Evidence in focus

Evidence compendium: Pressure injury prevention

ALLEVYN◊

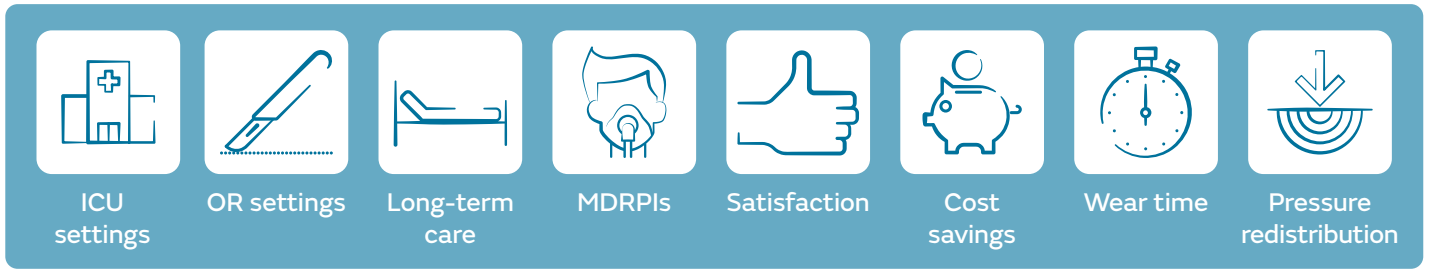
Wound Dressings

October 2021

Smith+Nephew

Icons and abbreviations

Key for icons



Levels of evidence

Links

Abbreviations

APACHE	Acute Physiology and Chronic Health Evaluation score
CAET	Canadian Association for Enterostomal Therapy
EPUAP	European Pressure Ulcer Advisory Panel
ER	Emergency room
HAPI	Hospital-acquired pressure injury
HAPU	Hospital-acquired pressure ulcer
ICU	Intensive Care Unit
MDRPI	Medical device-related pressure injury
NDNQI	National Database of Nursing Quality Indicators
NNT	Number needed to treat
NPUAP	National Pressure Ulcer Advisory Panel
OR	Operating room
PI	Pressure injury
PU	Pressure ulcer
PPPIA	Pan Pacific Pressure Injury Alliance
SAWC	Symposium on Advanced Wound Care
WHS	Wound Healing Society
WOCN	Wound Ostomy and Continence Nurses
WUWHS	World Union of Wound Healing Societies

Background and aims

The incidence of PIs is increasing due to an aging population[1]

PIs are areas of localised injury to the skin and underlying tissue, usually over a bony prominence, as a result of pressure, or pressure in combination with shear[1–3]

The majority of PIs among hospitalised adults are:[4]

- Classified as Stage I and Stage II
- Preventable
- Most likely to occur at the sacrum, heels and hips

They can have a substantial negative impact on patients as well as representing a large financial healthcare burden[1,5]

Guidelines recommend the use of multi-layer dressings, in addition to standard preventative care, to help prevent the development of PIs, HAPIs and MDRPIs[3,4]

>1 in 10
hospitalised patients are affected by PIs[4]

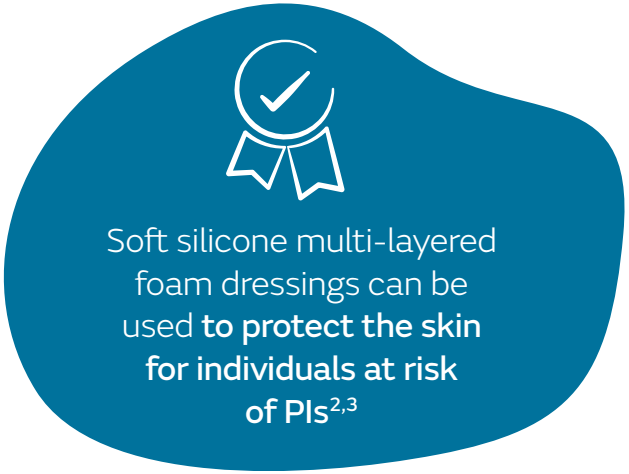
$21,767
additional cost of developing a HAPI in the USA[6]

The aim of this evidence compendium is to summarise current PI management guidelines and to demonstrate the role of ALLEVYN◊ Wound Dressings in reducing the incidence of PIs, HAPIs and MDRPIs as part of PI prevention protocols

Evidence-based PI management guidelines

The European Pressure Ulcer Advisory Panel, the National Pressure Injury Advisory Panel and the Pan Pacific Pressure Injury Alliance have made the following recommendations about use of dressings for PI prevention:[2,3]

- Consider applying a polyurethane foam dressing to bony prominences (eg, heels, sacrum) for the prevention of PIs in anatomical areas frequently subjected to friction and shear
- When selecting a prophylactic dressing consider:
  - Ability of the dressing to manage microclimate
  - Ease of application and removal
  - Ability to regularly assess the skin
  - Anatomical location where the dressing will be applied
  - Correct dressing size
- Continue to use all other preventive measures necessary when using prophylactic dressings
- Assess the skin for signs of PI development at each dressing change or at least daily, and confirm the appropriateness of the current prophylactic dressing regimen
- Replace the prophylactic dressing if it becomes damaged, displaced, loosened or excessively moist



To read more about the current guidelines

ALLEVYN◊ LIFE Foam Dressing PI prevention indications

ALLEVYN LIFE Dressing can be used for PI prevention on intact skin as part of a PI prevention protocol (up to 5 days wear on the sacrum, up to 7 days wear on other locations)[7–9]

- Five-layer construction redistributes pressure*[10]
- Breathable top film with a bacterial and showerproof barrier,[7,8,11–13] as well as a low friction coefficient to reduce the generation of shear*[14]
- EXUMASK◊ Discretion Layer and hyperabsorbent lock-away layer with EXULOCK◊ Technology[11,15,16]
- Highly absorbent[11,17] hydrocellular foam layer
- Soft silicone adhesive wound contact layer that enables the dressing to be lifted and repositioned to facilitate skin inspections, helping to minimise pain during dressing changes[8,9,18]

Available in a wide range of shapes and sizes for PI prevention and/or wound management

ALLEVYN LIFE Dressing

ALLEVYN LIFE Sacrum Dressing

ALLEVYN LIFE Heel Dressing

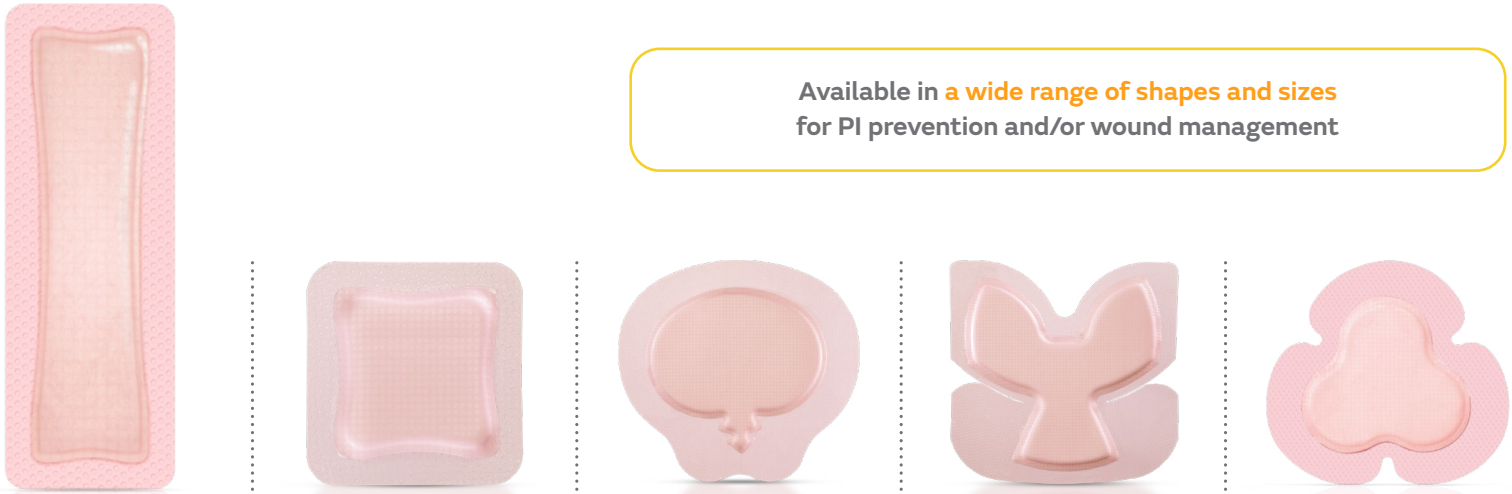
*Laboratory testing

ALLEVYN◊ GENTLE BORDER Foam Dressing PI prevention indications

ALLEVYN GENTLE BORDER Foam Dressing can be used for PI prevention on intact skin, including PIs caused by medical devices, as part of a PI prevention protocol

- Versatile, conformable and easy to cut,*[19–22] to help protect skin under medical devices
- Multiway stretch helps application on awkward areas and joints[19–21,23]
- Breathable top film[20,21] and showerproof top layer[24]
- Highly absorbent[20,21] foam layer
- Gentle silicone adhesive[19] allows the dressing to be repositioned upon initial application[25] and suitable for use on fragile and sensitive skin[23]

Available in a wide range of shapes and sizes for PI prevention and/or wound management



ALLEVYN GENTLE BORDER Rectangle Dressing

ALLEVYN GENTLE BORDER Square Dressing

ALLEVYN GENTLE BORDER Sacrum Dressing

ALLEVYN GENTLE BORDER Heel Dressing

ALLEVYN GENTLE BORDER Multisite Dressing

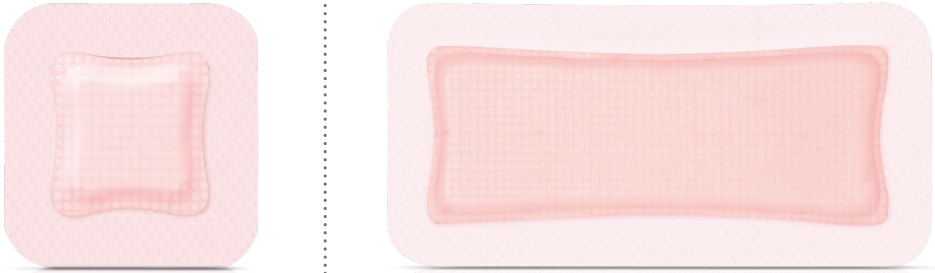
*Cutting compromises bacterial barrier properties of the dressing. Always use aseptic technique.
Ensure any exposed foam areas are covered with an appropriate film dressing taking care not to cover the entire dressing.

ALLEVYN◊ GENTLE BORDER LITE Foam Dressing PI prevention indications

ALLEVYN GENTLE BORDER LITE Foam Dressing can be used for the prevention of MDRPIs on intact skin as part of a PI prevention protocol

- Conforms to the contours of the face[26,27]
- Can be cut*[22]
- Helps to protect skin exposed to pressure and friction[26,28–31]
- Helps to reduce pressure transmission from a face mask by 49% on average†[28]
- Can be used in the prevention of facial MDRPIs as part of a PI protocol‡[26]

Available in a wide range of shapes and sizes for PI prevention and/or wound management



ALLEVYN GENTLE BORDER LITE Square Dressing

ALLEVYN GENTLE BORDER LITE Rectangle Dressing

Use of ALLEVYN Dressings under personal protective equipment (PPE) for maintaining the seal or impact of viral transmission has not been tested.
*Cutting compromises bacterial barrier properties of the dressing. Always use aseptic technique. Ensure any exposed foam areas are covered with an appropriate film dressing taking care not to cover the entire dressing. †Compared with no dressing. ‡n=235.

Factors affecting development of PIs

Pressure injuries usually occur over a bony prominence or are related to medical device use.[2,32]

Pressure can distort or deform skin and soft tissues, which is even greater when pressure is applied over a bony prominence.[32]

Factors contributing to PI onset include (Figure):[2,3,32]

- Pressure
- Friction
- Shear
- Microclimate

The potential of different dressings to help prevent the onset of PIs can be assessed using pressure redistribution studies.[33]

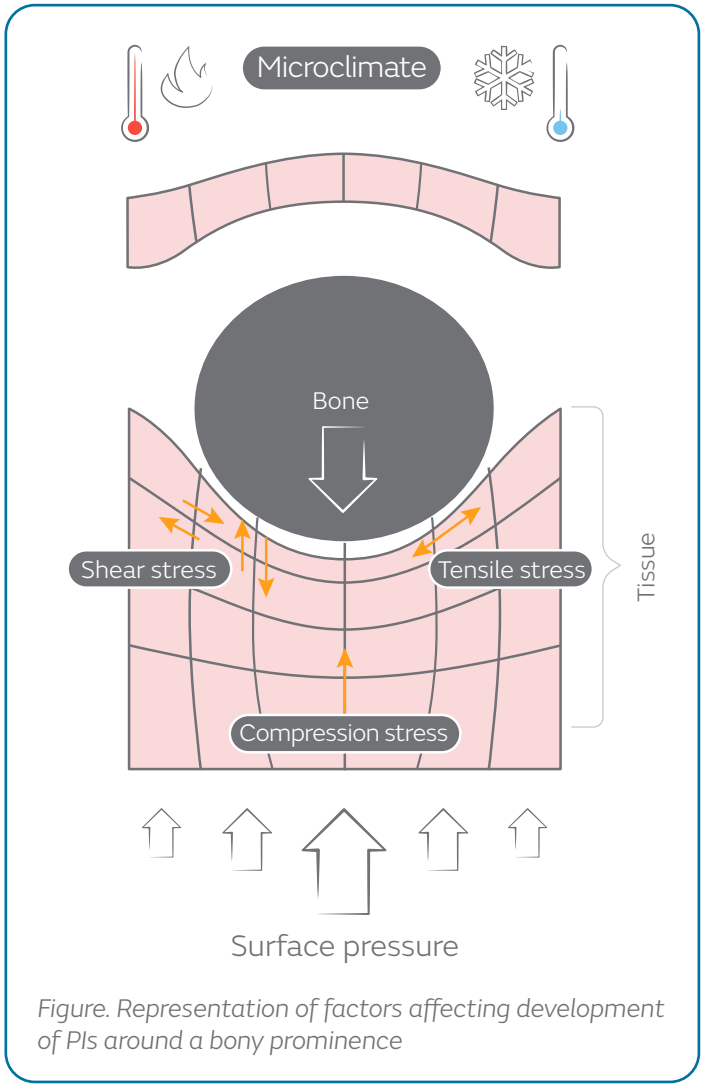


Figure. Representation of factors affecting development of PIs around a bony prominence

ALLEVYN◊ Wound Dressings and pressure redistribution

Pressure redistribution studies can demonstrate that using foam dressings helps to spread pressure across the dressing to protect against developing PIs.

One type of laboratory study, assessing pressure redistribution, uses a steel ball to represent the weight of a bony prominence in contact with the floor or a support surface (pressure sensor mat).[10]

Using this method, ALLEVYN LIFE Dressing spread pressure over a significantly greater contact area, and showed lower mean and peak pressures compared to another foam dressing (p<0.001; Figure).*[10]

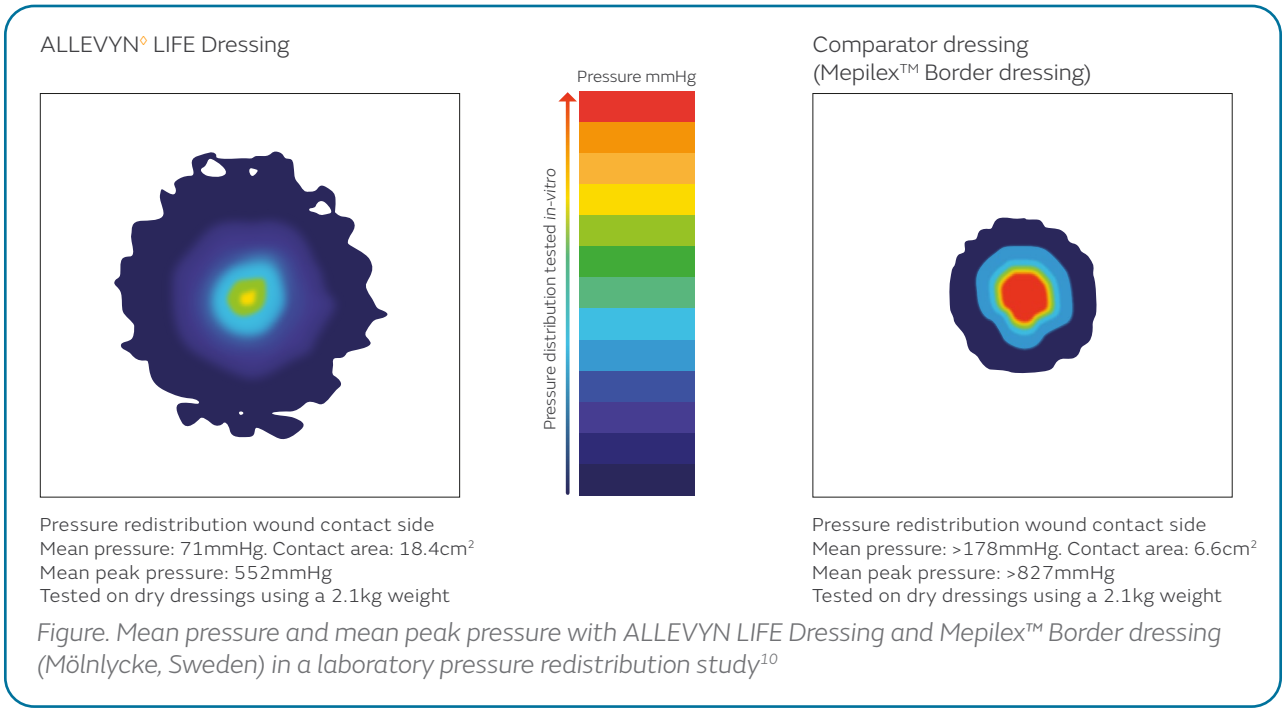


Figure. Mean pressure and mean peak pressure with ALLEVYN LIFE Dressing and Mepilex™ Border dressing (Mölnlycke, Sweden) in a laboratory pressure redistribution study[10]

Pressure mapping (redistribution) is a demonstration measuring only pressure and does not replace the need for clinical evidence of effectiveness.

*As demonstrated in laboratory testing (p<0.001).

Evidence pyramid and topics

In total, **28** **clinical publications** (and 4 publications of laboratory studies) that discuss use of ALLEVYN◊ Wound Dressings for PI prevention (including one cost analysis and five volunteer studies) were identified from a systematic literature review and are included in this evidence compendium.

Levels of evidence

4

Randomised controlled trials, systematic reviews and meta-analyses

1

Prospective, observational comparative studies

1

Retrospective, observational comparative studies

16

Case series (prospective and retrospective)

0

Case reports letters to the editor, expert opinions

Other clinical studies and a cost analysis (n=6)
Laboratory pressure redistribution studies (n=4)

Information correct up to 22 July 2021

Topic sections

Please select the relevant section to view the supporting evidence:

- ALLEVYN LIFE Dressings
- ALLEVYN GENTLE BORDER Dressings
- Other PI studies in humans
- Pressure redistribution studies

Forni C, et al.

Effectiveness of using a new polyurethane foam multi-layer dressing in the sacral area to prevent the onset of pressure ulcer in the elderly with hip fractures: A pragmatic randomised controlled trial.

Forni C, et al. *Int Wound J*. 2018;15(3):383–390.

Overview

- Pragmatic, randomised, controlled, superiority trial
- Patients aged ≥65 years with a fragility hip fracture admitted to the ER at an orthopaedic hospital in Italy
- Patients received standard preventive care alone (n=182) or with ALLEVYN◊ LIFE Dressing (n=177), applied within 24hrs of admission for the study duration (8 days)
- Standard preventive care included a reactive foam mattress (Braden score <18 and >15) or an active support surface mattress (Braden score <16); patients were moved and skin inspected every 4hrs

Results

- Significant 71% relative reduction in the incidence of sacral PUs with addition of ALLEVYN LIFE Dressing versus standard preventive care alone (8 vs 28 PUs; p=0.001; Figure)
  - NNT of 9 patients
- Significant 63% relative reduction in sacral PUs ≥Grade II with addition of ALLEVYN LIFE Dressing versus standard preventive care alone (6 vs 17 PUs; p=0.021; Figure)
- No Grade III PUs with ALLEVYN LIFE Dressing (Figure)
- Analysis of all PUs (n=50) showed a significant delay in onset with addition of ALLEVYN LIFE Dressing versus standard preventive care alone (6 vs 4 days; p=0.001)
- Despite daily dressing lifting for skin inspection, the ALLEVYN LIFE Dressing was not found to be rolled back or detached

Conclusions

Addition of ALLEVYN LIFE Dressing to standard preventive care significantly reduced the incidence of sacral PUs by 71% compared with standard preventive care alone in elderly patients with hip fracture

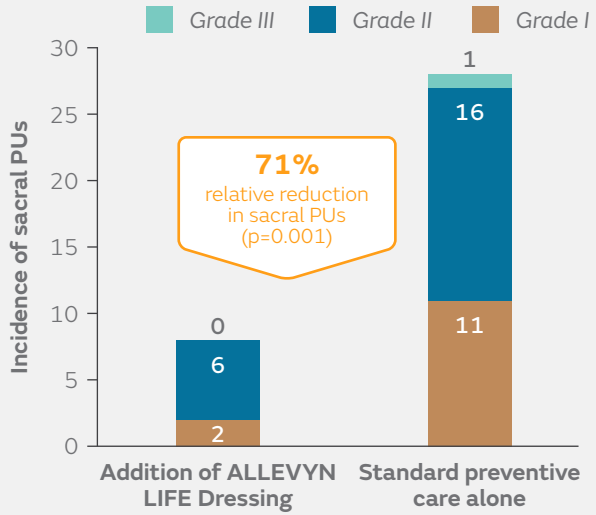


Figure. Incidence of sacral PUs by grade with standard preventive care alone or with ALLEVYN LIFE Dressing

Click here to read the economic evaluation summary

Click here to read the Evidence in focus summary

Beeckman D, et al.

Silicone adhesive multilayer foam dressings as adjuvant prophylactic therapy to prevent hospital-acquired pressure ulcers: a pragmatic noncommercial multicentre randomized open-label parallel-group medical device trial.

Beeckman D, et al. *Br J Dermatol*. 2021;185(1):52–61.

Overview

- Independent, pragmatic, randomised, controlled open-label trial at eight hospitals in Belgium
- Patients at risk of developing a HAPU (Braden score <17), admitted to hospital <48hrs previously and treated on ICU and non-ICU wards
- Pooled experimental group: ALLEVYN◊ LIFE Dressing on both hips, ALLEVYN LIFE Heel Dressing on both heels and ALLEVYN LIFE Sacrum Dressing (n=545) or Mepilex™ Border dressing on both hips, Mepilex™ Border Heel on both heels and Mepilex™ Border Sacrum dressings (n=542; Mölnlycke, Sweden), both in addition to standard care
- Control group: standard care alone (n=546); which was risk, daily skin and nutritional assessments, as well as tailored repositioning, heel offloading and skin care

Results

- Across hospital wards, compared with standard care alone, addition of foam dressings resulted in:
  - A 36% significant relative risk reduction in HAPU incidence Stage ≥II (p=0.04; Figure); NNT of 43 patients
  - A 41% significant relative risk reduction in sacral HAPUs (p=0.04; Figure)
  - A 24% non-significant relative risk reduction in heel HAPUs (1.4 vs 1.9% p=0.49)
  - Only one patient developed a HAPU at the hip in the experimental group
- No statistically significant differences in effectiveness between ALLEVYN LIFE Dressing and Mepilex™ Border dressing (exploratory analysis)

Conclusions

Addition of ALLEVYN LIFE Dressing or Mepilex™ Border dressing to standard care both significantly reduced the incidence of HAPUs (Stage ≥II) in at-risk patients across hospital wards compared with standard care alone

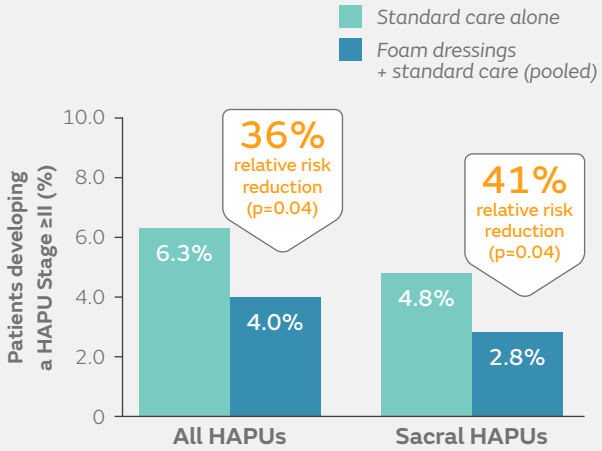


Figure. Incidence of HAPUs (%) with both foam dressings plus standard care and standard care alone in the ITT population

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Stankiewicz M, et al.

A cluster-controlled clinical trial of two prophylactic silicone sacral dressings to prevent sacral pressure injuries in critically ill patients.

Stankiewicz M, et al. *WP&R Journal*. 2019;27(1):21–26.

Overview

- A randomised, cluster-controlled clinical trial involving critically ill ICU patients at a hospital in Australia
- Incidences of sacral PIs (Stage ≥I) with ALLEVYN◊ LIFE Sacrum Dressing (n=129) and Mepilex™ Border Sacrum dressing (n=173; Mölnlycke, Sweden), used in addition to standard preventive care, were compared
- Standard preventive care included repositioning every 2–4hrs, specialised low air-loss beds, plus use of adjunct repositioning and turning aids
- Patients who were able to have a dressing applied for >24hrs without repeated dislodgement or soiling (≥3 times) were enrolled within 48hrs of ICU admission
- Patients were allocated to each dressing type in 3-month alternating clusters (three cycles per product) to minimise the potential impact of seasonal variation on admissions

Results

- Incidences of sacral PIs with ALLEVYN LIFE Sacrum Dressing and Mepilex™ Border Sacrum dressing were similar (1.6 vs 1.7%, respectively)
  - Incidence of new sacral PIs per 100 dressing days was 0.44 in both groups
- None of the nine patients with a PI on another body site at ICU admission developed a sacral PI in either group
- Number of dressings used per patient per day was 0.5 in both groups
- Daily dressing cost per patient was significantly lower with ALLEVYN LIFE Sacrum Dressing than with Mepilex™ Border Sacrum dressing (AUD $5.15 vs $7.21; p<0.001; Figure)
  - Total dressing cost per patient was also significantly reduced with ALLEVYN LIFE Sacrum Dressing (AUD $10.29 vs $28.84; p<0.001)

Conclusions

When used with standard preventive care, ALLEVYN LIFE Sacrum Dressing was as effective as Mepilex™ Border Sacrum dressing at helping to reduce sacral PI incidence in critically ill ICU patients, with 29% lower daily dressing costs per patient

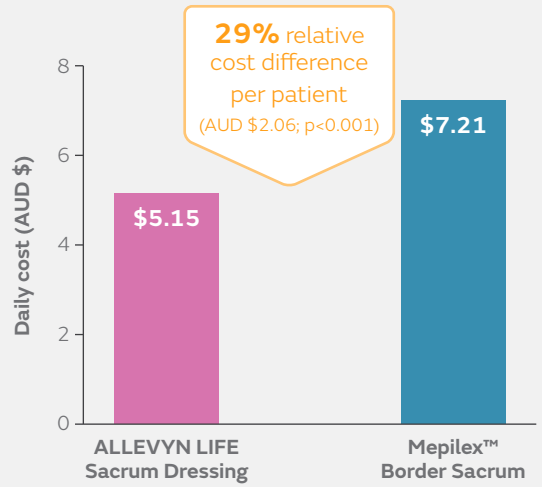


Figure. Daily dressing cost per patient with ALLEVYN LIFE Sacrum Dressing and Mepilex™ Border Sacrum dressing

Click here to read the Evidence in focus summary

McGuiness W.

Measuring microclimate; a randomized controlled trial to explore the influences of foam dressing on pressure prone areas.

McGuiness W. Presented at: 19th Annual EPUAP Meeting. 20–22 Sep 2017; Belfast, Northern Ireland.

Overview

- Assessment of microclimate over the sacrum and heels of patients in an ICU in Australia
  - Microclimate definition: changes to skin temperature, skin moisture and erythema
- Patients were randomly assigned to receive standard preventative care (n=111) or addition of ALLEVYN◊ LIFE Dressing to standard preventative care over the sacrum and heel within 24hrs of admission (n=107)
  - Mean APACHE score was 56
  - Mean age was 65 years
- Twice daily measurement of microclimate during routine turning procedures
- Skin inspection for development of PUs

Results

- Addition of ALLEVYN LIFE Dressing helped to reduce hydration at the sacrum more quickly than standard preventative care alone
- Hydration of the heels (left and right) was greater with addition of ALLEVYN LIFE Dressing than with standard preventative care alone

Conclusions

Use of ALLEVYN LIFE Dressing in addition to standard preventative care helped to normalise moisture levels of the skin, particularly at the heels

Forni C, et al.

A multilayer polyurethane foam dressing for pressure ulcer prevention in older hip fracture patients: an economic evaluation.

Forni C, et al. *J Wound Care*. 2020;29(2):120–127.

Overview

- An economic evaluation to determine the cost effectiveness of ALLEVYN◊ LIFE Dressing plus standard care for preventing sacral PUs in elderly patients with hip fractures compared with standard care alone
- A decision-analytic model was used to determine the incremental cost and effectiveness from the perspectives of Italian and US hospital systems

Results

- Use of ALLEVYN LIFE Dressing in addition to standard preventative care was cost saving and more effective than standard care alone in both Italy and the USA
- Switching to ALLEVYN LIFE Dressing plus standard preventative care would result in an estimated cost saving of (Figure):
  - €733 per patient in Italy (69% relative saving)
  - $840 per patient in the USA (68% relative saving)
- Estimated reduction in sacral PU incidence from adding ALLEVYN LIFE Dressing to standard preventative care was 10.9%
  - Applied to a cohort of 100 patients, an estimated 11 PUs would be avoided

Conclusions

Use of ALLEVYN LIFE Dressing with standard preventative care to help prevent sacral PUs in elderly patients with hip fracture was estimated to reduce overall per-patient costs of treating a PU by 69% versus standard preventative care alone

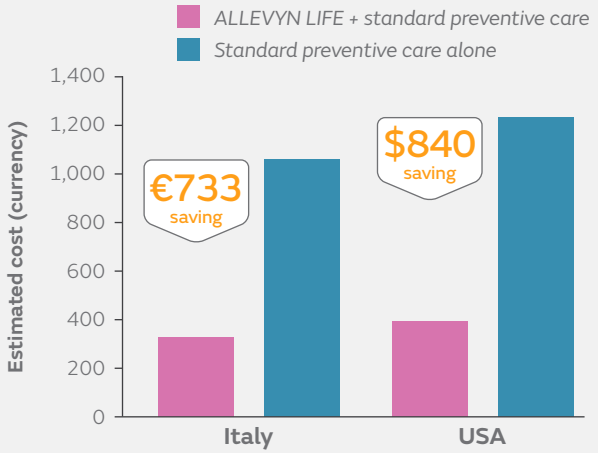


Figure. Estimated cost per patient and saving (Euros and US dollars) from adding ALLEVYN LIFE Dressing to standard preventive care versus standard preventive care alone

Click here to read the Clinical study summary

Click here to read the Evidence in focus summary

McFee K.

Implementation of medical-device related pressure injury prevention protocols: Protecting patients and caregivers with preventative dressings during the COVID-19 pandemic.

McFee K. Presented at WoundCon Spring Virtual Wound Care Conference & Expo. 12 Mar 2021; Online.

Overview

- Implementation of a comprehensive MDRPI prevention program for caregivers and high-risk patients in response to the COVID-19 pandemic at three hospitals in Missouri, USA
- A prevention protocol provided guidance to employees on use of ALLEVYN◊ LIFE Dressing with N95 masks and to caregivers of COVID-19 patients about application of ALLEVYN GENTLE BORDER Dressing on pressure points (face and anterior body)

Results

- After roll out of MDRPI protocols, along with a comprehensive education effort in all COVID-19 units:
  - Only one MDRPI of the face reported over 3 months
  - No reported complaints (high staff satisfaction)
  - No episodes of skin breakdown
  - No fit or comfort issues

Conclusions

PIP measures during the COVID-19 pandemic, including use of ALLEVYN LIFE Dressing, helped to reduce traditional PIs and MDRPIs. Data collection is ongoing to evaluate sustainability of the MDRPI protocol for clinicians

Gabriel OS.

Reducing HAPIs through focusing on Braden Scale subcategories.

Gabriel OS. Presented at: WOCNext Conference. 23–26 Jun 2019; Nashville, TN, USA.

Overview

- A strategy to improve HAPI prevention awareness and assessments at Zuckerberg San Francisco General Hospital, USA
- Implementation of a standard work sheet, with use of ALLEVYN LIFE Dressing for patients with a Braden Scale score ≤2 (Friction and Sensory subcomponents), in addition to:
  - Repositioning, protection from devices and equipment, offloading and improvements in patient handling logistics

Results

- Implementation of strategic prevention initiatives, including use of ALLEVYN LIFE Dressing for high-risk patients, reduced the incidence of reportable HAPIs by 72%, from 32 in 2016–2017 to 9 in 2017–2018 (July to May)
  - 90% in medical surgical units (from 20 to 2 HAPIs)
  - 42% on the ICU (from 12 to 7 HAPIs)

Conclusions

Use of ALLEVYN LIFE Dressing for one year, as part of a HAPI prevention strategy at one US hospital, helped to reduce the incidence of reportable HAPIs in medical surgical units and the ICU compared with the previous year

Click here to read the Evidence in focus summary

Francisco SF.

Hospital-acquired pressure injury turnaround project: how a medical surgical unit decreased HAPI by aligning its goals and initiatives with organization goals and initiatives in BHMC to zero hospital-acquired pressure injuries (HAPI) “One unit, one team, one common goal”.

Francisco SF. Poster presented at: NPUAP. 2–3 Mar 2018; Las Vegas, NV, USA.

Overview

- A performance improvement initiative at the medical–surgical unit of the Brookdale Hospital Medical Center (BHMC), New York, USA
- Interventions included prophylactic use of ALLEVYN◊ LIFE Dressing on patients at high risk of PIs and a new skin care protocol using SECURA◊ Skin Care
- In addition, there was an education plan (importance of HAPI prevention, heel boot use, turning and positioning, Braden scale), new HAPI prevention policies and treatment protocols, regular skin assessments, nutrition and rehabilitation in-service

Results

- For all inpatient units, the HAPI incidence decreased each quarter in 2017 versus 2016 after implementation of the initiative including ALLEVYN LIFE Dressing and SECURA Skin Care.
- In the medical–surgical unit, the incidence of HAPIs was reduced by 40–60% each quarter during 2017 after implementation, whereas HAPIs increased from Q2 to Q4 during 2016
- After implementation, more of the unavoidable HAPIs were identified at Stage I or II than before the initiative

Conclusions

Implementation of a performance improvement initiative, particularly the use of ALLEVYN LIFE Dressing and SECURA Skin Care combined with consistency in nursing practice, in addition to changes in hospital policy and available resources, helped to reduce the incidence of HAPIs in high-risk patients in this medical–surgical unit

Hughes J, et al.

HAPI reduction: a comprehensive approach; a 3-year story.

Hughes J, et al. Poster presented at: WOCN. 3–5 Jun 2018; Philadelphia, PA, USA.

Overview

- A three-year plan (2015–2017) to sustain a reduction in HAPIs and to reduce overall HAPI incidence further by using additional prevention modalities at a trauma center in Dallas, USA
- Initial placement of multiple prevention modalities, including:
  - Two-hour turning schedule, offloading devices and turn and positioning system (TAPS)
  - Use of ALLEVYN◊ LIFE Dressing
  - Education of staff, patients and their families

Results

- HAPI incidence was reduced by 88% over a 3-year period (50% reduction year after year), with only 4 HAPIs occurring the last year on the ICU (from 48 HAPIs in 2014 to 4 in 2017)
- Use of ALLEVYN LIFE Dressing as an additional prevention modality increased by 75% over 3 years
  - Number of dressings used was 1,516 in 2015, 2,696 in 2016 and 5,147 in 2017

Conclusions

Implementation of a HAPI prevention program with multiple prevention modalities, including use of ALLEVYN LIFE Dressing, reduced the incidence of HAPIs on the ICU over a three-year period

Austin M.

Implementation of a medical device related pressure injury prevention bundle: a multidisciplinary approach.

Austin M. Poster PI-002 presented at: SAWC Fall. 12–14 Oct 2019; Las Vegas, NV, USA.

Overview

- A quality improvement project, including an MDRPI prevention bundle, in response to increased MDRPIs at six US hospitals
  - Mean MDRPI incidence increased from 21.6% in 2018 to 35.0% in the first two quarters of 2019
- Initiatives included:
  - Interventions specific to common medical devices, such as use of ALLEVYN◊ LIFE Dressing under medical devices, periodic assessment and repositioning, and application of skin barrier film on otherwise exposed areas
  - Expansion of a multidisciplinary approach for implementation
  - Adoption of the bundle in all hospital settings

Results

- After implementation of the prevention bundle, including use of ALLEVYN LIFE Dressing, the incidence of MDRPIs decreased to zero in Q4 2019 (vs 40% in Q1 2019 and 27% in Q2 2019 prior to intervention)
  - In financial year 2019, the incidence of MDRPIs was 20%
- PI incidence also decreased after bundle implementation from 2.3% in Q2 to 0.8% in Q4 2019

Conclusions

Implementation of an MDRPI prevention bundle, including guidance for use of ALLEVYN LIFE Dressing, helped to reduce MDRPIs incidence to zero across six US hospitals

Click here to read the Evidence in focus summary

Hubbard D.

Results of a pre-operative pressure ulcer prevention program in a cardiovascular intensive care unit.

Hubbard D. Poster presented at: SAWC Spring. 25–29 Apr 2018; Charlotte, NC, USA.

Overview

- Implementation of the first PU prevention program and sacral dressing protocol for open heart surgery patients in Petersburg (USA) at a new cardiac unit
- From Jun 2015 to Oct 2017, 116 patients and their families completed a PU education and prevention program before surgery
- ALLEVYN◊ LIFE Sacrum Dressing was applied to at-risk patients prior to cardiac surgery and left in place until patients could ambulate for 180 feet at least twice per day and until haemodynamic stability was achieved

Results

- No PUs were reported in cardiac surgery patients after implementation of a PU prevention program that included use of ALLEVYN LIFE Sacrum Dressing

Conclusions

Implementation of a pre-operative PU prevention program, including prophylactic use of ALLEVYN LIFE Sacrum Dressing in the dressing protocol, helped to successfully prevent sacral PUs in cardiac surgery patients

Sammon M.

Driving to zero: Best practices in pressure injury prevention.

Sammon M. Presented at: 5th WUWHS Symposium. 25–29 Sep 2016; Florence, Italy.

Overview

- ICU program to reduce the incidence of PIs occurring in the OR, or that occurred within 3 days of a surgical procedure lasting >3hrs, at the Cleveland Clinic, USA
- ALLEVYN LIFE Dressing was used on the sacral area and heels and remained in place for ≥3 days, with daily skin inspections for at-risk patients
- PI prevention protocol also included skin moisturisers and barrier ointments, patient turning every 2hrs, nutrition and low air loss beds

Results

- In 2012, HAPI incidence was 4.5%, which fell to 3.8% using the initial foam dressing (1 Nov 2012 to 31 Mar 2013)
- After switching to ALLEVYN LIFE Dressing, PI incidence fell further to 2.3% (1 Nov 2013 to 31 Mar 2014) and was 1.5% in Q4 2014
- Switching from the previous dressing to ALLEVYN LIFE Dressing provided savings of US$88,000 in product costs during the study period

Conclusions

Proactive use of ALLEVYN LIFE Dressing on bony prominences in high- and severe-risk patients as part of a PI prevention protocol helped to reduce PI incidence in the OR and ICU and provided cost savings compared with the previous choice of foam dressing

Swafford K, et al.

Use of a comprehensive program to reduce the incidence of hospital-acquired pressure ulcers in an intensive care unit.

Swafford K, et al. *Am J Crit Care*. 2016;25(2):152–155.

Overview

- A year-long HAPU prevention program (2013) on a combined medical/surgical ICU at Eskenazi Health, Indianapolis, USA, aiming to reduce HAPUs by ≥50% compared with 2011
- The program included use of Braden scores, a revised skin care protocol, fluidised repositioners, and silicone gel adhesive dressings
- Staff were educated on HAPU prevention and how to identify patients at risk of HAPUs
- Addition of ALLEVYN◊ LIFE Dressing was implemented in Q2 2013

Results

- After implementation of the program, there was a 69% relative reduction in the incidence of HAPUs
  - From 45 of 461 patients in 2011 to 17 of 563 patients in 2013
- The potential cost saving as a result of this decrease was approximately $1 million in 2013, based on NDNQI mean costs
- MDRPI incidence also decreased from 9 of 461 patients in 2011 (2%) to 2 out of 563 in 2013 (0.4%), partly due to the use of dressings underneath cervical collars

Conclusions

Use of ALLEVYN LIFE Dressing as part of a comprehensive, proactive, collaborative HAPU prevention program effectively reduced the incidence of HAPUs and MDRPIs in ICU patients

Milne C.

After the fact: Use of a multi-layered silicone adhesive hydrocellular foam dressing in the prevention of reinjuring recently resolved pressure ulcers/injuries.

Milne C. Poster presented at: WOCN Society. 4–8 Jun 2016; Montreal, Canada.

Overview

- An evaluation of 20 patients in long-term care with a history of repeated reinjury PI sites
- ALLEVYN LIFE Dressing was applied to the affected site for 30 days (changed weekly or as needed) instead of standard preventative care of 3 times daily application of moisture barrier creams or ointments
- Weekly skin checks occurred for 4 weeks then for an additional 4 weeks after discontinuation of dressings and the patient was transitioned to standard preventative care

Results

- Previous PI sites remained intact with use of ALLEVYN LIFE Dressing
- ALLEVYN LIFE Dressing was mostly applied to the sacral area and remained in place for 7 days
- The site of a previous PI re-opened for only one patient after transitioning back to a moisture barrier ointment
- Mean wear time was 4.5 days (range: 2–7 days)

Conclusions

As part of a PI prevention plan, use of ALLEVYN LIFE Dressing over resolved PIs helped to prevent re-opening of PIs compared with standard preventative care when used in a long-term care setting

Clarke B.

Positive patient outcomes: The use of a new silicone adhesive hydrocellular foam dressing for pressure ulcer prevention and treatment.

Clarke B. Presented at: CAET Conference. 8–12 May 2013; Toronto, Canada.

Overview

- Introduction of ALLEVYN◊ LIFE Dressing to help reduce the incidence of, and effectively manage, PUs in two hospital units in Canada
- The neurological care unit evaluated the dressing on the coccyx, elbows and heels of nine patients as an addition to the existing PU prevention protocol
- The medical activation unit evaluated the dressing on six patients for wound management

Results

- Nurses found ALLEVYN LIFE Dressing gentle on the skin and easy to apply/remove
- Dressings fitted body contours well and stayed in place
- Patients reported low pain on dressing application/removal (used for prevention and management)
- Where ALLEVYN LIFE Dressing was used for wound management PUs decreased in size; fluid management and appearance of the wound/periwound skin were rated highly
- Patients with high risk of skin damage, where the dressing was used for PU prevention, did not exhibit skin breakdown during the study

Conclusions

Both patients and staff were extremely positive about ALLEVYN LIFE Dressing, which was effective in this patient population for managing PUs, and as a useful addition to a comprehensive PU prevention program

Lisco C.

Evaluation of a new silicone gel-adhesive hydrocellular foam dressing as part of a pressure ulcer prevention plan for ICU patients.

Lisco C. Poster presented at: WOCN. 22–26 Jun 2013; Seattle, WA, USA.

Overview

- To evaluate the impact of using ALLEVYN LIFE Dressing to help reduce the incidence of PUs among ICU patients
- A pre-market evaluation was conducted as part of a comprehensive plan to reduce sacral/coccyx PUs in a medical/surgical/neurological ICU (n=22)
- Mean Braden Scale score was 12.3

Results

- The majority of respondents rated use of ALLEVYN LIFE Dressing as 'excellent' or 'very good' for:
  - Ease of application, ease of removal, conformability and ease of re-application after skin inspection (100% each)
  - Ability to remain adhered without rolling (94%)
- Skin remained intact throughout wear of ALLEVYN LIFE Dressing
- A Stage I PU and a moisture lesion present on admission both resolved
- Mean wear time was 4 days

Conclusions

Use of ALLEVYN LIFE Dressing as part of a PI prevention program was rated highly by nurses and patients

Lee YJ, et al.

Use of prophylactic silicone adhesive dressings for maintaining skin integrity in intensive care unit patients: A randomised controlled trial.

Lee YJ, et al. *Int Wound J.* 2019;16(Suppl 1):36–42.

Overview

- A randomised, controlled trial to evaluate use of ALLEVYN◊ GENTLE BORDER Dressing to help reduce PIs and impaired skin integrity in critically ill patients at two ICUs in the Republic of Korea
- A total of 66 patients (mean age, 61 years) received standard preventive care alone (n=31) or with the addition of ALLEVYN GENTLE BORDER Dressing (n=35) applied to the sacrum, buttocks and coccyx (sacral area)
- Skin inspections were performed daily by staff nurses and every 3 days by specialist nurses
- Subepidermal moisture (SEM) at the sacrum, buttocks and coccyx was assessed three times per site using a moisture meter; blanching erythema was assessed by visual inspection

Results

- Compared with standard preventive care alone, ALLEVYN GENTLE BORDER Dressing plus standard preventive care had:
  - A lower incidence of Stage I PIs (2.9 vs 29.0%; p=0.006; Figure)
  - A reduced incidence of impaired skin integrity (17.1 vs 48.4%; p=0.003; Figure)
  - A similar incidence of blanching erythema (5 vs 6 patients, respectively)
- Mean SEM was significantly greater for patients with PIs versus those without (p<0.0001)
- Mean SEM was significantly greater at sites where PIs and blanching erythema developed compared with sites on intact skin in the same patient (p=0.0001 and p=0.0003, respectively)

Conclusions

Use of ALLEVYN GENTLE BORDER Dressing with standard preventive care helped to significantly reduce the incidence of Stage I PIs by 90% and impaired skin integrity by 65% in the sacral area when compared to standard care alone in critically ill ICU patients

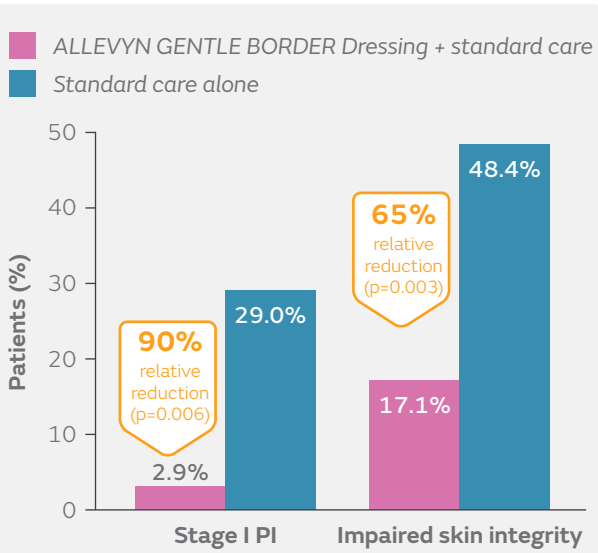


Figure. Incidences of Stage I PIs and impaired skin integrity with ALLEVYN GENTLE BORDER Dressing plus standard care or standard care alone

Click here to read the Evidence in focus summary

Byrne J, et al.

Prophylactic sacral dressing for pressure ulcer prevention in high-risk patients.

Byrne J, et al. *Am J Crit Care*. 2016;25(3):228–234.

Overview

- Prospective, observational study to determine the effect of introducing ALLEVYN◊ GENTLE BORDER Sacrum Dressing on the incidence of PUs at the sacrum, buttocks and coccyx
- PU incidence was assessed 7 months prior to and 7 months following the introduction of prophylactic ALLEVYN GENTLE BORDER Sacrum Dressing and was reported standardised per 1,000 patient days
- Data were collected from 200 patients at high risk of developing PUs across three ICUs (surgical coronary care unit, medical coronary care unit and medical ICU) at a single treatment centre in the USA
- Nurses performed skin inspections at least every 12hrs and changed the dressing every 3 days

Results

- Use of ALLEVYN GENTLE BORDER Sacrum Dressing reduced the incidence of sacral PUs in all three ICUs compared with prior practice (all p=ns; Figure)
- The surgical coronary care unit had the greatest reduction in sacral PU incidence (Figure)
- Mean dressing wear time was 3.26 days
- Nurses rated ALLEVYN GENTLE BORDER Sacrum Dressing positively for wear time, patient comfort and safety, as well as ease of application/removal and repositioning
- Five patients discontinued dressing use (3 deep tissue injuries, 1 Stage I PU, 1 sacral blister)

Conclusions

Prophylactic use of ALLEVYN GENTLE BORDER Sacrum Dressing in high-risk patients reduced the incidence of PUs on the sacrum, buttocks and coccyx in all three ICUs compared with prior practice

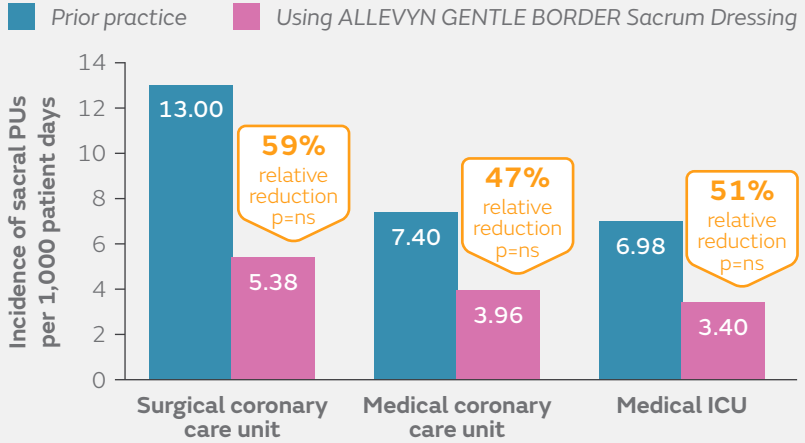


Figure. Incidence of sacral PUs per 1,000 patient days in three ICUs before and after implementation of ALLEVYN GENTLE BORDER Sacrum Dressing

Click here to read the Evidence in focus summary

McFee K.

Implementation of medical-device related pressure injury prevention protocols: Protecting patients and caregivers with preventative dressings during the COVID-19 pandemic.

McFee K. Presented at WoundCon Spring Virtual Wound Care Conference & Expo. 12 Mar 2021; Online.

Overview

- Implementation of a comprehensive MDRPI prevention program for caregivers and high-risk patients in response to the COVID-19 pandemic at three hospitals in Missouri, USA
- A prevention protocol provided guidance to caregivers for the application of ALLEVYN◊ GENTLE BORDER Dressing on pressure points (face and anterior body) for COVID-19 patients, and for employees on use of ALLEVYN LIFE Dressing with N95 masks

Results

- After roll out of MDRPI protocols, along with a comprehensive education effort in all COVID-19 units, there were:
  - Only one MDRPI of the face reported over 3 months
  - No reported complaints (high staff satisfaction)
  - No episodes of skin breakdown
  - No fit or comfort issues

Conclusions

PIP measures during the COVID-19 pandemic, including use of ALLEVYN LIFE Dressing, helped to reduce traditional PIs and MDRPIs. Data collection is ongoing to evaluate sustainability of the MDRPI protocol for clinicians

Coggins TD, et al.

Using a hydrocellular foam dressing with silicone adhesive as part of a comprehensive pressure ulcer prevention plan: Results from five US hospital ICUs.

Coggins TD, et al. Poster presented at: Annual SAWC Meeting. 19–22 Apr 2012; Atlanta, GA, USA.

Overview

- Evaluation of ALLEVYN GENTLE BORDER Dressing as part of a PU prevention plan at regional medical and/or trauma centre ICUs in the USA
- Data were available from four sites:
  - West coast (n=34)
  - Northeast (n=27)
  - Central (n=39)
  - Southern (n=20)
- ICUs continued routine PU prevention and applied the dressing to the sacral/coccyx area based upon local risk criteria

Results

- Mean length of stay was 6.7 days
- Mean dressing wear time was 5 days
- No patients experienced skin breakdown

Conclusions

Use of ALLEVYN GENTLE BORDER Dressing as part of an comprehensive PU prevention plan helped to prevent skin breakdown in ICU patients

Wang L, Zhao Y, Ma J. *Chest.* 2016;149(4):A161.	[Effect of a noninvasive adhesive dressing (ALLEVYN◊) to prevent pressure ulcers caused by ventilators.]	
Forni C, et al. *J Clin Nurs.* 2011;20(5-6):675–680.	Use of polyurethane foam inside plaster casts to prevent the onset of heel sores in the population at risk. A controlled clinical study.	

Niezgoda JA, et al.

In vitro characterization of pressure redistribution among commercially available wound dressings.

Niezgoda JA, et al. *Adv Skin Wound Care*. 2021;34(3):139–142.

Overview

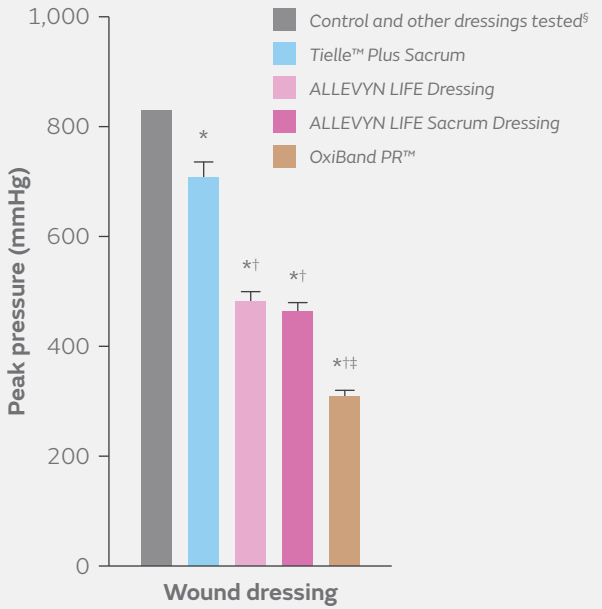
- An independent *in vitro* study to investigate the pressure reduction properties of 13 commercially available wound dressings
- A standardised protocol (1.7kg, 7.5cm sphere), for pressure mapping studies was used to compare the pressure force mitigation properties in a variety of wound dressings versus control (no dressing/interface), including ALLEVYN◊ LIFE Dressing and ALLEVYN LIFE Sacrum Dressing
- Each study dressing was sequentially tested three times in the same order by the same investigator

Results

- Of the foam dressings evaluated,§ ALLEVYN LIFE Dressing, ALLEVYN LIFE Sacrum Dressing, Tielle Essential™ and Tielle™ Plus Sacrum (Kinetic Concepts, Inc., San Antonio, USA) demonstrated the lowest mean pressures and the highest (largest) contact areas versus control
  - The oxygenated composite dressing OxyBand PR™ (OxyBand™ Technologies, St Louis, USA) performed best overall
- Peak pressure was only significantly different versus control for three foam dressings ALLEVYN LIFE Dressing, ALLEVYN LIFE Sacrum Dressing and Tielle™ Plus Sacrum, as well as for the oxygenated composite dressing OxyBand™ PR ($p<0.0001$; Figure)

Conclusions

ALLEVYN LIFE Dressing and ALLEVYN LIFE Sacrum Dressing decreased pressure forces and dispersed pressure over a wide surface area



*p<0.0001 versus control
†p<0.05 versus Tielle™ Plus Sacrum
‡p<0.05 versus ALLEVYN LIFE Dressing and ALLEVIN LIFE Sacrum Dressing

Figure. Peak pressure with the best performing foam dressings and with OxyBand PR™ versus control

§Other dressings were: Aquacel™ Foam dressing (ConvaTec, UK); Cutimed™ Siltec B dressing (Essity Medical Solutions, UK); Drawtex™ and Drawtex™ Surgical dressings (Beier Drawtex Healthcare, South Africa); Eclypse™ Adherent dressing (Advancis Medical, UK); Mepilex™ Border and Mepilex™ Border Heel dressings (Mölnlycke, Sweden); Optimfoam™ dressing (Medline International BV, the Netherlands); Tielle Essential™ (3M KCI, USA).

Matsuzaki K, Kishi K.

Investigating the pressure-reducing effect of wound dressings.

Matsuzaki K, Kishi K. *J Wound Care*. 2015;24(11):512, 514–517.

Overview

- An investigation into the pressure reducing effects of different dressings, including ALLEVYN◊ GENTLE BORDER Dressing, ALLEVYN NON-ADHESIVE Dressing and ALLEVYN ADHESIVE Dressing
- Pressure was measured in a model that simulated compression on the sacral region
- Pressure was measured for different dressings: ten products, consisting of five types of material (polyurethane foam, hydropolymeric, Hydrofiber™, hydrocolloid, and low-adherent absorbent) versus control (no dressing)

Results

- ALLEVYN NON-ADHESIVE Dressing had the lowest pressure (35.8±1.2 mmHg) compared with control (74.7±1.4 mmHg; p<0.0001)
- Pressures for ALLEVYN ADHESIVE Dressing and ALLEVYN GENTLE BORDER Dressing were 44.2±0.8 mmHg and 47.0±1.5mmHg, respectively
- All ALLEVYN Wound Dressings tested had significantly lower pressures than the other foam dressings tested (Mepilex™ Border; Mölnlycke, Sweden, and Biatain™ Silicone, Coloplast, UK; p<0.01)

Conclusions

ALLEVYN Wound Dressings showed the greatest pressure reductions compared with control of all dressings evaluated in this study

McFee K. Poster presented at: SAWC Spring/WHS Virtual Meeting. 24–26 Jul 2020; Online.	Implementation of a pressure injury prevention program: integrating preventative dressings, pressure redistribution surfaces, comprehensive education, and appropriate patient interventions.	
McFee K. Poster presented at: SAWC Fall Annual Meeting. 12–14 Oct 2019; Las Vegas, USA.	The role of polyurethane foam multi-layer dressings in combination with pressure redistribution surfaces in reducing peak pressure to minimize pressure injury.	

References

1. Boyko TV, Longaker MT, Yang GP. Review of the current management of pressure ulcers. *Adv Wound Care*. 2018;7(2):57–67.
2. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and treatment of pressure ulcers/injuries: quick reference guide. Emily Haesler (Ed.). EPUAP/NPIAP/PPPIA: 2019. Available at: http://www.internationalguideline.com/static/pdfs/Quick_Reference_Guide-10Mar2019.pdf - Last accessed August 2021.
3. National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and treatment of pressure ulcers: quick reference guide. Emily Haesler (Ed.). Cambridge Media: Osborne Park, Australia; 2014. Available at: https://www.epuap.org/wp-content/uploads/2016/10/quick-reference-guide-digital-npuap-epuap-pppia-jan2016.pdf - Last accessed August 2021.
4. Li Z, Lin F, Thalib L, Chaboyer W. Global prevalence and incidence of pressure injuries in hospitalised adult patients: a systematic review and meta-analysis. *Int J Nurs Stud*. 2020;105:103546.
5. Langemo DK, Melland H, Hanson D, Olson B, Hunter S. The lived experience of having a pressure ulcer: a qualitative analysis. *Adv Skin Wound Care*. 2000;13(5):225–235.
6. Wassel CL, Delhougne G, Gayle JA, Dreyfus J, Larson B. Risk of readmissions, mortality, and hospital-acquired conditions across hospital-acquired pressure injury (HAPI) stages in a US National Hospital Discharge database. *Int Wound J*. 2020;17(6):1924–1934.
7. Smith+Nephew 2016. Wound model testing of new ALLEVYN◊ LIFE Gen2 wcl dressing using horse serum at a flow rate modelling that of a moderately exuding wound. DS/14/303/R.
8. Smith+Nephew 2016. Product performance of next generation ALLEVYN LIFE. Internal report. (HVT080) GMCA-DOF/08.
9. Lisco C. Evaluation of a new silicone gel-adhesive hydrocellular foam dressing as part of a pressure ulcer prevention plan for ICU patients. Paper presented at the Wound Ostomy and Continence Nurses Society annual conference; 22–26 June 2013, Seattle, USA.
10. Smith+Nephew 2018. Pressure redistribution testing of ALLEVYN LIFE vs Mepilex™ Border and Optifoam™ Gentle SA. Internal report. DS/18/351/R.
11. Smith+Nephew 2016. New ALLEVYN LIFE Gen2 wcl - physical testing. Internal report. DS/15/025/R.
12. Smith+Nephew 2016. Permeability of hydrophillic polyurethane film when in contact with water and water vapour (ALLEVYN LIFE). Internal report. RD/16/019.
13. Smith+Nephew June 2016. Bacterial barrier properties of new ALLEVYN◊ LIFE Gen 2 WCL against Serratia marcescens. Internal report. DOF 1606005.
14. Smith+Nephew 2019. Properties of ALLEVYN LIFE advanced wound care dressing that can contribute to the effective use as part of a pressure injury prevention protocol. Internal report. RD/19/177.
15. Rossington A, Drysdale K, Winter R. Clinical performance and positive impact on patient wellbeing of ALLEVYN LIFE. *Wounds UK*. 2013;9(4):91–95.
16. Smith+Nephew 2016. A randomised cross-over clinical evaluation to compare performance of ALLEVYN◊ LIFE and Mepilex™ Border dressings on patient wellbeing-related endpoints. Internal report. CE/047/ALF.
17. Viamontes L, Jones AM. Evaluation study of the properties of two adhesive foam dressings. *Br J Nurs*. 2003;12(11):S43–S49.
18. Clarke R. Positive patient outcomes: the use of a new silicone adhesive foam dressing for pressure ulcer prevention and treatment. Presentation at the Canadian Association for Enterostomal Therapy; 8–12 May 2013, Toronto, Canada.
19. Hurd T, Gregory L, Jones A, Brown S. A multi-centre in-market evaluation of ALLEVYN GENTLE BORDER. *Wounds UK*. 2009;5(3):32–44.
20. Smith+Nephew 2016. ALLEVYN GENTLE BORDER Heel Gen 2 - physical evaluation. Internal report. DS/16/465/R.
21. Smith+Nephew 2017. ALLEVYN GENTLE BORDER Gen 2 - physical evaluation. Internal report. DS/16/424/R V3.
22. Smith+Nephew 2015. Cutting of ALLEVYN variants. Internal report. DS/14/318/R.
23. Rafter L, Reynolds T, Rafter M. An audit of patient outcomes in the management of skin tears using silicone dressings. *Wounds UK*. 2016;12(2):70–78.
24. Smith+Nephew 2017. An open, prospective, randomised, comparative volunteer trial to compare the performance of silicone adhesive dressings. Internal report. GMCA-DOF-10.
25. Smith+Nephew 2008. ALLEVYN GENTLE BORDER dressings assessment in terms of retention on thighs - HVT046. Internal report. GMCA-DOF/04.
26. Smith+Nephew 2021. PMS 274 ALLEVYN◊ Gentle Border Lite: PMCF activity summary report. Internal report. EO.AWM.PCS0207.002.v1
27. Smith+Nephew 2010. ALLEVYN Gentle Border Lite Dressing physical properties. Internal report. DS/10/100/R1.
28. Smith+Nephew 2021. Pressure transmission of face mask over ALLEVYN GENTLE BORDER and Mepilex™ Border Lite. Internal report. DS/21/274/R.
29. Smith+Nephew 2021. Pressure redistribution testing of ALLEVYN GENTLE BORDER LITE. Internal report. DS/21/336/R.
30. Smith+Nephew 2012. Friction Testing Comparison of ALLEVYN GENTLE BORDER LITE versus other competitor products. Internal report. DS/11/125/R1.
31. Smith+Nephew 2019. Properties of ALLEVYN LIFE advanced wound care dressing that can contribute to the effective use as part of a Pressure Injury Prevention protocol. Internal report. RD/19/177.
32. International review. Pressure ulcer prevention: pressure, shear, friction and microclimate in context. A consensus document. *Wounds International*. 2010. Available at: https://www.woundsinternational.com/resources/details/international-review-pressure-ulcer-prevention-pressure-shear-friction-and-microclimate-context - Last accessed: August 2021.
33. Matsuzaki K, Kishi K. Investigating the pressure-reducing effect of wound dressings. *J Wound Care*. 2015;24(11):512, 514–517.

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