



Wound Management Formulary

Updated: June 2009
Review Date: June 2010

Introduction

Welcome to the NHS Tayside Wound Management Formulary

The aim of this formulary is to provide practitioners with up-to-date, evidence based guidance on wound assessment and management. The formulary provides for a broad range of wound types, descriptions, treatment aims and advice on the most appropriate product(s) to use.

The formulary should be used as an educational tool to promote cost effective prescribing in the management of wounds across NHS Tayside and is available electronically at the undernoted web address:
<http://www.nhstaysideadtc.scot.nhs.uk/approved/formular/formular.htm>

For further education visit www.tissueviabilityonline.com

Medical Representative Advice

In order to reinforce the appropriate use and management of dressings and promote formulary compliance, medical representatives must not leave wound product samples in clinical areas. It is NHS Tayside policy not to accept such product samples. Please refer to the Code of Corporate Governance and recommended procedures governing the actions of medical representatives within NHS Tayside hospitals.

Wound Formulary Group Members 2009:

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Acknowledgements:

NHS Highland Wound Guideline and Formulary
NHS Greater Glasgow Wound Care Guideline

Section 1: List of dressings in Tayside Wound Formulary

*Prices below are from Scottish Drug Tariff February 2011

Dressing Type	Size	Cost* (£)
Alginate		
Algosteril	5 x 5cm	0.87
	10 x10cm	1.98
	10 x20cm	3.34
Algosteril Rope	30cm/2g	3.57
Foam Dressings		
Allevyn Polyurethane (no adhesive border)	5x5cm	1.21
	10x10cm	2.40
	20x20cm	6.44
	10x20cm	3.86
Allevyn adhesive (with adhesive border)	7.5x7.5cm	1.43
	10x10cm	2.10
	12.5x12.5cm	2.57
	17.5 x 17.5cm	5.07
	22.5 x 22.5cm	7.38
	17 x 17cm	3.80
Allevyn Compression	10 x 10cm	2.43
	15 x 15cm	4.12
	5 x 6cm	1.18
	15 x 20cm	4.62
Lyof foam	7.5 x 7.5cm	1.05
	10 x 10cm	1.20
	17.5 x 10cm	1.94
	20 x 15cm	2.61
Lyof foam extra (without adhesive border)	10x10cm	2.08
	10x17.5cm	3.52
	15x20cm	4.56
Hydrogels		
ActivHeal gel	15g	1.39
Intrasite Conformable	10x10cm	1.70
	10x20cm	2.30
	10x40cm	4.10
Hydrocolloid Fibres		
Aquacel	5 x 5cm	1.10
	10x10cm	2.61
	15x15cm	4.91
	4x10cm	1.40
	4x20cm	2.07

	4x30cm	3.11
Hydrocolloids		
Duoderm Extra Thin	7.5x7.5cm	0.75
	10x10cm	1.24
	15x15cm	2.68
	5x10cm	0.72
	9x15cm	1.66
	9x25cm	2.66
	9x35cm	3.72
Tegaderm hydrocolloid (no adhesive border)	10x10cm	2.30
	15x15cm	4.46
With adhesive border	10x12cm (oval)	2.26
	13x15cm (oval)	4.22
Keloid dressings		
Kelo-cote Gel	15g	17.88
Mepiform silicone gel sheet	5x7cm	3.26
	9x18cm	12.76
	4x31cm	10.31
Vapour permeable films and membranes		
Mepore ultra	9x20cm	1.43
	9x25cm	1.58
	9x30cm	2.61
	10x11cm	0.75
	11x15cm	1.12
Absorbent perforated dressing		
Mepore	7x8cm	0.10
	9x20cm	0.42
	9x25cm	0.58
	9x30cm	0.66
	9x35cm	0.72
	10x11cm	0.21
	11x15cm	0.34
Low adherence dressings		
Tricotex	9.5x9.5cm	0.32
Mepilex Border	10x20cm	3.54
	10x30cm	5.32
	7x7.5cm	1.32
	10x12.5cm	2.61
	15x17.5cm	4.49
	17x20cm	5.82

Mepilex border Lite (with polyurethane foam)	4x5cm	0.90
	7.5x7.5cm	1.36
	5x12.5cm	1.96
	10x10cm	2.47
	15x15cm	4.03
Mepilex (without border)	10x11cm	2.55
	11x20cm	4.21
	15x16cm	4.62
	20x21cm	6.98
Mepilex Lite (with polyurethane foam)	6x8.5cm	1.73
	10x10cm	2.06
	15x15cm	4.00
Mepitel	5x7cm	1.55
	8x10cm	3.11
	12x15cm	6.29
Odour Absorbent dressing		
Carbopad VC	10x10cm	1.59
	10x20cm	2.15
Honey dressings		
Activon Gel	25g	1.99
Activon Tulle	5x5cm	1.78
	10x10cm	3.01
Algivon	5x5cm	2.09
	10x10cm	3.53
Silver Dressings		
Alginate with silver		
Silvercel Ag	5x5cm	1.68
	11x11cm	4.14
	2.5x30.5cm	4.45
	10x20cm	7.68
Hydrocolloid with silver		
Aquacel Ag	5x5cm	1.85
	10x10cm	4.40
	15x15cm	8.29
	4x10cm	2.67
	4x20cm	3.48
	4x30cm	5.21
Charcoal with silver		
Actisorb Silver 220	6.5cmx9.5cm	1.64
	10.5x10.5cm	2.58

	10.5x19cm	4.70
Other		
Iodoflex Paste	5g	3.76
	10g	7.51
Iodosorb Ointment	10g	4.15
	20g	8.30
IV3000		
Non winged peripheral	6x7cm	0.49
Ported peripheral	7x9cm	0.64
Central line	10x12cm	1.23
PICC line	9x12cm	1.29
Inadine (povidone iodine fabric dressing)	5x5cm	0.32
	9.5x9.5cm	0.47

Section 2: Pain Control in Wound Management

PAIN CONTROL IN WOUND MANAGEMENT

Most wounds cause a certain amount of pain (Casey 1998) but pain management, a key function of all health professionals, is often ignored. Sometimes pain can be severe and ongoing, such as with chronic wounds, while at other times it may only occur with initial injury or during infection.

Patients may experience pain as a result of:

- Products or techniques used to cleanse wounds
- Trauma to the tissues and surrounding skin when products are removed
- Skin excoriation from exudates or wound drainage
- Lack of empathy
- Failure to record patient's earlier reports of pain
- Infection, which can exacerbate existing wound pain
- Poor techniques when using compression bandaging

Careful wound assessment is required, as selecting an inappropriate dressing can result in considerable pain and discomfort (Dealy 1999). The correct dressing can ensure comfort and reduce pain, especially during dressing change.

Emotional responses can also influence the perception of pain and the distress of having a wound. The way patients detect pain appears to be related to the type of damage causing it (Campbell 1995). Clinically, pain, like wound types, can be classified as acute or chronic, but will be related to:

- The type of injury
- The location of the wound
- Patient perception and previous experience
- The healing process and approaches to wound management, eg choice of dressing and provision of analgesia.

ASSESSMENT OF PAIN

Pain should be assessed prior to each dressing change and appropriate action taken to address the identified reason. Accurate assessment depends on subjective reporting by the patient. Pain can be assessed effectively during ongoing therapy by asking the patient to rate his/her pain. It is recommended that a simple visual analogue scale is used.

The patient should be asked if the pain is worse at any particular time or during a particular activity so that analgesic doses can be timed appropriately. Patients should be closely observed throughout the dressing procedure for reaction to treatment.

ANALGESIA

Whatever analgesia is used in wound care, its effectiveness should be evaluated continuously. Failure to achieve pain relief may contribute to the depression and anxiety associated with chronic pain.

The type of analgesia to be used depends upon:

- The type of wound
- Whether the wound is acute or chronic
- The level of pain reported by the patient

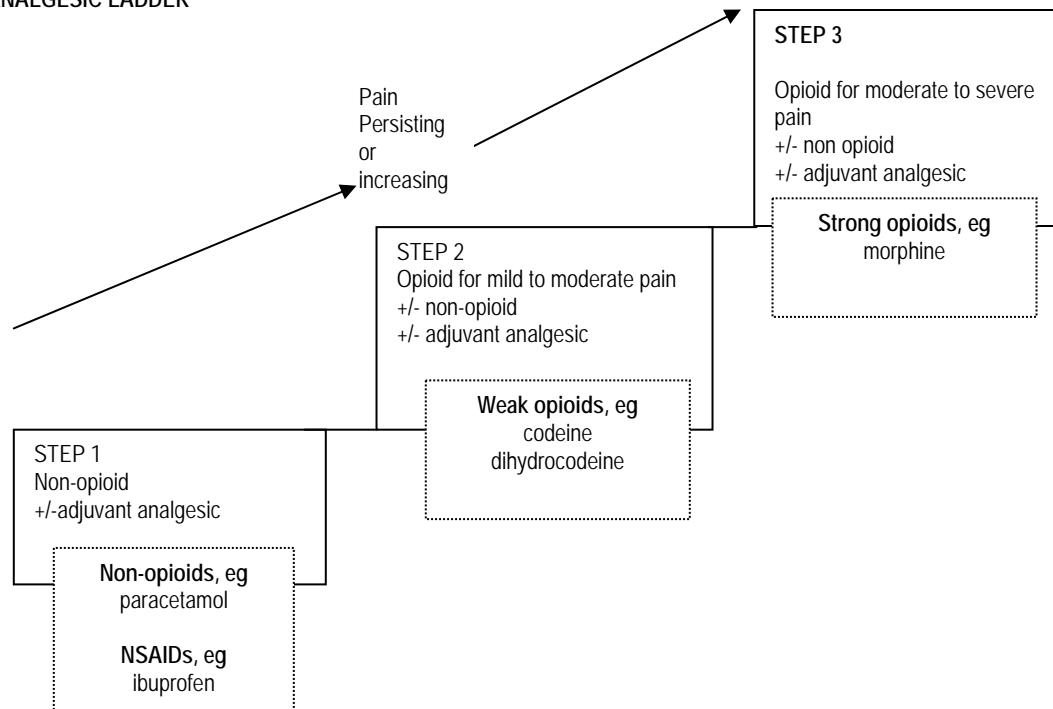
Effective doses of analgesics should be given. In chronic pain, treatment should be given often enough to provide continuous pain relief. This is preferable to giving analgesics only when necessary, ie allowing pain to recur before giving further treatment.

Analgesics should also be given in anticipation of pain, giving careful consideration to any activities that exacerbate pain. In the case of acute pain there is little time to titrate the dose against the patient's response. Analgesics should be chosen according to assessment of the factors mentioned above.

The use of non-steroidal anti-inflammatory drugs (NSAIDs) eg aspirin, ibuprofen, diclofenac etc, is common in treating minor injuries and in long-term inflammatory conditions. This is due to their action of inhibiting the production of prostaglandins (inflammatory mediators). If wound pain is ongoing it may not be appropriate to use an NSAID due to their side effects.

The WHO analgesic ladder forms the basis of many approaches to the use of analgesic drugs. There are three essential steps on this ladder.

THE WHO ANALGESIC LADDER



References:

Campbell, J. (1995) Making Sense of Pain Management. *Nursing Times* 91; 34-35.

Casey, G. (1998) The Management of Pain in Wound Care. *Nursing Standard* 13; 49-54.

Dealey, C. (1999) *The Care of Wounds*, 2nd ed. Oxford: Blackwell Science World Health Organisation (1996) *WHO Guidelines. Cancer Pain Relief*, 2nd ed. Geneva, World Health Organisation.

Section 3: Care of the Surrounding Skin

The state of the skin surrounding a wound should be assessed at each dressing change. Observe for signs of:

- dry skin which may break down and provide a portal for infection
- maceration caused by poor management of exudates
- contact sensitivity to dressing

The principles of good skin care depend on:

- keeping the skin clean and dry
- avoiding the excessive use of soap
- using showers in preference to baths where possible
- keeping the skin moisturised

EMOLLIENTS

Emollients are moisturisers that soothe and hydrate the skin. They are indicated for all dry or scaling disorders but their effects are short-lived so they must be applied frequently and regularly to maintain improvement. Most are best applied after a shower or bath. They should continue to be applied even after improvement occurs.

There are different types of product available. Effectiveness depends upon the correct choice of product and correct use. Choice will depend upon:

- the severity of the condition
- patient preference
- the site of application
- cost of preparation

Emollients should be applied in the direction of hair growth. Some ingredients may rarely cause sensitization and this should be suspected if an eczematous reaction occurs.

OINTMENTS are recommended as the first choice of formulation in most conditions and are particularly useful for chronic dry conditions. Ointments are greasy and generally insoluble in water so can be difficult to wash off, and do not suit all patients.

CREAMS, emulsions of oil and water, often contain an antimicrobial preservative and are, therefore, more likely to cause both irritant and allergic reactions. For this reason creams are best avoided first line but can be better than ointments for acute conditions due to a cooling effect as they evaporate and may be more cosmetically acceptable for some patients.

LOTIONS also have a cooling effect and may be preferable for treating hair sites. They can be made up in either water or alcohol. The latter will sting if applied to broken skin.

GELS have a high water content and are suitable for face and scalp.

TREATMENT

- emulsifying ointment BP
- white soft paraffin/liquid paraffin 50/50
- Diprobase® cream and ointment
- Zinc paste

All of the above should be applied as frequently as necessary.

CAVILON: Protective Barrier Cream

Wounds which may be heavily exuding or have friable surrounding skin, may result in excoriation or epidermal stripping. Cavilon cream may be used on the surrounding skin prophylactically, which will protect the skin and allow adherent dressings to be used. This should be reapplied at dressing changes. The cream resists wash off and skin will feel oily if too much applied. It may also increase adherence of some adhesive products.

If the skin is traumatized, Cavilon spray may be applied which does not contain alcohol and will allow pain free application and protection.

See [Skin Care Guidelines in the management of urinary and faecal incontinence](#)

Section 4: Wound Cleansing

As a general rule, routine cleansing of wounds to remove bacteria or to reduce infection is unlikely to be effective (Miller and Gilchrist 2001).

Wound cleansing may be advocated to remove contaminants in the following instances:

- To remove visible debris after a wound has occurred to aid assessment
- To remove excess slough and exudates
- To remove any remaining dressing material.

Frequent washing of wounds is unnecessary and undesirable.

CLEANSING SOLUTIONS

In the past, wounds were cleansed with antibacterial solutions. Studies comparing the effectiveness of antibacterial solutions to tap water, normal saline and distilled water have found no difference in lowering bacterial count and no increased incidents of infection (Dire & Welsh 1990; Rodeheaver et al 1982). Antiseptic solutions have been reported to cause tissue damage and hinder the healing process and are unlikely to be effective (Hellewell et al 1997).

Tap water of potable quality is becoming more common as a cleansing agent in clinical settings (particularly community). It is cost-efficient, copious and accessible and is the recommended wound cleansing solution of choice. It is not recommended, however, on exposed bone or tendon, post-operative wounds requiring sterile technique, or for patients who are severely immunosuppressed and on skin grafts, where tepid sterile saline is recommended.

Normal saline is an isotonic solution which does not impede the healing process, cause allergic reactions or alter the bacterial flora of the skin. However, routine use of sterile saline results in a significant waste of resources.

Cooling a wound inhibits cell mitosis and potentially delays healing (Myers 1982) therefore it is good practice to warm any fluid shortly before cleansing a wound.

METHODS OF CLEANSING

Irrigation is the cleansing mechanism recommended for removal of contaminants. Scrubbing causes pain and local tissue oedema, which decreases host defences. However vigorous cleansing may be necessary, in some instances to remove grease and dirt from traumatic wounds which, if left in situ, can cause unsightly tattooing of the skin (Miller & Glover 1999).




SUMMARY

- Does the wound need to be cleansed? If not, don't do it.
- Always use warm fluids for irrigation such as tap water or saline. Cooling the wound inhibits cell mitosis.
- Never use cotton wool or gauze swabs to clean wounds as they damage granulating tissue and shed fibres, which increase the risk of infection.





REFERENCES

- Fernandez R, Griffiths R, Ussia C. (2002) Review: wound cleansing with water does not differ from no cleansing or cleansing with other solutions for rates of wound infection or healing. *Evidence-based Nursing* 2003; 6:81
- Dire D.J Welsh A.P (1990) A comparison of wound irrigation solutions used in the emergency department. *Annals of emergency Medicine* 19 704 – 708
- Hellewell T.B Major D.A foreman P.A. Rodeheaver G.T (1997) A cytotoxicity evaluation of antimicrobial and non antimicrobial wound cleansers. *Wounds* 9 15 – 20
- Miller M & Gilchrist (1997) *Understanding Wound Cleaning and Infection*. London MacMillan
- Miller M & Glover D (1999) *wound Management: theory and practice*. London Emap Health Care Ltd.
- Myers J.A (1982) Modern plastic surgical dressings. *Health and Social Services Journal* 92, 336 – 337
- Rodeheaver. G Bellamy, W Kody M et al (1982) Bacterial activity and toxicity of iodine containing solutions in wounds. *Archives of Surgery* 117, 181 – 186.

Section 5: Leg Ulcers Bandaging Selection

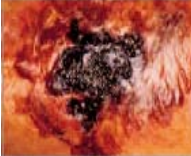




Type	Indicator/descriptor	Management aims	Treatment options	Other considerations	References
Venous 	<ul style="list-style-type: none"> • Medial gaiter area • Usually shallow with poorly defined edges • May be well vascularised pink base • May be complicated by varicose eczema • May have signs of venous staining, oedema and ankle flare • Can be painful • Doppler assessment/Pulse Oximetry Index >0.8 	<ul style="list-style-type: none"> • Reduce pressure in superficial veins • Aid venous return • Reduce oedema 	<p>Compression Bandages</p> <p>Profore latex free high compression system, OR Robinson's ultra four latex free Proguide Actico short stretch cohesive bandage</p>	<p>Compression bandaging requires application by a trained skilled practitioner.</p> <p>Multilayer bandaging system: First layer: natural orthopaedic wool layer which is used to absorb exudates and redistribute pressure around the ankle. Applied in a loose spiral (2 layers) Second layer: crepe bandage which increases absorbency and smoothes orthopaedic layer. Applied in a spiral Third layer: light compression bandage. Fourth layer: elastic, cohesive bandage which maintains the four layers in place.</p> <p>Recurrence of venous ulcers can be substantially reduced by continuous application of compression hosiery.</p>	<ol style="list-style-type: none"> 1 SIGN Guidelines 1998 (26) The Care of Patients with Chronic Leg Ulcer 2 NHS Tayside Clinical Skills Programme: Care of Leg Ulcers Version 7 Sept 2005 3 The Leg Ulcer Forum CRICP, Wolfson Institute of Health Sciences, 32-38 Uxbridge Road, London, W5 2BS www.legulcerforum.org
Mixed 	<ul style="list-style-type: none"> • Of both venous and arterial aetiology • Involves both venous problems and arterial insufficiency • Doppler assessment/Pulse Oximetry Index between 0.6 and 0.8 	<ul style="list-style-type: none"> • Increase venous return • Reduce pain and oedema 	<p>Profore latex free light compression system Actico-short stretch cohesive can be applied for mixed aetiology with Doppler assessment <0.8 after specialist referral and under supervision (manufacturer's guidelines)</p>	<p>Elevation of limb and exercise are also important.</p> <p>Nutrition: There is evidence to demonstrate that adequate levels of protein, fat, carbohydrates, vitamins and trace elements are necessary in wound healing, especially in collagen formation and maturation.</p> <p>The majority of leg ulcers are multifactorial therefore a holistic, systematic assessment looking at the patient, the limb and the ulcer must be undertaken.</p> <p>Pain control is an important factor in obtaining patient concordance to any treatment regime and a programme of pain management should be tailored to the needs of each individual patient.</p>	
Arterial 	<ul style="list-style-type: none"> • Any part of leg, commonly below ankle • Often over bony prominences • Localised oedema • Night pain • Punched out appearance • Pale ulcer base • Doppler assessment/Pulse Oximetry Index <0.6 	<ul style="list-style-type: none"> • Warm, insulate and protect limb • Support joints • Maintain surface temperature 	<p>Padded wool bandage eg softban Retention bandage eg crepe</p> <p>Compression bandaging must NEVER be used on arterial leg ulcers</p>	<p>Associated dermatitis which has not responded to topical steroid therapy should be referred for patch testing with a specific series for leg ulcers.</p>	

Section 5: Leg Ulcers Dressing Selection


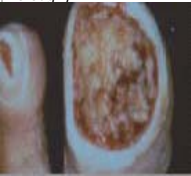
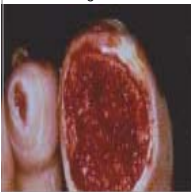

Tissue type	Indicator/descriptor	Management aims	Treatment Options		Other considerations	References
			Exudate Low-moderate	Moderate-heavy		
 <p>Necrotic</p>	Black, eschar, dry hard devitalized tissue	<ul style="list-style-type: none"> Rehydration Debridement 	ACTIVHEAL ACTIFORM Cool TRICOTEX Other Tx – Larvae (maggots)		<p>KEY POINTS</p> <p>The success of any dressing results from careful selection related to the individual patient and ulcer.</p> <p>Each stage of wound healing will require a specific dressing.</p> <p>The condition of the ulcer base i.e. moist, wet or dry contributes to the choice of primary dressing.</p> <p>The volume and viscosity of exudates determines the choice of secondary dressings, and the need to protect the surrounding skin from damage caused by the exudates. (See Section 2 -Care of Surrounding Skin).</p> <p>Dressings can be used to aid debridement, remove excess exudates, control bleeding and protect a wound.</p> <p>All dressings should provide the optimum wound healing environment. (Warm, and moist, not wet and not dry).</p> <p>All leg ulcer dressings should be soaked off by submerging the leg in warm water with an emollient solution added, either in a bucket, bath or shower. The advantages of this procedure are –</p> <ul style="list-style-type: none"> Facilitates painless removal of the primary dressing Prevents damage to new granulating tissue and capillary buds Maintains the wound temperature Is comforting to the patient to have the leg soaked in an emollient solution especially when multi-layer bandages have been in place for a week <p><u>Sharp debridement</u> by experienced practitioners only (Hampton, 1997a) (Hoffman, 1996). Not used in cases of ischaemic feet, malignant wounds, where other structures are near the surface (Hampton, 1997a).</p> <p><u>Infected Wounds</u> - refer to pages 18 - 19.</p> <p>Larvae Therapy (Maggots): (should only be used by nurses who have had training in this area)</p> <p>Sterile larvae (for venous and arterial leg ulcers) produce powerful proteolytic enzymes that degrade and liquefy necrotic tissue. Larvae rapidly increase in size, reaching 8-10mm when fully grown. As well as removing slough and necrotic tissue, larvae combat odour and infection by ingesting and killing bacteria present in the wound.</p> <p>Larvae should not be applied to wounds that have a tendency to bleed easily, or be introduced into wounds that communicate with the body cavity or any internal organ. Larvae should be left on the wound for a maximum of 3 days. In the initial stages of treatment there may be a noticeable increase in wound exudates, causing the outer dressing to become discoloured. If exudate production is excessive, the secondary dressing may be changed daily whilst leaving the primary dressing undisturbed.</p>	1 A key quality indicator. DoH 1993. 2 NHS Tayside Clinical Skills Programme. Care of Leg Ulcers, Version 7 Sept 2006. 3 Hampton, S. (1997a) Sharp debridement. Journal of Wound Care: 6:3, 151. 4 Hoffman, D. (1996) Know how: A guide to wound debridement. Nursing Times (supplement): 91: 32, 22-23.
 <p>Sloughy</p>	Identified by formation of viscous, predominantly yellow layer of tissue	<ul style="list-style-type: none"> To remove all debris and promote autolysis 	ACTIVHEAL Gel ACTIVON (honey dressing) Gel/Tulle AQUACEL Ag AQUACEL	ALGOSTERIL IODOFLEX (see page 21 for cautions) SILVERCEL ALGIVON		
 <p>Granulating</p>	Red, velvety and moist Overgranulation is when tissue is above the level of wound edges	<ul style="list-style-type: none"> Protect from trauma and maintain moist, warm environment Treat until overgranulation tissue is level with wound edges 	TRICOTEX MEPILEX			
 <p>Epithelialising</p>	Red/pink, new skin cover extending from wound edges, may have islands of new epithelium in main areas of the wound bed	<ul style="list-style-type: none"> Protect and maintain optimal wound environment 	TRICOTEX MEPILEX			

Section 6: Pressure Ulcers Dressing Selection

Pressure ulcers are damage caused by extrinsic factors (pressure, shearing forces, friction) and intrinsic forces (illness, age, nutritional status, drug therapy). The toes, heels, sacrum and ischial tuberosities are the most risk of developing pressure ulcers.


Tissue type	Indicator/descriptor	Management aims	Treatment options		Other considerations	References
			Exudate levels			
			Low/moderate	Moderate/high		
 <p>Necrotic</p>	Identified by presence of predominantly black or yellowish brown tissue	<ul style="list-style-type: none"> To rehydrate eschar 	ACTIVHEAL Gel INTRASITE Conformable IODOFLEX/IODOSORB ALLEVYN	ACTIVHEAL Gel INTRASITE Conformable IODOFLEX/IODOSORB ACTIVON (honey dressing) ALLEVYN-adhesive LYOFoAM	<p>Friction and shearing forces can be minimized by using good manual handling technique and good positioning and support for the patient. See The Treatment/Management of Pressure Ulcers</p> <p>It is important to check the wound for signs of infection.</p> <p>Nutrition: There is evidence to demonstrate that adequate levels of protein, fat, carbohydrates, vitamins and trace elements are necessary in wound healing, especially in collagen formation and maturation.</p> <p>It is important to note that the wound is a result of pressure damage. In order for successful healing to occur, it is necessary to treat the underlying cause (ie pressure).</p> <p>In the event of tissue necrosis extending to underlying bone tendon or joint capsule, surgical intervention may be necessary.</p> <p>Pain control is an important factor in obtaining patient compliance to any treatment regime. Careful consideration should be given to a programme of pain management/analgesia tailored to the needs of each particular patient. The aim of any programme should be to maximize patient comfort and adherence to treatment.</p>	<ol style="list-style-type: none"> Effective Health Care Bulletin (1995). The prevention and treatment of pressure sores. Bennett G, Dealey C, Posnett (2004). The cost of pressure ulcers in the UK. Stephen-Haynes J, Gibson E. Principles of pressure ulcer management and prevention. Educational booklet 1 (4) Hartford, Huntingdon: The Wound Care Society 2004.
 <p>Sloughy</p>	Identified by formation of viscous, predominantly yellow layer of tissue	<ul style="list-style-type: none"> To remove all debris and promote autolysis 	ACTIVHEAL Gel INTRASITE Conformable IODOFLEX/IODOSORB ALLEVYN INADINE AQUACEL Ag	ACTIVHEAL Gel INTRASITE Conformable ACTIVON (honey dressing) ALLEVYN – non-adhesive ALGOSTERIL AQUACEL Ag	<p>It is important to note that the wound is a result of pressure damage. In order for successful healing to occur, it is necessary to treat the underlying cause (ie pressure).</p>	<ol style="list-style-type: none"> Pressure ulcer risk assessment and prevention. Implementation guide and protocol. Improving Practice: Improving Care. RCN (2003), London. European Pressure Ulcer Advisory Panel, Wound Healing Unit, Department of Dermatology, Churchill Hospital, Old Road, Headington, Oxford, OX3 7LJ www.epuap.org
 <p>Granulating</p>	Wound has 'granular' appearance, looks red and bleeds easily	<ul style="list-style-type: none"> To promote angiogenesis and therefore wound healing 	MEPILEX ALLEVYN TEGADERM HYDROCOLLOID	AQUACEL ALLEVYN – non-adhesive LYOFoAM ALGOSTERIL	<p>Pain control is an important factor in obtaining patient compliance to any treatment regime. Careful consideration should be given to a programme of pain management/analgesia tailored to the needs of each particular patient. The aim of any programme should be to maximize patient comfort and adherence to treatment.</p>	<ol style="list-style-type: none"> National Institute for Clinical Excellence (NICE)- (2004). Pressure ulcer risk assessment and prevention – inherited Clinical Guideline B. ISBN:1-84257083-8. NHS QIS Best Practice Statement – The Treatment/ Management of Pressure Ulcers. March 2005: http://www.nhshealthquality.org/nhsqis/files/BPS%20Treatment%20Management%20Pressure%20Ulcers%20(Mar%202005).pdf
 <p>Epithelialising</p>	Wound is pink in appearance, tissue very fragile and needs to be kept moist	<ul style="list-style-type: none"> To protect and promote new tissue growth 	MEPILEX ALLEVYN DUODERM Extra Thin TEGADERM HYDROCOLLOID	AQUACEL ALLEVYN – non-adhesive LYOFoAM ALGOSTERIL	<p>This is particularly important to encourage mobility in the patient, in order to aid the relief of pressure on the affected area.</p> <p>The EPUAP (European Pressure Ulcer Advisory Panel) grading will be used to assess and document pressure ulcers and wound grading.</p>	
 <p>Reddened</p>	Skin which is likely to break down as a result of friction/shearing, or site of previous injury	<ul style="list-style-type: none"> To prevent friction Protect bony prominences 	Moisturisers such as AQUEOUS CREAM or 50% WHITE SOFT PARAFFIN / 50% LIQUID PARAFFIN OINTMENT or film dressings such as TEGADERM should be used as a preventative measure to prevent heel ulcers developing due to friction from shearing and rubbing. Consider appropriate pressure relieving aids.		<p><u>Infected Wounds</u> - refer to pages 18 - 19.</p> <p>The use of heel dressings, such as ALLEVYN Heel is only to be used if the skin is breaking down. It must not be used as a pressure relieving aid.</p>	

Section 7: Diabetic Foot Ulcers Dressing Selection

Tissue type	Indicator/descriptor	Management aims	Treatment options		Other considerations	References
			Exudate levels			
			Low-moderate	Moderate-high		
 <p>Necrotic</p>	Identified by presence of predominantly black or yellowish brown tissue	<ul style="list-style-type: none"> To rehydrate eschar 	ACTIVHEAL Gel INTRASITE Conformable ALLEVYN MEPILEX ACTIVON HONEY Tulle + Ointment <u>Other Treatment</u> Larvae therapy	ACTIVHEAL Gel INTRASITE Conformable ALLEVYN MEPILEX ACTIVON HONEY	<ul style="list-style-type: none"> If wound becomes too moist, there is a chance for bacterial growth which may lead to infection. This is especially for immuno-suppressed patient and ischaemic ulcers which should be kept as dry as possible to prevent maceration. Chemical debriding agents and hydrocolloids have limited role in diabetic foot ulceration if lack of protective sensation (neuropathy) is present. Dry gangrene should be kept as dry as possible especially at line of demarcation with sharp debridement to this area to remove dead material. Do not pack sinuses on soles of feet as weight will push packing in or will dry and form as a plug. All areas of wound must have pressure relief. Callus should be removed by sharp debridement by a podiatrist. If patient has loss of protective sensation then regular wound inspection is required to detect any changes. Laser Doppler or standard Doppler can be use to assess blood flow. Predominately neuropathic ulcers require adequate pressure relief (e.g. casting shoes): if this is accompanied with bed rest all the better (testing for neuropathy can be done with a mono filament). Adequate glycaemic control is also believed to aid healing. The nutritional status of the patient is also important. Education of patients on the principles of good rest can be essential and ongoing protection. For ischaemic ulcers surgical intervention is usually required. It is important to check the wound for signs of infection. (See pages 21 - 22). Ensure adequate blood supply. ALLEVYN only with ACTIVHEAL Gel to prevent drying. <p><u>Tapes</u> Toe tapes should not be wrapped around toe (circumferentially)</p>	<ol style="list-style-type: none"> Greener, M. Diabetes – Causes and Complications Pharmaceutical Times February 1997 Barnett, A. Prevention and treatment of the diabetic foot ulcer British Journal of Nursing 1992; 2 (1): 7-10 York Health Economics Consortium – Evaluation of the Cost effectiveness of Dermagraft in the treatment of diabetic foot ulcers in the UK A key quality indicator. DoH 1993
 <p>Sloughy</p>	Identified by formation of viscid, predominantly yellow layer of tissue	<ul style="list-style-type: none"> To remove all debris and promote autolysis 	ACTIVHEAL Gel INTRASITE Conformable ACTIVON (honey dressing) ALLEVYN MEPILEX <u>Other Treatment</u> Larvae therapy	ACTIVHEAL Gel INTRASITE Conformable AQUACEL Ag IODOFLEX/IODOSORB ACTIVON (honey dressing) ALLEVYN MEPILEX		
 <p>Granular</p>	Wound has 'granular' appearance, looks red and bleeds easily	<ul style="list-style-type: none"> To promote angiogenesis and promote wound healing 	ALLEVYN MEPITEL MEPILEX INADINE	INADINE AQUACEL MEPILEX ALLEVYN MEPITEL		
 <p>Epithelialising</p>	Wound is pink in appearance, tissue very fragile and needs to be kept moist	<ul style="list-style-type: none"> To protect and promote new tissue growth 	ALLEVYN MEPITEL MEPILEX	INADINE ALLEVYN LYOFOAM MEPITEL		

Section 8: Minor Wounds Dressing Selection





The minor injuries market consists of: - cuts, abrasions, minor burns/scalds, skin flaps, sprains and strains. Such wounds are classified as those where damage to the epidermis or superficial damage has occurred. These wounds are characterised by redness, minor bleeding and skin abrasion and are wounds commonly seen from day to day. If any wound becomes infected please see pages 21 - 22.

Tissue Type			Treatment Options			What not to use
			Exudate Levels			
			Minimum Exudate	Moderate Exudate	Heavy Exudate	
	Cuts and abrasions Skin flaps	<u>Dressings</u>	INADINE MEPITEL TRICOTEX	ALGOSTERIL	Unlikely in minor wound unless on oedematous limb. In which case it should be treated like any other heavily exuding wound.	Avoid tulle dressing unless able to change at least daily (not practical in GP and PC setting)
			MEPORE	ALLEVYN } LYOFOAM } Adhesive or Non adhesive		
		If allergies to adhesives alternatives are	MEPILEX } and bandage or tubifast/ tubigauze			
		If waterproof dressing required	MEPORE ULTRA DUODERM Extra Thin			
	Vapour permeable films and membranes	ALLEVYN				

Treatment of skin tears, either linear or flap, should be undertaken as close to the time of injury as possible. The wound edges should be approximated and closed. If enough time has elapsed the flap will dehydrate and no longer be viable. In this case secondary wound healing would be necessary. This lengthens the healing time, increases the risk of infection and pain. Professional judgement, patient skin type and extent of wound will inform the type of closure required. Choices are glue, sutures, paper closures or soft silicone coated dressing.

Section 9: Burns

Burns occur when hot solids, hot liquids or flames destroy some or all of the layers of cells which form the skin. Damage to the skin from ultraviolet radiation, radioactivity, chemicals and electricity is also considered a burn injury, as is respiratory difficulty following smoke inhalation.

Type	Indicator/descriptor	Management aims	Treatment options	Dressing options	Other considerations
 <p>Superficial</p>	<p>Wet, pink, blisters</p> <p>Cause: Hot liquid, short exposure</p>	<ul style="list-style-type: none"> To protect the area from infection To treat potential minor infection To absorb/manage exudate To encourage rapid healing 	<p>Cool wound and wrap in cling film</p> <p>Seek medical advice</p>	<p>Primary</p> <p>MEPITEL – is low adherent and protects surrounding skin from maceration. Can be left in situ for 7-10 days changing the secondary, absorbent dressing as often as required. Recommended not to be changed before fifth day. Wound can be monitored through MEPITEL.</p> <p>JELONET adheres to wound if not changed daily.</p>	<p>Control of pain is very important for patients with burns (see Section 1). For more severe burns, respiratory aspects should be considered first.</p> <p>British Burns Association guidelines state that any burn of greater than 10% body surface area should be referred to a specialist burns unit.</p>
 <p>Mid-dermal</p>	<p>Less wet, red and blisters</p> <p>Cause: Hot liquid, longer exposure Flash flame</p>	<ul style="list-style-type: none"> To protect the area from infection To treat potential minor infection To absorb/manage exudate To encourage rapid healing 	<p>Direct Patient to hospital</p> <p>Meantime, cool wound and wrap in cling film</p>	<p>Secondary</p> <p>Dressings of gauze, gamgee crinx and crepe bandage applied firmly should be used over MEPITEL or JELONET.</p> <p>Remove the outer gamgee and bandages if they soak through and replace.</p> <p>The largest amount of leakage will come from a superficial burn</p>	<p>Cling film or sterile towels to be used for transfer from Trust to Specialist Burns Unit.</p> <p>Burns are very susceptible to infection and infection prevention is critical to good burn management.</p> <p>Burn should be cooled for no longer than 10 minutes.</p>
 <p>Deep Dermal</p>	<p>Dry, fixed staining due to capillary thrombosis</p> <p>Cause: Chemicals Direct contact flames</p>	<ul style="list-style-type: none"> To protect the area from infection To treat potential minor infection To prevent the burn from converting into a deeper wound To absorb/manage exudate To prepare for grafting or encourage rapid healing 	<p>Direct Patient to hospital</p> <p>Meantime, cool wound and wrap in cling film</p>	<p>TELFA – useful on areas that are not easy to bandage eg back, buttocks.</p> <p>Change as required to keep outer surface dry. Use on burns with less exudates ie mid-dermal or deep dermal.</p> <p>Can be used over other wound products eg flamazine.</p> <p>Secure with tape.</p> <p>Available as a thin film or as a padded dressing.</p>	<p>NB: The longer the skin is in contact with the cause of the burn (eg hot liquid, chemical), the deeper the burn will become. Removing the cause and cooling the area is the most important first aid.</p> <p>Hand bags should not be used on children, due to suffocation risk.</p>
 <p>Full thickness</p>	<p>Dry, white or char Waxy/leathery</p> <p>Cause: Chemicals Direct contact flames Explosion, with very high temperature</p>	<ul style="list-style-type: none"> To protect the area from infection To manage exudate To maintain a healthy bed for subsequent grafting 	<p>Direct Patient to hospital</p> <p>Meantime, cool wound and wrap in cling film</p>	<p>FLAMAZINE (Silver-sulphadiazine Cream) indicated for the treatment of burns to the hands or digits. Once dressed with cream, the hand may be placed in a clear plastic bag or glove, which is then closed at the wrist. Secure bags with gauze and crepe bandage around the wrist to absorb seepage. During this treatment hand and finger movement should be encouraged.</p> <p>It is recommended that the cream be replaced at least every 24 hours; more frequently if the volume of exudates is large.</p>	<p>All burns should be observed closely until the depth of the burn has become evident. Grafting may then take place. This may be up to three weeks post-burn.</p> <p>This advise does not apply to radiotherapy burns. See http://www.sor.org/public/pdf/skinreact.pdf</p>



Section 10: Post-operative Wound Management Post-operative Wounds

The cost of infection in surgical patients in England was estimated to be £170 million per annum¹. The extra cost per case can be as much as £1552 and 10.2 extra days in hospital. Plowman et al² estimated the number of deaths resulting directly from hospital acquired infection (HAI) at 5,000 per annum, and those to which HAI made a significant contribution at 15,000 per annum.

Surgical Drapes					
Surgical drapes play a vital role in any surgical procedure where it is important to protect the body from both external and transient bacteria.					
Type/description	Management aims	Treatment options		Other considerations	References
		Exudate levels			
		Low/moderate	Moderate/heavy		
Minimal invasive surgery Ophthalmic surgery and minor procedures	Infection protection	OPSITE Plus MEPORE JELONET	MEPITEL	Security of drape. Use of topical antimicrobial solutions. Use of sterile procedures.	<p>1 Coella R. et al (1993) The cost of infection in surgical patients: a case control study. Journal of Hospital Infection.</p> <p>2 Plowman RM et al (1997) Hospital acquired infection. Office of Health Economics.</p> <p>3 www.worldwidewounds.com</p>
Paediatric surgery and herniotomy Spinal and abdominal surgery Nephrectomy and laminectomy	Infection protection	OPSITE Plus MEPORE JELONET	MEPITEL	MEPITEL is low adherent and protects surrounding skin from maceration. Can be left in situ for 7-10 days changing the secondary, absorbent dressing as often as required. Recommended not to be changed before fifth day. Wound can be monitored through MEPITEL. JELONET adheres to wound if not changed daily. Secondary dressing necessary with MEPITEL eg gauze and tape.	
Major orthopaedic surgery	Infection protection	OPSITE Plus MEPORE JELONET	MEPITEL	Patient can shower with tape in situ. It stretches with swelling.	
Breast Surgery	Infection protection Support of wounds	Microfoam surgical tape			



Section 11: IV Sites

It is thought that up to 75% of patients entering hospital will have an IV device inserted at some time during their stay. There is a risk of complications arising from IV therapy: patients are more susceptible to nosocomial bacteraemia and septicaemia than those not receiving treatment. IV related problems not only cost the NHS millions of pounds in extra bed days and antibiotics, but also nursing time. It is absolutely essential to use a specifically designed IV dressing which provides a safe, dry and secure site.

Type	Management aims	Treatment options	Other considerations	References
Central line PICCs 	Secure long term placement Maintaining a dry site Avoiding complications including infection and septicaemia	IV3000	<p>Ideally the dressing should be transparent (i.e. for a visible site), waterproof and bacteria proof.</p> <p>Topical anaesthesia can be provided to assist cannulation (particularly in children) via the use of AMETOP Gel.</p> <p>Upon removal of the cannula the site can be protected with OPSITE Post-Op.</p> <p>The cannula should be covered with a transparent, semi-permeable dressing. To ensure the catheter is secure, the site is visible, to reduce contamination and to promote patient comfort (Ingram & Lavery 2005).</p> <p>Peripheral devices should be re-sited every 48-72 hours to reduce infection risk (Homer and Holmes 1998).</p> <p>Dressings on the insertion site should be sterile, dry and intact (Hindley, 2004). The dressing should be changed if it becomes soiled or wet as the presence of moisture enhances the proliferation of microbes. The site should be inspected daily for signs of infection or whenever the cannula is manipulated and the dressing should be changed when it becomes soiled.</p>	1 NHS Tayside Clinical Skills Programme Peripheral Intravenous (IV) Medicine Administration Version No2 Feb 2006.
Peripheral sites 	Ease of use Maintaining a dry site Security of cannulae Avoiding complications	IV3000		

Section 12: Scar Care

Over 50% of the UK population have at least one scar and there are 6 million surgical procedures carried out each year that can potentially lead to scarring. Little attention is paid or advice given to patients who have scars or have sutures removed. Scars can have a profound psychological effect on patients with 2.5 million admitting to either seeking medical help or changing clothing or hair style to disguise their scar.

Type	Indicator/descriptor	Management aims	Treatment options	Other considerations	References
<p>Hypertrophic</p> 	<p>Red/dark, raised scar within the boundary of the original wound.</p> <p>Typical causes: Following any injury. It is believed that these scars are the result of an imbalance in the production of collagen in a healing wound. They are more common in the young and people with darker skin.</p>	<p>To flatten and fade scar, and to improve function and mobility over a joint</p>	<p>Silicone dressings eg KELO-COTE Gel MEPIFORM Gel Sheet</p> <ul style="list-style-type: none"> • Improves appearance • Prophylaxis on closed wounds to prevent hypertrophic or keloid scarring • Do not use on open wound • Can be cut to fit shape of scar • Best results achieved within 2-4 months • Sheets can be re-used for up to 1 month. Wash twice daily in mild non-oily soap solution and rinse in clear warm water. 	<p>It is much more efficient to prevent hypertrophic scars than to treat them.</p> <p>The consensus is that the most successful treatment of hypertrophic scar or keloid is achieved when the scar is immature but the overlying epithelium is intact.</p>	<p>Mustoe TA, Cooter RD, Gold MH et al. International clinical recommendations on scar management. <i>Plas, Reconstr. Surg.</i> 2002; 110: 560-571.</p>
<p>Keloid</p> 	<p>Red/dark, raised scar which can continue to grow outside boundary of the original wound.</p> <p>Typical causes: Following any injury. It is believed that these are the result of an imbalance in the production of collagen in a healing wound. They grow beyond the boundary of the original wound and can continue to grow indefinitely.</p>	<p>To flatten and fade scar, and to improve function and mobility over a joint</p>	<p>KELO-COTE Gel MEPIFORM Gel Sheet</p>		

Section 13: Wound Complications Infected Wounds

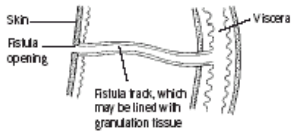
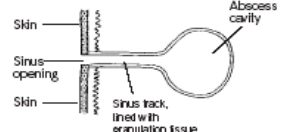


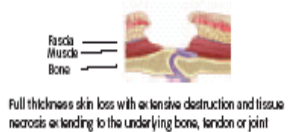
Infection is the invasion of living tissue by micro-organisms. The number of micro-organisms and their degree of pathogenicity determine the establishment of infection. The presence of bacteria does not always indicate that a wound is infected. All chronic wounds are colonised with bacteria but they only become problematic when healing is compromised. Wound stasis or deterioration may be caused when the host defences are unable to resist the bacterial load. Internal and external factors related to the patient's condition must be taken into consideration when planning care of an infected wound. Factors such as immunosuppression, poor nutritional status, metabolic disease, ischaemia or presence of a foreign body will affect a host's ability to control bacterial load. Critical colonisation occurs when the wound is unable to maintain a balance between the number of microbes and the defence system available.

Type	Management aims	Treatment options		Other considerations	References
Contaminated Presence of non-replicating bacteria in wound	Prevent infection Removal of devitalised tissue is important to reduce bacterial contamination. This may be achieved in a number of ways. Surgical debridement, autolytic debridement which liquefy slough and simultaneously promote granulation or biosurgical debridement which uses sterile larvae to break down and remove dead tissue	Exudate levels		1. <u>DIAGNOSING CLINICAL INFECTION</u> Signs and symptoms of clinical infection form the first indication of possible diagnosis. Increasing pain and wound breakdown are the most sensitive indicators of critical colonisation and infection. Other signs and symptoms include: <ul style="list-style-type: none"> • abscess • cellulitis • discharge • delayed healing • discolouration • friable, bleeding granulation tissue • pocketing/bridging at the base of the wound • malodour Inflammatory response may be inhibited in some people. Those who are immunosuppressed or have diabetes mellitus may not display typical signs and symptoms of wound infection. It may be necessary to exclude potential osteomyelitis when dealing with deep wounds.	1 Tayside Adult Antibiotic Policy: CLICK HERE 2 Fernandez R, Griffith R, Ussia C. Water for wound cleansing. Evidence based Nursing; July 2003; 6(3):81. 3 Davies P. Recent Clinical usage of honey in the treatment of wounds. Wounds UK: 14-16. 4 Houghton W, Young T Common Problems in Wound Care: Malodorous Wounds Br J Nursing 1995; 4(16): 959-60, 962-3. 5 Bell, A, Hart, J, (2007) Evaluation of two absorbent silver dressings in a porcine partial-thickness excisional wound model. <i>Journal of Wound Care</i> , 16, 10, Nov 2007, 445-453. 6 Stephen Haynes, J, Toner, L, (2007) Assessment and management of wound infection: The role of silver <i>Wound Care</i> , S6-12, March 2007. 7 Thomas, S, McCubbin, P, (2003) A comparison of the antimicrobial effects of four silver-containing dressings on these organisms. <i>Journal of Wound Care</i> , 12, 3, March 2003, 101-107.
		No-low ACTIVHEAL Gel INTRASITE Conformable INADINE Topical antibiotic creams not recommended	Moderate - high ALGOSTERIL INADINE ALLEVYN LYOFOAM		
Colonised Replicating bacteria adhering to the wound with no detrimental effect to wound healing	Prevent infection Removal of devitalised tissue is important to reduce bacterial contamination. This may be achieved in a number of ways. Surgical debridement, autolytic debridement which liquefy slough and simultaneously promote granulation or biosurgical debridement which uses sterile larvae to break down and remove dead tissue	ACTIVON (honey dressing) Topical antibiotic creams not recommended	ALGOSTERIL ALLEVYN LYOFOAM	2. <u>SWABBING</u> Once wound infection is recognized by the presence of clinical signs a wound swab may be taken for culture and sensitivity tests. This should only be necessary if the need for antibiotic therapy is suspected or to confirm that antibiotics commenced are appropriate. Although complete identification of all isolates is not routinely carried out when the swab reaches the lab, certain pathogens are fully identified and antibiotic sensitivities identified. This information together with full holistic assessment of the patient and their wound are sufficient to make correct effective clinical decision. Swabbing slough or necrotic tissue may only reveal saprophytic organisms which are not causing underlying infection. It is important therefore to adopt good swabbing procedure. Clean surface exudates from wound prior to taking swab with sterile solution of water or saline (sterile solution removes the risk of contaminating the sample). Take swab from deep tissue (as close to the wound site as possible). 3. <u>IODINE PRODUCTS</u> Caution in those with severe renal impairment or history of thyroid disease. Contra-indicated in thyroid disease, those receiving lithium, pregnancy, breastfeeding and children. Iodine is a wide spectrum antibacterial but is rapidly deactivated by wound exudate. Iodine has the propensity to dry out and adhere to the wound surface and indicates regular dressing changes. 4. <u>MALADOUR</u> Maladour can be the most distressing symptom for patients, family and care givers. See page 24 for management advice.	
Critically colonised Presence of bacteria at the wound bed which compromises healing but does not result in infection	Prevent bacterial proliferation	INADINE Long term use of silver dressings not recommended without further advice	IODOFLEX Paste ACTISORB Silver 220 AQUACEL Ag ALLEVYN SILVERCEL		

<p>Clinically infected</p> <p>Invasion and multiplication of micro-organisms in body tissue with overt host response</p>	<p>Resolve deep infection Reduce bacterial numbers Treat symptoms Prevent septicaemia If blood cultures confirm systemic infection, intravenous or oral antibiotics may be prescribed if sensitive to invading organism (see NHS Tayside Antibiotic Policy)</p>	<p>INADINE AQUACEL Ag/ SILVERCEL</p> <p>Localised infection may respond to topical antibiotic therapy eg Anabact or Metrotop for anaerobic infection.</p>	<p>IODOFLEX Paste ACTISORB Silver 220 ALLEVYN AQUACEL Ag/ SILVERCEL</p>	<p>5. ACTIVON (HONEY DRESSING) GEL/TULLE Not only has antibacterial properties, effective against resistant strains such as MRSA, also promotes autolytic debridement and it's high osmolarity draws lymph fluid from beneath wound tissue, thereby providing a good supply of protease enzymes at the interfact of the wound bed and slough layer. The osmotic effect may cause pain at wound site and in this instance alternative honey products may be tried e.g. Mesitran Honey.</p> <p>6. SILVER DRESSINGS Aquacel Ag is a sterile primary wound dressing made from sodium carboxymethylcellulose (NaCMC) containing 1.2% silver in an ionic form. The NaCMC is produced as a textile fibre and presented in the form of a fleece held together by a needle bonding process. The dressing absorbs and interacts with wound exudate to form a soft, hydrophilic, gas-permeable gel that traps bacteria and conforms to the contours of the wound whilst providing a micro-environment that is believed to facilitate healing.</p> <p>Silvercel dressing is a sterile, non-woven pad composed of high tensile strength alginate, carboxymethylcellulose (CMC) and silver coated nylon fibres. Contains elemental silver (8%) as a sustained release formulation. It is a primary dressing that is an effective barrier to bacterial penetration. The barrier functions of the dressing may help reduce infection in moderate to heavily exuding partial and full-thickness wounds including: pressure ulcers; venous ulcers; diabetic ulcers; donor sites; traumatic and surgical wounds.</p> <p>Dressing must be in contact with wound bed to be most effective. Discontinue after relief of symptoms of infection for 2 days.</p> <p>Silvercel may be preferable where dressing changes are more frequent and adherence to wound is not an issue.</p> <p>To minimise dressing changes it may be more cost effective to use ACTICOAT 7 or ACTICOAT Moisture Control. See page 26.</p>	
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Section 13: Wound Complications Fistulae/Sinuses/Cavities

As with all complex wounds a full assessment to determine the cause and extent of the wound is essential. A fistula is an abnormal passage between a hollow organ and the skin surface, or between two hollow organs¹. "A wound sinus is a discharging blind-ended tract that extends from the surface of an organ to an underlying area or abscess cavity". The cause of a sinus must always be determined by in-depth assessment. A cavity wound may be chronic or acute and falls into the categories described below.

Type	Indicator/descriptor	Management aims	Treatment options	Other considerations	References
Fistula  <p>Labels: Skin, Fistula opening, Viscera, Fistula track, which may be lined with granulation tissue.</p>	<p>Abnormal passage between two epithelialised surfaces that connects one viscera to another or to the body surface.</p>	<p>Management and free drainage of exudate. Protection of surrounding skin Prevention of infection Removal of necrosis or slough Promotion of granulation from the base of the wound</p>	<p>ALGOSTERIL ROPE – should be used very loosely as a wick to facilitate drainage and not cause a back flow of exudate into the body cavity.</p>	<p>Fistula: Examination of the fluid will indicate the source of the fistula, e.g. bile stained – from biliary tract; brown faecal fluid – from large bowel.</p> <p>Sinus: Often end in an abscess/cavity which contains foreign material. This needs to be removed and healing promoted or the sinus is likely to become chronic.</p>	<p>1 Romanelli M., Galatioto C., <i>et al</i>, <i>Fistula Care</i>. New approaches to the management of chronic wounds. Proceedings of the European Wound Management Conference, April 1997, Ramada, Italy.</p> <p>2 Butcher M (1999), <i>Management of Wound Sinuses</i>, <i>Journal of Wound Care</i>, Oct, 8: 9-1999; 415-453.</p> <p>3 A key quality indicator. DoH 1993.</p>
Sinus  <p>Labels: Skin, Sinus opening, Abscess cavity, Sinus track, lined with granulation tissue.</p>	<p>Discharging, blind-ended tract that extends from the surface of the skin to an underlying abscess/cavity. May be caused by infection, liquefaction or a foreign body.</p>	<p>Allow cleansing and draining Do not plug Protection of surrounding skin Prevention of infection Removal of necrosis or slough Promotion of granulation from the base of the wound</p>	<p>"Inject" with syringe of ACTIVHEAL Gel. If large amount exudate, pack loosely with HYDROFIBRE (eg AQUACEL)</p> <p>Foam Dressing – ALLEVYN, MEPILEX</p>	<p>- Establish the site and extent of tissue damage - Nutrition - Pain management - Measurement of volume of exudate may be appropriate - Surgical intervention - Multi-disciplinary approach</p> <p>Patient education</p>	
Cavity GRADE 2  <p>Labels: Epidermis, Dermis, Subcutaneous tissue.</p> <p>Partial thickness skin loss or damage involving the epidermis and/or dermis.</p> GRADE 3  <p>Labels: Subcutaneous tissue, Fascia, Muscle.</p> <p>Full thickness skin loss involving damage or necrosis of subcutaneous tissues but not through the underlying fascia and not extending to the underlying bone, tendon or joint capsule.</p> GRADE 4  <p>Labels: Fascia, Muscle, Bone.</p> <p>Full thickness skin loss with extensive destruction and tissue necrosis extending to the underlying bone, tendon or joint capsule.</p>	<p>A cavity wound may be acute or chronic.</p> <p>Surgical cavities are generally clean cavities with a healthy bed.</p> <p>Cavities can be present in a range of aetiologies (pressure ulcers and leg ulcers are examples).</p>	<p>Management and free drainage of exudate. Protection of surrounding skin Prevention of infection Removal of necrosis or slough Promotion of granulation from the base of the wound Cavity wounds should not be packed tightly or over-filled</p>	<p>ACTIVHEAL Gel INTRASITE Conformable IODOFLEX ALLEVYN Cavity</p>	<p>INFECTION – If cavity becomes infected use IODOFLEX</p>	






Section 13: Wound Complications Overgranulation

Overgranulation can sometimes occur in the latter stages of healing and clinical action can help reduce the granulation

Type	Indicator/descriptor	Management aims	Treatment options	Other considerations	References
	<p>Overgranulation, also referred to as proud flesh, hypergranulation, hypertrophic granulation, hyperplasia of granulation tissue or wound oedema, occurs at the proliferative stage of the wound healing process. It presents clinically as granulation tissue raised above the level of the surrounding skin.</p> <p>The presence of overgranulation tissue prevents progress to the maturation stage of the wound healing process and so delays wound healing.</p>	<ul style="list-style-type: none"> To reduce further development of granulation tissue To promote epithelialisation over the surface of the wound To effectively manage wound exudate To provide a dressing that is comfortable and acceptable to the patient 	<p>LYOFOAM</p>	<p>Topical steroids: may retard wound closure. Use for a maximum of 7 days. Requires a secondary dressing. Seek specialist advice.</p> <p>Silver nitrate sticks 75% caustic applicators (unlicensed). Seek specialist advice:</p> <p>Caustic and a potential cause of metabolic disturbances with prolonged use. Only use when all other options fail. Will damage healthy tissue. Protect with hydrocolloid template or white soft paraffin.</p> <p>Surgical excision: re-traumatises the wound, re-initiating the wound healing cycle</p>	<ol style="list-style-type: none"> Borkowski S. G Tube Care: Managing Hypergranulation Tissue. <i>Nursing</i> 2005; 35(8):24. Hawkins-Bradley, Walden. Treatment of a Non-healing Wound with Hypergranulation Tissue and Rolled Edges. <i>Journal of Wound, Ostomy and Continence Nurse Society</i> 2004; 29(6): 320-324. Nelson L. Points of Friction. <i>Nursing Times</i> 1999;95(34). Rollins H. Hypergranulation Tissue at Gastrostomy Sites. <i>Journal of Wound Care</i> 2000;9(3): 127-129.

Section 13: Wound Complications Fungating Wounds

Fungating wounds are caused either by a local tumour infiltrating the skin, or by metastatic spread from the primary tumour. Malignant fungating lesions are an immense challenge. The aim of treatment is rarely to heal: care is focused on reducing the impact of symptoms and maximizing comfort (Naylor *et al.*, 2001). Quality of life is the guiding principle of care planning, which should be undertaken in partnership with the patient. The most common symptoms requiring intervention are exudates, odour, bleeding and pain. As with any wound the underlying cause needs to be diagnosed and treated and the management of fungating wounds (in common with other complex wounds) is often by a combination of therapies.

	Indicator/descriptor	Management aims	Treatment options	Other considerations	References
	Exudate	Remove slough/necrotic debris Manage excess exudate Keep moist	Heavy exudate ACTIVHEAL Gel ALGOSTERIL LYOFOAM MEPITEL Light exudate ACTIVHEAL Gel AQUACEL	In selected wounds with high exudates either stoma appliances or absorbent pads over a non-adherent contact layer may be the most appropriate dressing method.	1 Dunford, C. (2000) The use of honey in wound management. <i>Nurs Stand</i> , 15(11), 63-8 2 Grocott, P. (2000b) Palliative management of fungating malignant wounds. <i>Journal Community Nursing</i> , 14(3), 312,35-6,38.
	Bleeding	Control bleeding Prevent trauma at dressing change	ALGOSTERIL may be applied to wounds with a small amount of bleeding but should be used with caution in fragile tumours as they may cause bleeding.	Haemostatic surgical sponges Spongostan® or Oxycell® Adrenaline 1:1000 (BNF 2006) - only under medical supervision and caution is advised as adrenaline may cause ischaemic necrosis due to local vasoconstriction. Referral to a vascular surgeon for cautery/ ligation	3 Naylor, W., Lavery, D & Mallet, J. (2001) The Royal Marsden Hospital Handbook of Wound Management in Cancer Care. Blackwell Science, Oxford.
	Malodour - the most distressing symptom from the patients perspective (Haughton & Young, 1995)	Reduce odour Check for infection via swab	METRONIDAZOLE gel - apply to clean wound 1-2 times daily and cover with non-adherent dressing. CARBOPAD VC	Natural live yoghurt (Schulte 1993) Sugar paste (Topham 2000) Honey (Dunford 2000) Larval therapy (Thomas et al 2001) Good ventilation, and essential oils on clothing or in the room.	4 Schulte, M. (1993) Yoghurt helps to control wound odour. <i>Oncol Nurs Forum</i> , 20(8), 1262
	Skin irritation	Protect from maceration/ breakdown. Control itching	Cavilon Diprobase or aqueous cream with menthol may provide relief. Hydrogel sheet can also reduce itching and promote comfort.	Advice to the patient regarding the use of light, cool clothing and bathing may be of some benefit. Irritation caused by radiotherapy may respond to topical hydrocortisone.	5 Thomas, T., Jones, M., Wynn, K. & Fowler, T. (2001) The current status of maggot therapy in wound healing. <i>Br J Nurs</i> , 10(22), (Suppl S5-12).
	Pain - Assessment provides a means to determine the underlying cause of the pain, e.g. infection, pressure on structures, heightened anxiety, invasion of nerves (Naylor 2001)	Analgesic drugs should be prescribed using the World Health Organisation (WHO) guidelines for the control of cancer pain and in accordance with the Tayside Area Prescribing Guide	A breakthrough dose of the patient's regular analgesia may be administered 20–30 minutes before the dressing change. A short-acting analgesic such as Oramorph may be required to supplement the regular analgesic when dressings are changed. The use of morphine or diamorphine mixed with a hydrogel (to form a 0.08–0.1% mixture) and applied topically to the wound has been found to be an effective method of pain relief in ulcerating wounds, including fungating wounds (Grocott 2000b).	Chemotherapy, radiotherapy, hormone therapy or a combination of these anti-cancer therapies may help to shrink the wound by destroying malignant cells, reducing pressure on nerves and other structures and decreasing the area of exposed tissue. This may have a significant effect on the level of pain experienced by the patient.	6 Topham, J. (2000) Sugar for wounds. <i>J Tissue Viability</i> , 10(3), 86-9. 7 Best practice statement radiotherapy: CLICK HERE

Section 14: Additional therapies or dressings

The dressings detailed in this Section are **NOT** standard practice and should be reserved for complex and difficult to heal wounds.

ACTICOAT or ACTICOAT 7: for treatment of localized infection in heavily exuding wounds:

- Acticoat is a nanocrystalline silver dressing which may be left in situ for up to seven days (Acticoat 7) or three days (Acticoat).
- It is suitable for exuding wounds with a high bacterial burden. The action of the dressing controls the bacterial burden, which in turn should reduce the exudate.
- May be of value in long standing heavily exuding wounds: eg, leg ulcers which have failed to respond to conventional therapies.

Application

- The dressing must be moistened with water prior to use and applied directly to the wound.
- The dressing can be cut to size, but avoid cutting through the "spots" on the dressing, which retains the dressing structure.
- The dark blue side of the dressing is the wound contact side.
- The dressing may be rehydrated with water, if necessary, whilst still in position to ensure optimum release of silver and prevent adherence to the wound bed.

Additional information

- Use of the dressing may result in blackening of the tissue due to the silver content. Try to avoid surrounding healthy skin with the dressing to help reduce this effect. It may be of value to protect the surrounding skin with a barrier, for example 50:50 or zinc paste.
- Discontinue use when exudate level reduces and bacterial burden reduced, with signs of local infection resolving.

ALLDRESS: use as secondary dressing on a variety of tissue types

- The requirement of a secondary dressing includes maintaining a moist warm healing environment, absorbency and preventing strike through which are requirements of an ideal dressing.
- Alldress is designed for use as a secondary dressing, when frequent dressing changes are required.
- Alldress has a non-adherent contact layer, absorbent island, adhesive and outer film coating. It has an adhesive border and may not be suitable for patients with fragile skin; non-adherent dressings should be considered.
- It is intended to optimise the effectiveness of the primary dressing: eg, Aquacel, ActivHeal.

ATRAUMAN: non adherent dressing which is intended to be used when tulle gras dressings would traditionally have been used.

- Atruaman (Hartmann) is a non-adherent dressing impregnated with non-medicated ointment based on triglycerides.
- It should be placed directly on the wound bed and will prevent adherence to the wound bed, therefore providing atraumatic removal at dressing change.
- The dressing allows excess exudate to pass through to an outer secondary dressing.
- May be folded or cut to size.
- Types of wounds include donor graft sites, nail bed removal, burns, fungating wounds.

- When to discontinue: once wound has healed or symptoms change.

MAGGOT THERAPY (Larvae/Biosurgery)

Sterile maggots can be used is used for the rapid debridement of sloughy/necrotic wounds including leg ulcers, pressure ulcers, infected surgical wounds and necrotic diabetic foot ulcers and burns. The number of maggots to be applied will be determined by size and condition of the wound. One container of 300 maggots will generally be sufficient for wounds measuring up to 5 X 5cm but larger wounds may require two or more pots to effect debridement. There is also good clinical evidence to suggest that maggots can be very effective in wounds containing MRSA. Sterile maggots should only be used by nurses who have had training in this area.

Benefits of maggot therapy:

- Rapid wound debridement
- Elimination of infection
- Reduced healing times
- Prevention of amputation
- Reduction of wound related pain
- Elimination of unpleasant odours
- Significant savings in treatment costs
- Decreased antibiotic usage

Application

- Prior to use ensure that no dressings with preservative or iodine are used.
- The sterile larvae should be applied to the wound on the day of delivery.
- Make a template to closely fit the surrounding wound with Aquacel, leaving the wound bed exposed. This serves the purpose of protecting the surrounding skin from proteolytic enzymes produced by the maggots, allows gaseous exchange and allows adherence of netting dressing to contain them.
- Remove maggots from container by use of small amount of saline and pour slowly onto netting.
- Place the net (larvae side down) over the wound.
- Secure netting to Aquacel with sleek tape, ensuring that the netting is not occluded over wound bed which would suffocate maggots.
- If necessary, place moistened wound swab over netting to retain hydration. This will have to be checked daily to ensure maggots do not dry out and die. Particularly important if patient is in the habit of sitting near the fireside or has central heating.
- Cover with light, loosely fitted bandage or gauze wound pad.
- Leave in situ for three days.
- Inspect the wound daily for signs of bleeding and, if occurs, larvae should be removed and wound re-assessed.
- The clinical waste bag must be incinerated.

Removal

- Place affected area over opening of yellow disposal bag.
- Peel away Aquacel and netting with underlying maggots in one piece and drop into bag.
- Irrigate remaining maggots into bag with saline or water.
- Use forceps to remove any remaining persistent maggots.
- Replace with conventional wound dressing.
- Disposal is by double bagging and taking to nearest hospital for incineration.

Additional Comments

- If wound continues to produce slough it is indicative of poor perfusion to the area and further investigation is required : eg, vascular referral in diabetic foot ulcer.
- Some patients have been noted to spike their temperature a few hours following application of maggots. This subsides after a few hours and does not appear to cause any detrimental effects.
- Preservatives in some hydrogels can kill maggots. Purilon gel should be used if larvae therapy is planned.

Alternative dressings to maggots: consider in first instance the use of Mesalt or conventional debriding agents (see below).

MESALT (Molnlycke): Concentrated Sodium Chloride Dressing

Wounds, which are heavily exuding with excess slough, may respond to the use of Mesalt, which is a concentrated sodium chloride (15%) dressing. This should be considered a short treatment with daily dressings with frequent reassessment.

Mesalt has the following benefits:

- The higher level of sodium will assist in facilitating the removal of slough.
- Provide a hostile environment for bacterial growth.
- Reduces interstitial oedema, thereby reducing constriction of capillaries and improving blood flow.

Contra Indications

- When bone or tendon is exposed as this may have a dehydrating effect.
- Dry slough/necrotic tissue.

When to discontinue its use:

- When slough is removed and exudate level is reduced.
- Continuance beyond this may cause pain to the patient, due to the "drawing effect" of the sodium and may dehydrate the wound bed and denature cells.

INDICATIONS FOR USE OF LEECHES

Leeches are used in plastic surgery to relieve venous congestion in any skin flap or replanted tissue. The leech bite causes a small bleeding wound that mimics venous circulation. Leeches produce several substances which allow the bleeding to continue for up to 10 hours after it has been removed from the patient – including an anticoagulant, a local vasodilator and a local anaesthetic.

Applying Leeches

Usually only one leech is used on a patient at any one time unless there is a very large area of congestion. The patient's skin should be cleaned with soap and water (**NOT SALINE**). The leech is placed over the area to be treated and it should attach quickly to the skin. If it is reluctant to bite, a small needle prick is made on the skin to produce a droplet of blood. The leech must be checked continuously to ensure that it has not moved. They usually stay attached to the patient for at least 30 minutes and will simply drop off the skin when full. A leech is applied in this way every 2-3 hours until congestion is relieved.

A leech that has attached itself to the wrong area may be removed by sprinkling it with saline or using a Steret.

Re-using Leeches

As leeches contain blood after use they must **NEVER** be re-used on a different patient. They only need to feed once very four months or so and if they are to be re-used on the same patient they must be made to vomit first. This is done by placing them in 5% sodium chloride solution for 30-60 seconds (**no** longer). Leeches that have regurgitated may be used again after a few hours, but are usually a little reluctant as they are less hungry. They should not be kept in the same container as unfed leeches because these creatures are cannibalistic!

Patient Care

- Haemoglobin should be checked daily
- The area should be inspected for signs of infection and swabs taken if necessary
- The wounds should be cleaned every few hours with water to remove any clots and allow continued bleeding

Drug Therapy

Antiplatelet drugs are usually prescribed to reduce clot formation and encourage circulation. Dextran infusions and/or aspirin (oral or rectal) are the most commonly used agents.

Disposal of Leeches

Fed leeches that are no longer required should be killed by placing them in 70% alcohol. They can then be sent for incineration. They must **never** be returned to pharmacy.

PROMOGRAN® : Guidelines for Use

Background

PROMOGRAN® is a protease-modulating matrix, that acts to bind and inactivate excess proteases at the wound bed, which in excess, are known to break down the body's natural growth factor required for wound healing. It is indicated for chronic/compromised wounds, which have a granulating wound base tissue and are free from necrotic tissue, but does not appear to be progressing as would be expected.

NOTE: A chronic wound is one that has been present for more than 6 weeks.

A compromised wound is one that occurs in a patient who is pre-disposed to delayed healing i.e. diabetes/ rheumatoid arthritis.

Promogran® is topically applied as a sterile, freeze dried product which transforms into a soft, conformable biodegradable gel. It does not need prescribed by a doctor or practitioner.

Prior to Commencing Promogran®

- As far as possible ensure the patient's underlying medical problems have been treated (e.g. diabetic control, compression therapy in venous ulcers).
- If appropriate, have you involved relevant members of the multi-disciplinary team? (e.g. diabetic nurse specialist, leg ulcer nurse specialist, vascular surgeons, dermatologist).
- Have you discussed management of the wound with patient/ carers?
- Remove slough or necrotic tissue if present by most appropriate method e.g. mechanical debridement.
- If compromised wound is shown to be critically colonised with bacteria, anti-microbial therapy will reduce any bacterial load in the wound bed. Actisorb silver or Povodine iodine are suitable treatments. These should not be used in patients sensitive to iodine or silver or pregnant/ breast feeding mothers. Once the infection is under control, the anti-microbial dressings should be stopped as they may delay wound healing if continued indefinitely. Inadine dressings should be changed every two days to maintain anti-bacterial effect from the dressing. Actisorb can be left in place for longer and changed at same time as Promogran®

If all above have been addressed and **wound is not progressing** then consider Promogran®.

Indications

Indicated as discussed above for following:

- Diabetic foot ulcer
- Pressure sores
- Pressure ulcers
- Post-operative wounds
- Venous / Arterial / Mixed leg ulcers

Guidelines For Use of Promogran®

- Wounds should be dressed using non-touch aseptic technique
- Heavy exudate wounds - apply directly to wound bed
- Low to moderate exudate - moisten with Saline or Ringers Lactate Solution.
- Apply Promogran® directly to wound bed to cover whole of wound bed. Promogran® should NOT overlap the skin
- Promogran® will "disappear" into the wound. If it is still in its original form, extend time between dressing changes. It should NOT be removed, cleaned or irrigated from the wound bed. It is safe to apply new Promogran® to wound at dressing changes if traces of Promogran® are still visible.
- As Promogran® gels, it is essential that the wound bed is kept in a moist wound-healing environment. If the wound is dry, Sodium chloride 0.9% or Ringers Lactate solution should be used to hydrate Promogran®. The choice of secondary dressing is important to maintain the moist environment:
- Dry to Low exudate - Allevyn lite + Inadine
- Low to Moderate exudate - Allevyn +Actisorb Silver
- Moderate to High exudate - Allevyn Plus/ Actisorb Silver
- Promogran® can be used under compression bandaging utilising a layering technique if required.
- Exudate levels may increase initially. This is to be expected.
- Continue Promogran® until granulating tissue (red, bumpy tissue) is level with surrounding tissue and contraction and epithelialisation (pink tissue restoring the skin barrier) is taking place
- Two sizes available:

	5 x 5 cm (28cm ²)
(both hexagonal shape)	10 x 10 cm (123cm ²)

Adapted from Following References

- PROMOGRAN® data sheet and application guidelines. Johnson & Johnson Wound Management
- Harrogate NHS Trust, PROMOGRAN® Prescribing Guidelines
- Glasgow Hospitals Wound Management Guideline

PROFORMA TO SUPPORT NEW DRESSING USE IN TAYSIDE
For completion by Healthcare Professional/Medical Representative

1. Dressing Name	Manufacturer
2. Dressing Type (hydrocolloid, alginate, foam etc)	
3. What type of wound could this dressing be used for? (eg. leg/pressure ulcer, burns, surgical etc)	
4. Effects on wound bed (desloughing, debridement, de-odourising) – include references	
5. Use with low/moderate/heavy exudate, if appropriate?	
6. Is there any research to support the above? If so, please include references	
7. Would this dressing replace another existing dressing? If so, state why the new dressing is preferable – include references	
8. Are there any additional benefits?	
9. Does this product require any additional equipment eg. secondary dressing?	
10. Please supply a price list	
11. Is this dressing in the Scottish procurement contract or FP10 listed?	
12. If this product is accepted on to the Tayside Wound Formulary would the manufacturer be prepared to provide clinical education to support the use of the product? If so, provide contact details.	
Name of healthcare professional/medical representative:	
Date: _____	
Wound formulary approval (representative name):	
Date: _____	

Please POST (include supporting documentation) to:
Wound Formulary Group, Pharmacy Department, Ninewells Hospital, Dundee DD1 9SY.

The Wound Formulary Group will review any requests and update the electronic wound formulary annually.