Mölnlycke®

Pressure injury prevention in the operating room

Contents

A worldwide health problem

The operating room is a significant risk factor for pressure injuries (PIs). The main challenge with the prevention and treatment of PIs lies in the delayed appearance of these injuries, which can develop within the first 30 minutes of your patient's surgery, but only become evident post-operatively[1].

According to the AORN guidelines tissue damage can continue to progress for up to 5 days following surgery, even after pressure has been relieved[2].

We need to understand and prevent pressure injuries together within the operating room.

Postoperative PIs occur in **19% of surgical patients**[3]

only **5%** of injuries are visible within 24 hours of long (>4 hours) surgeries

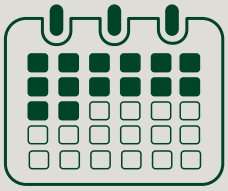
58% become apparent days later, underscoringthe critical need for proactive prevention and postoperative assessment[4]

A growing burden on patients and healthcare systems

The consequences of Hospital Acquired Pressure Injuries (HAPIs) in the operating room extend far beyond the immediate medical setting, they can have lasting effects on healthcare systems, hospital budgets, and lives of patients and their families.

The financial impacts

Around the world, healthcare budgets are strained from the burden of pressure injuries.



HAPI's increase hospital stays by up to **14 days or more** for severe case[5]

450% increase in mortality due to pressure injuries[6]

Average **per-patient cost** of **$10,708**[5]

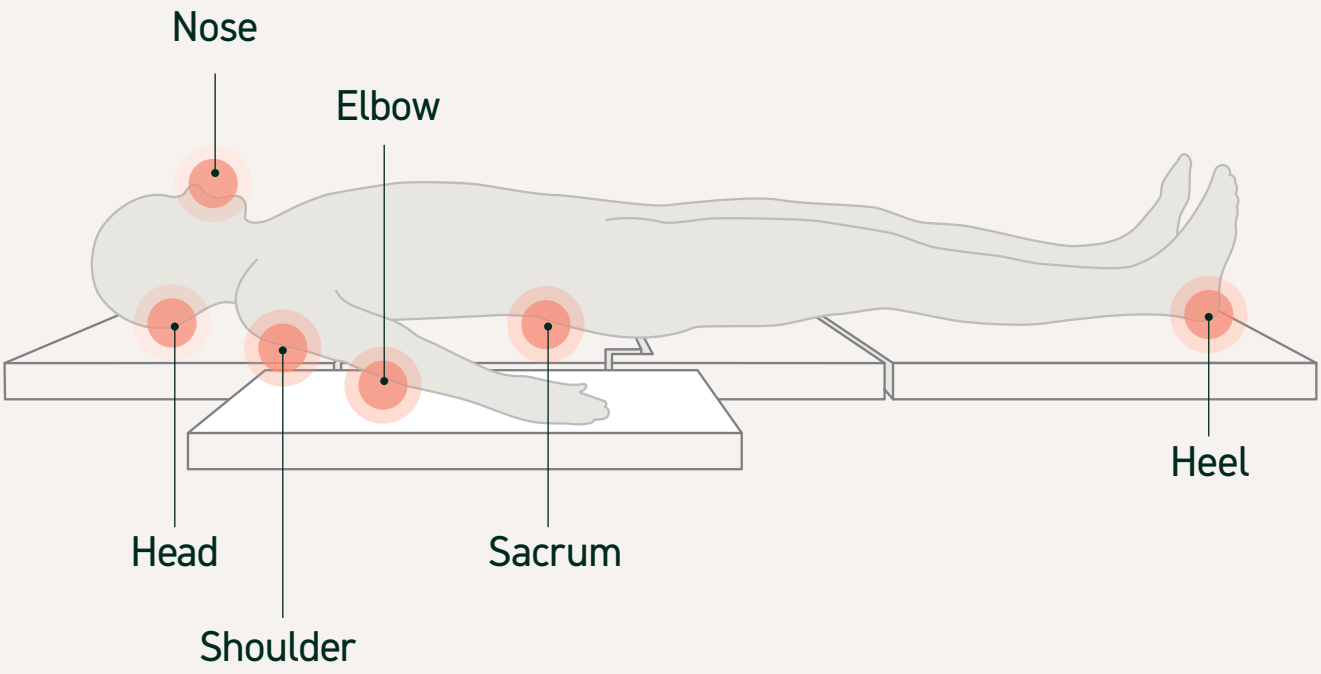
For healthcare systems, the management and treatment of these injuries add an additional layer of complexity to patient care, requiring extra resources, budget and time.

The impact on patients and families

Up to **60,000 deaths** annually in the U.S. are linked to HAPI-related complications[7]

High risk surgeries

Certain surgical specialties have been identified as higher risk for the development of pressure injuries due to the nature of the procedures and the positions patients must maintain during surgery.



These positions, combined with the length of surgery, significantly increase the likelihood of developing pressure injuries.

Orthopaedic surgery:

5.2% of geriatric hip fracture repairs[8]

Neurosurgery:

5.6% incidence overall[9], rising to 26% within 1 day post-surgery[10]

Cardiac surgery:

up to **30%**[11]

Vascular surgery:

up to 55%, highest in lower limb amputations[12]

Oncology surgery:

40.9% pressure injury incidence in conventional care vs. **11.8%** with enhanced protocols[13]

Key risk factors

There are key risk factors that you need to consider when preventing hospital-acquired pressure injuries (HAPI's) for your patients.

Prolonged surgeries:

Surgeries **over 2 hours** increase the risk of pressure injuries (Association of PeriOperative Registered Nurses (AORN), 2025), over 4 hours triples the risk[13]

Body Mass Index (BMI):

High (≥35 kg/m² and **low (<18 kg/m²** body weights **increases pressure injury risks**[16]

Age:

Patients **over 60 are at greater risk** of developing HAPI's in the OR vs younger patients

For every additional year the risk increases by **6%**[14]

Comorbidities:

Conditions like **diabetes, cardiovascular disease, hypertension**, and **heart failure can reduce tissue oxygenatio**n, increasing the risk of pressure injuries[17]

Surgical positioning:

Pressure injuries are exacerbated by prone or lateral positioning[15]

Pharmacologic agents:

Vasopressors and **inotropic medications play a role in the development of pressure injuries** by inducing vasoconstriction and decreasing peripheral blood flow[18]

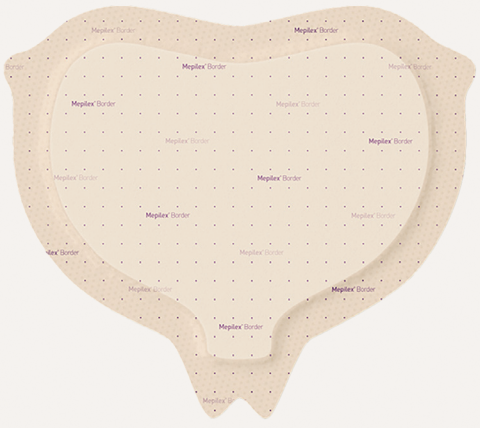
The solutions

Preventing HAPIs in your surgeries starts with making early interventions.

The AORN 2025 guidelines recommend prophylactic dressings on bony prominences to reduce shear and pressure forces[19]. Using silicone foam dressings under continuous positive airway pressure/Bilevel positive airway pressure masks help to prevent facial pressure injuries.

Mepilex® Border Sacrum and Mepilex® Border Heel are the only dressings with proprietary Deep Defense® technology.

- Deep Defense® technology reduces tissue deformation leading to fewer PIs.
- Safetac® technology and anisotropic properties improve patient comfort.
- 75% reduction in PIs and 43% reduction in projected treatment costs*.



*in a QIP in a US healthcare facility.

Mepilex® Border Flex

Mepilex® Border Flex combines Flex Technology™ and Safetac® to protect patients from pressure injuries. Contouring to the body, it's engineered to reduce sheer stress during prone position surgeries. Ideal for areas like the forehead, chin, heels, iliac chest and the knees.

Biomechanical modeling shows a 52–92% reduction in soft tissue stress and strain on the forehead and chin in prone patients[20].

Real world application:

63.2% reduction in forehead PIs in prone-positioned patients[21].

In a recent randomised controlled trial for prone-position surgery, patients with Mepilex® Border Flex on their face, chest, and iliac crest had significantly fewer PIs[22].

Mepilex® Lite

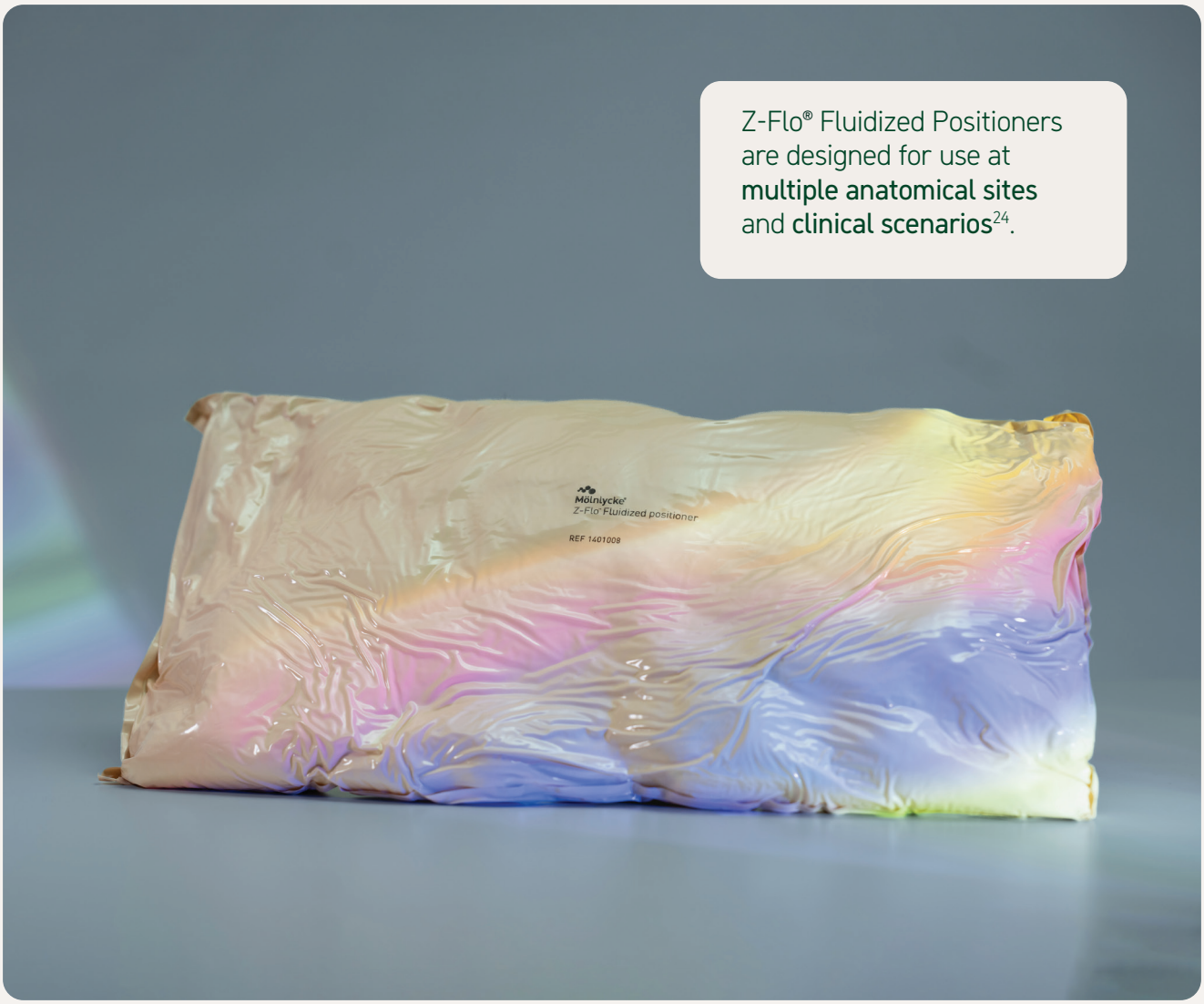
Mepilex® Lite, with innovative cutting guide, is a thin, soft, and flexible silicone foam dressing that excels in providing protection under medical devices. It's flexibility makes it ideal for use in preventing device-related PIs. Ideal for surgical patients with fragile or at-risk skin, such as the elderly or neonates.

Mepilex® Lite reduces Pressure Exposure Index (PEI) by 70%, lowering facial stress under CPAP masks and oxygen devices[23].

Pressure injury prevention with Z-Flo® Fluidized Positioners

The Mölnlycke Z-Flo® Fluidized Positioner effectively redistributes pressure over bony prominences while maintaining stable support by contouring to each patient's body, helping to prevent pressure injuries alongside Mepilex® dressings.

They are particularly valuable in prone and lateral surgeries,where pressure on the face and chest is high.



Holistic prevention programme

Preventing HAPIs needs a proactive, hospital wide, holistic approach. This needs:

- Pre and postoperative assessments.
- Standardised prevention protocols, such as skin assessments and surgical repositioning.
- Solutions proven to reduce the risk of PIs, such as Mölnlycke dressing and patient turning and positioning.

In a hospital-wide quality improvement initiative, Mölnlycke products were shown to reduce hospital-acquired pressure injuries by 90% over 4 years[25].

The cost of Pressure Injury Prevention

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260 Beds

Level 2 Trauma Centre

Explore the cost of implementing a PI prevention bundle in relation to the cost savings to health care by preventing PIs.

The Cost of Pressure Injury Prevention

Charleen Singh, PhD, MBA, FNP-BC, CWOCN, RN,
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The quality department explored the cost of implementing a pressure injury (PI) prevention bundle in relation to the cost savings to health care by preventing PIs. Using statistical analysis, the health care dollars saved by preventing PIs over 2 years (2020 and 2019) was compared to the prior year (2018). Secondarily, the cost of implementing a pressure injury prevention bundle was compared to the same 3-year period. The cost savings to the health care system is statistically significant ($p < 0.05$). The cost accrued by the hospital for implementing pressure injury prevention is not statistically significant year over year; however, the cost is extensive and requires planning into yearly capital budgets.

KEY POINTS

- The quality department explored the cost of pressure injury prevention.
- Identifying the cost of pressure injury prevention is discussed.
- The cost of incorporating pressure injury prevention into a yearly capital budget is significant.
- The benefits of pressure injury prevention are discussed.

Methods:

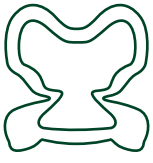
Retrospective Analysis

Total cost of pressure injuries

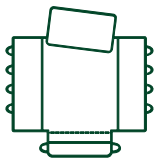
Prevention cost each year

Pressure injury prevention bundle

Mepilex® Border Sacrum



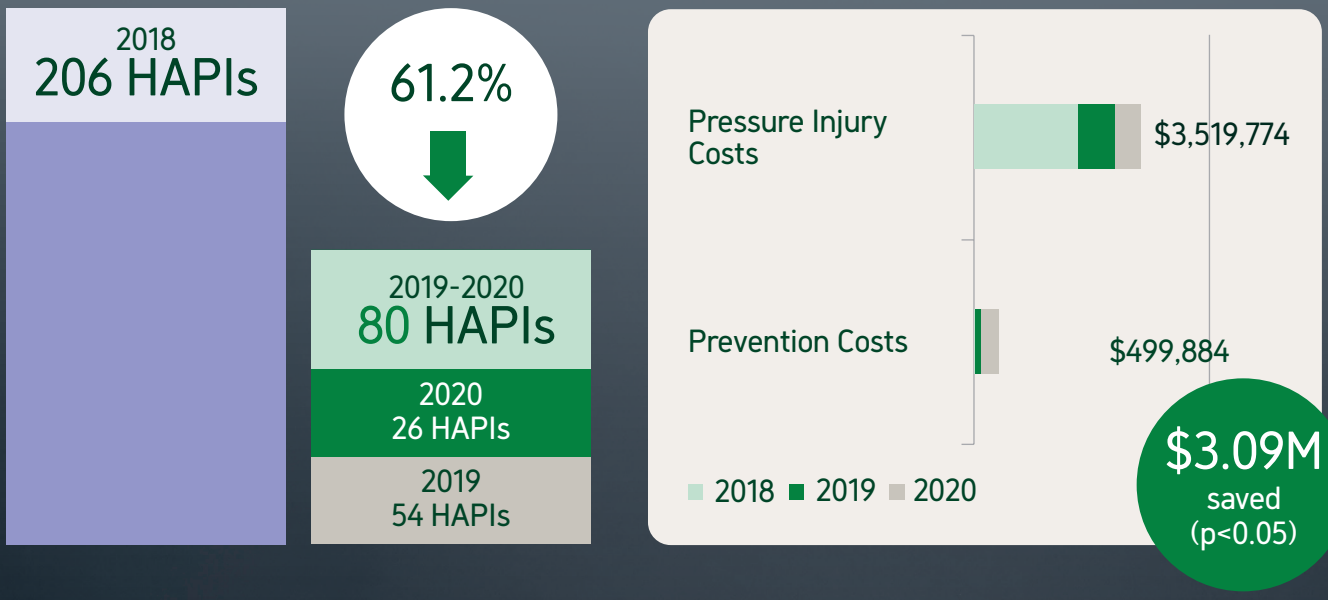
Mepilex® Border Heel



Tortoise® Turning & Positioning System

Z-Flex® Fluidized Heel Boot

Results:



Conclusion:

By reducing the incidence of pressure injuries, the projected cost to heal was significantly reduced. Although there is a cost associated with pressure injury prevention, spending $499,884 to realise a savings of $3,092,826 is a good rate of return[26].

Mölnlycke®

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