Unlocking Best Practices:

Real-World Cases and Quality Enhancement

Mölnlycke®

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Real-World Cases and Quality Enhancement

Contents

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Introduction

Wound care stories from the past 24 months describe ever mounting challenges faced by clinicians in Europe and beyond. Aging populations and increasing diabetes rates result in more patients than ever burdened by wounds. Post pandemic retirements, surgical backlogs, and staff shortages translate to increased patient case loads for clinicians, all while cost of care continues to rise. Further, patient access to care challenges, including remote locations, reduced access to care homes, and care facilities with limited access to wound products and specialists, are an all too common scenario. And yet, we continue to be inspired by wound care providers who apply their knowledge and passion to find unique solutions that maintain best practices for their patients.

Mölnlycke's dedicated Medical and Professional Affairs team partners with clinicians in all care settings to ensure they have the resources and education they need to feel comfortable when managing wounds. We are united by a common goal to enhance quality of wound care for patients. Education around best practices is a powerful vehicle to reach this goal. We, therefore, embrace partnership with clinicians and their facilities to shine a spotlight on best practice stories, healing journeys, quality improvements, educational efforts, and other real-world initiatives.

This compendium embraces the value of peer-to-peer sharing. It spotlights the case study partnerships and quality improvement projects that we deemed to be some of the most successful across Europe in 2022 and 2023. We extend our congratulations to the clinicians who led these projects and initiatives, as well our appreciation to them for partnering with Mölnlycke to make this information available to their peers.

One might ask why are we turning to real world cases and quality improvement initiatives to speak on best practices, when there is a wealth of best practice guidelines and controlled clinical trials available? Most often, evidence for wound care products stems from the laboratory benchtop or clinical trial setting. There are clear and necessary benefits to testing in those controlled settings. Still, they can fail to represent the 'real world' patient, who faces a number of challenges: wound-related, other co-morbidities, healthcare access and socioeconomic issues. These patients often do not meet the inclusion criteria for trials, so their unique challenges and journeys towards healing go unseen.

Wound care providers consider unique patient histories and needs alongside a multitude of factors – clinical evidence, product availability, and other access challenges - to reach the best possible treatment plan for a given patient. Their efforts bridge the gap between theory and clinical practice, by instilling real world experience and knowledge to provide high quality and high value wound care. This will improve patient outcomes, by minimising patient suffering (e.g. pain) and maximising patient quality of life. The resulting decision paths and wound care journeys warrant reporting, to empower their peers with knowledge.

The clinical stories highlighted herein span wound prevention through to advanced wound treatments, and feature a wide range of products and approaches -- advanced foam and gelling fibre dressings, products with antimicrobial properties, single-use negative pressure wound therapy (NPWT), and topical oxygen therapy -- all of which can be applied across a range of settings, including the patient's home.

Should you be interested in participating in future iterations of this compendium, please reach out to our Medical and Professional Affairs team about potential collaboration. Contact details can be found below.

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Mölnlycke Health Care

medical.affairs@molnlycke.com
Contact Mölnlycke on the above email if you would like to collaborate with us on similar initiatives found in this document.

Details of the Contributors

Elaine Bethell

MSc, SRN

Lead Tissue Viability Nurse, Royal Orthopaedic NHS Foundation Trust (ROH) Birmingham, United Kingdom

Elaine is a registered nurse with over 35 years' experience, 25 years of this in tissue viability. Her roles have included working in a busy inner-city hospital in Birmingham, with a large multi-ethnic population, as an intensive therapy unit Staff Nurse, Coronary Care Junior Sister and a Cardiology and Day Bed Unit Ward Manager. Previously, as Lead Nurse for Tissue Viability at Worcestershire Acute Hospitals NHS Trust, Elaine was an integral key leader in significantly reducing avoidable hospital acquired pressure ulcers across 3 sites, utilising a Rapid Spread Solutions model. Her current Tissue Viability service works in partnership with the Plastics, Bone Infection and Royal Orthopaedic Community Scheme (ROCS) teams at the Royal Orthopaedic Hospital, a specialised orthopaedic centre treating oncology, spinal, arthroplasty and other patients from all over the UK requiring complex orthopaedic surgery. Elaine has contributed to many publications including consensus statements on preventing medical adhesive-related skin injury (MARSI) and continues to be passionate about this subject in her work at the ROH. Prior to her current role, she worked within the commercial sector as a clinical specialist for an international wound care company.

Martina Collins-Stiff

Registered Nurse (Adult) Dip HE

Tissue Viability Nurse Specialist (care homes), West Suffolk Foundation Trust, Bury St Edmunds, Suffolk, United Kingdom

Qualifying in 2005 as an adult nurse, Martina has 15 years community nursing experience. In 2020, Martina's passion for wound healing led her to move into tissue viability. Working within a newly created post, Martina has built a tissue viability service which focuses on improving access to specialist wound care services for nursing and residential care home residents within the West Suffolk locality. Martina works within an integrated tissue viability team and a wider care home support team welcoming close collaboration with the local integrated care board. Emphasis is placed on enhancing wound care in care homes with clinical assessments, training provision and quality improvement projects.

Tina Dyble

MSc Tissue Viability, BSc (Hons), RGN, EN

Tissue Viability Nurse Specialist, James Paget University Hospital NHS Foundation Trust, Great Yarmouth, United Kingdom

Tina is the Lead Tissue Viability Nurse for an acute NHS Trust and manager of a nurse-led department which specialises in minor surgery, medical procedures and wound care for both in-patients and out-patients. She has been a qualified nurse for over 35 years, with experience gained in orthopaedics and tissue viability over a 15-year period. She is also responsible for chest drains and continence issues including urinary catheterisation for in-patients within the Trust. Tina is also qualified to undertake small procedures which require local anaesthesia and suturing. She has published several articles in peer-reviewed journals and presented at the European Wound Management Association conference. Tina has presented multiple posters describing wound dressing trials and work undertaken within her affiliation.

Tina is a member of the nursing midwifery council for qualified nurses. She is a nurse prescriber and a member of integrated care boards including those focusing on pressure ulceration and urinary catheterisation.

Viviana Goncalves

RN, TVN, MSN student

Tissue Viability Nurse, Cardiothoracic Surgery Department, Unidade Local de Saúde de São João (ULS São João), Porto, Portugal

Viviana has worked in the surgical area for more than 10 years (ward, theatre, intensive care unit and outpatient clinic). She post-graduated in anaesthetic nursing and scrub nursing, with 3 years of experience in theatre. Viviana specialises in tissue viability and wound care, specifically surgical wound care and surgical site complications after cardiac surgery, with neonatal, paediatric and adult patients. Her research interests include surgical dehiscence prevention, surgical site complications, new technologies in wound care and the quality of life of patients with wounds. Viviana has presented at numerous national and international conferences, as speaker and with oral presentations and posters, and authored articles relating to her areas of specialty.

Viviana is a member of the European Wound Management Association. She was the coordinator of the Tissue Viability workgroup of the Portuguese Wound Care Association.

Charina Mamino

RGN, BSc(Hons), MSc

Senior Cardiothoracic Surgical Care Practitioner, The Essex Cardiothoracic Centre, Mid and South Essex Foundation Trust, United Kingdom

Charina is a registered nurse, a qualified non-medical prescriber and a member of the managed voluntary list of qualified surgical care practitioners under the Royal College of Surgeons, Edinburgh. She has extensive experience in post-operative wound management in cardiac and thoracic surgery. As a non-medical surgical assistant in cardiac and thoracic surgery, Charina is proficient in performing surgical interventions such as harvesting conduits (long saphenous vein and radial artery) through open harvesting, bridging and endoscopic techniques. As a senior surgical care practitioner at the Essex Cardiothoracic tertiary centre, Charina enjoys training and mentoring junior members of the team. Her key research interests include: management and prevention of surgical site infection, patient satisfaction after surgery and innovations in post-operative care for cardiothoracic patients.

Sanna Kouhia

FEBVS, MD, PhD

Consultant in Vascular Surgery, Consultant in General Surgery, Specialist in Wound Care, Finland

Sanna has worked in the field of wound care since 2007. She has obtained consultant degrees in two fields of surgery involved in treatment of patients with wounds; general and vascular surgery. In addition, she has obtained a specialist diploma in wound care. Her work mainly concentrates around vascular patients with arterial or venous wounds, but she has also been involved in multidisciplinary wound care teams and diabetic foot care teams. Her educational activities include workshops for residents and newly graduated specialists in vascular surgery through the European Society for Vascular Surgery (ESVS) and lectures on clinical aspects of wound care.

Peter Kurz

RN

Managing Director, WPM Wund Pflege Management GmbH, Bad Pirawarth, Austria

Lecturer, University of Krems, Krems, Austria

With over 20 years' clinical experience of wound management, Peter is currently the Managing Director of WPM Wund Pflege Management GmbH (Bad Pirawarth, Austria) and Lecturer at the University of Krems (Krems, Austria). In addition, he is Director of the Vienna Wound Congress, Secretary General of the Austria Wound Association, a board member of the Wund-DACH organisation, member of the European Wound Management Association's Scientific Advisory Board, and a member of the Incontinence Associated Dermatitis Consensus Panel of the Wound, Ostomy and Continence Nurses Society. Peter is a member of the editorial board of the journal Wound Management and has authored numerous peer-reviewed journal articles. He regularly lectures and provides consultancy services in the fields of wound management, care diagnostics and documentation.

Cheryl Lugton

TVSN

Lead Tissue Viability Specialist Nurse – NHS Borders, Scotland

Specialising in Tissue Viability, Cheryl has 35 years' nursing experience working in both academic and health care roles within different health care systems both in Scotland and overseas. Tissue viability service improvement and development is where her passion lies and working both in the acute and community setting has recently integrated and transformed lymphoedema services ultimately improving patient outcomes in the Scottish Borders. Cheryl also works as an expert witness in tissue viability for a medico-legal company. Educated to Master's level Cheryl has a Specialist Practitioner Qualification in Critical Care as well as Tissue Viability, is a non-medical prescriber and skilled in conservative sharp debridement. Cheryl has occupied the Lead Tissue Viability Specialist Nurse role for the NHS Borders service for the past 5 years, prior to this Cheryl has had a continued flourishing nursing career which involved working abroad in both Australia and the USA and has occupied positions in Critical Care, Bed Management and in Clinical Improvement. Cheryl is a member of the National Association of Tissue Viability Nurses in Scotland (NATVNS) and the Society Of Tissue Viability.

Details of the Contributors

Elisabete Martins

BSc in Adult Nursing (2004) MSc in Advanced Clinical Practice (2023)

Advanced Nurse Practitioner, Chelmer Medical Partnership, Chelmsford, United Kingdom

Elisabete is a registered nurse with over 20 years of experience in healthcare settings across Portugal and the United Kingdom. She has worked in various fields including community and district nursing, infectious diseases, trauma and orthopaedics, critical care, dermatology, and tissue viability. She has worked as a Senior Tissue Viability Nurse at Mid and South Essex NHS Foundation Trust for the past 6 years playing a pivotal role in staff education in pressure ulcer prevention, trust policy development, wound care formulary development and quality improvement projects. Elisabete led various local quality improvement projects aimed at reducing hospital-acquired pressure ulcers, ultimately improving patient safety and the overall quality of care within the hospital. More recently, she has been working as an Advanced Nurse Practitioner in a GP practice, where her main duties involve the assessment, diagnosis, and treatment of patients presenting with various acute illnesses. Member of the Nursing and Midwifery Council: Adult Nursing (2014) and Independent Nurse Prescriber (2022). Holder of a digital badge from the Centre of Advanced Practice (2023) Quality, Service Improvement and Redesign Practitioner (2018).

Paulo Ramos

CNS, Msd

Nurse Specialist at ULS Póvoa de Varzim/ Vila do Conde – USF Corino de Andrade
Invited Professor at Escola Superior de Enfermagem de Coimbra; Cooperativa de Ensino Superior Politécnico e Universitário, CRL; Universidade Católica Portuguesa; Escola Superior de Saúde de Santa Maria.
Independent wound care consultant.

Specialising in community care, Paulo has over 20 years' experience of working in health care organisations. He started working in the hospital setting and, in the last 12 years, he has been working in community care. His key research interests include: epidemiology, quality of life and burden of wounds. Paulo has authored or co-authored consensus papers and research articles in peer-reviewed journals and presented at numerous national and international conferences. Paulo is currently the Vice-President of the Portuguese Wound Care Association (APTFeridas) and a European Wound Management Association (EWMA) council member and the current Chair of the Education Committee of EWMA. He is also a member of the wound care commission of ULS Póvoa de Varzim/ Vila do Conde.

Jennifer Pearson

RGN, RSCN, BSc(Hons)

Head of Nursing, Royal Orthopaedic Hospital, Birmingham, United Kingdom

With a background in paediatric and adult cardiothoracic intensive care, Jennifer holds a strategic role as Head of Nursing at the Royal Orthopaedic Hospital and is a Professional Nurse Advocate (PNA) delivering restorative clinical supervision. Prior to taking on this role, she was the Lead Nurse for Shared Governance at University Hospitals Birmingham where she established nursing councils across the Trust to improve patient care delivery. Jennifer has completed the Chief Nursing Office (CNO)-sponsored Aspiring Director of Nursing Program and the Breaking Through Leadership Program. She is Co-Chair for the CNO Delivery group whose membership includes the 11 system chief nurses, the purpose to translate national priorities into Midlands-specific actions to improve workforce and patient outcomes. As a committee member on the diaspora group, Caribbean Nurses and Midwives Association (CNMA), Jennifer contributed to an international wound care and skin tone guide publication in 2022. She is the winner of the Royal College of Nurses' Making a Difference Award 2021 for her work involving vaccine uptake in Black, Asian and Minority Ethnic (BAME) staff and communities following nomination by NHSE/I Midlands and voted BAME Nurse of the Year 2022 in the National Diversity Awards. She was recognised as a local hero by the Association of Jamaican Nationals and awarded the Mary Seacole 75th NHS Windrush Award in 2023. Jennifer was recently named in the list of top 50 most influential health care leaders in the Health Service Journal bubbling under category of Equality, Diversity and Inclusion (EDI) leaders.

Lisa Sutherland

MSc, PGCE, Dip RGN, LLB (hons)

Tissue Viability and Complex Wound Care Nurse Consultant at Norfolk & Norwich University, Regional Teaching Hospital, Norwich, United Kingdom

Lisa become a nurse after she had started her young family and developed a passion for wounds and person-centred care. Her career has seen her move from emergency nursing to clinical education and senior ward management before becoming a Tissue Viability Nurse in 2011. She has a MSc in Skin Integrity & Tissue Viability along with Non-Medical Prescribing qualifications. Lisa has worked across several NHS Trusts including acute, community and integrated settings, managing the challenges posed for staff and patient care delivery. She has been involved in pre-registration curriculum delivery at university level, both as a full-time lecturer and part-time lecturer (upon returning to full time clinical work). She delivers training to pharmacy students, operating department practitioners, and medical students alongside study day delivery to a variety of nursing and allied health professionals both in acute and community settings. Her work in improving knowledge, education and delivery of pressure area care was used in the NHS Leading Change Adding Value document. Lisa chairs both regional and local groups looking at wound and pressure area care.

Sarah Waller

BA(Hons), PG Cert

Tissue Viability Clinical Nurse Specialist, Jacobs and Gardens Neurological Centre (Elysium Health Care, part of Ramsey Health), Sawbridgeworth, United Kingdom

Sarah has completed 35 years of service to nursing, 8 years of this as a Tissue Viability Clinical Nurse Specialist (TVNS) in both the NHS and private sector. Within her role as a TVNS, Sarah has enjoyed working within the arenas of Clinical Practice, Research, Facilitation and Education. Sarah has previously published work on both moisture-associated skin damage and pressure ulcer care. Whilst nursing at Cambridge University Hospitals, Sarah completed her BA Hons degree at Homerton College School of Nursing (University of Cambridge), later furthering her studies to complete PGCerts in acute care, wound care and medical education. Currently, Sarah is enjoying the opportunity to help formulate, introduce and lead Tissue Viability Services within a 100 bedded long term neurological care centre, drawing on her clinical, academic and leadership experience.

Nikolaos Tentolouris

MD, PhD

Professor of Medicine and Diabetes, Head of the Diabetes Centre, Medical School, National and Kapodistrian University of Athens (NKUA), Laiko General Hospital, Athens, Greece

Nikolaos worked in the field of diabetes mellitus, metabolic and endocrine diseases at the University of Manchester (Manchester Royal Infirmary) in the United Kingdom. Since 2018, he has been a Full Professor of Internal Medicine at the 1st Department of Internal Medicine at the Medical School of the NKUA, Laiko General Hospital. His research work includes more than 330 publications in international journals that have more than 10,000 citations. Nikolaos has participated in scientific and organisational committees of many international and Greek conferences on diabetes and internal medicine; and is member of the editorial board of 4 international medical journals. Nikolaos is the coordinator of the Master of Science Program of the Medical School of the NKUA entitled “Diabetes mellitus-Obesity”. He is the president of the Hellenic Society of Internal Medicine, and, previously, he served as scientific secretary of the Diabetic Foot Study Group and a member of the executive committee of the European Association for the Study of Diabetes (EASD).

Chronic Wound Care

Case 1

Peter Kurz,
Managing Director, Wund Pflege Management Ges.m.b.H.,
Bad Pirawarth, Austria.

Granudacyn®/Granulox®/ Exufiber® Ag+/ Mepilex® Border Flex

Foot ulcer

Clinical challenge:

To improve oxygen concentration to the wound bed tissue, promote auto-debridement/cleansing of the wound, and help prevent infection.

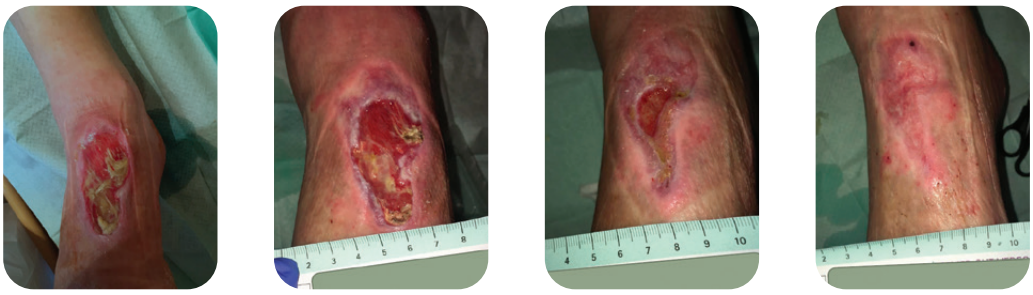
Patient and Wound History

- 91-year-old male.
- Medical history of type 2 diabetes mellitus, long-term chronic venous insufficiency and microangiopathy, varicose veins (foam sclerotherapy 1 year previous).
- Chronic diabetes-related foot ulcer (DFU) with tendon involvement, but no leg oedema, located on right forefoot; present for 6 years.
- Previous treatment: antimicrobial gel; absorbent, foam and silver-containing dressings.

Intervention and Treatment Regime

- Granudacyn® Wound Irrigation Solution (intervention), a hypochlorous acid solution, was chosen to cleanse the wound and so reduce the risk of infection; Granulox® (intervention) a topical haemoglobin spray, was selected for its ability to improve oxygenation of the wound bed to support healing; Exufiber® Ag+ (intervention), a silver-containing gelling fibre dressing was chosen for its antimicrobial action concomitant with its capacity to manage wound exudate; Mepilex® Border Flex (intervention), a foam dressing, was chosen for its conformability and exudate management.
- Wound debridement with a curette was performed and the wound cleansed for 8 minutes with Granudacyn®.
- The wound was coated with a thin layer of Granulox® and then dressed with Exufiber® Ag (primary dressing) and Mepilex® Border Flex (secondary dressing). A double layer of Tubifast® Blue (tubular retention bandage) provided dressing fixation. After 14 days, exudate levels were reduced and Exufiber® Ag was discontinued.
- Dressings were changed twice weekly.

Wound Progression



	Day 1 (Initial study intervention)	Day 57	Day 144	Day 232
Wound area	12cm²	8cm² (↓33%)	1.15cm² (↓86%)	Healed
Wound depth	1cm	1cm	0.3cm (↓70%)	-
Signs of infection	None	None	None	-
Viable tissue	60%	80%	90%	100%
Peri-wound	Healthy	Healthy	Healthy	Healthy
Exudate	Moderate, serosanguinous	Low, clear/serous	None	None
Pain score	≤3/10*↓	≤3/10↕	≤3/10↕	≤3/10↕

↕General pain

Perspective

The use of Granudacyn® , Granulox®, Exufiber® Ag+ and Mepilex® Border Flex promoted the successful healing of an infected diabetes-related foot ulcer, removing the need for limb amputation whilst improving the patient's quality of life.

Case 2

Nikolaos Tentolouris,
First Department of Propadeutic Internal Medicine, Medical School, National and Kapodistrian University of Athens, Laiko General Hospital, Athens, Greece.

Granulox®/Granudacyn®/ Exufiber® Ag+/ Mepilex® Border EM*
Foot ulcer

Clinical challenge:

Reduced vascularity and oxygenation are associated with delayed healing of diabetes-related foot ulcers, increasing the risk of complications such as infection and amputation.

Patient and Wound History

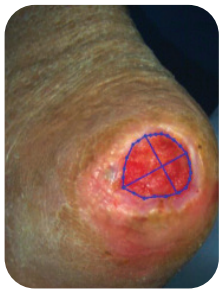
- 84-year-old male.
- Medical history: type 2 diabetes mellitus, chronic hepatitis and cirrhosis.
- Wound located on the heel of the right foot; present for 6 months.
- Previous treatment: surgical debridement and cleansing (15% sodium chloride), simple gauze dressings.

Intervention and Treatment Regime

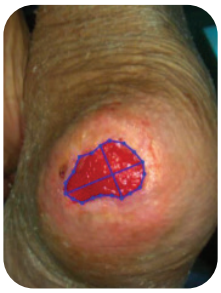
- Granulox® (intervention), a topical haemoglobin spray, was chosen for its ability to improve oxygenation of (intervention), a topical haemoglobin spray, was chosen for its ability to improve oxygenation of the wound bed to support healing.
- At each dressing change, non-viable wound tissue was debrided (sharp) and the wound cleansed with Granudacyn® Wound Irrigation Solution (hypochlorous acid), at which point pain was reported.
- The wound was coated with a thin layer of Granulox®.
- The wound was dressed with Exufiber® Ag+ (antimicrobial gelling fibre; primary dressing) and Mepilex® Border EM* (self adherent soft silicone foam; secondary dressing). At day 46, Exufiber® Ag+ was discontinued (no longer required).
- Dressings were changed every 3 days.

*Marketed as Mepilex® Border Lite in other countries

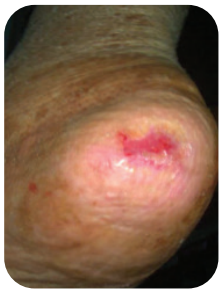
Wound Progression



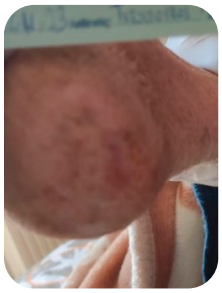
Day 1
(Start of Granulox ® treatment)



Day 11



Day 46



Day 58

Wound area	3.8cm²	3.2cm² (↓16%)	1.9cm² (↓50%)	Healed
Wound depth	0cm	0cm	0cm	-
Signs of infection	Yes#	Reduced	Reduced	-
Viable tissue	0%	0%	90%	-
Peri-wound	Not healthy+	Healthy	Healthy	Healthy
Exudation	Moderate, non-viscous, green/yellow	Low, non-viscous, clear/serous	None	-
Pain score	50/100	30/100	0/100	-

#increased pain/warmth/exudation, erythema, oedema +dry, erythematous, excoriated, macerated, blistered

Perspective

Following the introduction of Granulox®, a long standing foot ulcer progressed to complete healing within 9 weeks of commencing treatment.

Case 3

Peter Kurz,
Managing Director, Wund Pflege Management Ges.m.b.H.,
Bad Pirawarth, Austria.

Granudacyn®/Granulox®/ Exufiber® Ag+/Mepilex® Border Flex Oval

Leg ulcer

Clinical challenge:

To improve oxygen concentration to the wound bed tissue, promote auto-debridement/cleansing of the wound, and help prevent infection.

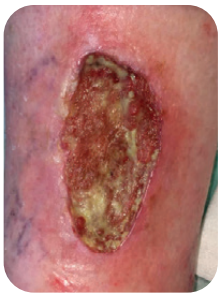
Patient and Wound History

- 70-year-old female.
- Medical history of chronic venous insufficiency, rheumatoid arthritis (RA), microangiopathy, malnutrition.
- Mixed aetiology leg ulcer (cutaneous complication of RA), originated after minor trauma; present for 4 years.
- Previous treatment: antimicrobial cleanser; alginate, absorbent, foam and silver-containing dressings.

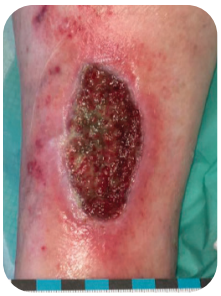
Intervention and Treatment Regime

- Granudacyn® Wound Irrigation Solution (intervention), a hypochlorous acid solution, was chosen to cleanse the wound and so reduce the risk of infection; Granulox® (intervention) a topical haemoglobin spray, was selected for its ability to improve oxygenation of the wound bed to support healing; Exufiber Ag+® (intervention), a silver-containing gelling fibre dressing was chosen for its antimicrobial action concomitant with its capacity to manage wound exudate; Mepilex® Border Flex Oval (intervention) a foam dressing, was chosen for its conformability and exudate management.
- Mechanical wound debridement (curette or debridement pad) performed and wound cleansed for 8 minutes with Granudacyn®.
- At each clinic assessment, the wound was treated with light therapy (LLLT 600J 2W, E2C-mode).
- The wound was coated with a thin layer of Granulox® and dressed with Exufiber® Ag (primary dressing) and Mepilex® Border Flex Oval (secondary dressing). Mextra® (superabsorbent dressing) was used as the secondary dressing when the volume of exudate increased. A bi-elastic alginate glulam bandage with a double layer of Tubifast® Blue (tubular retention bandage) provided compression. Three weeks before the final study assessment, exudate levels significantly reduced and Exufiber® Ag was discontinued.
- Dressings were changed twice weekly.

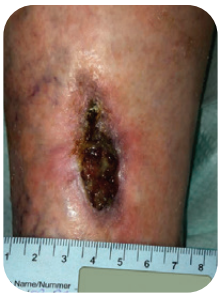
Wound Progression



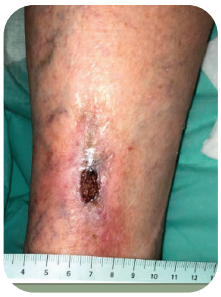
Day 1
(Initial study intervention)



Day 58



Day 177



Day 253

	Day 1 (Initial study intervention)	Day 58	Day 177	Day 253
Wound area	13cm²	14.1cm² (↑8%)	1cm² (↓92%)	Healed
Wound depth	11cm with pocket 12-3 o'clock	1cm -	0.3cm (↓70%) -	- -
Signs of infection	Yes*	Improved	Improved	None
Viable tissue	80%	90%	100%	100%
Peri-wound	Unhealthy#‡	Healthy	Healthy	Healthy
Exudate	High, serosanguinous	Low, clear/serous	Low, clear/serous	None
Pain score	6/10	4/10	None	2/10

*Increased pain, increased exudate and erythema ‡damaged by long pre-treatment period and infiltrated by biofilm

Perspective

The use of Granudacyn® , Granulox®, Exufiber® Ag+ and Mepilex® Border Flex Oval successfully 'kick-started' the healing process of a chronic leg ulcer and helped manage potential wound infection.

Case 4

Cheryl Lugton
Tissue Viability Nurse
NHS Borders, Melrose,
United Kingdom

Granulox®
Mepilex® Border Comfort
Leg ulcer

Clinical challenge:

Reduced vascularity and oxygenation are associated with delayed healing of diabetes-related venous leg ulcers, increasing the risk of complications such as infection and amputation.

Patient and Wound History

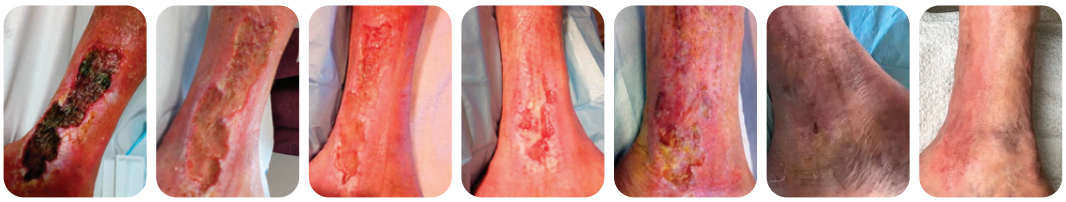
- 82-year-old male.
- Medical history: type 2 diabetes mellitus, peripheral neuropathy, chronic kidney disease, acute coronary disease, cellulitis and varicose eczema.
- Surgical history: left total knee arthroplasty.
- Wound located on medial lower left leg, incorporating the malleolus; present for 18 months.
- Analgesia administered for pain (10/10).
- Previous treatment (10 days before baseline): poly-absorbent fibre dressing with nano-oligosaccharide factor, superabsorbent dressing and compression hosiery.

Intervention and Treatment Regime

- Granulox® (intervention), a topical haemoglobin spray, was chosen for its ability to improve oxygenation of the wound bed to support healing.
- At each visit the wound was cleansed using an antimicrobial wound irrigation solution.
- The wound was coated with a thin layer of Granulox® spray and a barrier cream applied to the periwound. The wound was dressed with a superabsorbent dressing under wrap compression. After 10 days, the dressing was changed to Mepilex ® Border Comfort* (foam dressing).
- Dressings were initially changed 3 times per week; twice weekly in the final 3 months of the study.

*Marketed as Mepilex® Border Flex outside of the United Kingdom

Wound Progression



	Day 1 (Start of Granulox ® treatment)	Day 4	Day 10	Day 83	Day 104	Day 177	Day 218
Wound area	44.1cm^2	44.1cm^2	42.6cm^2 (↓3.4%)	4 wound islands	Not recorded	0.6cm (↓98%)	Healed
Wound depth	0cm	0.3cm	0.3cm	0-0.2cm	Not recorded	0cm	-
Signs of infection	Yes#	Reduced	Reduced	-	None	None	-
Viable tissue	0%	40%	70%	-	100%	100%	-
Peri-wound	Erythematous; macerated	Improved	Improved	Healthy	Deteriorated	Improved	Healthy
Exudation	High, viscous, creamy	High, non-viscous, clear/serous	Moderate, non-viscous, clear/serous	Low, non-viscous, clear/serous	Low, non-viscous, clear/serous	Minimal, non-viscous, clear/serous	-
Pain score	10/10 (morphine)	8/10 (morphine)	5/10 (paracetamol)	2/10 (none)	1/10	0/10	-

- After 7 months of treatment with Granulox®, the leg ulcer, previously considered non healing, had healed.
- Approximately 14 months after the wound had healed, another area of skin breakdown occurred to the lower limb; Granulox ® was applied again, and the wound healed within a few weeks.
- Following the positive outcome of this case study, the TVN applied to have Granulox® put on the formulary for NHS Borders.

Patient Experience

The patient was elated with the intervention and thought that Granulox® had 'most likely prevented amputation'. He said, "the dedication of my Tissue Viability Nurse together with her use of Granulox® haemoglobin spray have brought about a remarkable change in a relatively short time. In my opinion, following her method, a huge saving could be made in the treatment of leg ulcers across the country."

Perspective

Granulox® is considered to be an excellent product for the right wound. Any positive effect is generally observed within 2 weeks of starting treatment, with associated reductions in pain and wound exudate.

Case 5

Sanna Kouhia
Vascular Surgeon; Kainuu Central Hospital, Kajaani, Finland

Avance® Solo/Granudacyn®
Pressure ulcer

Clinical challenge:

To achieve healing of a device-related pressure injury.

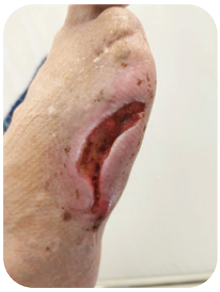
Patient and Wound History

- 82-year-old male.
- Medical history of type 2 diabetes mellitus, hypertension, peripheral vascular disease, heart disease, chronic pulmonary disease, and kidney disease.
- Surgical history: amputation of the 2nd, 3rd and 4th toes on the right foot.
- Amputation of right 5th toe due to bone-reaching ulcer (11 weeks prior to study; treatment - traditional NPWT and single-use (sNPWT), with further surgical revision; 2 months later: treatment – canister-less sNPWT).
- Development of pressure ulcer due to non-healing wound and use of an unsuitable pressure relieving boot.

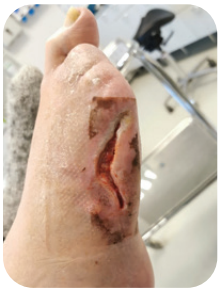
Intervention and Treatment Regime

- Avance® Solo (intervention), portable sNPWT, was chosen to provide effective exudate management (wound drainage transferred to Avance® canister prevents accumulation in wound) and support faster healing of a wound in a difficult-to-dress area. Granudacyn® Wound Irrigation Solution (intervention), a hypochlorous acid solution, was chosen to cleanse the wound to reduce the risk of infection.
- At all dressing changes, sharp debridement was performed and the wound cleansed with Granudacyn®.
- Initially, antimicrobial dressings (island or barrier dressings) were placed into the wound cavity (up to Day 23) before Avance® Solo foam wound filler (shaped to size) was applied to the wound cavity. Avance® Solo Border dressing (foam) was placed over the wound and the NPWT pump/canister attached.
- The NPWT system was changed 23 times over the 105 day study period.

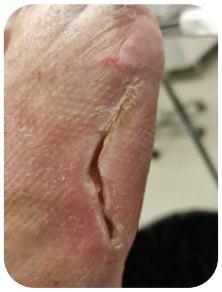
Wound Progression



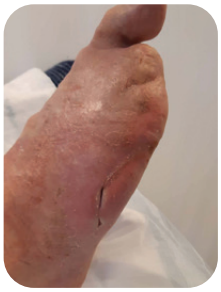
Day 1
(Initial study intervention)



Day 23



Day 70



Day 105

Wound area	6.5cm^2	2.5cm^2 (↓62%)	1cm^2 (↓85%)	Almost healed
Signs of infection	Yes*	None	None	None
Viable tissue	45%	100%	100%	100%
Peri-wound	No#	Improved	Healthy	Healthy
Exudate	Moderate, non-viscous, serosanguinous	Low, non-viscous, serosanguinous	Low, non-viscous, serosanguinous	None
Fluid in canister	N/A	Low	Low	Low

* Increased exudation, erythema and oedema – antibiotics administered #Dry, erythema and maceration

Perspective

At the final study evaluation, the wound had almost healed. The patient was satisfied with the easy use of the device but mentioned that he found disturbing the cycling sound of the pump which is necessary to ensure integrity of the device on draining wounds. [Subsequent to the case study being undertaken, a cover has been made available by the manufacturer to mask the sound of the pump.]

Case 6

Paulo Ramos
Nurse, USF Corino de Andrade,
Porto, Portugal

Granudacyn®/ Mepilex® Border Flex Oval
Pressure ulcer

Clinical challenge:

To promote wound healing and prevent infection whilst minimising scarring and reducing patient pain and discomfort.

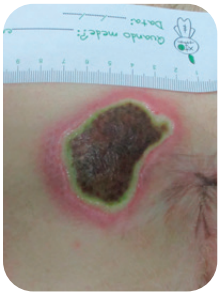
Patient and Wound History

- 64-year-old male with flaccid paralysis of the lower limbs.
- Medical history of bullous pemphigoid and type 2 diabetes mellitus (insulin-treated).
- Pressure ulcer located over the left side of the sacrum; present for 2 weeks.
- Previous treatment: polyhexanide solution/betaine 0.1%, hydrogel and bordered foam dressings.

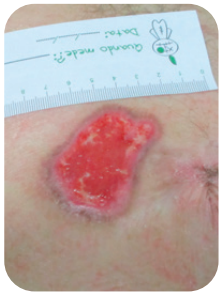
Intervention and Treatment Regime

- Granudacyn® Wound Irrigation Solution/Gel (intervention), a hypochlorous acid solution/gel, was chosen to cleanse the wound and so reduce the risk of infection. Mepilex® Border Flex Oval (intervention), foam dressing was selected for conformability and exudate management.
- Wound site was debrided at Day 1 (sharp); at all dressing changes the wound was cleansed with Granudacyn® Wound Irrigation Solution.
- Granudacyn® Wound Gel (primary dressing) was applied to the wound bed, and then Mepilex® Border Flex Oval (secondary dressing) applied. After 26 days, the use of Granudacyn® Wound Gel was stopped.
- Dressing change was performed twice weekly.

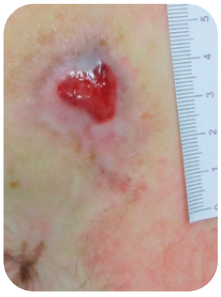
Wound Progression



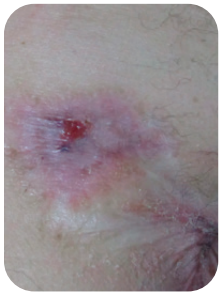
Day 1
(Initial study intervention)



Day 26



Day 92



Day 126

	Day 1 (Initial study intervention)	Day 26	Day 92	Day 126
Wound area	24cm²	18cm² (↓25%)	1.7cm² (↓93%)	Healed
Signs of infection	Yes*	Resolved	-	-
Viable tissue	0%	100%	100%	100%
Peri-wound	Healthy	Healthy	Healthy	Healthy
Exudate	Moderate, non-viscous, yellow/green	Low, non-viscous, clear/serous	Low , non-viscous, clear/serous	None

* Severe increased exudate and oedema

Perspective

The use of Granudacyn® successfully helped control the bacterial load and Mepilex® Border Flex Oval resisted friction from bed to chair transfers, and provided dressing confidence whilst the patient was seated for extended periods (up to 8 hours).

Case 7

Sarah Waller
Tissue Viability Specialist Nurse,
The Jacob and Gardens Neurological Centres, Sawbridgeworth,
United Kingdom

Exufiber® Ag+/ Mepilex® Border Comfort/ Avance® Solo Adapt

Pressure ulcer

Clinical challenge:

To stimulate wound healing, manage excess exudation and address wound bioburden in a delayed healing wound.

Patient and Wound History

- 76-year-old female; unable to mobilise or communicate due to severe cerebrovascular accident (CVA).
- Medical history of type 2 diabetes mellitus, hypertension and heart disease.
- Category 4 sacral pressure ulcer (PU); present for 10 months.
- Previous treatment: predominantly hydrofibre dressing.

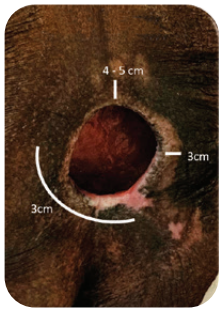
Intervention and Treatment Regime

- Exufiber® Ag+ (intervention), silver-containing gelling fibre dressing, was selected to pack wound undermining and manage exudate. Mepilex® Border Comfort* (intervention), foam dressing, was chosen for exudate management. Avance® Solo Adapt (intervention), portable single use negative pressure wound therapy (NPWT), was chosen to provide effective exudate management (wound drainage transferred to Avance® canister prevents accumulation in wound), address the epibole that was preventing wound contraction, and support faster healing of a wound in a difficult-to-dress area.
- Gentle mechanical debridement of the wound edge was performed on Days 13, 21, 64, 77 and 81 to help re-stimulate the healing process.
- During NPWT, the wound was cleansed with normal saline.
- Initially, Exufiber® Ag+ (primary dressing), cut into a thin strip, was loosely packed into the wound cavity, spiraling from the outer edge, including the undermining, towards the wound centre. The wound was covered using Mepilex® Border Comfort (secondary dressing). At Day 53, Exufiber® became the primary dressing until the start of NPWT. On Day 67, the wound cavity was filled using green Avance® foam cut to the correct size and Avance® Solo Adapt film dressing placed over the wound area and bridged to the hip before attachment to the NPWT pump. At Days 92 and 102, for 1 week and 4 days, respectively, treatment reverted to Exufiber® Ag+ and Mepilex® Border Comfort due to logistical issues. At Day 112, NPWT was discontinued and treatment with Exufiber® Ag+ and Mepilex® Border Comfort was resumed.
- Exufiber® Ag+ and Mepilex® Border Comfort dressings were changed daily; Avance Solo Adapt system was changed every 72 hours.

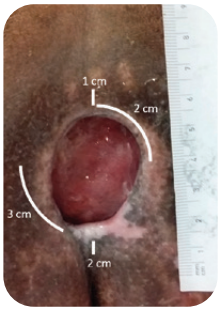
*Marketed as Mepilex® Border Flex outside of the United Kingdom

Wound Progression

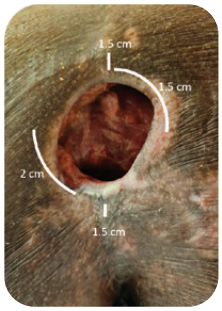
Areas of wound undermining indicated by white lines and measurements on the images.



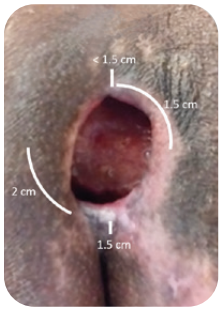
Day 1
(Start of assessment)



Day 13

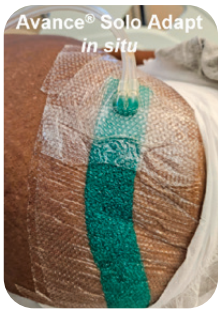


Day 53

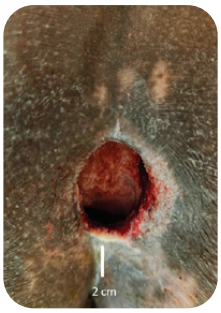


Day 67
(Start of NPWT)

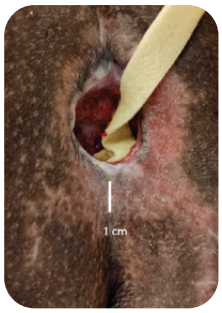
	Day 1 (Start of assessment)	Day 13	Day 53	Day 67 (Start of NPWT)
Wound size	3.5cm x 3.5cm	3.5cm x 3.5cm	3.5cm x 3.0cm (↓15%)	3.5cm x 3.0cm
Undermining	3 - 5cm	1 - 3cm	1.5 - 2cm	1.5 - 2cm
Signs of infection	Moderate oedema	Improved	Improved	None
Peri-wound	Epibole; moderate dryness & maceration	Epibole; moderate dryness, mild maceration	Epibole; moderate dryness, mild maceration	Epibole; moderate dryness
Exudate	High, non-viscous, serosanguinous	Moderate, non-viscous, clear/serous	High, non-viscous, clear/serous	Moderate, non-viscous, serosanguinous



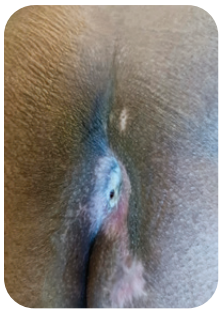
Avance® Solo foam was 'bridged' from the wound to a position on the hip and Avance® film dressing placed over the whole area to ensure the pump connection and tubing were positioned to avoid further pressure injury.



Day 110



Day 147



Day 210

	Day 110	Day 147	Day 210
Wound size	3.5cm x 2.0cm (↓43%)	1.5cm x 1cm (↓88%)	< 1cm diameter
Undermining	2cm	3cm	None
Signs of infection	None	None	None
Peri-wound	Epibole reversed; moderate dryness	Healthy	Slight wetness at catheter now removed
Exudate	Low, non-viscous, clear/serous	Remains low	Scant

Perspective

After 30 weeks of treatment, a previously labelled "never-will-heal wound" had almost healed. The appropriately selected wound care products and technologies, along with a care bundle approach according to the aSSKINg (assess risk, Skin assessment and skin care, Surface selection and use, Keep patients moving, Incontinence assessment and care, Nutrition and hydration, giving information) Framework stimulated wound healing whilst managing the wound exudate. The epibole that was stalling the healing process was quickly addressed.

Importantly, the patient has her life back and dignity restored. She was able to enjoy the Easter break and see the spring flowers in bloom.

Thank you to the staff at The Jacobs and Gardens Neurological Centre (Elysium Health Care, Sawbridgeworth) for providing excellent patient care during this case study.

Quality Improvement Project

Martina Collins-Stiff
Tissue Viability Specialist Nurse,
West Suffolk NHS Foundation Trust,
Bury St Edmunds, United Kingdom

Implementation of an interim dressing kit in residential care homes

Background

It was identified that care home residents, who had a new or existing wound, were not receiving appropriate, timely wound care due to a lack of training, support and dressing provision. Wounds were being left undressed, leading to an increased risk of infection and delayed healing time, along with the discomfort and distress an uncovered wound can cause a patient.

Community nursing services (District Nursing (DN) and out-of-hours services) are overstretched due to an increasing caseload, reduced staffing levels and a rise in the number of call outs making same day visits not always achievable.

Aims

It was hypothesised that the provision of an interim dressing kit (IDK) to care homes would facilitate, with support, use by non-registered care staff to safely manage both new and existing wounds until a community health care professional could visit.

The plan

Evaluation of interest

Care homes and nursing teams were surveyed for their views regarding the implementation of an IDK. When asked, the following thought that an IDK would help to increase the care and safety of patients:

- 93% of the care homes (n=14)
- 100% of the DNs (n=6)
- 100% of members of an Early Intervention Team (n=5)

All the care homes surveyed stated they would be happy to implement an IDK, with most staff saying they would feel confident using the kit. The DNs and EITs surveyed thought that the use of an IDK would help improve the service and improve their workload.

Kit development, training and cost

A generic dressing kit content was designed to allow placement or replacement of:

- dressings on existing wounds,
- bandages where exudate strikethrough occurs,
- new wounds, e.g. pressure ulcers, leg wounds and skin tears.

Contents of Interim dressing kit	Quantity	Cost (£)
Dressing packs	5	2.60
Saline 0.9% irrigation solution	5	0.70
Sterile disposable scissors	5	1.25
Medical adhesive tape	1	0.27
Silicone foam adhesive dressing 10cm x 10cm	5	6.47
Silicone foam adhesive dressing 15cm x 17.5cm	5	10.85
Superabsorbent wound pad	6	10.14
Tubular bandage (blue line)	1 box	3.26
Tubular bandage (yellow line)	1 box	4.27
Total cost of Interim dressing kit		£39.81

To help guide staff through the process of applying a dressing, simple step-by-step instructions and QR codes with "how to" videos were included.

To monitor usage of the IDK, an evaluation/feedback form was included to be completed after the kit was utilised.

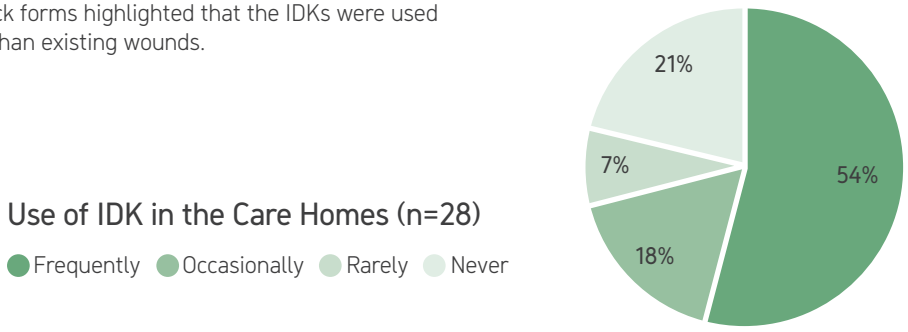
The IDK was distributed and advertised to all residential care homes in the West Suffolk locality.

Outcomes

Utilisation of IDK

At 6-month review, based on face-to-face visits, assessment of completed evaluation/feedback forms, and a follow-up care home survey, it was identified that 79% of care homes were utilising the IDK. Furthermore, **100% of care homes agreed that same day DN and out-of-hours visits for wound care had reduced.** The care home staff felt confident using the IDK. They also commented that **having the IDK helped improve patient safety**, and would like the IDK to continue to be available.

Data from completed evaluation/feedback forms highlighted that the IDKs were used more often to treat new wounds rather than existing wounds.



Examples of feedback received

From care home staff:

"The dressing kits have been helpful thank you and we have used them on a regular basis. We do have a nominated senior care assistant who oversees the kit."

"We requested replacement items for our interim kit last week. We have found them very useful, I hope this has reflected in our district nursing referrals, as we no longer need urgent visits."

From district nurses:

"The majority of homes I have visited have been utilising the kits and see them as an empowering tool to support the people they care for. It has also reduced the number of same day visits."

"I have been able to defer same day visits when triaging visits as the care homes have the dressings available to them."

Challenges encountered

Communication and promotion of the project to the care homes and nursing teams was underestimated. Some care homes remained unaware of the IDK. Due to staff and service pressures, some community nursing staff were unaware of the IDKs for the initial few months of implementation. Frequent change in care home managers and staff proved detrimental. Information was not passed on from staff initially introduced to the project. There was limited compliance with record keeping after each use of the IDK. Due to differences in the I.T. systems used in the Trust, care homes and GP surgeries, data collection and its collation was difficult, making it hard to prove the efficacy of the IDKs.

Follow-up

A second drive to raise awareness of the IDK across the Trust and care homes was initiated. Advertising posters displayed in all the DN bases, further face-to-face visits were given to all DN teams, and additional visits were made to the care homes to provide additional support with either an introduction to the IDK or for ongoing use of the IDK. A further review at 8 months showed a 100% uptake of care homes using the IDK.

Conclusions

This report demonstrates how the development and implementation of an IDK has helped to improve efficiencies in delivering wound care in residential homes.

Acknowledgements

The authors would like to thank Mölnlycke for supporting this project in a number of ways: printing of the guidance documents given to the care homes, supplying the bags in which the IDKs are stored, and providing medical writing support with the creation of conference poster presentations.

Acute Wound Care

Case 1

Viviana Gonçalves
Specialist in Management of Complex Wound Care, Cardiothoracic Surgery Department, Centro Hospitalier e Universitario de Sao Joao, Porto, Portugal.

Mepilex® Border Post-Op
Closed surgical incision site

Clinical challenge:

To minimise complications at a closed surgical incision site of a patient with increased post-operative risk due to previous surgical scarring.

Patient and Wound History

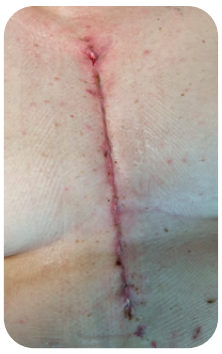
- 45-year-old female.
- Medical history of congenital cardiomyopathy, anxiety and depression.
- Repeat median sternotomy for mitral prosthesis replacement; 26cm incision closed with intradermal sutures and a drain inserted (drain removed 2 days post-operatively).

Intervention and Treatment Regime

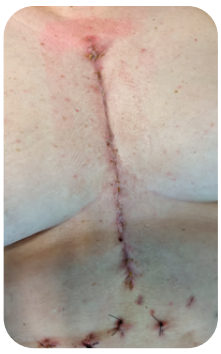
- Mepilex® Border Post-Op (intervention), absorbent foam dressing, selected for conformability and exudate management.
- The incision site was cleansed with physiological saline.
- Mepilex® Border Post-Op (primary dressing) was used to dress the closed incision site.
- Weekly dressing changes; after 2 days, the drain leaked necessitating an extra dressing change.

Wound Progression

Day 1
(Sternotomy)



Day 7



Day 14

	Day 1 (Sternotomy)	Day 7	Day 14
Incision site	Closed	Closed	Closed
Signs of infection	None	None	None
Peri-wound	Healthy	Healthy	Healthy
Pain score*	N/A	3, 4, 3/10	2, 3,-/10
Exudation	None	None	None

*Pain prior to dressing change, on dressing removal and dressing re-application

Perspective

The use of Mepilex® Border Post-Op facilitated wound healing with good evolution of the scar without inflammatory signals. The patient found the dressing comfortable to wear, almost pain-free, without causing itching. It also had the convenience that it could be left in place whilst showering/bathing.

Case 2

Viviana Gonçalves
Specialist in Management of Complex Wound Care, Cardiothoracic Surgery Department, Centro Hospitalier e Universitario de Sao Joao, Porto, Portugal.

Mepilex® Border Post-Op
Closed surgical incision site

Clinical challenge:

To minimise complications at a closed surgical incision site.

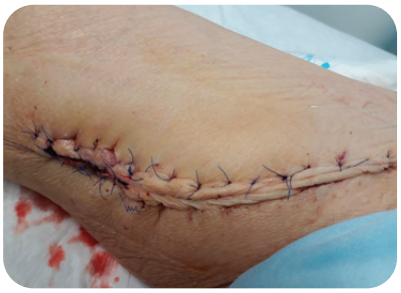
Patient and Wound History

- 76-year-old male who smoked and suffered from alcoholism.
- Medical history of acute myocardial infarction (~30 days), peripheral vascular insufficiency, hypertension and diabetes mellitus (oral medication and insulin required in hospital).
- Underwent median sternotomy for a triple coronary artery bypass graft (CABG) with an upper saphenectomy; sternotomy treated with negative pressure wound therapy (NPWT) at -125mmHg.
- Saphenectomy located on the upper inner thigh of right leg; 18cm incision site closed with sutures.

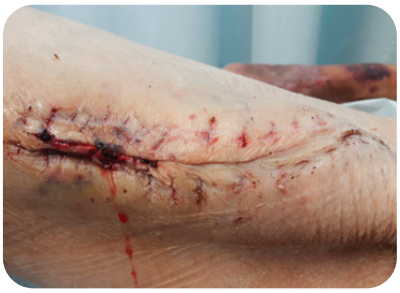
Intervention and Treatment Regime

- Mepilex® Border Post-Op (intervention), absorbent foam dressing, selected for conformability and exudate management.
- The incision site was cleansed with physiological saline.
- Mepilex® Border Post-Op (primary dressing) was used to dress the closed incision site.
- Weekly dressing changes; an extra dressing change was required after 1 day due to haemorrhage and an extra suture was inserted.

Wound Progression



Day 1
(Saphenectomy)



Day 14

	Day 1 (Saphenectomy)	Day 14
Incision site	Closed	Closed
Signs of infection	None	None
Peri-wound	Healthy	Healthy
Pain score*	N/A	2, 2,-/10
Exudation	None	Low, non-viscous, clear/serous

*Pain prior to dressing change, on dressing removal and dressing re-application

Perspective

At the final evaluation of the study, the incision wound had almost healed. Mepilex® Border Post-Op facilitated wound healing with good evolution of the scar without inflammatory signals. The patient found the dressing comfortable to wear, with the convenience that it could be left in place whilst showering.

Case 3

Charina Mamino
Senior Cardiothoracic Surgical Care Practitioner, Mid and South Essex NHS Foundation Trust, The Essex Cardiothoracic Centre Basildon University Hospital; Nethermayne, Basildon, United Kingdom

Mepilex® Border Post-Op
Closed surgical incision site

Clinical challenge:

To optimise wound healing and manage exudation in delayed healing wounds whilst affording comfort and flexibility for the patient.

Patient and Wound History

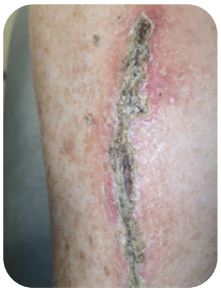
- 75-year-old male.
- Medical history of type 2 diabetes mellitus, hypertension, chronic pulmonary heart disease, anaemia (vitamin B12 deficiency) and mild asthma.
- Surgical history: coronary artery bypass graft (CABG) x 3; conduit vein harvest (bilateral legs).
- Wounds located on the lower right leg (1 x 14cm incision site closed with absorbable sutures) and lower left leg (4 x 4cm skip incision sites closed with absorbable sutures); present for 7 weeks.
- Treatment post-surgery: Mepilex® Border Post-Op for 3-4 days; compression bandage for initial 24 hours.

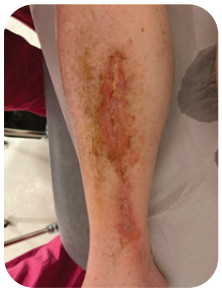
Intervention and Treatment Regime

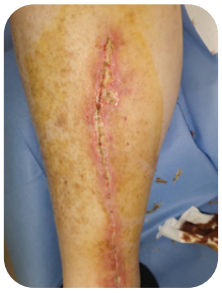
- Mepilex® Border Post-Op (intervention), a highly absorbable foam dressing, was chosen for its conformability, flexibility and exudate management.
- At the initial assessment, sharp debridement was performed on all wounds to remove black eschar and, on Days 7 and 14, mechanical debridement of the wounds was carried out.
- The wounds were cleansed with saline at dressing change.
- Initially, the wounds were dressed with an alginate (primary) dressing and Mepilex® Border Post-Op (secondary) dressing; at Day 45 the alginate dressing was discontinued.
- Initially dressings were changed every 6-12 days. In the latter part of the study, the intervals between two of the dressing changes were 17 and 21 days, due to cancellation of outpatient clinic appointments.

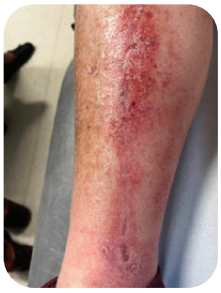
Wound Progression

Right leg


Day 1


Day 7


Day 28


Day 77

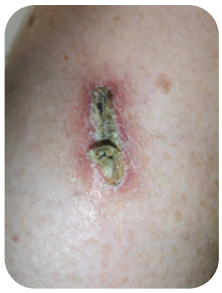
	Day 1	Day 7	Day 28	Day 77
Wound size*	30cm x 0.5cm	30cm x 0.5cm	30cm x 0.2cm (↓60%)	Healed
Wound depth	0.5cm	0.2cm (↓60%)	1cm (↓80%)	-
Signs of infection	Yes*	Improved	Improved	None
Viable tissue	0%	40%	100%	100%
Peri-wound	Not healthy#	Improved	Improved	Improved
Exudate	Moderate, non-viscous, yellow/green	Moderate, non-viscous, clear/serous	Low, non-viscous, clear/serous	None
Pain score+	-, -, 7, 5/10	0, 0, 5, 3/10	0, 0, 0, 0/10	0, 0, 0, N/A/10

*After debridement *Moderate increased pain and erythema, mild increased warmth and increased exudation # Moderate dryness and erythema
+Pain prior to dressing change, on dressing removal, wound cleansing and dressing re-application

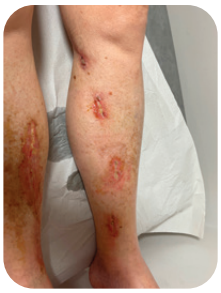
Wound Progression

Left leg

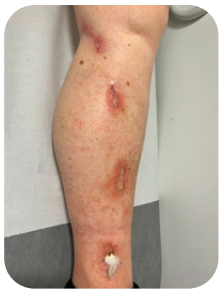
Note: observations for all 4 wounds were the same, unless stated otherwise



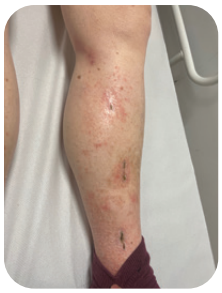
Day 1
(uppermost wound)



Day 7



Day 28



Day 77

Wound size*	4cm x 0.5cm	4cm x 0.5cm	Top wound healed; other wounds 4cm x 0.2cm (↓60%)	Healed
Wound depth	0.5cm	0.2cm (↓60%)	0cm (↓100%)	-
Signs of infection	Yes≠	Improved	Improved	None
Viable tissue	0%	30%	100%	100%
Peri-wound	Not healthy#	Improved	Improved	Healthy
Exudate	Moderate, non-viscous, yellow/green	Moderate, non-viscous, clear/serous	Low, non-viscous, clear/serous	None
Pain score+	-, -, 7, 5/10	0, 0, 5, 3/10	0, 0, 0, 0/10	0, 0, 0, N/A/10

*After debridement ≠Moderate increased pain and erythema, mild increased warmth and increased exudation #Moderate dryness and erythema
+Pain prior to dressing change, on dressing removal, wound cleansing and dressing re-application

Perspective

After 11 weeks of treatment, all the wounds had healed. The dressings helped protect the wounds to achieve complete closure.

Quality Improvement Project

Elaine Bethell (Lead Nurse, Tissue Viability) and Jennifer Pearson (Head of Nursing Division)
The Royal Orthopaedic Hospital (ROH) NHS Foundation Trust, Birmingham, United Kingdom

Addressing dressing-related problems in patients undergoing orthopaedic surgery: a quality improvement project

Background

Medical adhesive-related skin injury (MARSI) is a term used to define skin damage related to the use of medical adhesive products such as tapes and wound dressings.[1] MARSI compromises the skin barrier function, delays healing, causes pain and morbidity, and increases the risk of wound infection.[2,3]

The Royal Orthopaedic Hospital is one of the largest orthopaedic units in Europe and conducts approximately 60 surgical operations per week. During the period of February - May 2023, nine patients suffered moderate MARSI and damage related to the surgical dressing in use at the time (carboxymethylcellulose pad with hydrocolloid adhesive) **(Figure 1)**. These incidents were managed and reported by the Royal Orthopaedic Community Scheme (ROCS) team.

A thematic review into clinical practice (e.g. personnel, application, storage, skin preparation, warming techniques, etc.) was undertaken by the lead tissue viability nurse (TVN), matrons, ROCS lead nurse and heads of nursing (HoN). No common theme was identified. Details of the issue, mitigations and learnings were presented to the clinical audit committee and executive governance team, then reported to the United Kingdom's Medicines and Healthcare products Regulatory Agency. Monitoring of the issue continued and other Trusts scoped regarding any similar issues.

Aims

It was hypothesised that switching to a different surgical dressing could reduce the risk of MARSI.

The plan

The multi-disciplinary team selected Mepilex® Border Post-Op as the new dressing, based on the rationale presented in **Figure 2**.

Extensive training on dressing application and removal was given to theatre practitioners, surgeons and all appropriate medical and nursing teams; videos were also made available and patients given information leaflets **(Figure 3)**.

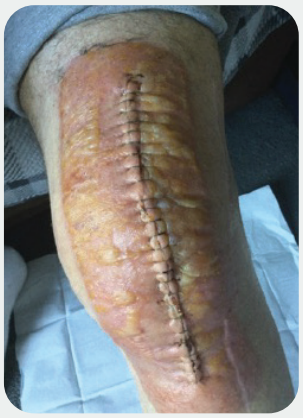


Figure 1: Example of MARSI observed following removal of surgical dressing post-knee arthroplasty

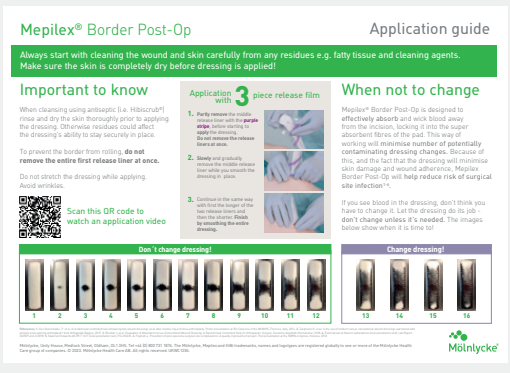
Rationale for selecting Mepilex® Border Post-Op

Safetac® (soft silicone) wound contact layer to minimise trauma on removal and pain

Range of sizes including large size (10x35cm) required for most surgical wounds at ROH

Conformability and flexibility (supports early patient mobilisation)

Figure 2: Dressing selection rationale



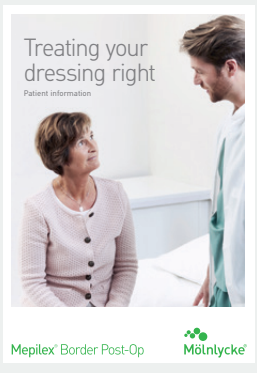
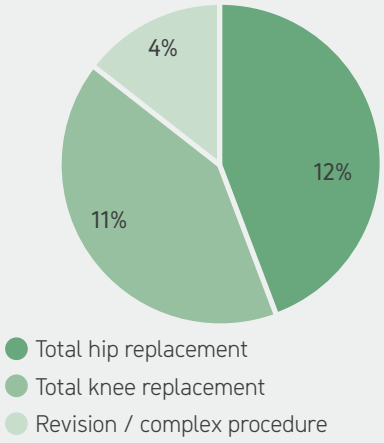


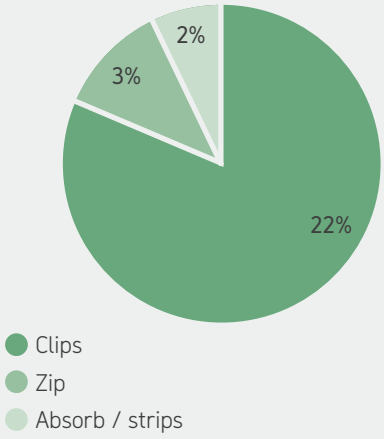
Figure 3: Dressing application guide and patient information leaflet

Figure 4:
Details of surgeries – a) surgery types and b) closure methods

a) Surgery types



b) Closure method



To evaluate the clinical and economic impact of introducing the new surgical dressing regimen, an audit was undertaken. The audit commenced in July 2023 and included a 2-week data collection window. The bulk of the work relating to the audit was undertaken by the TVN and ROCS team, with support from a representative of the dressing manufacturer. The ROH's incident reporting system was interrogated to identify occurrences of MARSI. Clinicians were asked to complete a questionnaire to (i) capture details of any skin reactions that occurred post-operatively; and (ii) rate the performance of the new dressing (ease of application/removal, patient comfort during wear, pain severity on removal, wear time) as 'Very good', 'Good', 'Adequate' or 'Poor'

In parallel, a cost analysis was undertaken in conjunction with the Procurement team to compare the costs of purchasing the previously used dressings over a 12-month period with the projected costs of purchasing the new dressing over a similar length of time.

Outcomes

Questionnaires were fully completed with regard to 27 patients undergoing surgery (**Figure 4**).

Skin reactions

In excess of 180 patients undergoing surgery during the evaluation period had Mepilex® Border Post-Op dressings applied to their incision sites, with zero reports of skin reactions. No cases of maceration were reported in the completed questionnaires.

Dressing performance

For every parameter assessed, the dressing was rated on average as "Very good" (**Figure 5**). All participating clinicians stated that they would recommend Mepilex® Border Post-Op to others.

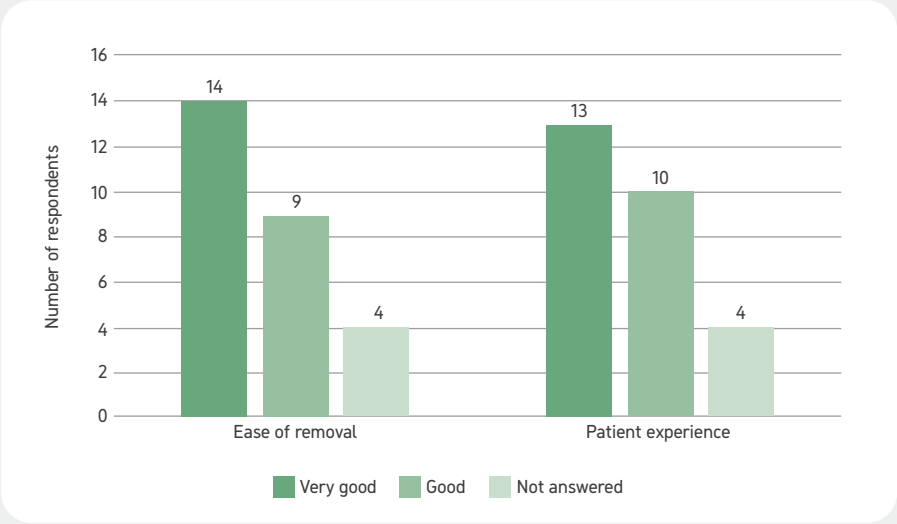


Figure 5: Dressing performance ratings

Cost analysis

The introduction of the new regime resulted in a saving of £10-12 on each dressing, depending on the size of dressing used. This equates to a potential annual 77% reduction in post-operative dressing expenditure.

Conclusions

100% of clinical objectives have been achieved, without any reports of skin reactions since the implementation of the new surgical dressing in September 2023. The dressing switch has also resulted in a substantial reduction in dressing costs. Mepilex® Border Post-Op is now included in the Trust's formulary.

References

1. Hitchcock, J., Haigh, D.A., Martin, N., Davies, S. Preventing medical adhesive-related skin injury (MARSI) Br J Nurs 2021;30(15):S48-56
2. Fumarola, S., Allaway, R., Callaghan, R., et al. Overlooked and underestimated: medical adhesive adhesive-related skin injuries. J Wound Care 2020;29(Suppl 3c):S1-24.
3. McNichol, L., Bianchi, J. (2016) Medical adhesive-related skin injuries (MARSI) made easy. London: Wounds UK.

Case 4

Tina Dyble
Tissue Viability Nurse Specialist, James Paget University Hospital NHS Foundation Trust, Great Yarmouth, Norfolk, United Kingdom.

Exufiber®
Traumatic wound

Clinical challenge:

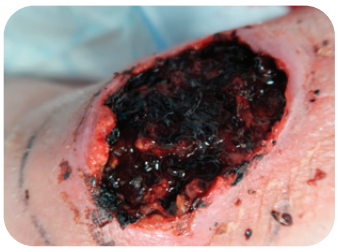
To prepare the wound for negative pressure wound therapy (NPWT) utilising autolytic debridement of the wound to remove wound debris, slough and non-viable tissue.

Patient and Wound History

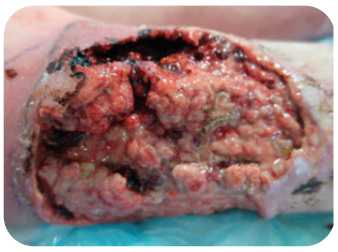
- 79-year-old female.
- Medical history of chronic coronary pulmonary disease, chronic kidney disease (stage 3), asthma, and hypercholesterolaemia.
- Following a fall at home, the patient had fractured ribs, plus a lower right lung consolidation, left lower lung opacification and hyper-inflated lungs.
- Intact haematoma (56 cm2, no depth), located on the right medial lower leg; protected for 10 days using a silicone-coated wound contact layer, gauze chest pad, crepe bandage and an absorbent bandage.
- After 10 days of treating the haematoma, the wound had deteriorated.

Intervention and Treatment Regime

- Exufiber® (intervention), a gelling fibre dressing, was chosen to manage wound exudate and promote autolytic debridement to support a clean wound bed upon dressing removal.
- Initially, forceps were used to remove some of the clots covering the wound bed.
- The wound was dressed with Exufiber® (primary dressing) and absorbent chest pads (secondary dressing). Crepe, padding and tubular elastic net bandages were used for fixation.



Day 1
(Initial study intervention)



Day 10

Wound Progression

	Day 1 (Initial study intervention)	Day 10
Wound area	250cm^2	250cm^2
Wound depth	1cm	1cm
Viable tissue	30%	90%
Signs of infection	None	None
Peri-wound	Dry	Dry
Pain score*	1, 1, 1/100	1, 1, 1/100
Exudation	Low, non-viscous, brown/blood	Moderate, non-viscous, brown/blood

*Pain prior to dressing change, on dressing removal, and on dressing re-application

Perspective

Exufiber® helped attain the treatment goal of wound debridement. Autolytic debridement of the wound bed was swift and effective, enabling NPWT to commence.

Case 5

Saana Kouhia
Vascular Surgeon; Kainuu Central Hospital, Kajaani, Finland

Avance® Solo/ Granudacyn®/Exufiber®/ Mepilex® Border Flex

Traumatic wound

Clinical challenge:

To achieve healing of a wound resulting from flap surgery and liposuction, with a concomitant positive effect on the patient's quality of life.

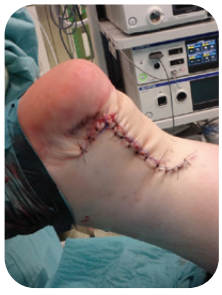
Patient and Wound History

- 48-year-old female.
- Medical history of obesity.
- Admitted for flap surgery and liposuction, for the construction removal and repair of a hypertrophic scar that had resulted from complications following Achilles tendon surgery 8 years previous.
- Closed incision flap; 13cm incision closed with sutures.
- Previous treatment: 4 months of compression therapy (flat woven support stocking).

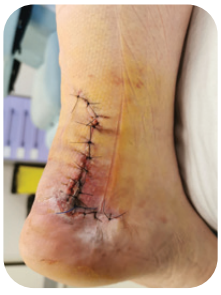
Intervention and Treatment Regime

- Avance® Solo (intervention), portable single use negative pressure wound therapy (NPWT), chosen to provide effective exudate management (wound drainage transferred to Avance® canister prevents accumulation in wound) and support faster healing of a wound in a difficult-to-dress area. Granudacyn® Wound Irrigation Solution (intervention), a hypochlorous acid solution, was chosen to cleanse the wound to reduce the risk of infection. Exufiber® (intervention), a gelling fibre dressing, was chosen to manage wound exudate and promote autolytic debridement to support a clean wound bed upon dressing removal. Mepilex® Border Flex (intervention), foam dressing, chosen for wound exudate management.
- At all dressing changes, sharp debridement was performed before cleansing with Granudacyn®.
- Avance® Solo Border dressing (foam) was placed over the wound and the NPWT pump/ canister attached; a compression bandage and support stocking provided additional fixation.
- Median dressing change was every 5 days (range 3 – 15 days).
- After 51 days, NPWT was stopped and wound treatment continued by the patient at home using medical honey, Exufiber® and Mepilex® Border Flex for a further 53 days.

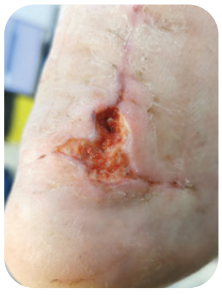
Wound Progression



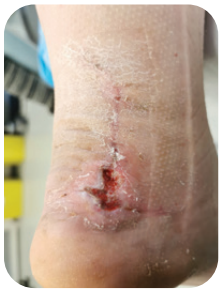
Day 1
(Initial study intervention)



Day 9



Day 30



Day 51

	Day 1 (Initial study intervention)	Day 9	Day 30	Day 51
Incision site	Closed	First sign of dehiscence – flap corner	Dehiscence (6.25cm^2)	Dehiscence (2.52 cm^2; ↓60%)
Signs of infection	Oedema	Oedema	None	None
Viable tissue	90%	100%	100%	100%
Peri-wound	Healthy	Healthy	Healthy	Healthy
Exudate	Low, non-viscous, serosanguinous	Low, non-viscous, serosanguinous	Low, non-viscous, serosanguinous	Low, non-viscous, serosanguinous

Perspective

At the final study evaluation, the wound had almost healed; after a further 53 days of traditional wound therapy (grade honey, Exufiber® and Mepilex® Border Flex) the wound was healed.

The patient reported that the functionality of her leg improved following the surgery and aftercare, significantly improving her quality of life. She was able to visit the gym whilst wearing the Avance® Solo NPWT system.

Case 6

Lisa Sutherland
Tissue Viability Nurse Consultant,
Norfolk & Norwich University Hospital,
Norwich, United Kingdom.

Avance® Solo
Dehisced surgical wound

Clinical challenge:

To effectively manage dehisced surgical wounds with negative pressure wound therapy (NPWT) while ensuring the patient's social care and wellbeing.

Patient and Wound History

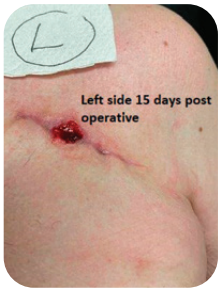
- 25-year-old male.
- Medical history: depression, nausea, functional hemiparesis and hemianopia with visual loss, neurodegenerative disease of autonomic nervous system, autonomic failure, paroxysmal symptomatic sinus tachycardia, postural orthostatic tachycardia syndrome, neurogenic bladder, irritable bowel syndrome, gastroesophageal reflux, oesophageal dysmotility, chronic nephrotic dysfunction, loin pain haematuria, and detection of urinary metadrenalines. Constant pain, severity typically rated as 6/10.
- Surgical wound dehisced (50%) 10 days post-implantation of pacemaker (left chest). Lymph node involvement caused significant pain and reduced patient mobility. Despite revision surgery 3 weeks later and a further 6 weeks treatment with conventional dressings, the wound remained fragile and unhealed with the periwound prone to 'ripping'.
- After 10 days, due to significant pain and a suspected allergic reaction, the pacemaker was removed. New pacemaker implanted into right side of chest.

Intervention and Treatment Regime

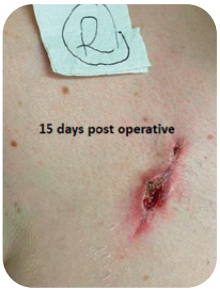
- Original (left) incision site treated with Avance® Solo (intervention), single-use, canister-based NPWT system for first 15 days post-surgery. At each dressing change, the wound was cleansed with normal saline before an Avance® Solo bordered dressing was placed over the wound and attached to the NPWT pump. Thereafter, the wound was managed with an antimicrobial alginate gel and adhesive foam dressings.
- New (right) incision site initially dressed with Mepilex® Border (soft silicone foam dressing) because of high pain severity. Avance ® Solo NPWT introduced at the first dressing change and continued for 9 days. Thereafter, the wound was managed with foam dressings and emollients.

Wound Progression

Original (left) pacemaker site



New (right) pacemaker site



	Post-operative day 6	Post-operative day 15 (NPWT ceased)	Post-operative day 6	Post-operative day 15 (NPWT ceased)
Dehisced area	2.5cm²	1cm² (↓60%)	1cm²	0.75cm² (↓25%)
Viable tissue	100%	100%	100%	100%
Signs of infection	None	None	None	None
Peri-wound	Healthy	Healthy	Healthy	Healthy
Pain score*	6/10	6/10	6/10	6/10
Exudation	Low, non-viscous, clear/serous	Moderate, non-viscous, clear/serous	Low, non-viscous, clear/serous	None

* Pain prior to dressing change, on dressing removal, and on dressing re-application

Perspective

After post-operative day 98, the patient was discharged from the care of the tissue viability specialist, with advice on how to support ongoing skin maturation. This case illustrates how a multidisciplinary team can achieve a positive outcome of a hard-to-heal incision wound while ensuring the patient's social care and wellbeing.

Case 7

Paulo Ramos
Nurse, USF Corino de Andrade,
Porto, Portugal

Granudacyn®/ Mepilex® Transfer Ag
Burn

Clinical challenge:

To promote wound healing and prevent infection whilst minimising scarring and reducing patient pain and discomfort.

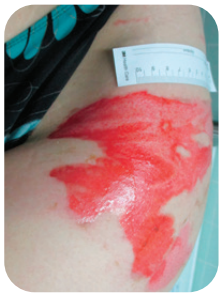
Patient and Wound History

- 35-year-old female.
- No relevant medical history.
- Superficial second degree burn injury located over the left hip and part of the buttock; present for 3 days.
- Previous treatment: enzyme alginogel dressing.

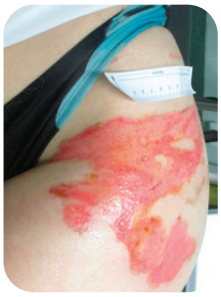
Intervention and Treatment Regime

- Granudacyn® Wound Irrigation Solution (intervention), a hypochlorous acid solution, was chosen to cleanse the wound and so reduce the risk of infection. Mepilex® Transfer Ag (intervention), silver-containing foam dressing selected for exudate management.
- Wound site was cleansed with Granudacyn® Wound Irrigation Solution.
- The wound was dressed with Mepilex® Transfer Ag (primary dressing) and fixed in place using gauze and adhesive tape (secondary dressings).
- Dressing change was performed twice weekly.

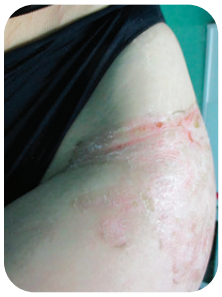
Wound Progression



Day 1
(Initial study intervention)



Day 2



Day 9

Wound area	800cm^2	750cm^2 (↓6.3%)	Healed
Signs of infection	Yes*	Resolved	-
Viable tissue	100%	100%	-
Peri-wound	Healthy	Healthy	Healthy
Exudate	Low, non-viscous, clear/serous	Low , non-viscous, clear/serous	None
Pain scores#	3; 5; 3/10	2; 3; 2/10	2; 2;-/10

*Severe increased pain, erythema and oedema #Pain prior to dressing change, on dressing removal, and on dressing re-application

Perspective

The use of Granudacyn® and Mepilex® Transfer Ag led to the successful healing of the burn injury. Maturation of the scar was monitored for an additional month. Mepilex® Transfer Ag was easy to use. It was comfortable for the patient to wear and helped reduce pain when in situ.

Pressure Ulcer Prevention

Quality Improvement Project

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A quality improvement project to reduce the incidence of hospital acquired sacral pressure ulcers in a trauma orthopaedic ward

Background

Pressure injuries or ulcers are defined as damage localised to the skin or underlying tissue resulting from body weight pressure on the skin or from a combination of pressure and shear.[1] Although they typically occur over bony prominences, pressure ulcers are also associated with forces exerted externally such as those related to the use of medical devices.[2] Despite implementation of standard prevention strategies, pressure ulcers remain a challenging health issue for patients, carers, and clinicians. Moreover, facilities often face financial repercussions or penalties (depending on the health system) in relation to the occurrence of pressure ulceration.

Some multi-layer foam wound dressings reduce shear and friction forces at the point of application and reduce the chances of altering moisture levels of the skin to the point where it becomes weakened. This has been indicated in computer modelling, animal, and clinical studies.[3] The ability of these dressings to reduce the incidence of pressure ulceration, when used in addition to standard preventive measures, has been confirmed in multiple randomised controlled trials.[4]

One such dressing – Mepilex® Border Sacrum is a 5-layer foam dressing incorporating a proprietary soft silicone-based adhesive (Safetac®), which prevents damage to the periwound skin and associated pain on removal. Mepilex® Border Sacrum re-distributes pressure over extensive areas of the skin with the multiple layers neutralising external forces of shear on the skin in the sacral area. The outer layer of the dressing is vapour permeable which helps reduce accumulation of moisture at the skin surface.[3]

Figure 1: React to red logo, used to raise awareness of the project

Figure 2: Record form incorporated into patients' medical records

Aims

In the 2 years prior to this quality improvement project (QIP), Notley ward (Mid and South Essex NHS Foundation Trust) had an average 3.75 hospital acquired sacral pressure ulcers each 3 months. With this in mind and, in response to a high reported prevalence of hospital acquired pressure ulcers nationwide between 2017 and 2019, a QIP was undertaken. The aim was to assess whether the addition of Mepilex® Border Sacrum dressings to the SSKIN (Surface, Skin inspection, Kinetics/keep moving, Incontinence/moisture, Nutrition/hydration) based preventative care bundle (used at the time) could help in reducing the incidence of category 2 or worse hospital acquired sacral pressure ulcers on the ward.

The plan

Patients having sustained a fractured neck of the femur were admitted to the orthopaedic ward from the emergency department. Full skin assessment was carried out on admission to the ward and patients who fulfilled the inclusion criteria had a Mepilex® Border Sacrum dressing applied to the sacrum. This was in addition to the SSKIN preventive care bundle utilised as standard of care for all patients on this ward.

Staff involved in the project were supported through the use of a variety of training sessions. For the benefit of participating staff, a magnet displaying the 'react to red' logo **(Figure 1)** was applied to the bed side white board, so communicating to the whole team that the patient was participating in the project.

A pre-designed record form **(Figure 2)** was incorporated into patient nursing notes. Patients were sent to theatre with the dressing in place and the theatre staff were made aware of this. The dressing remained in place or was renewed as required as long as the patient remained immobilised. When patients were transferred to a different ward, the dressing was kept in place until its renewal date. An allocated 'React to Red' champion in the ward was responsible for daily monitoring of compliance, making sure that patients fulfilling the inclusion criteria had the dressing applied.

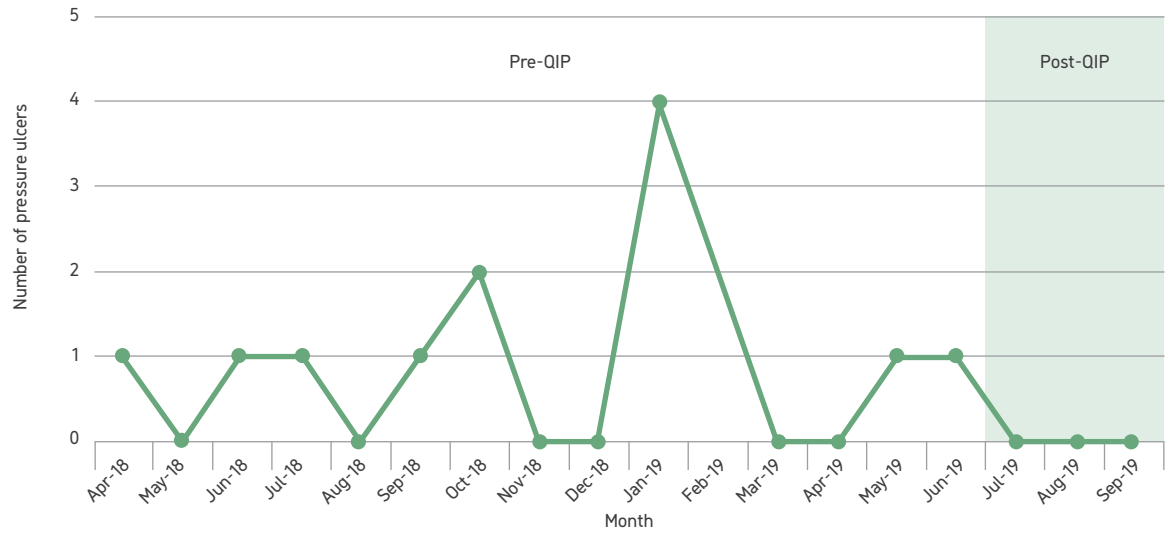

Figure 3: Run chart recording the incidence of pressure ulcers prior to (white area) and following the implementation of the QIP (green area)

Outcomes

During the 3-month trial (July 2019 to September 2019), 92 patients were identified as being suitable candidates for having Mepilex® Border Sacrum applied. Of these, 89 were provided with the prophylactic dressing. Additional risk factors for pressure ulcer development, other than fractured neck of the femur and blanching erythema to the sacrum, were dementia (31%), single or multiple organ failure (13%), diabetes mellitus (10%), and cerebral vascular accident (9%). The majority of patients had already what was considered the early stages of skin damage with redness over the sacrum before placement of the dressing.

None of the patients receiving the prophylactic dressing in addition to standard preventive care developed sacral pressure ulcers during the course of the QIP, equating to a 100% reduction in pressure ulcer incidence compared to the previous 2 years (**Figure 3**).

Conclusions

As a result of the successful outcomes in this pressure ulcer prevention initiative, a change in practice has been embedded into routine care within the ward when a patient is identified as at high risk of developing pressure ulcers. The use of prophylactic Mepilex® Border Sacrum dressings is being rolled out in other areas within the hospital trust.

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Compendium

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Declaration of interest

This compendium has been prepared by the Medical and Professional Affairs group at Mölnlycke Health Care. It has not been subject to double-blind peer review.

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