

INTERNATIONAL
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Case studies evaluation: Using advanced wound dressings in the local management of diabetic foot ulcers

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In these cases, Acelity dressings were used with other wound care products. As with any case studies, the results and outcomes should not be interpreted as a guarantee or warranty of similar results. Individual results may vary depending on the patient's circumstances and condition.

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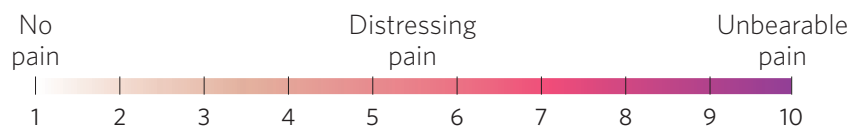
INTRODUCTION

This case study supplement describes the use of a range of Acelity dressings in the management of diabetic foot ulcers (DFUs) in patients with complicating factors, including infection, co-morbidities, previous amputation and polypharmacy.

After thorough, holistic assessment of the patient and the DFU, a dressing was selected from a range of Acelity advanced wound dressings according to an algorithm (Figure 1, page 2). The algorithm is based on the recommendations from the World Union of Wound Healing Societies' Position Document *Local Management of Diabetic Foot Ulcers*^{1,2}. Use of the algorithm provided guidance for the clinician so that the dressing selected provided the properties that the clinician determined necessary to meet the unique needs of each patient and DFU.

Formal assessment was usually conducted at weekly intervals, but patients often underwent more regular dressing changes as per product labelling and according to clinical need. Patients were assessed for signs and symptoms of clinical improvement including:

- Reduction in wound size
- Improvement in wound bed tissue composition and periwound skin condition
- Reduction in exudate level and malodour
- Resolution of infection or signs of infection
- Improvement in quality of life
- Reduction in pain levels during and between dressing changes — pain levels were assessed using a visual analogue scale (VAS), where 1=no pain and 10=unbearable pain.



Reporting included recording relevant additional advice or treatment, such as measures used for offloading and periwound skin care.

LOCAL MANAGEMENT OF DFUS

A patient with a DFU requires holistic and individualised care that is based on the needs identified by a full assessment of the patient and the wound. Initial local assessment of the DFU should include wound location, wound size/depth, exudate level, wound bed tissue types, condition of the wound edge and surrounding skin, presence of odour, pain and signs of infection¹.

Local management of the DFU should be accompanied by optimisation of blood glucose control, management of vascular insufficiency and other co-morbidities, and education of the patient and carer(s)³.

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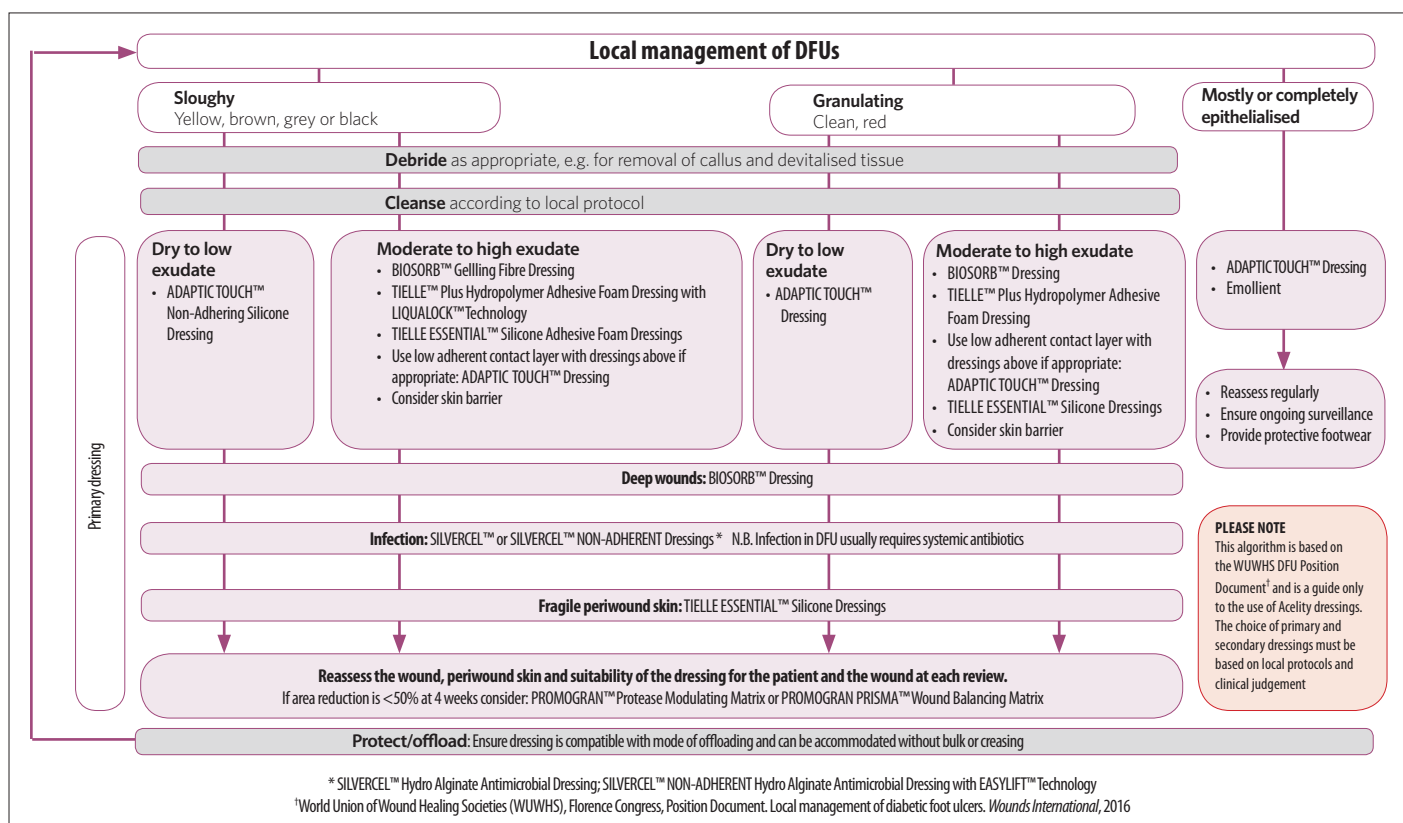
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Local management of a DFU should include consideration of:

- Regular, repeated debridement — sharp debridement is widely used in the management of DFUs to remove slough, non-viable tissue and hyperkeratotic wound margins (callus). However, it requires specialist training and should be used with caution in patients with an ischaemic foot¹. Autolytic debridement facilitated by dressings may also have a role in the management of a DFU¹.
- Cleansing — is generally undertaken with water or saline¹. A gentle rubbing action applied during cleansing may aid removal of slough⁴.
- Exudate management — to maintain a moist wound bed to aid cell migration and facilitate autolysis of slough, while preventing periwound maceration¹.
- Treatment of infection — patients with an infected DFU usually require systemic antibiotics, administered orally or parenterally according to the severity of the infection. Topical antimicrobial agents such as those found in some wound cleansers or dressings are sometimes used to help treat mild infection^{5,6}.
- Protection/offloading — devices that redistribute pressure (offload) and provide protection are used to shield the DFU and foot from pressure generated during walking¹.
- Regular monitoring and reassessment — DFUs should be monitored at each dressing change. Triggers for reassessment include increasing wound size, new pain or discomfort or signs of infection. Reassessment should include changes in wound size/depth, wound bed composition, exudate level, pain and signs and symptoms of infection. Because some aspects of DFU assessment are subjective, e.g. description of colour or odour, and signs of deterioration may be subtle, regular reassessment by the same clinicians may aid early detection of problems¹.

Figure 1: Dressing selection algorithm for the local management of DFUs with the Acelity advanced wound dressings used in the case studies presented in this document (adapted from ^{1,2})



See Appendix 1 for the full range dressing selection algorithm for the local management of DFUs.

SELECTING THE RIGHT DRESSING

Dressing selection should be made on the basis of the condition of the wound, the needs of the patient and the objectives of management, while employing clinical judgement and taking account of local guidelines¹. Figure 1 outlines the appropriate use of the Acelity dressings featured in the case studies presented here and is discussed further below.

Dressings for exudate management

Exudate management is often a principal driver of dressing selection¹.

DFU producing high levels of exudate

When a DFU is producing high levels of exudate, management aims to achieve a moist wound environment to aid healing and, if slough is present, aid autolytic debridement, while preventing periwound maceration and excoriation². Suitable dressings include those that contain foam, alginates and/or carboxymethylcellulose, e.g. BIOSORB™ Gelling Fibre Dressing, TIELLE™ Dressings including TIELLE™ Non Adhesive Hydropolymer Dressing with LIQUALOCK™ Technology, TIELLE™ Plus Hydropolymer Adhesive Dressing with LIQUALOCK™ Technology, TIELLE ESSENTIAL™ Silicone Dressing or TIELLE ESSENTIAL™ Silicone Border Dressing (Table 1, page 5).

DFU containing slough and producing low levels of exudate

When a DFU is producing low levels of exudate but contains slough, management aims to retain moisture to facilitate moist wound healing and aid autolytic debridement². Suitable dressings include foam dressings or hydrogels¹, e.g. TIELLE™ Lite Hydropolymer Adhesive Dressing, TIELLE™ Non Adhesive Hydropolymer Dressing or NU-GEL™ Hydrogel with Alginate, or a low adherent contact layer, e.g. ADAPTIC TOUCH™ Non-Adhering Silicone Dressing (Table 1) with a suitable secondary dressing.

Granulating DFU with low exudate levels

A granulating DFU with low exudate levels requires protection and management that aims to prevent the wound bed drying. Suitable dressings include hydrogels or low adherent dressings¹, e.g. ADAPTIC TOUCH Dressing (Table 1).

Dressings for deep wounds

Deep wounds require packing to eliminate deadspace and prevent pooling of exudate. The rope, ribbon or strip form of the dressing material selected should be appropriate for the exudate level². BIOSORB™ Dressing (Table 1) is available in a rope form and is suitable for wounds with moderate to high levels of exudate.

Dressings for infected wounds

Systemic antibiotics are the mainstay of treatment for infected DFUs¹. Antimicrobial dressings are sometimes used alongside antibiotics for infected DFUs, or as prophylactic treatment when a DFU is considered at risk of infection².

Topical antimicrobials frequently used in the management of DFUs include silver-impregnated dressings, e.g. SILVERCEL™ Hydro Alginate Antimicrobial Dressing or SILVERCEL™ NON-ADHERENT Hydro Alginate Antimicrobial Dressing with EASYLIFT™ Precision Film Technology for moderately to highly exuding wounds (Table 1), or iodine-impregnated dressings, e.g. INADINE™ PVP-I Non-Adherent Dressing for DFUs with low exudate levels².

Advanced therapies

Second-line topical treatments, e.g. collagen dressings or negative pressure wound therapy, may be indicated if a DFU has not reduced in size by greater than 50% over 4 weeks, despite optimised management of the patient and wound².

Non-healing chronic wounds often contain elevated levels of proteolytic enzymes and inflammatory markers. Collagen-containing dressings, e.g. PROMOGRAN™ Protease Modulating Matrix (Table 1), are designed to reduce levels of proteases and inflammatory markers in wounds that are failing to heal⁷. PROMOGRAN PRISMA™ Wound Balancing Matrix (Table 1) also contains silver for antimicrobial activity⁷.

Protection of periwound skin

Contact with exudate can increase the risk of damage, e.g. maceration and excoriation, of the periwound skin². The use of low adherent or silicone dressings of appropriate absorbency can help to contain exudate. Dressings containing silicone, e.g. ADAPTIC TOUCH Dressing and TIELLE ESSENTIAL Silicone Dressing or TIELLE ESSENTIAL Silicone Border Dressing (Table 1), can help to protect areas at risk.

Pain

Newly occurring pain or a sudden increase in pain may indicate the development of infection¹. Where pain is related to dressing changes, careful attention to technique and the use of low adherent dressings, e.g. ADAPTIC TOUCH Dressing, TIELLE ESSENTIAL Silicone Dressing, TIELLE ESSENTIAL Silicone Border Dressing, SILVERCEL NON-AHDERENT Dressing (Table 1), can be helpful.

SUMMARY

This International Case Studies Evaluation presents six case studies from Germany, Spain and the United Kingdom, illustrating use of ADAPTIC TOUCH Dressing, BIOSORB Dressing, PROMOGRAN Matrix, SILVERCEL NON-ADHERENT Dressing, TIELLE ESSENTIAL Silicone Dressings and TIELLE Plus Adhesive Foam Dressing for the management of DFUs, in a variety of settings and across various disciplines.

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Table 1: Overview of the Acelity advanced wound dressings used in this case studies evaluation^{2, 8-12}

Primary dressing	Indications/uses	Suitable aims of treatment
ADAPTIC TOUCH™ Non-Adhering Silicone Dressing <ul style="list-style-type: none"> ■ Highly conformable, meshed, soft-tack silicone dressing that facilitates free passage of exudate into the secondary absorbent dressing, minimising the risk of exudate pooling, adherence of secondary dressings to the wound bed and pain at dressing removal 	<ul style="list-style-type: none"> ■ Fragile or friable wound tissues or recently epithelialised wound 	<ul style="list-style-type: none"> ■ To minimise pain and risk of trauma at dressing change ■ To protect newly epithelialised wounds
TIELLE™ Plus Hydropolymer Adhesive Dressing with LIQUALOCK™ Technology <ul style="list-style-type: none"> ■ Contains a hydropolymer foam with LIQUALOCK™ Technology, a wicking layer and a vapour permeable polyurethane foam backing ■ Conforms to the wound bed, locks fluid away and helps to avoid maceration 	<ul style="list-style-type: none"> ■ Sloughy or granulating wound ■ Moderate to high exudate ■ Can be used as a secondary dressing 	<ul style="list-style-type: none"> ■ To facilitate autolytic debridement ■ To absorb excessive exudate and protect the wound from maceration
TIELLE ESSENTIAL™ Silicone Foam Dressing <ul style="list-style-type: none"> ■ Perforated silicone adhesive wound contact layer for gentle adhesion and to reduce adherence, trauma and pain at dressing change with waterproof polyurethane film backing 	<ul style="list-style-type: none"> ■ Fragile skin ■ Sloughy or granulating wound ■ Moderate to high exudate 	<ul style="list-style-type: none"> ■ To reduce the risk of dressing change related pain and trauma ■ To minimise the risk of maceration
BIOSORB™ Gelling Fibre Dressing <ul style="list-style-type: none"> ■ Gelling fibre is highly absorbent ■ Forms a conformable gel on contact with wound exudate ■ Designed for intact removal, minimising risk of fibre shed and pain 	<ul style="list-style-type: none"> ■ Sloughy or granulating wound ■ Moderate to heavy exudate ■ A rope formulation is available for deep wounds 	<ul style="list-style-type: none"> ■ To facilitate autolytic debridement ■ To absorb excessive exudate and protect the wound from maceration
SILVERCEL™ Dressing/SILVERCEL™ NON-ADHERENT Dressing* <ul style="list-style-type: none"> ■ Composed of hydro-alginate fibres, a sterile, non-woven pad composed of a high G (guluronic acid) alginate, carboxymethyl cellulose (CMC) and silver-coated fibres ■ SILVERCEL NON-ADHERENT Dressing has a layer of perforated EASYLIFT™ Precision Film Technology on both sides to help prevent wound bed adherence 	<ul style="list-style-type: none"> ■ Sloughy or granulating wound ■ Moderate to high exudate level ■ Signs of infection or at increased risk of infection ■ SILVERCEL NON-ADHERENT Dressing may be preferred if dressing changes are painful 	<ul style="list-style-type: none"> ■ To help manage infection[†]
PROMOGRAN™ Protease Modulating Matrix/ PROMOGRAN PRISMA™ Wound Balancing Matrix <ul style="list-style-type: none"> ■ Composed of oxidised regenerated cellulose (ORC) and collagen, which reduces inflammatory protease activity (<i>in vitro</i>) ■ PROMOGRAN PRISMA Matrix also contains the antimicrobial agent silver ■ In the presence of exudate the matrices transform into a soft and conformable biodegradable gel 	<ul style="list-style-type: none"> ■ Stalled healing: a wound that has not decreased in size by greater than 50% in 4 weeks despite standard patient and wound management ■ Sloughy or granulating, no necrotic tissue ■ Light to heavy exudate ■ If infected or at increased risk of infection, use PROMOGRAN PRISMA Matrix 	<ul style="list-style-type: none"> ■ To help reduce protease activity levels ■ PROMOGRAN PRISMA Matrix: To manage infection[†] or reduce risk of infection
<p>*SILVERCEL™ Hydro Alginate Antimicrobial Dressing/SILVERCEL™ NON-ADHERENT Hydro Alginate Antimicrobial Dressing with EASYLIFT™ Technology</p> <p>[†]Patients with an infected DFU usually require systemic antibiotics</p> <p>N.B. Clinicians should consult the instructions for use for any product under consideration for use in the management of a patient</p>		

Case 1: BIOSORB™ Gelling Fibre Dressing used on a sloughy, diabetic foot ulcer on the left foot

Author: Bettina Born, Head of the Diabetic Foot Department, Kreiskliniken Reutlingen GmbH, Reutlingen, Germany

INTRODUCTION

A 66-year-old male presented with a diabetic foot ulcer (DFU) on his left foot, which was classified as Grade 3 (deep ulcer with abscess, osteomyelitis or joint sepsis) according to the Wagner Ulcer Classification system¹.

The patient was taking multiple medicines, including insulin, and the patient's poorly controlled type 2 diabetes had resulted in peripheral neuropathy. The patient's DFU was managed using a non-adherent wound dressing, gauze and a retention bandage as the secondary dressing, which was changed daily.

BIOSORB™ Gelling Fibre Dressing was selected for exudate management, protection of the wound edge and to promote healing according to the algorithm based on the recommendations of the World Union of Wound Healing Societies' Position Document *Local Management of Diabetic Foot Ulcers*².

Baseline:

The wound measured 7cm (length) x 3.3cm (width) x 2cm (depth) (Figure 1), and the wound bed comprised 50% granulation tissue, 45% slough and 5% epithelial tissue. The wound was producing moderate amounts of thin serous exudate and there was no odour. The patient had not experienced pain between or during dressing changes, due to his neuropathy.

The wound bed was prepared using sharp debridement and an emollient was applied on the edges of the wound. A BIOSORB Dressing 10cm x 10cm was applied and an appropriate moist wound healing dressing was used as a secondary dressing. Dressing changes were planned for every 2 days. The patient was instructed to remain on bed rest and given oral antibiotic therapy.

Review 1 (+ 8 days):

The composition of the wound bed remained the same (Figure 2). The exudate remained thin and serous, but the amount had reduced. The dressing remained intact on removal, and the patient reported that BIOSORB Dressing was very comfortable. The clinician rated the dressing as 'very good' at handling exudate and conforming to the wound bed.

The patient's quality of life had improved since baseline as there were fewer dressing changes required. Due to the good performance of BIOSORB Dressing the treatment was continued. The wound was debrided and dressing changes were planned every second day. The patient was instructed to continue bed rest to offload.

Review 2 (+14 days):

The wound measured 6.8cm (length) x 3.5cm (width) x 3.5cm (depth). The wound bed comprised more granulation (60%) and epithelial tissue (10%) and reduced slough (30%) (Figure 3).



Figure 1. Baseline



Figure 2. Review 1



Figure 3. Review 2



Figure 4. Review 3

A small piece of bone was removed as it was delaying wound healing, and the clinician commented that the wound bed was cleaner than at the last review, with no signs of infection. Exudate continued to be serous and thin, but the level of production was low. The dressing regimen was continued as before, with the dressings changed every second day. The patient was allowed to move but was advised to restrict the amount of walking.

Review 3 (+24 days):

The wound continued to reduce in size measuring 6cm (length) x 3cm (width) x 3.5cm (depth), and the wound bed now comprised 70% granulation tissue, 20% slough and 10% epithelial tissue (Figure 4). The wound continued to produce low levels of thin serous exudate. The treatment regimen was continued as before, and the patient was advised to minimise the amount of walking.

Review 4 (+28 days):

The wound had further reduced in size measuring 6cm (length) x 3cm (width) x 2.5cm (depth), and the wound bed now comprised 75% granulation tissue, 15% slough and 10% epithelial tissue (Figure 5). The clinician commented that the wound bed was cleaner and looked healthier, and was satisfied with the reduced depth of the wound. Exudate level and consistency remained the same. The BIOSORB Dressing continued to be used, with dressing changes reduced to every third day.



Figure 5. Review 4

FINAL COMMENTS

Following treatment with BIOSORB Dressing and offloading, the wound had progressed with healthier composition of tissue and a reduction in size. Both the clinician and patient were highly satisfied with the treatment. In particular, the clinician rated the ability of the BIOSORB Dressing, in combination with secondary dressing and antibiotic therapy, to handle exudate, conform to the wound bed, and remain intact on removal as 'excellent'. The patient found the dressing very comfortable during wear time, and commented that their quality of life had been improved because of the reduced number of dressing changes required and the healing progress of the wound. The clinician concluded that she would use BIOSORB Dressing again for other suitable patients.

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CASE 2: PROMOGRAN™ Protease Modulating Matrix for non-healing complicated wounds, post-fasciotomy on the left foot

Author: Bettina Born, Head of the Diabetic Foot Department, Kreiskliniken Reutlingen GmbH, Reutlingen, Germany

INTRODUCTION

A 53-year-old male presented with three open wounds on his left foot following an emergency fasciotomy for acute sepsis of the foot more than 4 weeks previously. The patient's poorly controlled type 2 diabetes had previously resulted in amputation of the second and third toe of the right foot and neuropathic arthropathy.

Before presentation, the patient's wounds were managed using a gelling fibre dressing as the primary dressing and an appropriate moist wound healing secondary dressing. An emollient was applied to the periwound areas, and the dressings were changed every second day.

PROMOGRAN™ Protease Modulating Matrix was selected for all three wounds, as healing had stalled and the wounds had not decreased in size by >50% in 4 weeks. Selection of this dressing was made according to the algorithm based on the recommendations of the World Union of Wound Healing Societies' Position Document *Local Management of Diabetic Foot Ulcers*¹.

Baseline:

The wounds had failed to progress within 4 weeks, and the condition of the wound bed for all wounds was rated as poor. The wound beds comprised 50% granulation tissue, 45% slough and 5% epithelial tissue (Figure 1). The wounds produced low levels of thin serous exudate, and there was no odour or signs of wound infection. The patient had not been experiencing pain between or during dressing changes, likely due to their neuropathy.

The wounds were prepared using sharp debridement. PROMOGRAN Matrix was cut to size and applied to all three wounds, and ADAPTIC TOUCH™ Dressing was applied as an atraumatic secondary dressing, held in place by a retention bandage. An emollient was applied to the periwound area, and the patient had been given oral antibiotics and advised to remain on complete bed rest. The dressings were planned to be changed every 3 days.

Review 1 (+6 days):

The wound bed in all three wounds had improved, with more epithelial tissue and a cleaner wound bed — 70% granulation tissue, 20% slough and 10% epithelial tissue. Low levels of thin serous exudate continued to be produced. The patient commented that the dressing regimen was very comfortable during wear time and he was hopeful that the wounds would continue to heal. The wounds were prepared with sharp debridement as per clinical protocols, and the current treatment regimen was continued alongside a recommendation for bed rest.

Review 2 (+13 days):

The wound beds now comprised 75% granulation tissue, 15% slough and 10% epithelial tissue (Figure 2), and the low level of exudate continued to be serous and thin. The wound was prepared with sharp debridement, and the treatment regimen continued as before with dressing changes every third day. Limited, gentle mobilisation of the patient was introduced slowly.

Review 3 (+20 days):

The wounds comprised 75% granulation tissue, 10% slough and 15% epithelial tissue, and the clinician commented that they looked clean and red, with healthy granulation tissue and more epithelial tissue (Figure 3). The dressing regimen with offloading was continued as before.

Review 4 (+24 days):

The wound bed now comprised 75% granulation tissue, 5% slough and 20% epithelial tissue (Figure 4), and thin serous exudate continued to be produced at a low level. The clinician decided to continue using PROMOGRAN Matrix.

FINAL COMMENTS

For this individual with stalled non-healing wounds, the use of PROMOGRAN Matrix had helped to reduce the size of the wounds and improve the wound bed composition, moving these wounds onto a healing trajectory. The patient rated the comfort of the combined dressing regimen of PROMOGRAN Matrix and ADAPTIC TOUCH Dressing during wear time as 'excellent', and both clinician and patient were highly satisfied with the treatment. The combined dressing regimen with antibiotic therapy helped improve to the quality of life of the patient because the wound improved faster, and fewer dressing changes were required compared to the previous dressing regimen.

REFERENCE

1. World Union of Wound Healing Societies (WUWHS), Florence Congress, Position Document. Local management of diabetic foot ulcers. *Wounds International* 2016. Available at: www.woundsinternational.com



Figure 1. Baseline



Figure 2. Review 2



Figure 3. Review 3



Figure 4. Review 4

Case 3: TIELLE ESSENTIAL™ Silicone Foam Dressings used in a non-healing diabetic foot ulcer on the right foot

Author: José Luis Lazáro Martínez, Tenured Professor, Clinical Director, Head of Diabetic Foot Unit, Teaching Podiatric Clinic, Madrid, Spain

INTRODUCTION

A 65-year-old male presented with a diabetic foot ulcer (DFU) on his right foot. The ulcer had been present for 2 months and was located at the site of previously amputated second and third toes. The patient's poorly controlled type 1 diabetes had resulted in peripheral neuropathy, second and third toe amputation and a kidney transplant.

TIELLE ESSENTIAL™ Silicone Border Silicone Adhesive Foam Dressing was selected for this wound according to the algorithm based on the recommendations of the World Union of Wound Healing Societies' Position Document *Local Management of Diabetic Foot Ulcers*¹. The dressing was selected due to the fragile periwound skin surrounding the wound, the sloughy and granulating composition of the wound bed, and to aid exudate management.

Baseline:

The wound measured 1.7cm (length) x 1.7cm (width) x 1cm (depth) (Figure 1). The wound bed comprised 20% granulation tissue and 80% slough, and the surrounding skin was macerated. The wound was producing a moderate level of thin serous exudate, and the patient had not been experiencing pain between or during dressing changes due to their neuropathy. The primary dressing used before presentation was gauze soaked in a topical wound preparation, which was changed daily. A post-surgical shoe had been prescribed to wear to offload the wound.

After surgical debridement, a TIELLE ESSENTIAL Silicone Border Dressing 7.5cm x 7.5cm was applied to the wound. The dressing was changed twice weekly and the patient wore a post-surgical shoe for offloading.

Review 1 (+7 days):

The wound had reduced in size measuring 1.4cm (length) x 1.6cm (width) x 1cm (depth) (Figure 2), and comprised 90% granulation tissue and 10% slough, with some maceration to the surrounding skin. Exudate levels were moderate and remained thin and serous.

Due to the wound improvement, it was prepared as before and the treatment regimen continued with TIELLE ESSENTIAL Silicone Border Dressing with changes twice a week and use of a post-surgical shoe for offloading.



Figure 1. Baseline



Figure 2. Review 1

Review 2 (+14 days):

The wound had reduced further – 1.2cm (length) x 1cm (width) x 1cm (depth) – and now comprised 100% healthy granulation tissue (Figure 3). Exudate continued to be serous, but the level of production was now low. The dressing regimen with TIELLE ESSENTIAL Silicone Border and offloading continued as before.

Review 3 (+21 days):

The wound continued to improve in size, with both the size and depth reduced since the last review (Figure 4). The wound continued to produce low levels of thin serous exudate. Dressing regimen with TIELLE ESSENTIAL Silicone Border Dressing and offloading continued as before.

Review 4 (+28 days):

The wound had healed, with the wound bed comprising 100% epithelial tissue (Figure 5) and there was no exudate production. Both clinician and patient were highly satisfied with the treatment outcome.

FINAL COMMENTS

The ulcer healed within 4 weeks, and both the clinician and patient were highly satisfied with the treatment, particularly that using TIELLE ESSENTIAL Silicone Border Dressing had led to reduced dressing change frequency compared with the previous dressing regimen.

The clinician commented that it can often be difficult to adhere a dressing to the wound bed after toe amputation due to the new anatomical shape; however, TIELLE ESSENTIAL Silicone Border Dressing conformed well to the wound bed, while remaining gentle to the surrounding fragile skin. Throughout treatment, the patient rated the comfort of the dressing as 'excellent', and did not experience pain between or during dressing changes (which may have been linked to his neuropathy). The clinician found TIELLE ESSENTIAL Silicone Border Dressing easy to use and did not cause trauma to the fragile skin that was surrounding the wound. The clinician would use TIELLE ESSENTIAL Silicone Border Dressing again in the future because the dressing had good comfortability to the wound area.

REFERENCE

1. World Union of Wound Healing Societies (WUWHS), Florence Congress, Position Document. Local management of diabetic foot ulcers. *Wounds International*, 2016. Available at: www.woundsinternational.com



Figure 3. Review 2



Figure 4. Review 3



Figure 5. Review 4

Case 4: SILVERCEL™ Hydro Alginate Antimicrobial Dressing used in an infected expanding ulcer on the styloid of the left foot

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INTRODUCTION

A 72-year-old female patient with type 1 diabetes presented with an expanding diabetic foot ulcer on the styloid process of the left foot. Co-morbidities included stage 5 autoimmune hepatitis, peripheral arterial disease (with an ankle-brachial pressure index ratio of 0.7), pancytopenia and vitamin B deficiency. The wound had been present for a year, and had previously been treated with a foam dressing with a silicone adhesive border, which was changed three times a week.

The wound was suspected of infection as there was a slight malodour and healing had stalled. As a result, SILVERCEL™ Hydro Alginate Antimicrobial Dressing was selected according to the algorithm based on the recommendations of the World Union of Wound Healing Societies' Position Document *Local Management of Diabetic Foot Ulcers*¹. The principles of the 'two-week challenge' for antimicrobial use were followed (i.e. two weeks of antimicrobial agent followed by standard care to continue on the healing trajectory²).

Baseline:

The wound measured 9mm (length) x 4mm (width) x 5mm (depth) (Figure 1), and the wound bed comprised 70% granulation and 30% slough. The wound was malodorous, suggestive of infection, and was producing moderate levels of serous exudate, but it was not painful.

The wound was debrided and cleansed with saline. A SILVERCEL Dressing 11cm x 11cm was cut to fit the wound and an appropriate moist wound healing secondary dressing was used. SILVERCEL Dressing was easy to apply, and the patient was advised to offload the foot and to stop using the dressing if there were any signs of irritation.

Review 1 (+7 days):

After two planned dressing changes, the wound measured 7mm (length) x 3mm (width) x 5mm (depth), and granulation tissue was visible. There were low levels of serous exudate present. The wound was not painful during dressing removal, but had been painful (reported as 4 out of 10 on a pain VAS) since the last dressing change. The surrounding skin was dry and flaky with slight malodour. SILVERCEL Dressing was continued in order to reduce the risk of infection and to reduce malodour. The wound was cleansed and the dressing reapplied as before. The patient was advised to offload and continue the dressing regimen, with planned dressing changes to take place three times a week.

Review 2 (+13 days):

The wound had reduced in size, measuring 5mm (length) x 4mm (width) x 3mm (depth), and comprised 100% granulation tissue. The surrounding skin was dry and flaky with no exudate. The wound had been painful (reported as 6 out of 10 on a pain VAS) when the patient was in bed.

The clinician was happy with the dressing regimen and the continuing improvement in malodour, so the decision was made to reduce dressing changes from three to two times a week.

Review 3 (+19 days):

The wound now measured 7mm (length) x 5mm (width) x 2mm (depth) and comprised 90% granulation tissue and 10% slough (Figure 2). The patient reported pain while in bed when pressure was placed on the wound (6 out of 10 on a pain VAS).

Moderate levels of serous exudate were present, and malodour had improved since the commencement of the SILVERCEL Dressing; however, odour was still a minor issue. The wound was debrided and cleansed with tap water and both dressings were reapplied as before. A soft cast was made and fitted to aid wound healing, and advice was given to the patient.

FINAL COMMENTS

The wound had been slow to heal, and infection was suspected as there was malodour. Treatment over the 3-week period helped to kick-start the wound on a healing trajectory as there was a reduction in odour and exudate levels, and the patient commented that they had an improved quality of life as the number of dressing changes were reduced.

Throughout treatment, the SILVERCEL Dressing was easy to use and conformed well to the wound bed. Following this regimen, the patient was moved on to standard wound care.



Figure 1. Baseline

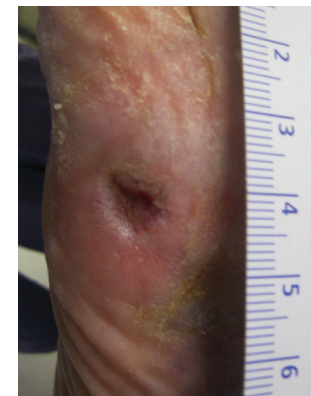


Figure 2. Review 3

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1. World Union of Wound Healing Societies (WUWHS), Florence Congress, Position Document. Local management of diabetic foot ulcers. *Wounds International*, 2016. Available at: www.woundsinternational.com
2. International consensus. Appropriate use of silver dressings in wounds. An expert working group consensus. London: *Wounds International*, 2012. Available at: www.woundsinternational.com

Case 5: Two-week use of SILVERCEL™ NON-ADHERENT Dressing on an infected diabetic foot ulcer

Author: Samantha Haycocks, Advanced Podiatrist, Podiatry Department, Salford Royal NHS Foundation Trust, Salford, UK

INTRODUCTION

A 57-year-old male patient presented with an infected necrotic left fifth toe. Two months later, due to progressive osteomyelitis, the toe was amputated. The patient had had type 2 diabetes for 8 years, and also had neuropathy. At baseline, the wound had been present for 4 weeks and had previously been treated with a PHMB non-adherent dressing, with a secondary dressing of a soft-absorbent sub-compression bandage and a type 1 conforming and retention bandage, changed three times a week. The previous dressing had been ineffective at managing the exudate, with the patient disliking the sight of the exudate striking through on the dressing. The patient used a cast sandal to provide support and relief to the wound.

Oral antibiotic therapy and a SILVERCEL™ NON-ADHERENT Dressing were selected for this moderately exuding, infected wound to deslough and reduce the infection, according to the algorithm based on the recommendations of the World Union of Wound Healing Societies' Position Document *Local Management of Diabetic Foot Ulcers*¹. A secondary dressing of TIELLE™ Plus Dressing was selected to absorb the exudate and help to prevent maceration. The principles of the 'two-week challenge' for antimicrobial use were followed, i.e. two weeks of antimicrobial agent followed by standard care to continue on the healing trajectory².

Baseline:

The wound measured 29mm (length) x 15mm (width), with depth to the bone (Figure 1). It comprised 100% slough, which was well adhered in places, with the wound bed in poor condition and stalled. Purulent exudate levels were moderate and the surrounding skin was inflamed. The wound area showed signs of infection with swelling, slight malodour, local warmth, purulent discharge and erythema of the wound. Oral antibiotics (co-amoxiclav and ciprofloxacin) were commenced. The patient reported experiencing no pain during or between dressing changes, due to having neuropathy.

The wound was cleansed with saline and sharp debridement was conducted. A SILVERCEL NON-ADHERENT Dressing 5cm x 5cm was applied, and a TIELLE Plus Dressing 10cm x 10cm was applied as a secondary dressing. The SILVERCEL NON-ADHERENT Dressing did not need to be moistened with saline, or cut or folded, and was very easy to apply. The dressings were planned to be changed three times a week, and the patient was instructed to continue wearing the cast sandal and take oral antibiotics. Advice was given on what to do if they became unwell or the wound deteriorated.

Review 1 (+8 days):

The wound measured 25mm (length) x 12mm (width), with depth to the bone (Figure 2). The wound bed still comprised of 100% slough, but exudate levels had reduced slightly and odour was no longer an issue. The surrounding skin was inflamed, swollen and warm to the touch, indicating infection was present.

SILVERCEL NON-ADHERENT Dressing had handled exudate very well. The dressing was easy to remove, intact on removal, and then easy to apply. It conformed well to the wound bed and had been comfortable to wear. The clinician and patient were both highly satisfied with treatment and the decision was taken to continue the dressing regimen. The wound was prepared and dressed as before, taking 10 minutes, and the treatment plan continued as before.

Review 2 (+14 days):

The wound measured 25mm (length) x 10mm (width), with depth to the bone, and the wound bed comprised 90% slough and 10% granulation tissue. The wound still showed signs of infection — swelling, redness, local warmth — but inflammation had become localised with low levels of serous exudate. Slough had loosened, allowing for easier debridement.

The wound was prepared and the dressings were reapplied as before, with three planned dressing changes to take place over the following week.

FINAL COMMENTS

After 2 weeks using SILVERCEL NON-ADHERENT Dressing and TIELLE Plus Dressing regimen plus oral antibiotic treatment, the clinician reported progress in wound healing and a reduction in infection. Using an antimicrobial dressing for 2 weeks kick-started the wound on the healing trajectory (Figure 3).

SILVERCEL NON-ADHERENT Dressing remained intact on removal and was easy to use at dressing changes. It had been comfortable to wear, conforming well to the wound bed. The dressing provided a high degree of comfort, alongside TIELLE Plus Dressing and was able to manage exudate well and prevent strikethrough.

REFERENCES

1. World Union of Wound Healing Societies (WUWHs), Florence Congress, Position Document. Local management of diabetic foot ulcers. *Wounds International*, 2016. Available at: www.woundsinternational.com
2. International consensus. Appropriate use of silver dressings in wounds. An expert working group consensus. London: *Wounds International*, 2012. Available at: www.woundsinternational.com



Figure 1. Baseline

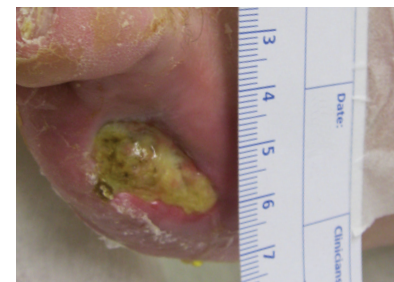


Figure 2. Review 1

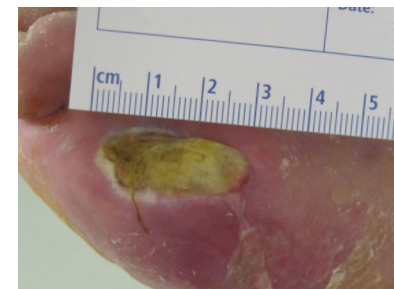


Figure 3. 22 days from baseline

Case 6: PROMOGRAN™ Protease Modulating Matrix treatment on a partially healed diabetic foot ulcer on amputation site

Author: José Luis Lazáro Martínez, Tenured Professor

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INTRODUCTION

A 60-year-old female presented with a partially healed diabetic foot ulcer (DFU) over 4 months' duration on an open stump of the right leg, post-metatarsal amputation. The patient had been diagnosed with type 2 diabetes 20 years ago and also had a limb amputation of the left leg. The wound had stalled, and during this 4-month period, wound management included a protease inhibitor dressing.

For this wound, PROMOGRAN™ Matrix was selected according to the algorithm, which is based on the recommendations of the World Union of Wound Healing Societies' Position Document *Local Management of Diabetic Foot Ulcers*¹. The wound had stalled (not decreased in size by >50% in 4 weeks) and exudate, slough and granulating tissue were present, which made the wound appropriate for PROMOGRAN Matrix use. A TIELLE ESSENTIAL™ Silicone Dressing was chosen as a secondary dressing to maintain a moist environment at the wound surface.

Baseline:

The wound measured 5.7cm (length) x 5.9cm (width) x 2.0cm (depth) (Figure 1). The wound bed was coated with sloughy debris (25%), granulation tissue (75%) with skin gaps from the anterior area to the posterior and irregular edges present. There was moderate serous exudate of a clear amber colour. The wound had not been painful during or between dressing changes, due to the patient's neuropathy.

The wound was prepared using surgical debridement to remove the slough, and PROMOGRAN Matrix 28cm² and a non-border TIELLE ESSENTIAL Silicone Dressing were applied. Dressing changes were scheduled for twice a week. Throughout treatment, the patient was instructed to rest and use a wheelchair to offload the wound.

Review 1 (+ 7 days):

The wound size had reduced, measuring 5cm (length) x 5cm (width) x 2cm (depth), with sloughy tissue present on the bed of the ulcer (Figure 2). There was some strikethrough of exudate, but there was no leakage.

The wound was prepared as before using surgical debridement, and PROMOGRAN Matrix was applied. Dressing changes were planned for twice a week.

Review 2 (+14 days):

The wound had increased slightly in size, with slough (40%) and granulating tissue (60%) present in the wound bed (Figure 3). Serous exudate was at a moderate level. The wound bed was prepared as before, and the PROMOGRAN Matrix and non-border TIELLE ESSENTIAL Silicone Dressing regimen was continued.

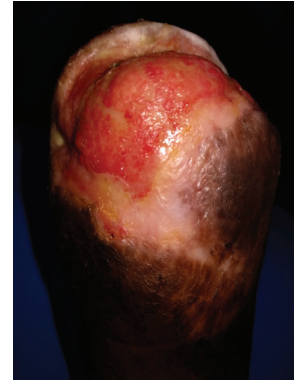


Figure 1. Baseline



Figure 2. Review 1

Review 3 (+ 21 days):

The wound measured 4.7cm (length) x 6.9cm (width) x 2cm (depth) (Figure 4), and there was a reduction in slough (30% of the wound bed). There was a moderate level of serous exudate. Dressing regimen with PROMOGRAN Matrix and non-border TIELLE ESSENTIAL Silicone Dressing and offloading continued as before.

Review 4 (+28 days):

The wound had reduced further to 3cm (length) x 3.2cm (width) x 2cm (depth), and granulating tissue now comprised 70% of the wound bed (Figure 5). Serous exudate levels remained moderate with strikethrough present during dressing wear time.

FINAL COMMENTS

Over 4 weeks, this DFU reduced in size by 50%, and there was an increase in granulating tissue. Throughout treatment, the clinician and patient were both highly satisfied with the dressings, with the patient feeling positive about the current treatment plan healing the wound. Though the wound had not completely healed, the use of PROMOGRAN Matrix with a secondary dressing of non-border TIELLE ESSENTIAL Silicone Dressing progressed the wound to a healing trajectory, and continued to be used beyond the 4-week evaluation period.

During the 4-week period, dressing changes reduced to twice a week. The patient rated the comfort of the PROMOGRAN Matrix and non-border TIELLE ESSENTIAL Silicone Dressing as 'very good'. The patient began to feel more comfortable and less anxious, especially as her left limb had previously been amputated. All these improvements combined helped to improve the quality of life and outlook of the patient.



Figure 3. Review 2



Figure 4. Review 3

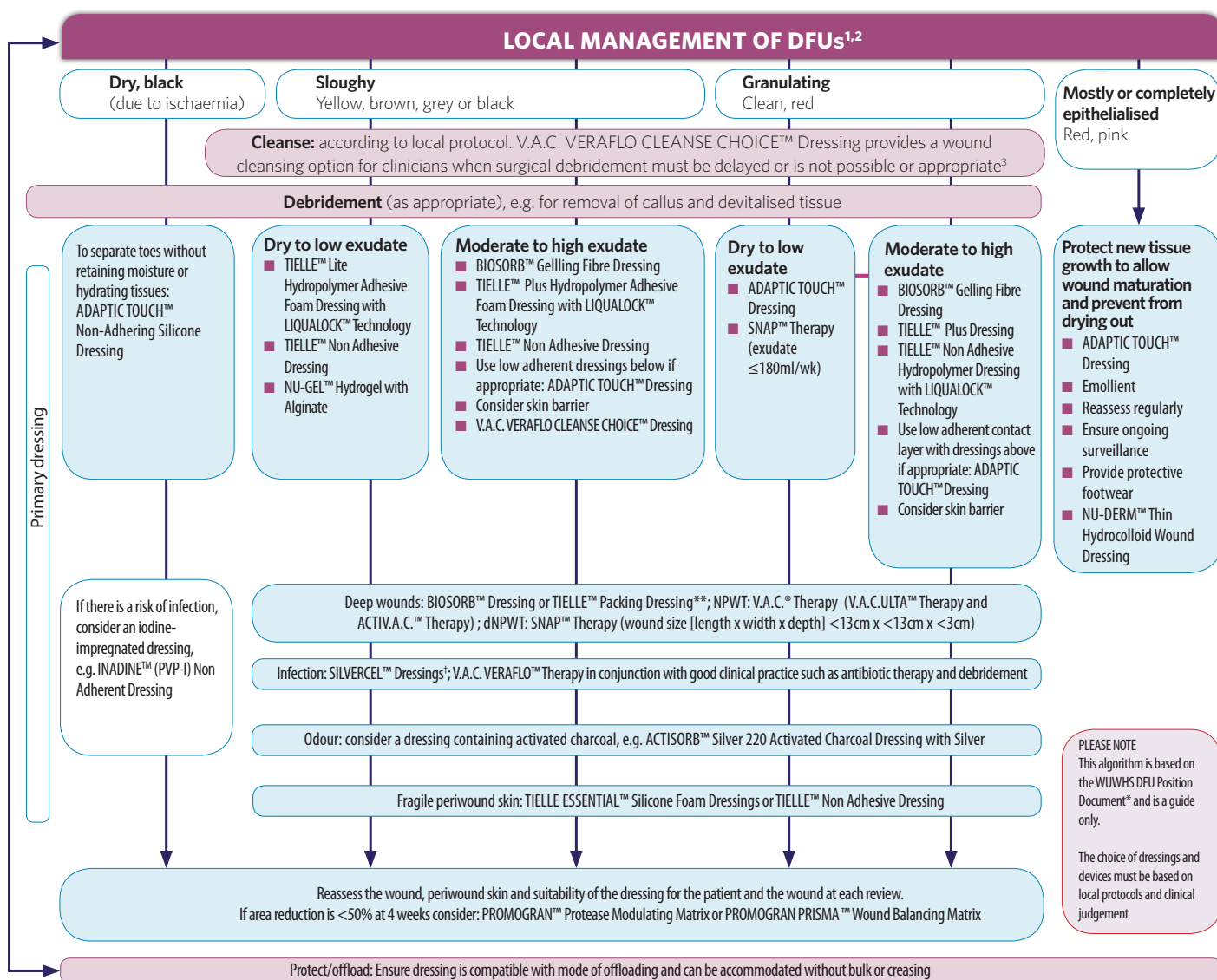


Figure 5. Review 4

REFERENCE

1. World Union of Wound Healing Societies (WUWHS), Florence Congress, Position Document. Local management of diabetic foot ulcers. *Wounds International*, 2016. Available at: www.woundsinternational.com

Appendix 1: The local management of DFUs dressing selection algorithm, including the complete Acelyty portfolio of advanced therapies.



*World Union of Wound Healing Societies (WUWHS), Florence Congress, Position Document. Local management of diabetic foot ulcers. Wounds International, 2016

**TIELLE™ Packing Hydropolymer Foam Dressing with LIQUALOCK™ Technology; †SILVERCEL™ NON-ADHERENT hydro alginate antimicrobial dressing with EASYLIFT™ Technology; SILVERCEL™ hydro alginate antimicrobial dressing

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2. Chadwick P, Armstrong DG. Local management of diabetic foot Made Easy. *Wounds International*, 2017
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Notes

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