**TIME TO OPTIMISE WOUND MANAGEMENT**

The TIME framework can be used to apply wound bed preparation to practice and addresses the different pathophysiological underlying abnormalities:

**TISSUE MANAGEMENT**
- Debride the ulcer (usually sharp, but also larval, hydrosurgical and autolytic)
- Remove necrotic/sloughy tissue and callus, as appropriate
- Visualise underlying tissue, reduce pressure and stimulate healing
- Repeat if necessary for ongoing maintenance

**INFLAMMATION/INFECTION CONTROL**
- Classify infected DFUs as mild, moderate or severe
- Direct antibiotic therapy based on chronicity and previous exposure to antimicrobial therapy
- For severe infections, start patients quickly on broad-spectrum antibiotics, pending culture results (see IDSA guidelines — www.idsociety.org)
- Do not use antibiotics as a preventative measure in the absence of clinical signs of infection

**MOISTURE BALANCE**
- Assess the wound thoroughly
- Select wound dressing according to tissue type and to optimise exudate management
- Use dressings designed to create a moist wound environment to support progression towards wound healing
- Reassess regularly, as the status of the diabetic foot can change very quickly, especially if infection has not been appropriately addressed

**EPITHELIAL EDGE ADVANCEMENT**
- Monitor for indications the wound is in a healing trajectory
- Review and reassess patient and wound management if epithelial advancement fails
- Aim to achieve optimisation of tissue management, infection, moisture control, disease management, offloading and adherence

**STEPS TO AVOIDING AMPUTATION**

**A. Diagnosis of diabetes**
- **Aim:** Prevent the development of a diabetic foot ulcer
  1. Implement DFU prevention care plan and involve the multidisciplinary team
  2. Perform annual general foot examination
  3. Review regularly and provide patient education

**B. Development of diabetic foot ulcer**
- **Aim:** Treat the ulcer and prevent infection
  1. Determine cause of ulcer
  2. Agree treatment aims and implement care plan:
     - Initiate antibiotic treatment if infection suspected; consider topical antimicrobial therapy
     - Review offloading device; ensure footwear accommodates dressing
     - Optimise glycaemic control for diabetes management
     - Refer to vascular services if limb ischaemia is suspected
     - Educate patient on how to self-manage and when to raise concerns

**C. Development of vascular disease**
- **Aim:** Prevent complications associated with ischaemia
  1. Refer to vascular specialist for revascularisation to improve blood flow in patients with ischaemic/neuropaecic ulcer
  2. Offer all patients with identified peripheral arterial disease best medical therapy for cardiovascular risk
  3. Optimise diabetes control

**D. Ulcer becomes infected**
- **Aim:** Prevent life- or limb-threatening complications
  1. For mild infections: treat with systemic antibiotics and consider topical antimicrobials as adjunctive therapy
  2. For moderate or severe infections: treat with appropriately selected empiric antibiotics. Modify using the culture results and sensitivity reports
  3. Offload pressure and optimise glycaemic control
  4. Consider therapy directed at biofilm in wounds slow to heal or not progressing in a timely way

**WHERE AMPUTATION IS UNAVOIDABLE**
1. Implement skin and wound care plan to manage surgical wound and optimise healing
2. Review regularly and implement prevention care plan to reduce risk of recurrence or further DFU on contralateral limb

Adapted from International Best Practice Guidelines®
OPTIMISING DFU WOUND MANAGEMENT

Classification of ulcer (based on Wagner and University of Texas/Armstrong)\(^\text{13}\)

<table>
<thead>
<tr>
<th>Ulcer Grade</th>
<th>Non-infected</th>
<th>Infected</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Severely deformed foot at risk of ulceration</td>
<td>Skin care (eg Trixo(^\text{®})/Linovera(^\text{®}))</td>
</tr>
<tr>
<td>I</td>
<td>Superficial ulcer, not involving tendon, capsule or bone</td>
<td>Wound bed preparation</td>
</tr>
<tr>
<td>II</td>
<td>Deep ulcer with no bony involvement</td>
<td>Primary dressing</td>
</tr>
<tr>
<td>III</td>
<td>Deep ulcer with evidence of osteomyelitis</td>
<td>Secondary dressing</td>
</tr>
</tbody>
</table>

Wound treatment objective
Note: in an ischaemic foot, revascularise in the first instance

Severely deformed foot at risk of ulceration
- Maintain skin integrity

Superficial ulcer, not involving tendon, capsule or bone
- Remove slough/callus
- Prevent/remove biofilm
- Manage exudate/odour

Deep ulcer with no bony involvement
- Remove slough/callus
- Provide clean wound bed for granulation tissue
- Prevent/remove biofilm
- Manage exudate/odour

Deep ulcer with evidence of osteomyelitis
- Remove slough
- Reduce bacterial load
- Prevent/remove biofilm
- Manage exudate/odour

Local wound treatment

Skin care (eg Trixo\(^\text{®}\)/Linovera\(^\text{®}\))

Wound bed preparation

Use antiseptic wound irrigation solution and/or gel (eg Prontosan\(^\text{®}\) Wound Irrigation Solution, Prontosan\(^\text{®}\) Wound Gel, Prontosan\(^\text{®}\) Wound Gel X)

Primary dressing

Secondary dressing

GOAL: PREVENTION OF AMPUTATION

References

* NOTE: As Grade III DFUs may involve exposed cartilage, special caution is advised. Some products (eg Prontosan\(^\text{®}\)) are contraindicated for the use on hyaline cartilage. In all cases, a careful risk:benefit assessment should be performed. Decisions on product use must lie with the attending physician and normal saline should be used instead of Prontosan\(^\text{®}\) where indicated.