Wound Management
Policy & Resource Pack  March 2003
This document will be reviewed and updated in 2005. Any comments or suggestions for modification should be sent to the author Kathryn Vowden.
Policy Statement

All patients within the Bradford Teaching Hospitals NHS Trust and Bradford Primary Care Trusts who have a wound will have that wound managed according to the Wound Care Policy.

The lead responsibility for managing patient care lies with the Medical Practitioner in charge. The responsibility for wound care is usually delegated to other professionals following a prescribed wound care protocol.

The prescription, supply and administration of wound care products is governed by the Trusts’ Policy for the Storage and Administration of Medicines and the Policy for the Development of Patient Group Directions.

Policy Objectives

- That health care professionals undertake a comprehensive assessment of the wound (site, size, surface, grade and appearance, exudate type and volume, state of surrounding skin and level of wound pain) and the patient’s general condition.
- To identify the cause of the wound and any factors that may adversely affect wound healing.
- A photographic record by either departmental cameras or Medical Illustration and/or tracing are required for chronic or acute wounds involving tissue loss.
- The wound description should include details of the wound bed.
- The details of the assessment will be entered in the patient’s records in a way that will allow easy access for all members of the multidisciplinary care team.
- A plan of care with appropriate goals of care will be developed with the patient that takes into account a multidisciplinary approach to wound care.
- The frequency of wound reassessment will be determined by the patient’s clinical condition, the aims of wound management and treatment effectiveness.
- Suitably trained Health Care Assistants can apply simple dressings to wounds when following a plan initiated by a qualified health care professional. This does not include complex wounds such as infected wounds, leg ulcers or wounds on diabetic patients.
- Professionals will work collaboratively in addressing the patient’s wound care needs and will refer to others when appropriate.
- The effectiveness of care will be evaluated at each dressing change and progress or deterioration monitored and documented.
- To ensure continuity of care between and within hospital and community documentation should be available and where appropriate shared.
- A resource pack entitled “Wound Management” will be used to translate this policy into practice.
- Ongoing education will support the implementation of this policy.
- This policy document will be reviewed and updated on a regular basis.
Referrals to the Nurse Consultant for Acute and Chronic wounds can be made by Medical Staff, a Nurse in charge of the patient's care or Professionals Allied to Medicine.

**In patient**
Referrals should be made by post or by Fax to the Vascular Secretaries on 364807. Referrals should include patient's demographic details, relevant medical problems, reason for referral and wound assessment details. Referrals will usually be seen within 3 days of receipt of referral unless specifically requested as urgent.

**Community referrals**
Health Care Professionals referring patients from the community will inform the patient's GP.
Referrals from the community to the hospital will normally be seen within three weeks. Urgent out patient referrals will be seen at the next available clinic and this will usually be within one week. Within the community, patients with complex wounds are usually seen by the Community Tissue Viability Nurse who will liaise with, and refer to, the Nurse Consultant as appropriate. Domiciliary visits can be arranged through the Community Tissue Viability Nurse.

**Referral criteria**

- Non-healing wounds
  - Failure to make expected progress
  - For leg ulcers this may be at the 12 weekly review (PACE)
- Deteriorating wounds
- Underlying medical condition preventing/delaying healing
  - Venous disease
  - Arterial disease
  - Diabetes
  - Renal or cardiac failure
- Diabetic foot ulcers (PACE)
- Ischaemic ulcers
- When the diagnosis is uncertain
- When pain management is difficult
- When exudate is uncontrolled
- Wounds that fall outside your field of knowledge or experience
- When the use of an "Advanced Product" from the formulary would seem to be appropriate or advice on its use is required
- Contact dermatitis - referral for Dermatological opinion may be appropriate
- Suspected malignancy - referral to Plastic surgery or Dermatology

Further details on the wound care service are given in Appendix I.
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Wound Healing

i. The stages of wound healing
The healing of wounds can be thought of as having several stages although it must be remembered that the process is a continuous one. Deep wounds heal firstly through the formation of granulation tissue and then through epithelialisation. Shallow wounds, where only the epidermis has been damaged, heal through epithelialisation only. There are four basic phases involved in the healing process:

(a) Inflammatory phase: 0-3 days
When tissue is disrupted blood vessels are damaged and bleeding occurs into the space created. Platelets arrive at the wound site and initiate haemostasis forming a fibrin-platelet clot. This fibrin-platelet clot loosely unites the wound edges and prevents further bleeding into the wound, drying to forming a scab.

Damaged tissue and mast cells secrete histamine and other local hormones and enzymes causing vasodilatation of the surrounding capillaries. These capillaries become more permeable and white blood cells and serum are able to pass into the damaged area. The vasodilatation and increased capillary permeability cause the signs of inflammation; redness, heat, swelling and pain.

An influx of polymorphs and macrophages defend against bacteria, ingest debris and begin the process of repair. A number of local and systemic factors can slow or halt this influx of white blood cells. For example, high doses of corticosteroids such as Prednisolone can stop or slow this inflammatory response and subsequent wound healing.

(b) Destructive/Migratory phase: 2-5 days
Dead tissue and bacteria are removed in this stage to make way for new growth. Cells in healthy tissues are held together by proteoglycan-fibronectin cement. Where cells die due to injury, the body acts to dissolve this intercellular cement. The liquefaction of connective tissues in order to eliminate necrotic matter is called autodebridement. Macrophages migrate into the wound and play a vital role in this stage by engulfing bacteria, any foreign bodies and necrotic tissue. With neutrophils, the macrophages attract fibroblasts and influence the growth of new blood vessels into the wound by chemotactic activity and the release of growth factors.
(c) Proliferative phase: 3-24 days
A semblance of order appears on approximately the third day in a healthy person. There is extensive growth of epithelial cells under the scab that bridges the wound. With the developing new blood vessels multiplication of the fibroblasts occurs. The fibroblasts begin to produce collagen, a process that depends on zinc, oxygen and ascorbic acid. This may be deficient in some disease states such as diabetes. Collagen strands are deposited in a haphazard way and form a fibrous network that supports the new capillary loops. The tissue formed is called Granulation tissue. It has a moist translucent red appearance. Signs of inflammation disappear now and the fibroblasts contract pulling the wound edges together.

Wound contraction is an important part of wound healing as it means that the body does not have to make as much granulation tissue to fill in the wound cavity. The tensile strength of the wound is increased during this phase of the healing process and this process continues into the next phase, the maturation phase.

(d) Maturation phase: 24 days - 1 year
During the maturation phase there is a decrease in vascularity, shrinkage of fibroblasts and a reorientation of collagen fibres, this changes the appearance from red granulation tissue to a pink early epithelialisation. Finally, a white relatively avascular tissue develops, and the epidermis is restored to normal thickness.

Wound contraction, which starts during the proliferative phase and continues into this final phase of healing, is extremely powerful and may, in certain instances, cause deformation (contracture). The healing process can lead to the formation of excessive amounts of scar tissue resulting in a hypertrophic or possibly a keloid scar.

ii. Growth factors and their influence on wound healing
It is thought that growth factors produced by the various cells involved in wound healing act to communicate with each other as to ‘what to do next’. Examples of growth factors include:

- Platelet derived growth factor
- Fibroblast growth factor
- Angiogenesis promoting growth factor
- Epidermal growth factor
- Transforming growth factor Alpha and Beta
- Vascular endothelial growth factor

Each of these has different roles and for instance Epidermal growth factor promotes epithelial growth. Graham (1998) has reviewed the clinical use of growth factors. Additional information is available (Falanga and Shen, 2001). Platelet derived and other growth factors are available as specialist wound care products.

Angiogenesis stimulating factors initiate the growth of a new blood supply for developing granulation tissue and are an essential component in effective wound healing. The balance and effectiveness of these growth factors is influenced by the action of a number of proteinases in the wound bed (Hart, 2002).

iii. Wound types and categorisation
Wounds were categorised by Harding (1992) into acute and chronic wounds. Acute wounds comprise surgical, traumatic and thermal injuries where it is expected that the healing process should be uneventful and scarring and long term damage minimised. The patient should return to a normal lifestyle.

Chronic wounds fail to complete the healing cycle and have an impact on the patient’s health status and lifestyle. Chronic wounds include malignant fungating wounds, pressure sores, leg ulcers and diabetic foot ulcers. These wounds are the result of systemic disease processes that often require specialist intervention, investigation and treatment of the underlying cause in conjunction with care of an open wound.
Open and closed wounds
Sutures, clips or wound adhesives bring the opposing edges of a wound together and create the moist, warm, clean environment necessary for healing. In this situation, dressings are of secondary importance. However, on open wounds such as abrasion, burn or pressure sores sutures cannot be used. In such open wounds, the choice of dressing is of critical importance as it can provide the right environment to prevent complications and optimise healing.

iv. Factors delaying wound healing
Many factors have been recognised to reduce or delay the healing potential of a wound. Dealey (1999) relates the healing potential of a wound to the “activities of daily living” model of care. Mulder et al (1998) considers the physiological and biological effects of these factors on the healing process. Bale and Jones (1997) link these factors with the physiology of wound healing and patient assessment. The following factors are identified as some of the main causes for delay in wound healing.

1. Poor Circulation
Delayed healing and tissue breakdown is frequently associated with poor circulation and this may be due to local pressure, vascular disease or diabetes mellitus. Vowden and Vowden (1996) discuss the influence of peripheral arterial disease on leg ulcer healing.

2. Poor Nutrition/Malnutrition
Nutrition has a significant impact on wound healing (McLaren, 1992). Lack of protein will result in insufficient building blocks for cell regeneration. Deficiency of Vitamin C - which is essential for collagen synthesis - will delay healing. Zinc deficiency will cause slowing down of epithelialisation and collagen synthesis. Pinchcofski-Devin (1994) provides a review of the role of nutrients in the wound healing process. Oliver (1994) highlights aspects of continued nutritional support in the community.

3. Drug therapy
Anti-inflammatory drugs (NSAID) suppress initial inflammatory process. Systematic and topical corticosteroids can suppress both multiplication of fibroblasts and the immune system. Mulder et al (1998) lists the drug types which are known to effect wound healing in addition to those listed above these include anticoagulants, anti-neoplastic drugs and anti-prostaglandins.

4. Immune Response
Allergy to topical applications, e.g. iodine, may delay healing. Cameron (1998) highlights common allergens associated with wound care. Irritants and allergens include lanolin (wool alcohols), topical antibiotics, emulsifiers such as cetyl alcohol, rubber, parabens group of preservatives, colophony, fragrance mix or balsam of Peru. Simple bland preparations are recommended for patients with known skin allergies.

5. Age
Cell replication is slower (senescence) and the skin’s resistance to injury decreases with increasing age. These skin changes are discussed by Mulder et al (1998) and Bale and Jones (1997).

6. Obesity
Adipose tissue has poor vascularity. No known mechanism is responsible for increased infection and wound breakdown in obese surgical patients but these patients are at high risk of postoperative wound problems (Mulder et al., 1998).
7. **Psychological**

Increases in hormone levels, particularly glucocorticoids (occurring in stress and anxiety for example) may suppress the inflammatory phase and effect healing in both acute and chronic wounds (Kiecolt-Glaser et al, 1995; Cole-King and Harding, 2001). Reducing stress has been demonstrated to reduce postoperative wound infection.

8. **Infection**

Local or systemic infection inhibits healing. Resistance to infection is related to physiological ability and the patient’s physical health. Bacterial toxins are potent inhibitors of healing. Some having more devastating effects than others. A guide to understanding wound infection is provided by Miller and Gilchrist (1996) and Gilchrist (1999). Williams and Leaper (1998) provide a review of the pathogenesis, host response and clinical aspects of infection.

9. **Moisture**

Based on the work of Winter (1962) a moist environment allows the optimum environment for healing (Hermans and Bolton, 1993). Epithelial cells will migrate over living tissue and this process can be delayed by dehydration. A wound surface that has been exposed to air for a lengthy period suffers cellular dehydration, tissue necrosis and increase in wound depth. When a wound has to be exposed for examination by the medical staff cling film can be used to prevent dehydration and help protect and maintain temperature (see below). Most modern dressings have been designed to allow “moist” healing. The use of the most appropriate dressings will maintain a moist environment at the wound surface without causing maceration of the surrounding skin. The wound exudate that forms under occlusive dressings is highly bactericidal and prevents infection but in some wounds can be detrimental to healing. Cherry and Harding (1997) debate the management of wound exudate which is an important element of wound bed preparation.

10. **Temperature**

The optimum temperature for cellular activity and division is 37°C. Frequent dressing changes and application of cold solution and leaving the wound exposed can decrease the local temperature (Dealey, 1999).

11. **Chemical**

Inappropriate use of chemicals, for example Eusol, dyes or antiseptics, can damage the wound and retard healing. This practice should be discouraged. A review of hypochlorite literature is provided by Moore (1992). Antiseptic use in wound care is discussed by Brennan and Leaper (1985) and are debated by Scanlon and Stubbs (2002). All conclude that long term use of these substances should be avoided.

12. **Mechanical**

Unnecessarily disturbing the wound bed can damage the developing granulating tissue. Inappropriate dressing can also damage the granulating tissue. Mechanical cleansing of the wound is not required. Thomlinson (1997) illustrates the ineffectiveness of wound cleansing although irrigation can remove debris derived from dressings and exudate. The use of “wet-to-dry” dressings is discouraged (NICE Guidelines).

13. **Presence of Tumour**

Malignancy can inhibit healing as can a range of anti-neoplastic therapies. Grocott (1995a; 1995b) and Dealey (1999) give advice on treatment of fungating wounds which are based on symptomatic control.

14. **Local Factors**

Poor surgical technique such as over use of diathermy or poor choice of suturing material are among factors that will delay healing of a surgical wound (Leaper and Gottrup, 1998).
Poor assessment or some wound care practices may predispose to delayed or non-healing. Inappropriate choice of wound dressing, the use of fibre shedding materials like cotton wool or fragments of gauze swabs, tight bandaging on an ischaemic or diabetic limb can all lead to deterioration of the wound.

15. General Factors

Poor assessment of the cause of the wound can lead to inappropriate treatment and this will lead to poor healing. Any deterioration in the patients overall health adversely affects wound healing. Poor nutrition, for example, due to prolonged fasting or medical conditions such as oral or dental problems will adversely affect wound healing as can immobility following a stroke.

Other medical conditions that can delay or prevent healing include diabetes, uraemia, anaemia, liver and renal damage and various vascular and connective tissue disorders.
Other factors that are important in wound care

Hydration and Nutrition

Many nutrients are involved in promoting new tissue formation; suppressing oxidation of tissues, free radical scavenging and improving wound function. Adequate nutrition helps to maintain immune competence and decrease the risk of infection.

Up to 60% of patients are malnourished on admission to hospital (Kings Fund 1992). Malnutrition often becomes worse during hospitalisation and can result in a delay in the healing process. Patients with adequate nutritional intake before surgery have better wound healing when compared with patients who have poor pre-operative nutritional intake (Olde Damink 1997). Early restoration of nutrition after surgery also improves post-operative recovery and wound healing. When the diet lacks vitamins and minerals, physiological replacement of dietary deficiency can prevent development of a full deficiency state. However, supplementing nutrients in patients who are not clinically deficient has yet to be shown to be effective and may be harmful (Thomas 1997).

In accordance with BHT Hospital Nutrition Standards for Adults (February 1997), the use of a simple nutritional assessment to identify and monitor those patients who suffer from, or are at risk of, malnutrition is essential. In appropriate cases, the malnutrition quotient (MQ) should be measured weekly.

It is therefore important to encourage patients to have a wide and varied food intake to provide a balanced diet to maintain body cell mass and promote wound healing.

If dietary intake is considered inadequate, record the patient's food and drink intake, and refer to the Dietician for further assessment and advice. Patients should also be referred to the Dietician if they have lost 10% of their initial body weight unintentionally within the last month or they have a BMI of less than 17 or an MQ of less than 80. Obesity does not equate with either appropriate nutritional balance or hydration. The Dietician will assess the patient's nutritional requirement and aim to provide this by the most appropriate method. This may involve the use of meal shakes, dietary supplements or enteral tube or intravenous feeds. The patient's ability to meet their nutritional needs should be monitored and further action taken if intake remains sub-optimal.

In addition to nutrition, fluid balance is important. Dehydration can result in diminished healing ability since water is a major component of healthy cells. A large wound may exudate significant volumes of fluid that can result in electrolyte imbalance as well as dehydration. A heavily exuding wound may also delay healing by macerating surrounding skin. When wounds are heavily exuding a cause for this should be sought, and if possible corrected. For example, this may include the management of peripheral oedema by compression and/or diuretic therapy.

Wound Colonisation and Infection

Healthy skin provides a physical barrier to bacterial invasion of underlying structures. There are three main routes for the acquisition of bacteria by skin wounds:

1. Self contamination from skin or gastrointestinal tract.
2. Airborne contamination via dust, skin squames or water droplets.
3. Contamination by contact with clothing, equipment or the skin or carers.

Colonisation

Many wounds, especially if chronic, are colonised by a variety of bacteria including potentially pathogenic species. These colonising bacteria may exhibit no apparent harmful effect and although many wounds become colonised by a diverse range of bacteria, infection is not an inevitable consequence. Usually, colonised wounds do not require specific antimicrobial therapy.
The exception to this is where the wound is covered with slough or eschar that may harbour significant quantities of bacteria and can act as a potential focus for microbial spread. Such eschar should be actively debrided. To prevent the spread of micro-organisms (resistant or susceptible strains), it is important that all healthcare professionals pay particular attention to hand hygiene.

**Infection**

Infection occurs when micro-organisms cause damage to body tissues either by their presence or through the production of poisonous substances (endo and exotoxins). A bacterial load of $>10^5$ organisms per gram usually results in infection although lower levels of virulent organisms may cause infection. A positive swab result does not necessarily mean that a wound is infected. The wound may simply be colonised. If a wound shows any of the following then infection requiring intervention should be considered:

- Abscess with inflammation
- Cellulitis
- Wound discharge which is characterised as:
  - Serous exudate with inflammation
  - Seropurulent (turbid serous exudate)
  - Haemopurulent
  - Frank pus
- Pyrexia*
- Raised C-reactive protein levels*
- Raised white blood cell counts*

*with no other source of infection

**The use of Antibiotics**

Wounds satisfying the criteria specified above usually require treatment with antibiotics as recommended by a Doctor/Consultant Microbiologists. The choice of antibiotic should be based on microbial sensitivity testing when ever possible and should be modified according to any known allergy.

The presence of a biofilm (a bacterial colony, which may consist of several separate strains of bacteria, surrounded by a protective impenetrable glycocalyx) may prevent effective treatment with antibiotics alone (Sibbald, 2001). Similarly wounds infected with resistant strains of bacteria such as MRSA may require additional therapy. Further information on the management of infection and the use of antibiotics can be found in the Infection Control Policy and from prescribing information.
Wound Cleansing

Indications
Wound cleansing is NOT indicated for most wounds and should only be performed with a specific goal or aim.

Wound:
- to remove excess exudate, slough or necrotic tissue
- to remove remnants of old dressing material
- to remove dirt and debris from traumatic wounds which could cause wound infection
- to allow inspection and assessment of dirty traumatic wound

Surrounding skin:
- The skin surrounding a wound may require care including washing at dressing change to remove wound exudate and skin debris or for patient comfort.

Wound cleansing does not, by itself, reduce the number of bacteria in a wound. Thomlinson’s study (Thomlinson, 1997) revealed that bacteria were simply redistributed.

Types of cleansing fluid
Cleansing can be achieved with either tap water or normal 0.9% saline. The chosen cleansing fluid should be at a comfortable temperature and should not be below 28°C (Lock, 1979). The decision to use isotonic saline is dependant on the type, depth and extent of the wound and the period of time that the fluid will remain in contact with the wound. Care should be taken if the full extent of the wound is not known.

Tap Water
Any fears regarding bacterial contamination of tap water appear to be unfounded (Angeras and Bradbard, 1992). Studies have shown no increased risk of infection if sutured wounds are washed with soap and water (Noe and Keller, 1988) or when the patient showers (Chrintz et al, 1989). Microbiologists suggest running the tap water for a few minutes to flush out potential bacteria accumulations prior to use as a precautionary measure.

Methods of cleansing
Wound and skin cleansing is best achieved by gentle irrigation either by showering, irrigating with a jug of warm water or saline or by irrigation with a syringe.

Irrigation or short immersion of the wounded area in a bowl or bath is often appreciated by the patient. This practice is useful for skin care and cleansing particularly in patients with leg ulceration (Lawrence, 1997). Care must be taken to avoid prolonged immersion of the wound and cross infection. Lawrence (1997) suggests using disposable plastic bags to line the bowl. Care must be taken in the cleansing of lifting equipment and the bath if this is the chosen method of care.
Patient and Wound Assessment

Assessment should include information from different sources. It should bring together general and specific information on the patient, the skin, the circulation and the wound itself, only in this way can an accurate diagnosis be made, risk factors evaluated and effective treatment commenced (Vowden and Vowden, 1998).

**Patient assessment can be thought of on four levels (Morison, 1992)**

- General patient factors that could delay healing
- Immediate causes of the wound and any underlying pathophysiology
- Local conditions at the wound site
- Potential consequences of the wound for the individual

**This should allow you to identify and record in a care plan:**

1. Factors that will help formulate a treatment plan such as the general appearance of the skin, wound pain or allergies.
2. Factors that will delay healing such as general health, nutritional status, underlying disease, medication or incontinence.
3. The cause of the wound so that further problems can be prevented, such as immobility resulting in pressure sores, venous hypertension resulting in a venous ulcer or diabetes giving rise to a neuropathic ulcer.
4. Functional and psychological factors that will result from the wound or its treatment that may delay healing.
5. The requirement for the carer in both hospital and following discharge.

The care plan should ensure the management of all factors that could influence wound healing. This may include referral to other members of the multi-disciplinary team such as Nurse Consultant, Clinical Nurse Specialists, Dieticians, Physiotherapists, Chiropodists, Vascular Consultant or Dermatologist.

**Wound assessment**

Wounds are graded according to their depth using the Stirling scale and colour indicating their stage of healing. The aim of any assessment is to allow accurate grading and description of the wound appearance. Measurement forms an important part of documentation and can be achieved simply by the use of a tracing map. Vowden (1995) has reviewed different wound measurement techniques. This information will enable the carer to select the correct type of dressing and allow the progress of the wound to be monitored.

Assessment should include:

1. The general appearance of the wound
2. The size of the wound
3. The shape of the wound
4. The depth of the wound
5. The amount, type and colour of exudate
6. Wound related pain:
   - Dressing changes and wound cleansing can be painful. If the wound is painful or pain is anticipated, prescribed analgesics should be given prior to dressing changes. If severe pain is anticipated, Entonox may be prescribed and/or EM LA cream may be used topically.
Always consider potential causes of wound pain:

1. Is an agent being used which is known to provoke an irritant response?
2. Is the dressing being changed too infrequently?
3. Is the wound infected?
4. Is the dressing being changed unnecessarily?

7. The condition of the surrounding skin
8. The presence of infection and details of swab results

This information should be recorded on a wound care assessment chart with the size and shape recorded as a traced diagram. An example assessment chart is included (Appendix II). It is important that a date be set for the re-evaluation of the wound and that any changes in dressing policy following re-assessment are recorded. At discharge or transfer, all this information must be passed on to the receiving area or Community Nurse to allow continuity of care.

The European Wound Management Association (EWMA) has published a document on 'pain at wound dressing changes' which is available at [www.tendra.com](http://www.tendra.com) or from the EWMA website.
Wound Grading and Appearance

The Stirling Pressure Sore Severity Scale (Reid and Morison, 1994)

**Grade 1**
Discolouration of intact skin e.g. Non-blanching erythema with increased local heat.

**Grade 2**
Partial-thickness skin loss or damage involving epidermis and/or dermis e.g. Blister; Abrasion; Shallow ulcer, without undermining of adjacent tissue.

**Grade 3**
Full-thickness skin loss involving damage or necrosis of subcutaneous tissue but not extending to underlying bone, tendon or joint capsule e.g. Crater, with or without undermining of adjacent tissue; Sinus, the full extent of which is not certain.

**Grade 4**
Full-thickness skin loss with extensive destruction and tissue necrosis extending to underlying bone, tendon or joint capsule. e.g. Visible exposure of bone, tendon or capsule; Sinus assessed as extending to bone, tendon or capsule.

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Indicates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black wound</td>
<td>Necrotic area of dead tissue</td>
</tr>
<tr>
<td>Green wound</td>
<td>Infected, pus, inflammation at edges often with offensive odour</td>
</tr>
<tr>
<td>Yellow wound</td>
<td>Slough, dead cells accumulate in exudate</td>
</tr>
<tr>
<td>Red wound</td>
<td>Granulating tissue</td>
</tr>
<tr>
<td>Pink wound</td>
<td>Epithelialisation, white or pink tissue</td>
</tr>
</tbody>
</table>
Dressing Selection Flow Chart

**Assessment**

- Necrotic Tissue (Black & Green Wounds)
  - Yes → Debridement
  - No → Slough Present (Green & Yellow Wounds)

- Slough Present (Green & Yellow Wounds)
  - Yes → Deslough
  - No → Granulating Wounds (Red & Pink Wounds)

- Granulating Wounds (Red & Pink Wounds)
  - Yes → Promote Healing
  - No → Healing Wound (Epithelialisation)

- Healing Wound (Epithelialisation)
  - Yes → Chronic non-healing wound look for possible underlying cause’s of non-healing (biopsy) continue to provide moist healing environment or use of advanced products. See referral criteria.
  - No → Superficial wounds (Grade 1)

**Goal**

- Deep Wounds (Grade 3 & 4)
  - Low Exudate
    - Hydrogel
    - Hydrocolloid
  - High Exudate
    - Hydrofiber
    - Alginate
    - Foam
    - Cadexamer

- Shallow wounds (Grade 2)
  - Low Exudate
    - Hydrogel
    - Flamazine
    - Hydrocolloid
  - High Exudate
    - Hydrofiber
    - Alginate
    - Foam
    - Cadexamer

**Action Plan**

- Surgical / Biosurgical
- Chemical - Antiseptics
- Autolytic - Hydrocolloid or Hydrogel
- Osmotic - Cadexamer

**Infection**

- Any Wound
  - Signs of Infection
    - Pyrexia
    - Cellulitis
    - Odour
  - Yes → Culture Swab

- Treat Infection
  - Systemic antibiotics
  - Topical dressings
  - Hydrofiber
  - Alginites
  - Silver Products
  - Povidone Iodine
  - Cadexamer
  - Deodourisers
  - Metronidazole
  - Charcoal

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Planning Care: Wound Bed Preparation

Wound documentation and observation by skilled staff are important elements of effective wound care and the concept of wound bed preparation is a useful model to work from.

The aim of wound bed preparation (WBP), a process described by Falanga (2000), is to create an optimal wound-healing environment. The core precept of WBP is to focus on both the wound and the patient as a whole. This approach will frequently require a multidisciplinary and structured approach to care delivery. The process, illustrated below, suggests five areas of intervention.

Although interrelated, the relative importance of each intervention will vary in each wound. Most therapeutic actions address several of these components.

**Bacterial Balance**
A bacterial load of $10^5$ to $10^6$ organisms per gram in a wound bed, irrespective of the organism, will adversely affect wound healing (Dow et al, 1999) and this can be further influenced by the synergistic interaction of micro-organisms. Therapy should always reflect the clinical status of the wound and not be based on culture results alone. The presence of a biofilm, a secreted glycocalyx with attached microorganisms, inhibits correction of the bacterial balance (Sibbald, 2001).

**Management of necrosis**
Necrotic material, the most obvious marker of a chronic wound, can be both a focus for bacteria and a barrier to healing. Falanga (2001) introduced the concept of initial and maintenance debridement in the context of WBP reflecting the need to respond to a dynamic situation within the wound. Debridement, other than with surgical excision, is rarely completed in one treatment episode; rather a “mixed” wound is created with some areas still containing necrotic material and bacteria.

**Exudate management**
Advanced wound care products such as growth factors and bioengineered skin will perform badly when applied to an apparently clean healthy granulating wound if exudate is not controlled (Falanga, 2000). Chronic wound fluid has an adverse effect on wound healing. Exudate management consists of two related management phases; direct management such as the use of absorbent dressings, compression bandaging and negative pressure therapy (VAC) and indirect management such as control of heart or renal failure. Frequently both methods need to be combined.
**Cellular function and biochemical balance within a wound**

Normal wound healing is highly co-ordinated with rapid choreographed changes in specific cell populations occurring as an acute wound progresses from injury through repair and remodelling to healing. This process is impaired in chronic wounds where the process stalls, due to either under or over expression of building or degradative proteins or cells at one or more stages in the healing process. Although still experimental, modern therapy is now beginning to address this by the introduction of substances such as growth factors and protease modulators (Promogran) to the wound.
Debridement of Wounds

Definitions
Debridement is the removal of devitalised, infected tissue or foreign materials and debris. The body can remove this material by natural processes but large quantities of debris can prevent adequate inspection of a wound, delay healing and provide a focus for infection.

Debridement is complete when 100% of the wound bed consists of healthy granulation tissue (Vowden and Vowden, 1999a; Vowden and Vowden, 1999b). To achieve this several methods of debridement may be required and short term goals set such as the softening of echar prior to sharp debridement. A number of debridement methods exist and these include autolysis, mechanical debridement, biological (larval) debridement and sharp or surgical debridement (Vowden and Vowden, 1999a; Vowden and Vowden, 1999b).

- Sharp debridement is conservative frequently leaving a thin margin of necrotic tissue
- Surgical debridement is more extensive and includes debridement to bleeding healthy tissue

Sharp debridement
Debridement is an accepted principle of good wound care, especially when debris is acting as a focus for infection (NICE 2001). Debridement is however only one part of overall wound care and should not be used in isolation. Sharp debridement is routinely performed by staff in the Vascular Department, Podiatry Department (feet only) and Department of Plastic Surgery. When managing a wound and it is considered that debridement is required, consider if it is necessary to refer for specialist debridement or treatment.

Prior to debridement all patients will have:
- Comprehensive and holistic assessment and documentation
- The underlying cause of the wound identified which may (if the wound is on the leg) include Doppler ABPI to exclude arterial disease
- Wound assessment and photography, when possible, before and after the procedure
- Explanation to, and informed consent from, the patient

The decision to perform sharp debridement should be multi-disciplinary and have a specific rationale and documented aims.

Contra-indications for sharp debridement by nursing staff
- Patients with clotting disorders
- Fungating or malignant wounds
- Wounds on the face, hands or feet (excluding the heel area)
- Wounds near the following structures:
  - A vascular graft
  - A prosthesis
  - A dialysis fistula

Care should be taken when performing sharp debridement on:
- Patients with ischaemia
- Patients with neuropathy
- Patients with infection (who may require antibiotic cover)
- Patients on anticoagulant therapy
- Wounds on the heel and Achilles tendon area where bone and/or tendon may easily be exposed

Referral to the podiatrist may be appropriate for multidisciplinary assessment of all foot wounds.
Nursing procedure - Sharp debridement
Within Bradford Trusts nurses carrying out sharp debridement will:
- Be a registered nurse and have completed university i.e. have completed accredited wound management modules.
- Maintained competence by attending study days on sharp debridement.
- Have undertaken supervised practice with a suitable mentor with training emphasis on competency, anatomy and tissue types and have undergone an assessment by the Nurse Consultant in wound care, a Consultant or a Podiatrist.

Nurses wishing to undertake Sharp debridement:
- Do so in line with the recommendations outlined in NMC Code of Professional Conduct (2002)
- Should know and understand the anatomy
- Recognise structures and be able to distinguishing between viable and non-viable tissue
- Have adequate equipment, lighting and, if appropriate, assistance
- Be able to deal with complications
- Recognise the limitations of the technique and their skill.

The procedure
- The patient should be comfortably positioned on bed or couch in such a way as to allow full view of the wound
- The patient should receive suitable analgesia for both the wound and the procedure
- Suitable lighting must be available
- Apron and well fitting sterile gloves should be worn

Equipment
- Sterile dressing pack
- Scalpel with 10 and 15 blade
- Sharp scissors
- Forceps capable of grasping or holding necrotic tissue
- Sterile gauze
- Haemostatic dressing

Other equipment
Culture swab
Biopsy pot
Camera
Doppler if appropriate
(Suture material)

Complications of sharp debridement
Stop the procedure should any concerns or uncertainties regarding the extent of the necrotic tissue or damage to underlying structures occur.

Pain
- Provide adequate analgesia either systemically or topically in the form of Lignocaine or EMLA cream. Evaluate the need to continue or delay the procedure. Continue adequate analgesia after the debridement.

Bleeding
- Apply pressure to the bleeding point or area and/or use a haemostatic agent such as Kaltostat. Stop the procedure if excessive bleeding occurs. Occasionally suturing of the bleeding vessel may be required.

Ensure that equipment is available to manage complications prior to commencing this procedure. Report and document difficulties, liaise with doctor/multidisciplinary team and, if necessary, complete a clinical incidence report form.
The Ideal Dressing

There are two different categories of dressings:
1. Primary - This is in contact with the wound.
2. Secondary - This is not in contact with the wound but covers the primary dressing.

When choosing a secondary dressing ensure it’s compatibility with the primary wound contact layer.

Choosing the ideal dressing

There are many hundreds of wound products available all having slightly different properties. The ideal wound management choice is dependant on the type, depth and colour of the wound taken in conjunction with the stage of healing and what the main objectives of treatment e.g. debridement or protection. Dressing choice will also be influenced by the level and type of exudate. The ideal dressing was initially described by Turner (1985) this has since been expanded by Thomas (1990) and Morison (1992) these are compared by Bale and Jones (1997). Some authors include criteria such as longevity of wear, shelf life, availability and cost-effectiveness in their definition all of which are important.

For the purpose of this document the ideal dressing is considered to be one that ensures optimal healing:

1. Maintain high humidity
   Epidermal cells require a moist (not wet) surface to permit them to migrate across the wound surface a dry wound forces the cells to burrow deeper until they meet a moist level, delaying healing. This is based on the initial work of George Winter (1962). Studies by Freidman and Su (1983) showed that the moist environment enhanced natural autolytic processes by breaking down necrotic tissue.

2. Removes excess wound exudate
   Exudate, micro-organisms, toxins and dead cells are removed to relieve maceration, tissue oedema, and to reduce pain and swelling. The dressing choice will allow control of the exudate, either by absorbing it into the dressing or by passing it on to a hydrophilic absorbent secondary dressing (Cherry and Harding, 1997).

3. Permit thermal insulation
   A constant temperature of 37°C is essential to maintain biological processes (mitosis and enzymatic activity). Myers (1982) found that, following wound cleansing it was 3 hours after replacing the dressing before mitotic activity was returned to normal.

4. Impermeability
   A dressing should prevent bacteria gaining access to the wound surface. A soaked or leaking dressing provides a pathway for bacteria in either direction. Some dressings are waterproof allowing bathing whilst in position.

5. Gaseous exchange
   At different phases of wound healing both hypoxia and normal amounts of oxygen are required. A more rapid restoration of the microcirculation occurs in an anaerobic environment (Knighton et al, 1981). High levels of oxygen are necessary for the development of fibroblasts and collagen. The role of oxygen and hyperbaric therapy is reviewed by Heimbach (1985) and Simmons (1999).

6. Non fibre shedding/non toxic
   Fibres shed into the wound causes irritation and can become a focal point for infection. Granulating tissue can grow into the open mesh, attaching the dressing to the wound. Local irritation or sensitivity can occur with some products used the most common is iodine.

7. Non adhesive, Comfortable and conforming
   The dressing must be non-adhesive to the wound bed and protect the wound from further trauma that will delay healing (Dealey, 1999). Patient compliance is best achieved with a comfortable, conforming, flexible dressing causing minimal pain when changed and which does not take excessive time to redress.
Choosing A Wound Dressing

To help with the choice of the most appropriate dressing the following flow chart relates the wound grade and appearance to a series of dressing options. By following the correct pathway you will be led to an options box that contains a recommended dressing type. The dressing options table then lists the recommended products of that dressing type. A detailed description of all the recommended products then follows in alphabetical order.

Cost Effectiveness

Cost effectiveness is achieved by appropriate choice of treatment. This may not always be achieved by using the cheapest product. Factors such as healing time, nursing costs, frequency of dressing changes and requirements for other products such as secondary dressings, antibiotics and analgesics all need to be considered when selecting a product. At times the use of multiple products may be necessary but in general this should be discouraged. When necessary products from different manufactures may be combined providing this is not contra-indicated in the product literature.

Dressing Cost Code

The detailed description of each dressing contains a cost code. This can be used as a guide only. The total cost of a dressing depends on many factors including the size of the wound and the frequency of dressing changes. Charges also vary according to purchasing conditions.

Each product listed has been given a cost code:  
- **Band A** are priced between 1p and 49p  
- **Band B** are priced between 50p and £1.49  
- **Band C** are priced between £1.50 and £2.49  
- **Band D** are priced between £2.50 and £4.99  
- **Band E** are priced above £5.00

Advanced Wound Care Products

Some Products listed in this resource file are designated “Advanced Wound Care Products” and are not freely available either within the hospital or Community. These products are highlighted in red in the formulary. Details on these products are included to provide staff, who may be managing a patient receiving specialist wound care, with the necessary information to understand care requirements of patients receiving treatment with these products. These products are highlighted in the formulary.

<table>
<thead>
<tr>
<th>Advanced Product</th>
<th>Manufacturer</th>
<th>Approximate costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acticoat 7</td>
<td>Smith &amp; Nephew</td>
<td>£8 for 10x12.5cm</td>
</tr>
<tr>
<td>Hyalifill-F</td>
<td>ConvaTec</td>
<td>£27 for 10x10cm</td>
</tr>
<tr>
<td>LarvE</td>
<td>SM TL</td>
<td>£54.50/treatment</td>
</tr>
<tr>
<td>Promogram</td>
<td>Johnson &amp; Johnson</td>
<td>£4.63 small size</td>
</tr>
<tr>
<td>VAC</td>
<td>KCI</td>
<td>£30 pump/day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consumables £40</td>
</tr>
</tbody>
</table>
# Dressing Options

<table>
<thead>
<tr>
<th>Dressing Type</th>
<th>Recommended Product</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low adherence</td>
<td>N/A ultra</td>
<td>Jelonet</td>
</tr>
<tr>
<td>Non adherence</td>
<td>Mepitel</td>
<td>Mepilex</td>
</tr>
<tr>
<td>Film</td>
<td>Tegaderm</td>
<td>Tegaderm with Pad</td>
</tr>
<tr>
<td></td>
<td>Opsite Flexigrid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cavilon</td>
<td></td>
</tr>
<tr>
<td>Hydrogel</td>
<td>Intrasite Gel</td>
<td></td>
</tr>
<tr>
<td>Hydrocolloid</td>
<td>Granuflex</td>
<td>Duoderm</td>
</tr>
<tr>
<td></td>
<td>Comfeel Plus</td>
<td></td>
</tr>
<tr>
<td>Hydrofiber</td>
<td>Aquacel</td>
<td>Carboflex</td>
</tr>
<tr>
<td>Cadexomer</td>
<td>Iodoflex</td>
<td></td>
</tr>
<tr>
<td>Alginate</td>
<td>Sorbsan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kaltostat</td>
<td></td>
</tr>
<tr>
<td>Foam</td>
<td>Allevyn</td>
<td>Allevyn cavity</td>
</tr>
<tr>
<td></td>
<td>Lyofoam</td>
<td>Allevyn Adhesive</td>
</tr>
<tr>
<td></td>
<td>Mepilex</td>
<td>Meplilex Boarder</td>
</tr>
<tr>
<td></td>
<td>Tielle</td>
<td></td>
</tr>
<tr>
<td>Deodorisers</td>
<td>Metronidazole gel (Anabact)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carboflex</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Actisorb Silver 220</td>
<td></td>
</tr>
<tr>
<td>Tulle</td>
<td>Inadine</td>
<td>Jelonet</td>
</tr>
<tr>
<td>Antiseptics</td>
<td>Betadine ointment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inadine</td>
<td></td>
</tr>
<tr>
<td>Silver containing antimicrobials</td>
<td>Flamazine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Actisorb Silver 220</td>
<td></td>
</tr>
</tbody>
</table>
Acticoat 7

Advanced Product
Dressing type: Antimicrobial

Cost £8 for 10x12.5cm dressing
Manufacturer: Smith and Nephew

What is it?
Acticoat 7 consists of three layers of a fine silver coated polyethylene mesh and two layers of non woven fabric. All 5 layers are welded together. The silver is applied to the mesh by a vapour deposition process forming nanocrystals of metallic silver. Acticoat 7 is available in two sizes 10cm x 12.5cm and 15cm x15cm.

How does it work?
Nanocrystaline silver exhibits an antibacterial activity against a wide range of Gram negative and Gram positive bacteria, yeasts and fungi.

Advantages
1. Fast acting and long lasting antimicrobial dressing.
2. Can be left in place for up to 7 days.

Disadvantages
1. It is expensive to use and application warnings must be noted.
2. Care should be taken with secondary dressing.
3. Some patients find this dressing painful.
4. Care needed in choice of wound for this product; needs to be appropriate to be beneficial.

Wounds to use it on
Yellow or green, infected or heavily colonised and heavily exudating wounds that have not/will not responded to conventional dressings. Use when a reduction of bacterial load is necessary. Acticoat 7 has been used as a secondary dressing over Mepital for skin grafts.

How to use it
The dressing must be moistened with water (not saline) and must not be used with any oil based products or other active dressings or antimicrobials. Secondary dressings should be an inert absorbent product chosen according to the level of exudate.

Minimum and maximum changing times
Can be left in place for 7 days. May require more frequent change in heavily exudating wound.

Bibliography:


Actisorb Silver 220

Cost Code C for 10.5x10.5cm dressing

Dressing type: Antimicrobial and Deodoriser

Manufacturer: Johnson & Johnson

What is it?
Activated charcoal cloth with silver chemically and physically bound to the carbon fibres. This “active fabric” is sealed inside a nylon envelope that eases handling and reduces fibre loss. It is used as an antimicrobial, wound cleanser and deodoriser. The dressings are available in 6.5cm x 9.5cm, 10.5cm x 10.5cm and 10.5cm x 19cm sizes.

How does it work?
The activated charcoal cloth absorbs bacteria, bacterial toxins and odour. Sufficient silver is present to act as an antimicrobial agent.

Advantages
1. Easy to apply.
2. Effective against a wide range of bacteria.
3. Effective in the management of all types of malodorous wounds.

Disadvantages
1. May adhere to dry wounds.
2. Cannot be cut to size.

Wounds to use it on
Suitable for all green or yellow exuding malodorous wounds including leg ulcers, fungating carcinomas, faecal fistulae and pressure sores.

How to use it
Apply Actisorb directly to the wound. In the presence of delicate skin use Actisorb over N-A dressing to prevent damage. Cover with an absorbent layer and a retention bandage.

DO NOT CUT THIS DRESSING

Minimum and maximum changing times
Depending on the state of the wound the Actisorb component of the dressing may be left in place for up to 7 days. The absorbent layer of the dressing may need to be changed more frequently particularly in the case of heavily exudating or grossly malodorous wounds.

Bibliography
Allevyn

Dressing type: Foam

What is it?
Allevyn consists of a layer of soft hydrophilic foam, 4mm thick, bonded to a semipermeable film. Allevyn Adhesive is a similar product with low allergy adhesive which adheres well to intact skin but not the wound. The dressing acts as an effective barrier to water or wound exudate and prevents the passage of microorganisms through the back of the dressing. The dressing is available in several sizes (5x5cm, 10x10cm, 10x20cm and 20x20cm). A specific heel and sacral shaped dressing is also available.

How does it work?
The wound contact layer is a three dimensional polyurethane net which renders the dressing less adherent to granulation tissue. By virtue of its hydrophilic nature, the foam is capable of absorbing large volumes of fluid. Strike through is prevented by the semipermeable backing.

Advantages
1. Able to absorb large volumes of exudate but still maintain a moist wound environment.
2. Does not adhere to granulating tissue.
3. Easy to use and can be cut to size.

Disadvantages
1. Limited value on dry wounds.

Wounds to use it on
Yellow, red or pink wounds with moderate to heavy exude.

How to use it
The dressing is available in a number of sizes. Choose a size that will overlap the edges of the wound by 2-3cm and place the white patterned surface next to the wound. Secure Allevyn with tape or bandage. Water may aid removal of Allevyn Adhesive dressing.

Minimum and maximum changing times
Daily/7 days depending on the volume of exudate.

Bibliography
Allevyn Cavity Wound Dressing

Cost Code E for 10cm circular dressing

Dressing type: Foam

Manufacturer: Smith and Nephew

What is it?
Allevyn Cavity wound dressing is a highly conformable absorbent pillow shaped dressing that consists of a soft honeycombed outer membrane containing a mass of hydrophilic foam chips. The product cannot be cut. It is, however, available in different shapes and sizes (circular: 5cm and 10cm diameter and tubular: 9cm x 2.5cm, 12cm x 4cm).

How does it work?
The outer membrane provides an effective porous low adherent wound contact layer that allows exudate to be drawn into the foam chips where it is held.

Advantages
1. An easy to use packing for exudating cavity wounds.
2. Does not adhere to the wound bed.
3. Very absorbent, this can reduce the need for frequent dressing changes and lessen the chance of skin maceration.

Disadvantages
1. Cannot be cut.
2. Expensive if cavity is large and multiple dressings required.

Wounds to use it on
Use it on full thickness cavity wounds or for the temporary treatment of wounds prior to delayed primary closure.

How to use it
Appropriately sized dressing(s) is/are inserted into the wound. The dressing is then held in place by tape, dressing retention sheet or bandage.

DO NOT CUT THIS DRESSING

Minimum and maximum changing times
Daily/7 days depending on volume of exudate.

Bibliography:
Aquacel

Cost Code C for 10x10cm dressing

Dressing type: Hydrofiber

Manufacturer: ConvaTec

What is it?
Aquacel hydrofiber dressing is made up of a hydrocolloid polymer (carboxymethylcellulose) which is spun into fibres and manufactured into a sheet and a ribbon. The sheets are available in three sizes 5x5cm, 10x10cm and 15x15cm.

How does it work?
Aquacel dressing is absorbent and allows fluid into the fibres of the dressing. As exudate wets the dressing, Aquacel becomes a gel sheet. The gel provides an environment that encourages the healing and debriding process. There is minimal expansion of the dressing as the fluid is absorbed.

Advantages
1. Aquacel is more absorbent than alginate dressings.
2. Vertical wicking reduces maceration of the surrounding skin.
3. Deals effectively with moderate to heavy exudate.

Disadvantages
1. Can become adhered if the wound is too dry.
2. Requires a secondary dressing.

Wounds to use it on
Use on yellow, pink or red moderate to heavy exuding wounds. The product can be used on infected wounds but it is recommended that regular inspections be carried out. Aquacel is particularly useful in surgical cavity wounds.

How to use it
The fibre dressing can be used flat or as a loose cavity filler. This can be covered by a secondary absorbent dressing of Granuflex or DuoDerm. The gel maintains its integrity and therefore can be removed whole or it can be washed out of the wound with water or saline.

Minimum and maximum changing times
The dressing can be left for up to seven days or until leakage occurs.

Bibliography:
**Betadine Ointment**

**Equivalent to Inadine**

**Dressing type: Antiseptic**

**Cost Code A (Multi-use containers)**

**Manufacturer: SSL**

**What is it?**
Betadine antiseptic water soluble ointment contains 10% Povidone Iodine.

**How does it work?**
As an antiseptic, it should be used short term in the presence of infection or to prevent infection where antibiotic therapy is inappropriate. Povidone Iodine has a rapid and prolonged germicidal action against a wide range of organisms including Gram positive and Gram-negative bacteria, fungi, protozoa and viruses. It is also active against bacterial spores. Whilst the golden brown colour remains its activity persists.

**Advantages**
1. Wide spectrum of activity (Gram -ve and +ve bacteria, spores, fungi and viruses).
2. Germicidally active whilst brown colour remains evident, unaffected by blood, pus etc.

**Disadvantages**
1. Iodine is a common allergen (Dealey, 1999)
2. Antiseptics are known to retard healing and lower the tensile strength of the wound. In addition irreversible micro-circulation damage occurs which compromises fibroblasts and interferes with collagen synthesis (Lineaweaver et al, 1985).
3. May accumulate systemically leading to thyrotoxicosis in patients with pre-existing thyroid disease should not be used during pregnancy, lactation or in patients on Lithium therapy.

**Wounds to use it on**
Wounds requiring prevention or treatment of infection or high bacterial load.

**How to use it**
Check potential allergic status. Should be used short term (Dealey, 1999), apply the ointment directly to the wound and cover with a secondary dressing dependant on the amount of exudate.

**Minimum and maximum changing times**
The ointment should be changed when the colour changes to white. Maximum recommended use is alternate days. The total used for one dressing change should not exceed 50 grams.

**Bibliography:**
Carboflex

Dressing type:
Hydrofiber / Deodoriser

What is it?
CarboFlex is a five layer dressing specifically designed to address the management problems associated with malodorous wounds. It consist of a wound contact layer of Kaltostat with Aquacel, a film to delay wicking, activated charcoal cloth, an absorbent pad and a sleeve to delay strike through.

How does it work?
It is a highly absorbent dressing, Kaltostat and Aquacel both absorb exudate. The activated charcoal controls odour.

Advantages
- Absorbs and controls exudate.
- Absorbs offensive odour.
- Soft, light and conformable.
- Contact layer gels as it absorbs the exudate which can ease dressing removal.

Disadvantages
Can adhere to wound if insufficient exudate.

Wounds to use it on
Use on yellow, pink or red moderate to heavy exuding wounds particularly where odour is a problem. The product can be used on infected wounds but it is recommended that regular inspections be carried out. Aquacel can be used in combination with Carboflex for cavity wounds.

How to use it
Choose a dressing sized so that it is large enough to overlap the wound edge by at least 3cm.. Place the fibrous (non-shiny) surface of the dressing directly onto the wound or over the cavity filler. CarboFlex should be secured in place with tape or other appropriate material.

DO NOT CUT THIS DRESSING

Minimum and maximum changing times
3 to 7 days according to exudate and presence of strike through.

Bibliography
Cavilon

Dressing type: Barrier Film

Cost: single use applicator B
Multiuse spray (28ml) E

Manufacturer: 3M

What is it?
Cavilon is an alcohol free, quick drying non-cytotoxic liquid film. Is available as a spray and applicator.

How does it work?
Cavilon forms a breathable transparent protective coating on the skin. It is intended to protect intact or damaged skin from urine, faeces and wound exudate. It is also useful to protect fragile skin from adhesive products and helps with adhesion of dressings.

Advantages
1. Alcohol free formula will not sting on application.
2. Claims 72 hours protection from urine and faeces.
3. Non cytotoxic and hypoallergenic (suitable for use on neonates).
4. Protects skin from adhesive tape complications and trauma.

Disadvantages
1. Allow the product to dry as it is adhesive.
2. Will not adhere to wet or weeping skin.

Wounds to use it on
Pressure areas to prevent friction damage, to skin surrounding wounds to protect from either exudate or excrement and around stomas to protect skin from adhesive stripping.

How to use it
Spray affected skin or apply using sponge applicators.

Minimum and maximum changing times
Daily application may be necessary in some cases of skin excoriation due to incontinence. At dressing change when used for protection.

Bibliography
Comfeel Plus

Equivalent to Granuflex

Dressing type: Hydrocolloid

Cost Code C for 10x10cm dressing

Manufacturer: Coloplast Ltd

What is it?
Comfeel Plus is a hydrocolloid dressing with calcium alginate in the form of a wafer. The wafer is permeable to water vapour but impermeable to bacteria. Comfeel Plus is available in a variety of sizes and shapes.

How does it work?
Creates a moist environment conducive to autolytic debridement (this may lead to an initial increase in wound size). The moist environment also increases mitosis and encourages angiogenesis and the formation of granulation tissue and allows epithelialisation. Comfeel reacts with exudate to form a viscous yellow gel that can resemble pus.

Advantages
1. Can be used to debride necrotic wounds by rehydration and autolysis.
2. Reduces pain, the moist gel prevents exposed nerve endings drying out.
3. May be used to remove dirt and small foreign bodies from wounds.

Disadvantages
1. Sensitivity or skin maceration can develop with prolonged use.

Wounds to use it on
Use on black, yellow, red or pink wounds with moderate exudate. It can be used on clinically infected wounds but care should be taken and the wound monitored carefully. Comfeel should not be used in the presence of an anaerobic infection. It is not recommended for use on exposed muscle or bone.

How to use it
Comfeel is best applied warm, avoiding unnecessary stretching and allowing a 3 cm margin all around the wound. Change only when leakage or “strike” through occurs.

Minimum and maximum changing times
Can be left for up to 7 days.

Bibliography:
Flamazine

Equivalent to: Silver Sulphadiazine

Dressing type: Antimicrobial

Cost Code D for a 50g tube

Manufacturer: Smith and Nephew

What is it?
Flamazine is a broad spectrum white hydrophilic antibacterial cream containing silver sulphadiazine 1% in an oil and water base.

How does it work?
It is an effective topical antimicrobial agent active against most strains of Gram +ve and Gram -ve bacteria found as wound pathogens (including Pseudomonas) as well as some types of yeasts and fungi.

Advantages
1. Broad antimicrobial spectrum.
2. Easy to apply.
3. No discomfort on application.
4. Can be left for up to 48 hours.

Disadvantages
1. Some patients are sensitive to sulphonamides.
2. Use with caution on large wounds due to potential absorption of silver and sulphonamide components.
3. Should not be used on pregnant women or neonates.
4. Use with caution if hepatic or renal function impaired.

Wounds to use it on
Infected, yellow or green wounds with low to medium exudate.
Treatment of soft tissue injuries such as burns or finger tip injury.
For short term use on leg and pressure ulcers.

How to use it
Cleanse wound. It may be necessary to deslough the wound first. Apply a layer of 3-5mm of Flamazine and cover with an absorbent secondary dressing. Flamazine may also be used under an occlusive glove for hand injuries and burns.

Minimum and maximum changing times
Every 48 hours.

Bibliography:
Granuflex

Equivalent to Comfeel Plus
Dressing type: Hydrocolloid

Cost Code C for 10x10cm dressing
Manufacturer: ConvaTec

What is it?
Granuflex is a hydrocolloid dressing in the form of a wafer or a thinner version Duoderm. The wafer’s outer layer is semi-permeable and is bonded to an inner matrix of hydrocolloid particles and hydrophobic polymer. Available in a variety of shapes and sizes.

How does it work?
Granuflex creates a moist environment conducive to autolytic debridement (this may lead to an initial increase in wound size). The moist environment also increases mitosis and encourages angiogenesis and the formation of granulation tissue. It also supports epithelialisation. Granuflex combines with exudate to form a viscous yellow gel that can resemble pus.

Advantages
1. Can be used to debride necrotic wounds by rehydration and to deslough by autolysis.
2. Reduces pain, the moist gel prevents exposed nerve endings drying out.
3. Effective barrier to bacteria.
4. May be used to remove dirt and small foreign bodies from wounds.

Disadvantages
1. It can be difficult to apply in awkward areas.
2. Unusual smell, patients should be warned of this phenomenon.
3. Sensitivity can develop with prolonged use.
4. Skin maceration can develop with inappropriate use.

Wounds to use it on
Use on black, yellow, red or pink wounds with low to moderate exudate. It can be used on clinically infected wounds but care should be taken and the wound monitored carefully. Granuflex should not be used in the presence of an anaerobic infection.

How to use it
It is best applied warm avoiding unnecessary stretching and allowing a 3-4 cm margin all around the wound overlapping if necessary. Change only when leakage or “strike” through occurs. Duoderm is useful on low exudating wounds or as a protective layer.

Minimum and maximum changing times
Can be left up to seven days.

Bibliography:


**Advanced Product**

**Dressing type: Healing Enhancer**

**Hyalofill - F**

**Cost**: £27 for 10x10cm

**Manufacturer**: ConvaTec

**What is it?**

Hyalofill-F is a soft, conformable and absorbent biopolymeric fleece composed of Hyaff, which is an ester of hyaluronic acid. Hyaluronic acid is a biocompatible naturally occurring carbohydrate component of the extracellular matrix of human skin, joints, eyes, and most organs and tissues.

**How does it work?**

Hyalofill-F sheets are made up of 100% Hyaff which liberates hyaluronic acid as it breaks down in contact with wound exudate providing a moist soft gel which supports the healing process.

**Advantages**

1. Naturally occurring product.
2. Stimulates the healing process at all stages.
3. Can be used for many types of wounds.
4. Can be used on infected wounds (in conjunction with systemic antibiotics).

**Disadvantages**

1. Cost.
2. Not suitable for black green or yellow wounds.
3. Care needed in choice of wound for this product; needs to be appropriate to be beneficial.

**Wounds to use it on**

Hyalofill-F is most effective on red wounds. This product should be used on non-healing or recognised as difficult to heal wounds where conventional products are ineffective.

**How to use it**

The soft conformable product is placed in direct contact with the wound base. Hyalofill-F must remain moist. Granuflex or Duoderm are suitable secondary dressings. Aquacel can also be used in conjunction with this dressing for heavily exudating wounds.

**Minimum and maximum changing times**

Can remain active for three days before degrading. May require more frequent change if the level of exudate is high.

**Bibliography**


**Inadine**

**Dressing type: Antiseptic**

**Manufacturer: Johnson & Johnson**

**Cost Code A for 10x10cm dressing**

**What is it?**
Inadine is a sterile, low adherent knitted fabric dressing impregnated with a polyethylene glycol base containing 10% Povidone iodine. It appears yellow-brown in colour and comes in individual packets. It is available as 5cm x 5cm and 9.5cm x 9.5cm sizes.

**How does it work?**
Povidone Iodine has a rapid and prolonged germicidal action against a wide range of organisms including Gram positive and Gram negative bacteria, fungi, protozoa and viruses. It is also active against bacterial spores. Its activity persists in the presence of necrotic tissue, purulent exudate, blood and serum whilst the golden brown colour remains.

**Advantages**
1. Wide spectrum of activity.
2. Useful colour change indicating need for dressing change.
3. Easy to apply.

**Disadvantages**
1. Retards healing and lowers the tensile strength of the wound (Lineaweaver et al., 1985).
2. Is a common allergen (Dealey, 1999).
3. Causes irreversible micro-circulation damage and interferes with collagen synthesis and damages fibroblasts (Lineaweaver et al., 1985).
4. May accumulate systemically leading to thyrotoxicosis in patients with pre-existing thyroid disease and should not be used during pregnancy, during lactation and should be used with caution in the presence of hepatic and renal disease and on patients receiving Lithium therapy.

**Wounds to use it on**
Use in low exudate, shallow wounds. It is useful for the prophylaxis/treatment of a wide range of bacterial and fungal infections.

**How to use it**
Inadine should be used short term. Peel the Inadine from the protective sheets and apply 1-2 layers over the wound and cover with a secondary dressing.

**Minimum and maximum changing times**
Change when the yellow-brown colour turns to white.

**Bibliography:**
Intrasite Gel

Dressing type: Hydrogel

Manufacturer: Smith and Nephew

Cost Code C for 25g

What is it?
Provided in an applicator, Intrasite is an aqueous gel consisting of a carboxymethyl cellulose polymer. Sizes 15g and 25g applicators.

How does it work?
The gel will hydrate a wound allowing autolytic debridement. It also will absorb exudate and thus produces a moist environment at the wound surface.

Advantages
1. Assists rehydration and autolysis of dead tissue.
2. Facilitates re-epithelisation minimizing scar formation in granulating wounds.
3. May reduce wound pain.

Disadvantages
1. Not ideally suited for use on heavily exudating wounds.

Wounds to use it on
Use on wounds requiring debridement including black, green and yellow or red wounds with low to moderate exudate.

How to use it
Squeeze the gel into wound. On re-dressing, the gel should be removed by irrigating with saline before re-applying. The excess gel is removed and a secondary dressing applied.

The choice of secondary dressing depends on the state of the wound:

- **Dry** Use an occlusive dressing to reduce fluid loss and gel drying out e.g. Opsite
- **Light** Non-adherent less permeable e.g. N-A
- **Heavy** Simple absorbent pad or foam e.g. Allevyn/Allevyn Adhesive.

Interval between dressing changes depends on the wound. The dressing should be changed when the area of Intrasite covering the wound is completely liquefied.

Minimum and maximum changing times
Daily/every three days.
(Infected wounds - daily).

Bibliography:
Iodoflex

Dressing type: Cadexomer

Manufacturers: Smith and Nephew

Cost Code C for 5g

What is it?
Iodoflex consists of medicated hydrophilic polysaccharide beads which contain 0.9% iodine. This is held within the structure of a cadexomer polymer and is slowly released when the dressing is hydrated. Iodoflex is available in 5gm and 10gm sizes.

How does it work?
The polysaccharide beads take up fluid and swell. If placed on a sloughy or infected wound, bacteria and cellular debris are taken up by capillary action and are trapped in the spaces between the beads. Iodine is slowly released into these spaces to work on the bacteria. The same capillary action ensures that iodine concentrations remain at the lowest at the wound surface.

Advantages
1. Effective cleanser active against a wide range of gram-negative and gram-positive bacteria and fungi.
2. Biodegradable.
3. The low % iodine slowly released does not delay healing or effect fibroblasts.

Disadvantages
1. Not suitable for use on a dry, necrotic wound.
2. Can cause local skin reactions and cannot be used in patients with known iodine sensitivity.
3. The maximum single application is 50gm and the weekly application must not exceed 150gm.

Wounds to use it on
Iodoflex is recommended for the treatment of infected, moist, sloughy green and yellow wounds. In some chronic wounds Iodoflex has stimulated growth factors and white cell activity (Moore, Thomas and Harding 1995) and therefore encouraged healing.

How to use it
Prior to application of Iodoflex dressing one of the protective carrier layers is removed and the paste is placed directly in contact with the wound. The second carrier layer is then generally removed but it can be left in place if required. Removal is best accomplished by irrigation.

Minimum and maximum changing times
Daily / weekly depending on nature of wound and volume of exudate.

Bibliography:
Equivalent to: Paraffin Gauze

Dressing type: Tulle

What is it?
A mesh of cotton or cotton and viscose impregnated with white or yellow soft paraffin. Jelonet has not less than 175 grams of paraffin per square metre.

How does it work?
Paraffin gauze is intended as a primary wound contact layer. The paraffin is present to reduce the adherence of the product to the wound.

Advantages
1. Cheap.
2. Easy to apply.

Disadvantages
1. This product is not recommended as new granulation tissue may grow into the gauze mesh and be damaged on dressing change.
2. If placed on heavily exudating wounds the semi-occlusive nature of the dressing may prevent free movement of exudate and cause maceration.

Wounds to use it on
Use on red or pink wounds, traumatic injuries, burns and skin grafts.

How to use it
The Paraffin Gauze dressing should be placed directly onto the surface of the wound and covered with a secondary dressing and secured with tape or bandage. Several layers of the dressing can be used if necessary and it can be used as a secondary dressing to prevent a primary dressing “drying out”.

Minimum and maximum changing times
Daily/7 days depending on the type of wound.

Bibliography
 Equivalent to SORBSAN

Dressing type: Alginate

What is it?
A natural dressing product, made from Norwegian seaweed (Laminaria Hyerborea) composed of Calcium (80%) and Sodium Alginate fibres (20%). It is available as Kaltostat 5x5, 7.5x10, 10x10 and 15x25cm dressings and as a “rope” in a 2g pack.

How does it work?
Calcium ions in the alginate fibres react with the sodium ions in the exudate, converting it to a strong ion-active gel which coats the wound surface, keeping it moist and warm. This is said to reduce wound discomfort. Kaltostat tends to stay intact even as a gel. When the dressing is removed, there may be a “glazed” appearance over the wound; this should not be disturbed as the gel contains nutrients which encourage cell growth. May also be used as a haemostatic agent.

Advantages
1. Easy application and removal, without disturbing wound bed.
2. Conformability and comfort for the patient.
3. Some haemostatic properties.

Disadvantages
1. A mild burning sensation may be experienced when first applied.
2. The dressing will harden and become ineffective if allowed to dry out.
3. As this dressing expands as it absorbs exudate it should not be inserted into narrow sinuses.

Wounds to use it on
Green through to red wounds with medium to high exudate. May be used on infected wounds. Haemostatic properties allow use on traumatic, surgical, debrided, bleeding or malignant wounds.

How to use it
Cut or fold Kaltostat to the shape of the wound. Secure with a secondary dressing or a semi-permeable film according to exudate. Leave undisturbed until maximum absorbency reached.

Minimum and maximum changing times
Daily/every 3 days depending on the volume of exudate although may be left up to 7 days.

Bibliography:
LarvE (Sterile Maggots)

Advanced Product

Dressing type: Biosurgery

Manufacturer: Biosurgical Research Unit

Cost £54.50 per pot

What is it?
Sterile larvae (maggots) supplied for use in wound management are those of the common green bottle Lucilia Sericata. This is a second line treatment where quick removal of necrotic and infected material is required.

How does it work?
When applied to the wound they are 2-3mm long. Once in place they produce powerful proteolytic enzymes that degrade and liquefy necrotic tissue. The maggot then ingests the liquefied necrotic tissue and infective material reducing the non viable tissue and bacterial load at the wound bed. It has been reported that the use of Larvae can reduce wound pain and stimulate granulation tissue.

Advantages
1. Rapid but selective method of debridement.
2. Reduces bacterial load including MRSA.
3. Stimulation of healing.
4. Non toxic, non allergenic.

Disadvantages
1. Availability.
2. Slow when compared to sharp or surgical debridement.
3. Not suitable for all wounds.
4. Effectiveness limited by environment.
5. Aesthetic aspects.
6. Disposal within 24 hours of removal.

Wounds to use it on
Necrotic or infected black green yellow wounds. Larvae are not effective on hard dry eschar and rehydration may be necessary prior to application. Their use should be a joint decision between the patient, senior nursing and medical staff and should be re-evaluated at each dressing change. Advice on use can be obtained from the Nurse Consultant or the Vascular Unit. Care needed in the choice of wound for this product, excessively dry or moist wounds may lead to larval death. Larvae are used:

- Where sharp debridement may expose bone or joint
- Where autolytic debridement has failed or is contraindicated
- To control infection
- Prior to skin grafting.

How to use it
The dressing system intends to retain the larvae at the wound whilst maintaining the correct environment for larvae and the optimum effectiveness of treatment. A hole, the size and shape of the wound is cut out of a sheet of hydrocolloid and placed over the surrounding skin. The larvae are placed on the wound with a net over the larvae on the wound which is fixed to the hydrocolloid with sleek tape. Moistened secondary non-occlusive dressings are placed over the area. Further instructions and details are sent with each order of LarvE.

Dressing change/Larval removal
The Larvae should be removed three to four days and disposed of in double yellow bags for incineration within 24 hours of removal.

Availability: Larvae are ordered the day prior to application from SMTL. T. 01656 752820. No Delivery Monday.

Bibliography:
**Lyofoam**

**Dressing type:** Foam

**Manuacturer:** SSL

**Cost Code B for 10x10cm dressing**

**What is it?**
Lyofoam is a soft, open cell hydrophobic foam sheet 8mm thick. The wound contact layer has been heat treated to collapse the cells of the foam. Available as: 7.5x7.5cm, 10x10cm, 17.5x10cm and 15x20cm, also available as a tracheostomy dressing.

**How does it work?**
The dressing absorbs liquid by capillarity; it is freely permeable to gasses and water vapour. In use, the dressing absorbs blood or other tissue fluids, and the aqueous component is lost by evaporation through the back of the dressing. The pores however can become occluded if the exudate is viscose or produces large volumes of exudate.

**Advantages**
1. Maintains a warm moist environment facilitating rehydration and autolysis.
2. Lyofoam is a good thermal insulator and will keep the wound warm.
3. Secondary dressing is not required.
4. Can be used as protection e.g. on the foot or for newly epithelialised skin.

**Disadvantages**
1. The dressing cannot absorb large amounts of viscose exudate (Allevyn is more absorbent).
2. Lyofoam can adhere to the wound surface in some situations.

**Wounds to use it on**
Lyofoam is a useful and versatile material and can be used on a variety of exudating wounds including leg ulcers, decubitus ulcers, diabetic foot ulcers, sutured wounds, burns and graft donor sites and tracheostomy wounds. It should not be used on wounds with a dry scab or hard black necrotic tissue.

**How to use it**
Dressings should be cut to size allowing a 2-3cm overlap. Place the shiny side of the dressing next to the wound. In wounds with copious amounts of exudate allow for a larger overlap as this will increase the absorptive power of the dressing. Secure with tape but not an occlusive film.

**Minimum and maximum changing times**
Daily / week depending on volume of exudate.

**Bibliography**
What is it?
Mepilex is a non adherent absorbent dressing made from polyurethane foam. Mepilex Boarder is an island dressing of the same material. The outer surface of the foam is bonded to a vapour permeable membrane which acts as a barrier to liquid and micro-organisms. The wound contact layer is a soft silicone that does not stick to the surface of a wound or cause trauma to delicate or fragile tissue. Available in sizes 10cm x 10cm, 15cm x 15cm, 20cm x 20cm.

How does it work?
The soft silicone layer (Safetac™) is slightly tacky but not adhesive. This layer prevents skin stripping and does not cause pain on removal. The gentle adhesion prevents maceration by inhibiting lateral drainage of exudate onto the surrounding skin.

Advantages
1. Mepilex has been demonstrated to reduce wound pain in different types of wounds.
2. Where other dressings have low adherence to the wound bed Safetac is non adherent.
3. The foam can be used as protective padding.
4. Can be used on infected wounds if infection is treated.

Disadvantages
There are no contraindications for the use of Mepilex.

Wounds to use it on
Mepilex is suitable for all types of wounds with moderate to high exudate. The dressing absorbs exudate and maintains a moist wound healing environment whilst reducing the risk of maceration.

How to use it
Remove the protective film and place the sticky side on to the wound. The dressing should overlap the margins by two centimetres. Mepilex can be cut to size or shapes. When in position the dressing can be held in place with a retention bandage. Mepilex Boarder requires no secondary dressing.

Minimum and maximum changing times
Dressing change will depend on the amount of exudate and the size and type of wound. It can be left undisturbed for up to 7 days.

Bibliography
Mepitel

Equivalent to: Mepilex Foam / N/A dressing  
Cost Code D for 7.5x10cm  
Dressing type: Non Adherent  
Manufacturer: Molnlycke

What is it?
Mepitel is a semi-transparent, non adhesive wound contact layer (Safetac™). It is a flexible polyamide net coated with soft silicone. The silicone is tacky which prevents the lateral drainage of exudate. The nature of the dressing allows minimum pain and reduced damage to tissue on removal.

How does it work?
The soft silicone layer (Safetac) is slightly tacky but not adhesive. This layer prevents skin stripping and does not cause pain on removal. Mepitel is not absorbent but contains pores (1mm diameter) that allow the passage of exudate into a secondary absorbent dressing.

Advantages
1. Mepitel has been demonstrated to reduce wound pain in different types of wounds.
2. Where other dressings have low adherence to the wound bed Safetac is non adherent.
3. Mepitel can be used with topical agents.

Disadvantages
There are no contraindications for the use of the dressing. Imprints of the mesh can be seen if pressure is applied over the dressing this is not damaging to granulation tissue.

Wounds to use it on
Mepitel is useful where adherence of the dressing represents a particular problem such as skin tears, abrasions, blistering diseases, burns or skin grafts. Where indicated, topical agents can be applied under or over Mepitel.

How to use it
Mepitel is removed from the protective film and applied to the wound bed. It can be difficult to apply as the tacky nature sticks to gloves moistening gloves can help in positioning the dressing.

Minimum and maximum changing times
The times of dressing change is dependant on the level of exudate and the type of wound. Change is recommended to inspect the wound bed at least at weekly intervals.

Bibliography.
Metronidazole Gel

Equivalent to: Anabact

Dressing type: Deodoriser

Cost Code C for 20g

Manufacturer: Pharmacy

What is it?
Metronidazole gel is a colourless transparent hypromellose gel containing 8% Metronidazole and Benzalkonium chloride.

Anabact is a colourless gel containing 7.5% Metronidazole, hydroxybenzoate and propylene glycol. Available in: 15gm and 30gm tubes.

How does it work?
Metronidazole gel has two actions. The gel itself helps to provide a moist environment which promotes debridement by autolysis. Metronidazole is active against a range of anaerobic and aerobic bacteria and is therefore active against the odour produced by these bacteria.

Advantages
1. Provides a warm moist environment.
2. Effective odour control agent especially for malignant wounds and leg ulcers.

Disadvantages
1. Should be avoided in patients with known Metronidazole or Parabens allergy.
2. Should not be used during pregnancy or lactation.
3. Must not be exposed to strong sunlight or UV light.

Wounds to use it on
Malodorous wounds, fungating tumours, pressure sores and leg ulcers.

How to use it
The Gel should be applied liberally to the wound surface and covered with a secondary dressing or film depending on the volume of exudate.

Minimum and maximum changing times
Daily/As required.

Bibliography
Thomas S, et al., The antimicrobial properties of two metronidazole medicated dressings used to treat malodorous wounds, Pharm. J., 1991, 246, 264-266.
**N-A Ultra**

**Dressing type: Low Adherence**

**Manufacturer: Johnson & Johnson**

**What is it?**
N-A ultra has a silicone coating. This dressing is designed to act as a low adherence primary contact layer. Available in: 9.5x9.5cm and 19x9.5cm.

**How does it work?**
These dressings are porous so they allow free drainage of exudate. Having low adherence they can be removed from granulating wounds without causing significant trauma to the delicate healing tissues.

**Advantages**
1. Inexpensive.
2. Easy to apply.
3. Generally low adherence therefore less trauma at dressing changes.
4. Can be used with other dressings, gels, creams etc.
5. No contra-indications have been reported.

**Disadvantages**
1. N-A ultra is a low adherence dressing but can stick to some wounds.
2. Require a secondary dressing.

**Wounds to use it on**
Any sort of wound where dressing adherence may be a problem. Indications for use are therefore any ulcerated or granulating wound such as leg ulcers, pressure sores, burns, cuts or abrasions.

**How to use it**
These dressings are used as a primary dressing, an absorbent secondary dressing is then generally applied the whole being kept in place by bandage or tape.

**Minimum and maximum changing times**
The secondary dressing should be changed as often as required, leaving the primary N-A dressing undisturbed. Weekly changes of N-A or N-A Ultra are required.

**Bibliography:**
**Opsite Flexigrid**

**Equivalent to TEGADERM**

**Dressing type: Film**

**Cost Code B for 10x12cm dressing**

**Manufacturer: Smith and Nephew**

**What is it?**
Opsite Flexigrid is a sterile transparent dressing which consists of a thin polyurethane film with a hypoallergenic, water resistant adhesive. The dressing is permeable to both water vapour and oxygen but impermeable to micro-organisms. It is available in sizes: 6x7cm, 10x12cm, 12x25cm and 15x20cm sizes.

**How does it work?**
This product produces a moist environment by reducing evaporation from the wound surface. This in turn reduces scab formation and encourages healing.

**Advantages**
1. Possesses good oxygen and moisture vapour permeability.
2. Transparent, can visualise wound without disturbing it.
3. An intact dressing is impermeable to liquids and bacteria.
4. Can be used as a secondary dressing securing a hydrogel or alginate dressing.

**Disadvantages**
1. It can stick to some skin and it can remove healthy skin if care is not taken.
2. Mild acne has been observed on testing.

**Wounds to use it on**
This product can be used as a primary or secondary dressing or as a protective cover to area susceptible to skin breakdown. It may also be used to dress donor sites, closed, clean surgical wounds, minor abrasions and Grade 1 pressure ulcers or to prevent friction.

It should not be used as a primary dressing on infected wounds/sites.

**How to use it**
To apply: Choose a dressing size which ensures a 3-4 cm. margin of healthy skin to be included to ensure there is good adhesion. If required the outline of the wound can be traced onto the plastic grid which is then removed and filed with the patient’s case records.

To remove: Gently grasp the edges and slowly pull horizontally to the patient’s skin to break the seal. Gently remove the dressing in the direction of hair growth.

**Minimum and maximum changing times**
Changing times vary considerably depending on the state of wound. On clean wounds the dressing may be left undisturbed for in excess of 14 days.

**Bibliography**
Promogran

Advanced product

Dressing type: Protease Modulator

Cost £4.63 (small dressing)

Manufacturer: Johnson & Johnson

What is it?
Promogran is composed of a matrix of collagen and oxidised regenerated cellulose.

How does it work?
The matrix absorbs liquid to form a gel which binds with, and inactivates, matrix metalloproteinases (MMPs). This enhances the action of the growth factors and is postulated to stimulate healing.

Advantages
1. Stimulates chronic wounds which are not responding to conventional dressings.
2. Case studies suggest that when used on wounds improvements are seen.

Disadvantages
1. Cost.
2. Little clinical trial data to prove its clinical use.
3. Care needed in choice of wound for this product; needs to be appropriate to be beneficial.

Wounds to use it on
Clean debrided red wounds that are slow to heal. Is appropriate for diabetic foot ulceration, leg ulcers and arterial ulceration.

How to use it
Apply the hexagonal shaped dressing to the wound, can be cut to size. Secondary dressings are required such as Tielle. It can be placed under compression bandaging.

Minimum and maximum changing times
Determined by the wound and the exudate. Daily changes may be necessary where exudate is high in other wounds may be left for up to 3 days.

Bibliography:


What is it?
Sorbsan is a natural product, made from calcium alginate fibres derived from Scottish seaweed (Ascophyllum Nodosum). It is available as a flat dressing (5x5, 10x10 and 10x20 cm.), ribbon (40 cm) or as packing (30 cm).

How does it work?
Exudate, rich in sodium, is drawn into the calcium rich dressing along with any contaminating bacteria. The fibres quickly swell to form a sodium-calcium coagulum creating a warm, moist environment which encourages healing. Sorbsan gels more easily than Kaltostat. The wound may initially appear to increase in size as necrotic tissue is removed.

Advantages
1. Versatile, adapts easily to wound cavity or contour.
2. Highly absorbent and biodegradable.
3. Comfortable for the patient, easy removal as soluble in water/normal saline.
4. Can be used on infected or malodorous wounds.
5. No contra-indications, a non-toxic product.

Disadvantages
1. A mild “drawing” may be noticed by the patient (reduced by moistening before application).
2. Not suitable for hard or dry wounds or for use in narrow sinuses.

Wounds to use it on
Moderately to heavily exudating green, yellow or red wounds. It can be used on infected wounds.

How to use it
Apply to the wound leaving a margin of at least 2 mm. Cover with secondary dressing. Sorbsan may be used as a loose cavity filler but care should be taken as the ribbon will swell as it absorbs the exudate. To change the dressing the non-gelled Sorbsan should be removed from around the wound and the gelled Sorbsan can be irrigated to remove it.

Minimum and maximum changing times
Daily/every three days.

Bibliography
Thomas S, Alginites: A guide to the properties and uses of the different alginate dressings available today, J. Wound Care, 1992, 1, 29-32.
What is it?
Tegaderm is a sterile and transparent dressing which consists of a thin polyurethane film with a hypoallergenic, water resistant adhesive. The dressing is permeable to both water vapour and oxygen but impermeable to micro-organisms. It is available in sizes: 6x7cm 10x12cm, 10x25cm, 15x20 and 20x30 cm. **Tegaderm with Pad** is available and is suitable for surgical and traumatic wounds.

How does it work?
Tegaderm produces a moist environment by reducing evaporation from the wound surface. This reduces scab formation and encourages healing.

Advantages
1. Possesses good oxygen and moisture vapour permeability.
2. Transparent and therefore allows visualisation of the wound without disturbing the dressing.
3. An intact dressing is impermeable to liquids and bacteria preventing wound contamination.
4. May provide some relief of pain in acute wounds.

Disadvantages
1. May stick to some skin and it can remove healthy skin if care is not taken.
2. Tegoderm Plus should not be used on patients with known iodine sensitivity.

Wounds to use it on
Can be used as a primary or secondary dressing or as a protective cover to area susceptible to skin breakdown or exposed to friction. Also may be used to dress invasive sites such as IVVs, closed, clean surgical wounds, minor abrasions and Grade 1 pressure sores. It should not be used as a primary dressing on infected wounds/sites and is not recommended for use on deep cavity wounds, 3rd degree burns or heavily exuding wounds.

How to use it
Choose a dressing size which ensure a 4-5 cm. margin of healthy skin to ensure there is good adhesion. Peel off the central backing and apply to the site. Seal the edges before removing the frame around the outside of the dressing, carefully smoothing the edges. **To remove:** Gently grasp the edges and slowly pull horizontally to the patient’s skin to break the seal. Gently remove the dressing in the direction of hair growth.

Minimum and maximum changing times
Varies considerably, dependent on the state of wound and level of exudate. On clean wounds may be left undisturbed for in excess of 14 days.

Bibliography
Tielle

Cost Code C for 11x11cm dressing

Dressing type: Foam
Manufacturer: Johnson & Johnson Medical

What is it?
Tielle is an island dressing with a multi-layered structure. It consists of a piece of highly absorbent foamed hydrogel made from polyurethane, located in the centre of an adhesive polyurethane membrane coated with an acrylic adhesive. A piece of non-woven fabric is placed between the foam and the adhesive backing to act as a wicking layer and facilitate uniform dispersion of exudate throughout the absorbent foam. The dressing is available in several sizes (11x11cm, 15x15cm, 15x20cm, 18x18cm), a shaped sacral dressing is also available.

How does it work?
The central island gently expands as exudate is absorbed. The absorbent layers are arranged to avoid maceration at the wound edge. This allows the wound to remain moist but not macerated encouraging healing and auto-debridement where necessary.

Advantages
1. The foam layers are capable of absorbing more fluid than a hydrocolloid dressing.
2. The adhesive layer is thin and flexible.
3. The dressing does not adhere to granulating tissue.
4. It is easy to cut and shape and dressing to accommodate body contours.
5. Tielle is waterproof and impermeable to bacteria but is permeable to moisture vapour.

Disadvantages
1. Limited value on dry wounds.

Wounds to use it on
Use on moderately exuding yellow, red and pink wounds. Tielle is particularly useful for pressure sores, heel ulcers and traumatic wounds. This product is ideally suited to be used as an acute dressing prior to full wound assessment.

How to use it
Choose a dressing size that will allow the wound to be covered by the island part of the dressing. Wetting the adhesive on removal of the dressing will reduce trauma.

Minimum and maximum changing times
May be left for up to seven days dependant on the amount of exudate.

Bibliography
**Vacuum Assisted Closure (VAC)**

**Advanced Product**

**Dressing type:** Exudate management system

VAC therapy is for use in complex wounds where

- Stimulation of healing is required to achieve closure
- Where exudate from a cavity wound is uncontrolled and requiring frequent dressing change
- Where bacterial load is not controlled by conventional dressing

VAC therapy is expensive to use. Hiring charges are based on a daily rate and there is the added cost of consumables which are required on a regular basis. The decision to use VAC is one made jointly between the patient, senior nursing and medical staff. This should be discussed with the Nurse Consultant or Tissue Viability Nurse who holds a register of patients treated in this way. Evaluation of progress and decision to discontinue / continue therapy must be made, where possible, by the same staff initiating therapy and treatment should be reviewed at least at weekly intervals. Initial assessment and documentation of the wound should include photography.

Staff should have specific training in its use. Training can be provided by the Nurse Consultant, a member of the vascular or plastic nursing team or by the staff from KCI. It is recommended that when applying or changing the VAC, assistance is available to ensure a good fit and seal. When difficulties occur KCI staff can be contacted directly for assistance (Tel: 0800 9808880).

**What is VAC (Vacuum Assisted Closure)**

Also called vacuum therapy or negative pressure system the VAC is a sophisticated development of the application of topical negative pressure to the wound bed. The dressing consists of an open pore sponge placed on to the wound which is cut to the size of the wound. A wound drain is placed within or on top of the foam. The sponge and drain are then covered with a transparent adhesive membrane which is firmly sealed to surrounding healthy skin. The drain is connected to the VAC pump with clear tubing. A disposable canister collects the wound fluid.

The pressure setting is dependent on the type of wound, the level of exudate and the duration of VAC therapy. The negative pressure setting is adjustable, 125mmHg being the maximum therapeutic level. The suction can be applied continuously or intermittently according to the wound requirements and patient comfort. Evidence is lacking on which is the most effective method. When applied the negative pressure reduces the sponge size and volume of the wound.

There is no good RCT evidence demonstrating benefit. However the clinical benefits are supported by case examples and by published clinical series and the use of the equipment has been discussed by Thomas (2001). The VAC has entered practice despite the lack of RCT evidence but evidence of this type may be inappropriate for this or similar devices.

**The VAC systems available are:**

VAC (Advanced Therapy System) which has a canister capacity of 500ml which replaced the original VAC. A mini VAC is also available which is portable and suitable for community use however the collection canister which only holds 50cc may require more frequent change.

**Advantages of VAC**

- Control and reduction of exudate and oedema within the wound and surrounding tissue
- Control and reduction of bacterial load within the wound and surrounding tissue
- Enhancement of debridement by above actions
- Increase in local blood flow through reduction in local tissue pressure

Cost

- Pump hire £30/day
- Disposables £40 to £45 / dressing change
Increase in local blood flow through reduction in local tissue pressure
The mechanical action results in protein and matrix synthesis stimulating granulation
Reduces the need for as frequent dressing change
Demonstrated to be suitable for used on many types of wounds
Foam shapes are available for difficult to manage areas

Disadvantages of VAC
VAC and the consumables which are bought separately are costly
The suction can be painful when used on some patients or wound types
Not suitable on wounds where a seal on the surrounding skin cannot be maintained
Patient mobility is reduced by attachment to pump

Indications for the use of VAC therapy
VAC is a second line therapy and should be used where conventional dressing products have failed to achieve the required aims of wound bed preparation or exudate management.
Can be used on:
Acute and traumatic wounds
Sub-acute wounds such as dehisced incisions
Pressure ulcers
Chronic non healing open wounds e.g. diabetic foot wounds, meshed grafts or flaps.

Contra-indications for the use of VAC therapy
Fistulas to organs or body cavities
Necrotic tissue with hard or dry eschar
Osteomyelitis (untreated)
Malignancy
Caution should be used with patients with bleeding disorders or on anticoagulants or when applied directly to a fresh surgical wound when bleeding has not been controlled

Availability
A limited number of VAC pumps are available within BTHNHST and are kept on wards 19 and 21 the pump can also be hired from KCI. The charges are on a daily basis and delivery is not included. The consumables foam, drainage tubing and canisters are obtained direct from KCI and different sizes of sponge dressing are available.

Bibliography
## Bandages Used In Wound Care

<table>
<thead>
<tr>
<th>Class</th>
<th>For</th>
<th>Function and uses in wound care</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Retention</td>
<td>Conforming retention bandages: These bandages are used to simply hold a dressing in place; they consist of lightweight elastomeric fibres allowing conformability but no power to the bandage.</td>
<td>K band, Tubifast, Tubigauze</td>
</tr>
<tr>
<td>2</td>
<td>Support</td>
<td>Light support bandages: These can be used to prevent oedema and providing support for minor sprains. These bandages have limited elasticity. If used at full extension can be used to provide support over a joint without generating significant levels of compression. Sub bandage padding is recommended when using crepe.</td>
<td>Crepe bandages</td>
</tr>
</tbody>
</table>
| 3     | Compression bandages (Elastic) | Type 3 is subdivided 3a, 3b and 3c dependant on the level of compression.  

**All support or compression bandages must be applied over soft padding such as Soffban (Profore #1) - see below**

<table>
<thead>
<tr>
<th>Type</th>
<th>Compression level</th>
<th>Application and effects</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a</td>
<td>Light compression</td>
<td>Applied at 50% stretch and 50% overlap provides a sub-bandage pressure of 14-17mmHg. This is equivalent to Class 1 (British Standard) hosiery.</td>
<td>Profore #3 (Litepress)</td>
</tr>
<tr>
<td>3b</td>
<td>Moderate compression</td>
<td>Applied at 50% stretch and 50% overlap in a spiral provides a sub-bandage pressure of 18-24mmHg and is suitable for the management of mild oedema and is effective in prevention or management of venous disease on a normal sized limb. This is equivalent to Class 2 (British Standard) or Class 1 (European Standard) hosiery.</td>
<td>Profore #4 (Co-plus)</td>
</tr>
<tr>
<td>3c</td>
<td>High compression</td>
<td>Applied at 50% stretch and 50% overlap in a spiral provides a sub-bandage pressure of 25-35mmHg and is suitable for the management of oedema and venous leg ulcers. This is equivalent to Class 3 (British Standard) or Class 2 (European Standard) hosiery.</td>
<td>Profore plus or Tensopress</td>
</tr>
<tr>
<td></td>
<td>Short stretch compression</td>
<td>Applied in a spiral with a 50% overlap. Form a rigid containment layer improving venous return during exercise. Used on mobile patients to treat lymphoedema and venous disease.</td>
<td>Panalast, Actico</td>
</tr>
</tbody>
</table>
**Soffban** orthopaedic wool bandage (Profore #1 = Soffban natural).

Soffban natural is cotton orthopaedic wool bandage it is conformable and comfortable used under bandages both as an absorbent layer and is used to protect bony prominences from pressure.

Other methods of compression may be appropriate for some patients. Specialist clinics can provide advice and assistance with application and advice on these treatments.

### Application of compression bandages

Any compression bandages or hosiery must only be applied following Doppler assessment and calculation of ankle brachial pressure index (ABPI) (Vowden, Goulden and Vowden 1996; Vowden and Vowden 2001) and not applied if ABPI is less that 0.8 where referral to vascular team is necessary.

The correct application of high compression bandages requires both an understanding of the scientific principles behind their use and a practitioner skilled in their correct application. Compression systems should only be applied by suitably trained heath care professionals. Incorrectly applied bandages and hosiery may not only be ineffective they may actually lead to deterioration in the condition of the limb and, in extreme cases, may lead to amputation, particularly if compression therapy is used inappropriately on an ischaemic limb. The correct application of a graduated compression bandage demands a degree of technical skill that can only be acquired through training and maintained by repeated practice (Vowden and Vowden, 2002). Training can be provided by the Nurse Consultant Acute and Chronic Wounds or a delegated trained member of staff.

Regardless of the type of compression system chosen it is important to identify at risk areas, such as bony prominences, prior to the application of bandages. Multi-layer bandage systems, which contain an orthopaedic wool layer, are specifically designed to accommodate different sizes and shapes of limb and this can overcome the problems associated with generating excessive bandage tension, and therefore pressure, when applying compression.

The four layer bandage system is a combination of these bandages according to limb size. The sub bandage pressure of the combination is 40mmHg. The bandage regimen is used to treat venous leg ulceration and gross oedema.

The European Wound Management Association (EWMA) has published a position document on the theory behind and the application of compression bandages in relation to venous ulcer disease.
Components in the 4 layer compression bandage system and how they vary according to ankle circumference are listed below:

<table>
<thead>
<tr>
<th>Ankle circumference</th>
<th>Bandage combination</th>
</tr>
</thead>
</table>
| Less than 18cm      | 2 orthopaedic wool layers - extra padding protects thin limbs  
                       1 cotton crepe  
                       1 Class 3a - elastic (Litepress)  
                       1 Class 3b - cohesive (Co-plus) |
| 18-25cm             | 1 orthopaedic wool layer  
                       1 cotton crepe  
                       1 Class 3a - elastic (Litepress)  
                       1 Class 3b - cohesive (Co-plus) |
| 25-30cm             | 1 orthopaedic wool layer  
                       1 Class 3c - high compression bandage (Profore plus or Tensopress)  
                       1 Class 3b - cohesive (Co-plus) |
| Greater than 30cm   | 2 orthopaedic wool bandages - necessary for extra length required  
                       1 Class 3a - elastic (Litepress)  
                       1 Class 3c - high compression bandage (Profore plus or Tensopress)  
                       1 Class 3b - cohesive (Co-plus) |

Note effective compression will result in a decrease in oedema and a reduction in ankle circumference. The limb should therefore be re-measured frequently and appropriate changes be made in the bandages used. For the majority of patients the ankle circumference will be between 18-25 cm.

Bibliography
Guidelines For The Management Of A Malignant Wound

Aims of Management
Probably the most important aspect in the management of these particular lesions is the switch of emphasis from healing as the primary aim to quality of life maintenance through good symptom management (Grocott, 1995). The four most common symptoms requiring intervention are exudate, odour, bleeding and pain.

Malignant lesions may display both ulceration, wounds being typically crater like in appearance, while those with proliferating features tend to develop a raised ‘cauliflower’ like form. These features may combine to form a ‘rolled edge’ to an ulcerated area.

Although these lesions occur anywhere on the body, most (over 80%) tend to appear in the head, neck and breast region (Haisfield-Wolfe, 1997) and typically in the older patient (> 70 yrs) (Ivetic and Lyne, 1990; Thomas, 1992) although usually associated with advanced cancer, malignant wounds may be present for decades particularly if the underlying disease is localised (Naylor et al, 2001) or slow growing.

Exudate
The volume and type of exudate may vary considerably. The aim is comfortable and secure control. Appropriate dressing selection according to exudate level is seen in the flow chart (Page 13). In selected cases wounds with high exudate either stoma appliances or absorbant pads over a non adherant contact layer may be the most appropriate dressing method. It is important to work with the patient to find the best method and products (Grocott, 1995). VAC should not be considered for malignant wounds.

Malodour
Recognised as probably the most distressing symptom from the patients perspective, the malodorous wound is characterised by anaerobic bacteria necrotic tissue (Haughton and Young, 1995). Surgical or sharp debridement is not recommended because of these wounds have an increased tendency to bleed. Autolytic debridement and control of bacterial load is therefore the treatment of choice in this situation. Metronidazole can be applied topically or given systemically although side effects (nausea, neuropathy and alcohol intolerance) may affect compliance. Activated charcoal (with or without silver) or Occlusive dressings can be used to reduce odour. Alternative therapies such as Natural Live Yoghurt, Manuka Honey or the use of Essential Oils on the clothing or in the room may help.

Pain
Pain should be managed in accordance with local policy and with reference to the WHO cancer pain guidelines. Dressing products should be Non-adherant Mepilex or Mepital being useful products. A moist but not macerated environment is favourable using dressings that require less frequent changes. Skin can be protected with Cavilon spray. The following agents could be considered to help at dressing change: Entonox, Emla cream, Topical opioids in a hydrogel, NSAID’s or Lignocaine gel.

Bleeding
Ensure the dressing used is non adherant. Alginates or Hydrfibre dressings can reduce bleeding. Alternative methods are Haemostatic surgical sponges, topical adrenaline if necessary consider Referral to a vascular surgeon for cauterity or ligation. A Barker 2003

Bibliography
Pace Guidelines

- Guideline for the risk assessment and prevention of pressure ulcers
- Guidelines for the diagnosis and management of leg ulcers
- Management of patients with Diabetes (foot ulceration)

(see following pages)
Guideline for the Risk Assessment and Prevention of Pressure Ulcers

It is estimated that 95% of pressure ulcers are preventable (Hibbs 1985)

What is a pressure ulcer?
A pressure ulcer is an area of localised damage to the skin and underlying tissue caused by pressure, shear, friction and/or a combination of these (EPUAP 1998)

What is a pressure ulcer risk factor?
A risk factor can be defined as an identifiable, intrinsic or extrinsic characteristic that increases a person’s susceptibility to forces which induce tissue trauma (Peterson et al 1971)

- The development of pressure ulcers should not automatically be seen as an outcome of poor nursing care
- Pressure ulcer prevention is a multi-faceted problem requiring a multi-disciplinary approach. It is everybody’s problem
- Health care professionals are advised to respect and incorporate the knowledge and experience of individuals who have been at long term risk of developing pressure ulcers and have been self-managing this risk

KEY
Grade of evidence:
- National Expert Consensus opinion
- Local Expert Consensus opinion

DEVELOPED BY
Bradford & Airedale Trusts, Social Services, Independent Sector and PACE

This guideline has been developed using guidance from NICE, The Royal College of Nursing and The European Pressure Ulcer Advisory Panel

Produced November 2002

Identifying Individuals at Risk of Developing Pressure Ulcers

Who is at risk?
There is a potential risk for all individuals to develop pressure ulcers when one or more risk factors are present

How are they identified?
Trained health care professionals educate patients, carers and other health care workers in the early detection of risk factors

How is risk assessed?
By an appropriately trained professional who is able to:
1. Carry out an informal assessment to determine the presence of risk which will be based on the individuals’ clinical presentation and consideration of their risk factors
2. Carry out a systematic formal assessment of risk using professional judgement in combination with locally agreed risk assessment scores
3. Develop an individualised plan of action based on assessment findings
4. Implement a plan of care and evaluate

When will risk be assessed?
1. The timing of the risk assessment should be based on each individual case it should be:
   - Within two hours of admission to care
   - At the initial assessment in community care
   - Formal and informal risk assessment is a dynamic process
   - If considered not at risk on initial informal assessment, reassessment should take place if there is a change in an individual’s condition
   - When a different risk assessment score is used
   - There is a change in an individual’s clinical condition
   - There are changes in an individual’s circumstances e.g. a change in carer or care setting

Documentation
- All assessment of risk should be documented/recorded immediately even when risk is not identified and made accessible to all members of the multi-disciplinary team
- Good documentation provides an accurate record of an individual’s progress and risk status
- Good documentation is the key for accountability, responsibility, risk management and evaluation

Risk Assessment Scores
- Should be used only as an “aide memoir” in conjunction with professional judgement
- No risk assessment score has demonstrated greater predictive value than professional judgement
- Document which score used, not all clinical areas use the same

NB
There is insufficient evidence to recommend one risk assessment score as being superior to another

Extrinsic factors
- Pressure
- Shearing
- Friction
- Moisture
- Poor moving and handling
- Medication

Intrinsic factors
- Nutritional status / Hydration
- Reduced mobility / immobility
- Extremes of age
- Sensory impairment
- Incontinence
- Pain
- Chronic / acute / terminal illness
- Vascular disease
- Mental health status
- Level of consciousness
- Previous history of pressure damage

What factors must be included as part of the formal assessment?
GUIDELINES FOR THE DIAGNOSIS AND MANAGEMENT OF LEG ULCERS IN BRADFORD AND AIREDALE

DATE DEVELOPED: MARCH 2000

Recommendation statements graded as follows:

I. Generally consistent finding in a majority of multiple acceptable studies

II. Either based on a single acceptable study, or a weak or inconsistent finding in multiple acceptable studies

III. Limited scientific evidence which does not meet all of the criteria of acceptable studies of absence of directly applicable studies of good quality. This includes published or unpublished expert opinion

IIIb. As agreed by PACE

ABPI = Ankle Brachial Pressure Index

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A leg ulcer is defined as a loss of skin below the knee which takes more than 6 weeks to heal

Dale et al 1983

LEG ULCER
Primary or recurrent

Assessed by appropriately trained PCG/T Nurse*

Diabetic Foot ULCER

Urgent referral to Diabetic Foot Clinic

Ischaemic Heart Disease, Diabetes, suspected malignancy, Rheumatoid Arthritis, or unknown aetiology

YES

NO

ABPI greater than 0.8

NO

ABPI less than 0.5 or rest pain

YES

NO

Urgent referral

Urgent referral to VASCULAR CLINIC

SPECIALIST CENTRAL LEG ULCER ASSESSMENT CLINIC
DUPLEX ULTRASOUND
Healing prognostic indicators established

Start Compression and routine referral to

Non-healing at 12 weeks

Community management via PCG/T LEG ULCER CLINICS

Prevention of recurrence

HEALED ULCERS

Venous Surgery if appropriate

Hospital management via VASCULAR LEG ULCER CLINIC

Inpatient

Dermatology and other specialist services

*Refer to 1998 RCN Guidelines

Guidelines have been developed by a multi-professional team from across Bradford and Airedale
GUIDELINE FOR THE MANAGEMENT OF DIABETES IN ADULTS

Unstructured care is no care
In partnership with the patient negotiate structure of care provision and targets to be achieved

RENAL

- Urine test annually for proteinuria using a dipstick
- If dipstick positive for protein undertake MSU
- Dipstick negative for protein:
  - No infection identified
  - Infection identified and treated

- Send urine for Albumin Creatinine Ratio (ACR)

- ACR ≥ 2.5
- ACR < 2.5

- Send urine for Protein Creatinine Index (PCI)
- PCI > 1000: Refer to Consultant Diabetes Service and Renal Specialist
- PCI 150-1000: Refer to Renal Specialist and Specialist Diabetes Services

- Treat with ACE inhibitors to maximum tolerated dose

FEET

- Podiatrist to examine feet annually:
  - Pulses - Doppler
  - Sensation-10g monofilament
  - Ongoing education

- Skin intact:
  - Review 3 to 6 monthly
  - Foot ulcer
  - ACR ≥ 2.5

- Claudication Pain at rest: Referral to Vascular Service

- Referral should be to an optometrist participating in the Bradford Diabetic Retinopathy Screening Service

GRADE OF EVIDENCE

A Randomised control trials
B Controlled studies
C Robust experimental or observation studies
D National expert consensus opinion
E Local expert consensus opinion

EDUCATION

- Everyone to have access to education tailored to their individual needs
- Education needs to be reviewed and addressed at least annually
- Education support must be given at times of treatment change or if problems are identified

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Guidelines, Policies And Other Literature Supporting This Document


Diabetes National Service Framework (as it relates to the management and prevention of diabetic foot ulceration) (http://www.doh.gov.uk/nsf/diabetes/index.htm)


NICE guidelines on pressure ulcer risk assessment and prevention (Guidelines B) NICE (2001) (http://www.nice.org.uk)

A rapid and systematic review of the clinical effectiveness and cost-effectiveness of debriding agents in treating surgical wounds healing by secondary intention. (http://www.hta.nhsweb.nhs.uk)

Surgical Materials Testing Laboratory (SMTL) (http://www.smtl.co.uk) with dressings information on (http://www.dressings.org/)

Specialist Wound Care Societies and Journals

EWMA - European Wound Management Association, PO Box London SE1 8TT (http://www.ewma.org)

TVS - Tissue Viability Society, Wessex Rehabilitation Unit Odstock Hospital Salisbury (http://www.tvs.org.uk)

ETRS - European Tissue Repair Society, Wound Healing Institute, Churchills Hospital Headington Oxford OX3 7LJ (http://www.etrso.org)

WCS - Wound Care Society, PO Box 263, Northampton NN3 4US (http://www.woundcaresociety.org)

All have internet websites where further information is available.

Specialist Journals

Journal of Wound Care (http://www.journalofwoundcare.com)

EWMA Journal (http://www.ewma.org)


British Journal of Nursing (http://www.britishjournalofnursing.com/index.htm) Tissue Viability Supplements

World Wide Wounds (http://www.worldwidewounds.com)

Community Nurse

Nursing Times - Wound Care Supplement
References


Appendix I - Wound Care Service Profile

Who leads the service?

Kathryn Vowden BSc(Hons) DipN TV RGN
Nurse Consultant (for patients with Acute and Chronic Wounds)
Bradford Teaching Hospitals NHS Trust

Contact details

Address: The Department of Vascular Surgery, Bradford Royal Infirmary, Duckworth Lane, Bradford, BD9 6RJ.
Referrals: To the above address or by fax or phone (see referral criteria).
Secretary: Lesley Kelly (Ext: 01274 364466 Int: 4466).
Fax: Ext: 01274 364807 Int: 4807.
Email: kath.vowden@bradfordhospitals.nhs.uk or lesley.kelly@bradfordhospitals.nhs.uk.
Mobile: 07774 779321

Availability

Office hours: 8.30am to 5.00pm Monday to Friday (University attachments Tuesday and Thursday pm).
Clinics: Tuesday and Thursday 8.30am to 12.30pm Outpatients West, BRI.
Wednesday 8.30 to 12.30pm (Diabetic Foot Clinic) - Diabetes Unit, Duke of York Wing, BRI.
Ward visits: As required to suit patient, carers and staff needs
St Lukes visits usually on Wednesday pm unless urgent.
Domicillary: As required following arrangements with Community Tissue Viability Nurse and/or General Practitioner or Community Physician.
Leg ulcers: A specialist leg ulcer service is run through Outpatients West at the Bradford Royal Infirmary. Enquires should be made through the above contact points. Alternatively contact can be made through 01274 364092 (Ansaphone available).
Research: A research clinic runs on a daily basis. Staff within this clinic can be reached through the above contact points or through 01274 364092.
Appendix II - Example wound management chart

WOUND CARE CHART

Patient details: 

Consultant: 

Ward: 

Admission: 

Discharge: 

Type of wound: 

Duration of wound: Days/Weeks/Months/Years (Delete as appropriate)

Treatment aims:

Communications:

Indicate site of wounds on the diagram. For example, amount of wound and refer this on the progress chart.

Photo:

Tracing:

Wound size:

Wound appearance:

Initial Risk Assessment:

Waterflow: 

ABPI: 

Factors that may delay healing: 

Referral to: 

Date: 

Infection: Clinical Nurse Specialist

Diabetes: Dietician

Vascular disease: Podiatrist

Nutrition/Obesity: Other

Medication: Comment

Allergies:

Anemia:

Other:

Wound Progress Chart

Date: 

Wound appearance:

1. Necrotic (black)
2. Sloughy green/yellow
3. Granulating (red)
4. Epithelialising (pale)

Grade (Stirling): 

1. Erythema
2. Partial thickness shallow
3. Full thickness skin loss
4. Full thickness to bone

Exudate:

1. High
2. Moderate
3. Low

Exudate type:

1. Serous
2. Seropurulent
3. Haemorrhagic
4. Foul

Wound pain:

1. Continuous
2. Intermittent
3. At dressing change
4. None

Pain level:

Grade 1-5 (no obvious)

Surrounding skin:

1. Oedema
2. Mucosal
3. Erythema
4. Cellular
5. Excoriation
6. Dryness
7. Friction
8. Healthy

Infection:

1. Present
2. Suspected
3. Absent

Swab result:

Results:

Treatment:

Risk:

Waterflow score:

ABPI:

Documentation:

1. Notes
2. Photographs

Treatment objectives:

1. Debridement
2. Dressing
3. Friction breaking
4. Pressure

Treatment rationale:

Dressing:

Primary

Secondary

Re-evaluation due:

Name/Initials: