High Impact Intervention
Reducing the Risk of Infection in Chronic Wounds Care Bundle

Aim
To reduce the risk and incidence of chronic wound infections and chronic wound-related blood stream infections.

Context
The aim of the care bundle, as set out in this high impact intervention (HII), is to ensure appropriate and high quality patient care. Regular auditing of the care bundle actions will support cycles of review and continuous improvement in care settings.

Registered providers must audit compliance against key policies and procedures for infection prevention, inline with the relevant legislation at the time of publication1.

The identification and management of chronic wounds in all care settings, especially those identified as being infected, presents a significant clinical challenge, an ever-increasing financial burden to the NHS and affects the quality of life for those people with these wounds. In 2009, analysis of a twelve-month period of meticillin resistant Staphylococcus aureus (MRSA) bacteraemia cases was completed. Where the source of the bacteraemia was identified, over 18% were due to skin and soft tissue infections. Of these 28% had diabetes identified as a risk factor2,3. Chronic wounds are the most likely cause of these skin and soft tissue infections.

A chronic wound is defined as a wound that does not heal within an expected time frame (i.e. 6 weeks) despite optimal correction of any underlying pathological processes interfering with the body’s normal process of wound healing4. The majority of these wounds fall into three types: venous ulcers; pressure ulcers; and diabetic ulcers5.

Venous ulcers: the incidence is 1.5-3 per 1000 in those under 80 years4 rising to 20 per 1000 in those over 80 years5.

Pressure ulcers: the incidence of pressure ulceration among hospital in-patients in the UK is approximately 40 per 1000 in the population deemed to be at risk5. Pressure ulcers usually occur in people with conditions that inhibit movement of body parts that are commonly subject to pressure such as heels, shoulder blades, and sacrum.

Diabetic foot ulcers: the lifetime risk of a person with diabetes developing a foot ulcer may be as high as 25%, whereas the annual incidence is 3-7%7. Raised blood glucose levels increase the risk of both ulceration7 and infection of the wound8. Patients with diabetes may have suppressed inflammatory response and will not necessarily demonstrate the same overt signs of infection as those without diabetes.

Chronic wounds can also include arterial leg ulcers and wounds from fungating carcinoma. Acute wounds may become chronic and surgical wound dehiscence is a major event with high associated costs and is often linked to infection.

In chronic wounds, there is a clear increase in colonisation, bacterial burden, and infection caused by micro-organisms, including MRSA, best documented in those with diabetic foot ulcers5. Chronic wounds colonised with MRSA are at increased risk for both wound infection and systemic infection.

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1 50% of all bacteraemia entered onto the HPA DCS (data capture system) had a source entered against them and 47% had a risk entered against them. This covers the period June 2008 - May 2009 and is based on unpublished data.
The risk of infection in chronic wounds is complex and increased by:
- Reduced perfusion of blood to tissues. 
- Raised blood glucose levels. 
- The severity of the lesion. 
- Reduced immune status, stress, alcohol, smoking, drug abuse, lack of sleep. 
- A patient’s age; the very young and older people are at particular risk. 
- A patient’s nutritional status; emaciation or obesity place people at risk. 
- Medication; immnosuppressive agents, steroids and non-steroid anti-inflammatory agents. 
- Contamination either at the point of injury (e.g. by soil, gravel) or at a later stage (e.g. by faeces). 
- Poor wound management (e.g. inadequate wound debridement). 
- Failure to exclude osteomyelitis.

The risk of infection in patients with diabetic foot ulcers is further increased by:
- Presence of diabetic neuropathy and any structural deformity such as Charcot joints. 
- Failure to off load pressure. 

Early referral of patients with chronic wounds to specialist health professionals, such as vascular surgeons and tissue viability teams and, in the case of patients with diabetic foot ulcers, urgent referral to a multidisciplinary foot care team, is indicated to promote healing and reduce the risk of infection.

Pressure and diabetic ulcers are largely preventable and the National Institute of Clinical Excellence (NICE) has produced comprehensive guidance for the prevention and management of these ulcers.

**Why use the care bundle?**
This care bundle is based on evidence-based guidance, expert advice and national policy. It should be used to support the development and implementation of local policy. Its purpose is to act as a way of improving and measuring the implementation of key elements of care.

The risk of infection reduces when all elements within the clinical process are performed every time and for every patient. The risk of infection increases when one or more elements of a procedure are excluded or not performed.

**Staff competence and training:**
In line with policy, staff should be appropriately trained and competent in any stated procedure or care process. Assessment of competence is not a specific care action within the HII as it is a pre-requisite for any care delivered. Registered care providers will have mechanisms for assuring training, assessment and recording of competence.

**Elements of the care process**
There are two sets of actions outlined below as good practice. These are concerned with:
- a wound care actions; and
- b patient management.

### Wound care actions

1. **Hand Hygiene**
   - Hands are decontaminated immediately before and after each patient contact, using correct hand hygiene technique (the World Health Organisation’s ‘5 moment of hand hygiene’ or the...
### Patient Management

1. **Patient education**
   - Education and information is provided to the patient as appropriate\(^1,14\)
   - The patient is involved with decision making.\(^{14}\)

2. **Glucose control**\(^8,14\)
   - Optimal glucose levels are maintained in patients with diabetes.

3. **Referral to other health care specialists**
   - Referral is made in the case of static or deteriorating wounds (referral may include tissue viability specialist\(^{12,18}\), surgeon\(^{11}\) and other specialists as required).
   - Deep seated infections are referred for imaging and biopsy.
   - Urgent referral of patients with diabetes to a Multidisciplinary Foot Care team\(^{11,14,18}\).

4. **Nutritional assessment**
   - Nutritional support is given to patients with an identified deficiency\(^{11,19}\)
   - Dietary advice is provided to any patient with dietary needs.

5. **Communication of infection status**
   - Clear communication of patients known to be infected or colonised with pathogenic organisms,
including MRSA, is given to all relevant healthcare providers involved with the patient’s care.

<table>
<thead>
<tr>
<th>6. Pressure Ulcers</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Patients with pressure ulcers are placed on appropriate pressure relieving/reducing mattresses/cushions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Diabetic Foot Ulcers</th>
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<tbody>
<tr>
<td>▪ The pressure is offloaded in patients with diabetic foot ulcers, including providing appropriate footwear and insoles.</td>
</tr>
</tbody>
</table>

Using the care bundle and the electronic tool
The use of this care bundle will support cycles of review and continuous improvement, which will deliver appropriate and high quality patient care.

Audits of compliance with the care bundle should be carried out regularly and the results recorded at the point of care. They should be carried out by peers and the results can be collected manually or electronically depending on what is appropriate. The use of an electronic, graphical package such as the HII electronic tool provided is recommended, as this will increase the understanding and usefulness of the overall results.

The electronic tool will:
▪ Collect, collate and produce different views of the information.
▪ Clearly identify when actions within the care bundle have or have not been performed.
▪ Provide information to support the development of plans to resolve any issues and improve the quality of care.
▪ Support a culture of continuous improvement.

Recording and making sense of the results
▪ Print an audit sheet from the HII electronic tool or alternatively create one such as the example below.
▪ When a care bundle action is performed, insert a Y in the relevant column. If the action is not performed, insert an X in the relevant column.
▪ When the care action is not performed, as it is not applicable (for example local policy has determined it as not applicable in all or certain situations) insert an N/A to demonstrate that local policy is being adhered to. (This is then recognised as a Y when total compliance is being calculated)
▪ Calculate the totals and compliance levels manually or enter the results into the HII electronic tool to calculate these for you.
▪ The goal is to perform every appropriate action of care every time it is needed and achieve 100% compliance with the care bundle. The “All actions performed” column should be filled with a Y when all the appropriate actions have been completed on every required occasion. See the example below.
▪ Where actions have not been performed, overall compliance will be less than 100%. This provides immediate feedback for users of the tool on those care bundle actions not completed, and action can then be taken to improve compliance levels.
Example audit sheet

<table>
<thead>
<tr>
<th>Observation</th>
<th>Care action1</th>
<th>Care action 2</th>
<th>Care action 3</th>
<th>Care action 4</th>
<th>All actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>2</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>3</td>
<td>Y</td>
<td>Y</td>
<td>N/A</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>5</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

| Total number of times an individual action was compliant | 5 | 4 | 4 | 4 | 2 |
| % when action of care was given | 100% | 80% | 80% | 80% | 40% |

- This example tool shows that while most care actions were performed, on only two occasions were ALL actions performed correctly while all actions was only 40% and as a result the risk of infection was significantly increased. (Please note for observation no 3. the N/A was calculated as a Y and overall compliance was achieved)

- When the information has been entered into the HII electronic tool a compliance graph for each action of care and for overall compliance with the care bundle can be produced. This will show where to focus the improvement efforts to achieve full compliance and achieve high quality patient care.
References:


