEVERE (MSSA, Streptococci, enterobacteriaceae, obligate anaerobes, MRSA)</th>
<th>OSTEOMYELITIS (MSSA, Streptococci, MRSA)</th>
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</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>Either:</td>
<td>As per mild with either:</td>
<td>Any infection with evidence of severe sepsis. Presence of critical ischaemia may make the infection severe.</td>
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<td>(a) 2 or more features of inflammation: pus, erythema, pain, tender, warmth, induration Or (b) Cellulitis &lt;2cm. Confined to skin or subcutaneous tissue</td>
<td>(a) Lymphatic streaking, deep tissue infection (subcutaneous, fascia, tendon, bone), abscess Or (b) Cellulitis &gt;2cm No evidence of systemic illness</td>
<td>(a) Patients should normally be reviewed in secondary care (b) Patients may be treated in primary care if no complicating factors</td>
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<tr>
<td><strong>Duration/Notes</strong></td>
<td>7 days</td>
<td>7-10days (total IV/PO) assuming not deep infection/bone infection</td>
<td>7-10days (total IV/PO) 14 days IV if <em>S. aureus</em> bacteraemia Review need for gram negative cover and rationalise therapy depending on microbiology results</td>
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<td><strong>Antibiotic naive</strong></td>
<td>Flucloxacillin 1g qds (oral)</td>
<td>Flucloxacillin 1g qds (oral) + Metronidazole 400mg tds (oral) If deep tissue infection: Flucloxacillin 2g qds (IV) + Metronidazole 400mg tds (oral)</td>
<td>Flucloxacillin 2g qds (IV) + Gentamicin (IV) or Aztreonam if appropriate + Metronidazole 400mg tds (oral) or 500mg tds (IV) If necrotising fasciitis seek plastics advice and refer to cellulitis guidance for treatment.</td>
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<td>(Patients who have not had antibiotics for DFU in the previous month)</td>
<td>No penicillin allergy (for patients with penicillin allergy see next page)</td>
<td>Acute: Flucloxacillin 2g qds (IV) Consider additional gram negative and anaerobic cover as per severe regime if patient not improving.</td>
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<td>Chronic: Avoid empirical treatment and use pathogen directed therapy from biopsy results. If empirical treatment requires to be initiated recommend flucloxacillin 1g qds (oral) + /-metronidazole 400mg tds (oral) Seek advice if require gram negative cover or patient is not improving.</td>
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</tr>
</tbody>
</table>
| Severity | MILD  
(MSSA, Streptococci, MRSA) | MODERATE  
(MSSA, Streptococci, enterobacteriaceae, obligate anaerobes, MRSA) | SEVERE  
(MSSA, Streptococci, enterobacteriaceae, obligate anaerobes, MRSA) | OSTEOMYELITIS  
(MSSA, Streptococci, MRSA) |
|---------|----------------------------|-------------------------------------------------|-------------------------------------------------|-----------------------------|
| **Non-antibiotic naive**  
(Patients who have had antibiotics for DFU in the previous month) | Doxycycline 100mg bd (oral)  
Or  
Co-trimoxazole 960mg bd (oral) | Doxycycline 100mg bd + Metronidazole 400mg tds (oral)  
Or  
Co-trimoxazole 960mg bd (IV/oral) + Metronidazole 400mg tds (oral) | Treat as above.  
If penicillin allergy or concerns re possible MRSA use Vancomycin (IV) instead of flucloxacillin and aim for predose level 15-20mg/l.  
If patient not improving seek advice. | Acute:  
Vancomycin (IV) aim for predose level 15-20mg/l  
Consider additional gram negative and anaerobic cover as per severe regime if patient not improving |
| **OR**  
Penicillin allergy | | | | Chronic:  
Avoid empirical treatment and use pathogen directed therapy from biopsy results. If empirical treatment requires to be initiated recommend doxycycline 100mg bd (oral) +/- metronidazole 400mg tds (oral) or co-trimoxazole 960mg bd (oral) +/- metronidazole 400mg tds (oral)  
Seek advice if require increased gram negative cover or patient is not improving |
| **MRSA known carrier or proven infection**  
Community associated MRSA is usually sensitive to doxycycline, co-trimoxazole. Check sensitivities if available. | Doxycycline 100mg bd (oral)  
or  
Cotrimoxazole 960mg bd (oral) | Vancomycin (IV) aim for predose level 15-20mg/l | Vancomycin (IV) aim for predose level 15-20mg/l  
Consider additional gram negative and anaerobic cover as above | Vancomycin (IV) aim for predose level 15-20mg/l  
Consider additional gram negative and anaerobic cover as per severe regime if patient not improving |
| **OHPAT**  
Discuss with ID team Tay-UHB.id@nhs.net and OHPAT team immohpat.tayside@nhs.net | Not applicable | If deep infection as per ID advice, options include:  
Ceftriaxone 2g od (IV)  
or  
Teicoplanin (IV) aim for predose level 20-30mg/l | Not applicable as requires initial hospitalisation. Once patient is stable refer to ID/OHPAT team to assess if outpatient therapy is an option. | As per ID advice, options include:  
Ceftriaxone 2g od (IV)  
or  
Teicoplanin (IV) aim for predose level 20-30mg/l |

**References:**  
Scottish Diabetes Foot Action Group Guidance 2016  
IDSA Diabetic Foot Infection Guidance 2012

Adapted for use in NHS Tayside by: Endocrinology/ID/Pharmacy  
Approved by AMG: June 2016  
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