PRESSURE INJURY PREVENTION

Utilizing International Clinical Practice Guidelines as part of the pressure injury prevention strategy

For clinicians – support surface and patient handling intervention in pressure injury prevention, and measuring outcomes that matter.

arjo
EMPOWERING MOVEMENT

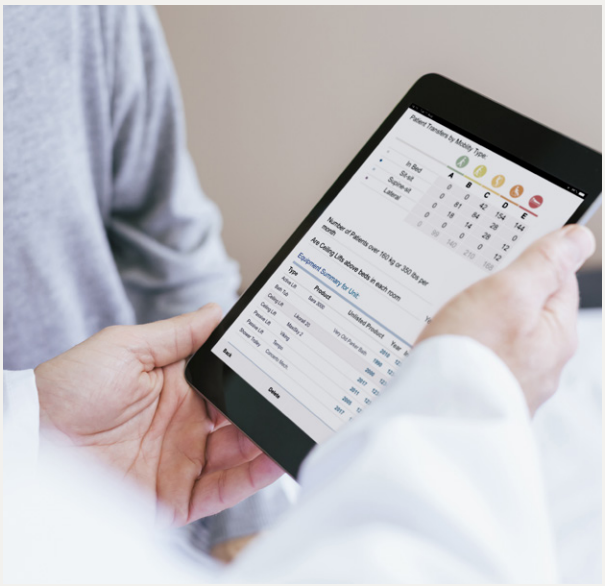
Arjo pressure injury prevention & management solutions

Prevention and treatment of pressure injuries: clinical practice guideline[1]

The launch of the 2019 guideline represents a truly international perspective of pressure injury prevention and management, reflecting multidisciplinary expertise, key opinion leader insight and cutting edge research from around the world. The most recent 3rd edition presents the latest evidence based recommendations to guide prevention and management practices.

A holistic program aligned with evidenced best practice

Aligned with latest pressure injury prevention and treatment guidelines (2019) and developed using decades of specialized expertise and pressure injury key opinion leaders, Arjo offers a wide range of equipment interventions and clinical consultancy services for effective prevention of pressure injuries.



Evidence-based assessments (including PI prevalence) with expert healthcare professionals to help you design and implement a **tailored intervention outcome program**

Hands-on practical skill training related to utilization of PI prevention equipment and best practice in bed and out of bed patient repositioning methods

As a leading global provider of equipment solutions which help to prevent avoidable harm for patients at risk of pressure injuries and other complications associated with immobility, we would like to share with you how Arjo's range of support surfaces and integrated solutions align to the new recommendations.

Our solutions are designed to help create safer and more efficient healthcare environments from patient handling and mobilization, to hygiene & pressure injury prevention, we can help you meet the new & continually evolving challenges of today's acute care & long-term care settings.

As the scope of the 2019 guidelines is substantial, this document focuses on subject areas related to early identification of risk, the management of pressure and tissue tolerance and immobility – areas closely aligned to our philosophy and expertise.

Pressure injury development: evolving insights

Evolving insights and perspectives on pressure injury development suggest three major contributors to cell damage and tissue necrosis, namely deformation, inflammation and Ischaemia.[2] It is suggested that deformation damage can happen in a matter of minutes with ischaemia taking several hours before it manifests itself.[2] Support surface technologies are considered to play an important protective role and may help in reducing the onset and progression of inflammatory damage, enhance overall tissue tolerance and in delaying the ischaemic response.[3]

In bed support surfaces
for pressure redistribution, targeted offloading and microclimate management, validated with S3I methodology

Patient handling devices for your patients with mobility challenges, medical beds and accessories for ergonomic **patient repositioning and mobilization**

Proactive service and flexible rental and financing plans to ensure you have **the right equipment, in the right condition, at the right time**

A partnership to develop and implement a tailored pressure injury prevention program

Arjo MOVE® pressure injury prevention program is a holistic intervention and implementation partnership which informs and empowers your staff with the knowledge and skill to decisive action to prevent hospital acquired pressure injuries. The program is tailored to your facility and the needs of your caregivers and patients and drives measurable operational, clinical and financial improvements and outcomes for your facility.

- In-depth assessment including:
  - your facility deployment of pressure injury interventions in accordance with latest EPUAP guidelines (2019)
  - Unit level implementation and utilization of known pressure injury prevention strategies (as evidenced within the EPUAP standards (2019)
  - Patient level intervention implementation and pressure injury prevalence
- Detailed pressure injury process mapping and process resolution in partnership with your facility wound care (tissue viability) expert by experienced wound care and nurse clinicians
- Hands-on practical skill training related to utilization of pressure injury prevention equipment and best practice in bed and out of bed patient repositioning methods
- Ongoing workplace consultation to embed and support continued improvements and achieve your agreed program outcomes

Support surfaces

With over 60 years of experience, Arjo has become a leading and trusted global authority on the design, development and clinical application of therapeutic support surfaces for the prevention and management of pressure related injuries.

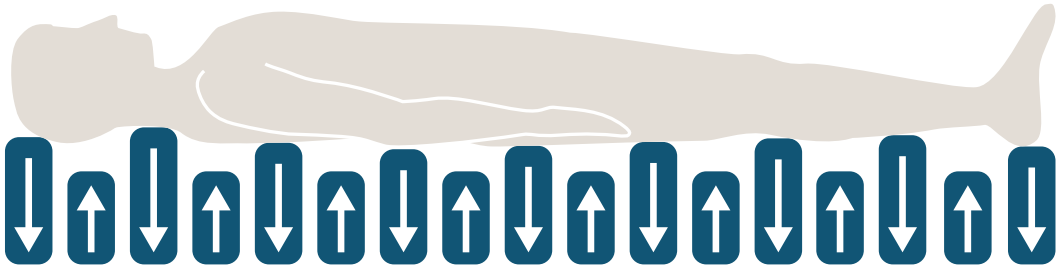
As a company we aspire to deliver class leading clinical performance and technological innovation to assist healthcare facilities in reducing avoidable harm. We recognize that each healthcare provider has its own unique blend of clinical and financial objectives to consider when considering and addressing support surface solutions as part of a pressure injury prevention and management strategy.

With an extensive choice of Active (Alternating Pressure) and Reactive (Constant Low Pressure) approaches to pressure redistribution, along with powered microclimate controlled support surfaces and cover options, we can help tailor flexible, user-friendly and guideline aligned solutions to help meet a range of requirements.

"Select a Support Surface that meets the individuals need for pressure redistribution based on the following Factors" [11]

- Level of Immobility & Inactivity
- Need to influence Microclimate Control & Shear Reduction
- Size & weight of the individual
- Number, Location & Severity of Existing Pressure Injuries
- Risk of Developing New Pressure Injuries

Active (alternating) support surfaces



International guideline 2019

"Assess the relative benefits of using an alternating pressure air mattress or overlay for individuals at risk of pressure injuries"[12]

Considerations:

- An alternating air pressure mattress overlay will require a quality base mattress. Substandard base mattresses may affect performance[13]
- Where possible continue a regular turning and repositioning regimen with frequency based on the needs of the individual[13]

Automatic CELL PRESSURE ADJUSTMENT

NIMBUS® RANGE

AURALIS®

Manual cell pressure adjustment

ALPHA ACTIVE® RANGE

ATMOSAIR VELARIS® ADAPTABLE ALTERNATING PRESSURE SYSTEM

Arjo Active (alternating) Therapeutic Support Surfaces are designed to closely mimic the natural protective environment of regular spontaneous movement, by redistributing pressure several times each hour, even if the patient doesn't move.[14] A 1 in 2 cell cycle, where alternate cells inflate and deflate balances the application and removal of pressure to give time for tissue reperfusion.

Auralis Alternating Pressure Mattress with Self-Set Technology

Auralis Automated Self-Adjusting Pressure

The Auralis offers a solution for patients at very high risk of a pressure injury. Designed for high acuity patients with limited mobility and compromised skin integrity, the Auralis System uses intelligent automated Self-Set Technology to control mattress pressures in both active (alternating) and reactive (constant low pressure) modes. An advanced microprocessor in the Auralis pump regularly assesses the body mass distribution of patients and readjusts cell pressures to suit their individual needs.

Nimbus range with wound valve technology

As a further level of tissue protection, products such as the Nimbus Professional and Nimbus 4 mattresses offer the facility to completely and permanently off-load pressure from high risk areas such as the heels, wounds and surgical sites through Wound Valve Technology™.

Nimbus Professional with Wound Valve Technology

Support surfaces for individuals with existing pressure injuries

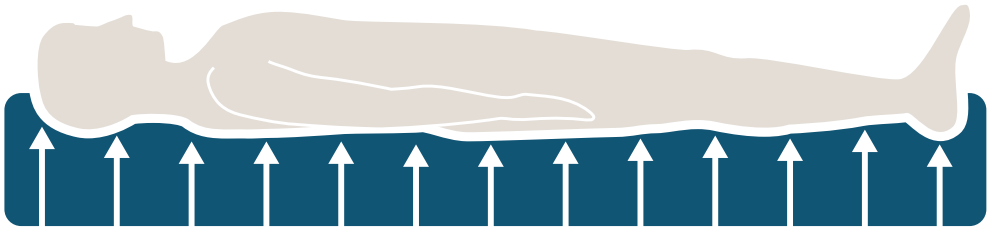
International guideline 2019

For individuals with a pressure injury, consider changing to a speciality support surface when the individual:

- Cannot be positioned off the pressure injury
- Has pressure injuries on two or more turning surfaces that limit repositioning options
- Has a pressure injury that fails to heal or that deteriorates
- Is at high risk for additional pressure injuries
- Has undergone flap or graft surgery
- Is uncomfortable
- Bottoms out on the current support surface[15]

The international guidelines recommend speciality support surfaces to consider for individuals with an existing pressure injury include alternating pressure air mattresses, mattresses with a low air-loss feature and air fluidized beds (Expert Opinion).[15]

Reactive (constant low pressure) powered support surfaces



International guideline 2019

"Consider using a reactive air mattress or overlay for individuals at risk for developing pressure injuries" [16]

Reactive (continuous low pressure) therapeutic surfaces typically reduce the contact pressure at the skin-mattress interface by increasing the surface area over which the individual is supported. Pressures will depend on the type of support surface and how it is adjusted. As the pressures do not change unless the individual makes a movement, these devices are termed 'reactive'. Reactive surfaces typically include foam, gel, air foam combination products, air with low air-loss and air fluidised systems.

Reactive support surfaces from Arjo aim to reduce the level of continuous pressure exerted against the skin by enabling the body to immerse into and be enveloped by the support surface[17].

With a choice of non-powered technologies including Velaris Foam/Air hybrids through to powered surfaces such as the Therakair Visio that delivers pulsation and low air-loss therapy, the range of reactive support surfaces from Arjo can suit a wide range of clinical applications and environments.

Dual modality air mattress systems

Both the Auralis and the Citadel® C200 mattress systems offer a 'dual modality' function to provide a reactive air, constant low pressure mode for pressure injury prevention and management.

Non-powered reactive surfaces

With foam pressure redistribution mattresses often delivering the first line of defence against pressure injury development, it's important to feel confident in the capabilities of the solution you choose. For this reason, Arjo has a range of high specification foam mattresses and hybrid air/foam pressure redistribution surfaces with self adjusting valves, designed for the prevention and management of pressure injuries.

ATMOSAIR VELARIS REACTIVE SUPPORT SURFACE (WITHOUT PUMP)

PENTAFLEX® HIGH SPECIFICATION FOAM

International guideline 2019

"Use a high specification reactive single layer foam mattress or overlay in preference to a foam mattress without high specification qualities for individuals at risk of developing pressure injuries"[18]

Specialist off-loading for prevention & management

Wound Valve Technology available with the Nimbus 4 and Nimbus Professional mattress replacement systems, facilitates selective off-loading of vulnerable areas. Other mattresses within the Arjo support surface range include heel zones to assist with pressure injury prevention in the heel area.

International guideline 2019

"Support Surfaces are an important element in pressure injury prevention and treatment because they can prevent damaging tissue deformation and provide an environment that enhances perfusion of at risk or injured tissue" [19]

"Ensure the heels are free from the surface of the bed" [20]

International guideline 2019

"For individuals at risk of heel pressure injuries/ and or with category/stage I or II pressure injuries. Elevate the heels using a device specifically designed for heel suspension" [21]

For individuals with a category/stage III or greater heel pressure injury, elevate the heels using a device specifically designed for heel suspension, offloading the heel completely in such a way as to distribute the weight of the leg along the calf without placing pressure on the Achilles tendon and the popliteal vein" [21].

"wherever possible, do not position an individual on an existing pressure injury" [22]

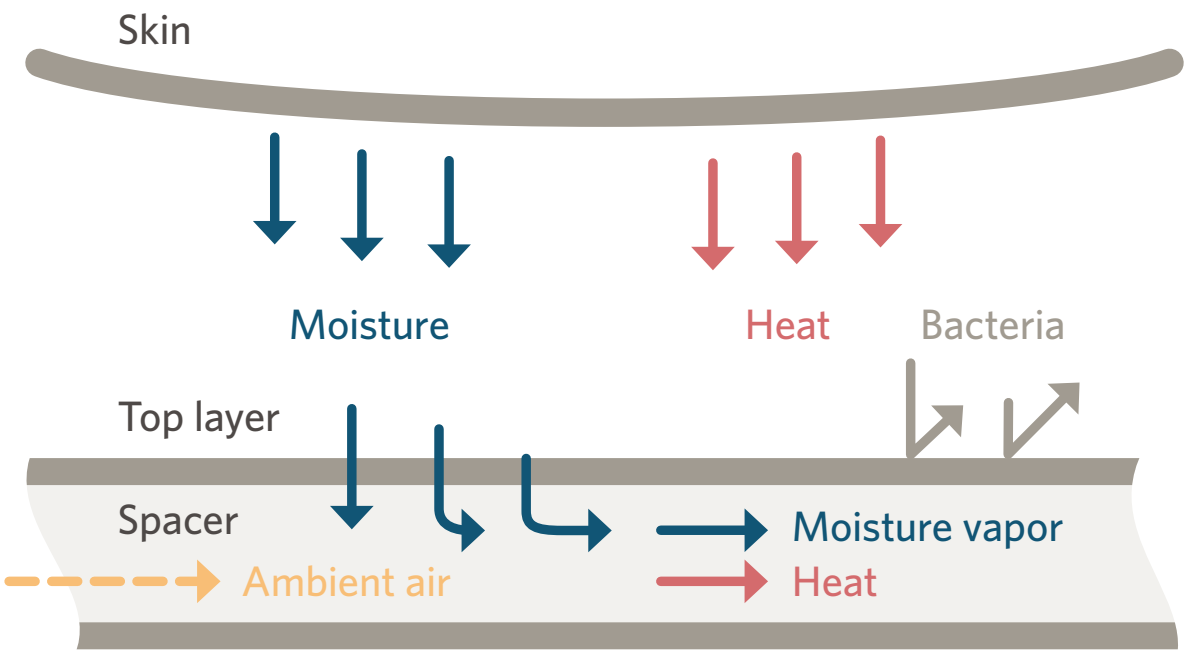
Managing microclimate

Microclimate management can help to complement pressure redistribution for the prevention and management of pressure injuries. There is a growing appreciation of the role of microclimate management in helping to improve tissue tolerance to aid pressure injury prevention and management, particularly in the presence of excessive moisture and elevated temperature at the skin/surface interface.[23]

Any surface that is in contact with the skin has the potential to affect the microclimate. The overall effect is dependent on the nature of the support surface and the cover.[24]

International guideline 2019

"An increasing body of evidence suggests that microclimate between the skin and supporting surface plays a role in the development of Pressure Injuries"[23]



Skin IQ® mode of action

Microclimate management solutions

Microclimate management at the patient/surface interface can be delivered in multiple ways.

For example, it can be integrated into the support surface via cells designed to produce a positive airflow, commonly know as low air-loss. Alternatively it can be provided by adding a coverlet to an existing support surface which is powered to use a negative airflow to draw away or remove heat and moisture at the interface.

SKIN IQ MICROCLIMATE MANAGER

THERAKAIR VISIO

Seating

Pressure injury risk is a 24 hour problem

Risk is particularly high when patients are sitting in a chair, given that the pressure exerted over the bony pelvis is naturally elevated.[27] Aside from limiting sit time, pressure redistributing chair cushions are recommended for individuals with reduced mobility.

Arjo provide a range of seat cushions for individuals at risk of, or with existing tissue damage. These range from reactive pressure redistribution to active alternating air cushions.

ATMOSAIR VELARIS (REACTIVE) SEAT CUSHION

AURALIS (ACTIVE) ALTERNATING SEAT CUSHION

International guideline 2019

"Use a pressure redistribution cushion for preventing pressure injuries in people at high risk who are seated in a chair/ wheelchair for prolonged periods, particularly if the individual is unable to perform pressure relieving maneuvers"[25]

"Assess the relative benefits of using an alternating pressure air cushion for supporting pressure injury healing in individuals who are seated in a chair/ wheelchair for prolonged periods, particularly if the individual is unable to perform pressure relieving maneuvers"[26]

Repositioning and mobility

Repositioning is undertaken to reduce the duration and magnitude of pressure over vulnerable areas of the body, and to contribute to the patients comfort, hygiene, dignity and functional ability[28].

As a global leader in patient handling solutions, Arjo believe frequent repositioning can be made easier and safer for both patient and staff with the use of appropriate patient handling aids. This may include the use of slide sheets and, where necessary patient lifts and standing aids. The variety of sling solutions helps to facilitate both patient repositioning in bed and transfers out of bed.

International guideline 2019

"Reposition the individual to relieve or redistribute pressure using manual techniques and equipment that reduce friction and shear" [29]

Implementation considerations:

"Use moving and handling equipment to reposition the individual. Appropriate equipment assists in lifting the individual and reduces unintended drag" [30]

Patient handling

Standing & Raising aids

For patients with reduced mobility, regular relief of pressure is vital to help protect the skin against tissue damage. In addition to a pressure redistributing cushion , the use of a standing and raising aid such as Sara Plus® or Sara Stedy® can facilitate standing to allow regular skin inspection and temporarily relieve the sustained high pressures normally encountered during sitting.

Sara Plus

Sara Stedy

International guideline 2019

"Do not leave moving and handling equipment under the individual after use, unless the equipment is specifically designed for this purpose"[30]

"Consider using textiles with low friction coefficients for individuals with or at risk of pressure injuries"[31]

Loop Comfort Repositioning Sling

The dual purpose Loop Comfort Repositioning Sling, is an example of a product which has been designed to remain under the patient after use. Combining the benefits of a transfer sling and the functionality of bed linen, its soft breathable fabric construction,[32] enables it to remain in place under the patient after use.

Loop Comfort Repositioning Sling

Repositioning

International guideline 2019

"Keep the head of the bed as flat as possible"[33]

"Maintaining a flat position should be evaluated with consideration to the individuals clinical needs. When elevating the head of the bed maintain elevations at 30˚ or lower to minimize soft tissue deformation.[34]

As a global leader in healthcare medical bed design, Arjo has incorporated features such as 30˚head of bed pause and visible angle indicators. Both features support accurate positioning of patients at a lower head of bed angle when clinically indicated, as part of a pressure injury strategy to minimise soft tissue deformation.[35]

Evidence discussion also suggests individuals should be positioned and supported with flexed knees to prevent slouched positions or sliding down in bed, avoiding increased pressure and shear forces on the sacrum and coccyx.[35]

Articulating bed frame design where the head of bed and knee angle raise simultaneously may contribute to skin protection as shear, friction and interface pressure can be influenced by the knee angle.[35]

Early Mobilization

International guideline 2019

"Implement an early mobilization program that increases activity and mobility as rapidly as tolerated"[36]

"Ambulation schedules may offset the clinical deterioration often seen in patients subjected to prolonged bed rest"[37]

Arjo Walker®

Bed rest not only places patients at an increased risk of pressure injuries and venous thromboembolism events, but also reduces pulmonary function and significantly increases muscle loss and decreases muscle strength. Mobilization early in the patients pathway is encouraged in the new international guidelines to help prevent many of these issues.[37]

Maxi Move® passive lift

Sara Combilizer® patient positioning and mobilization aid

Contact your Arjo representative to learn more or visit us at:
https://www.arjo.com/pressureinjury

* Median

Please note: This document is not designed as a comprehensive overview of guideline recommendations. Always refer to the full guideline document or quick reference guide when planning care or making any clinical decisions.

Please also note that the international guidelines do not provide any endorsements of a specific product. This guide has been developed to provide the reader with an overview of products and solutions available from Arjo which may help you in your quest to prevent or manage pressure injuries.

References

1. The references listed below by page number, refer to direct statements appearing in the full version of the European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline, Emily Haesler (Ed.). EPUAP/NPIAP/PPIA:2019.
2. Section 2: The Aetiology of Pressure Injuries – contributors to cell damage and tissue necrosis in pressure injuries. **Pages 22–23**
3. Gefen A (2018). The future of pressure ulcer prevention is here: Detecting and targeting inflammation early. EWMA Journal, Vol 19 (2):7-13
4. Section 5 Skin and Tissue Assessment. **Page 73**
5. Ross G, Gefen A (2019) Assessment of sub-epidermal moisture by direct measurement of tissue biocapacitance. Medical Engineering and Physics. Vol 73:92-99
6. Burns M (2020). Reducing Pressure Injury/Ulcer through the introduction of Technology. Accepted and presented at EWMA Virtual Conference 2020.
7. Okonkwo H, Bryant R, Milne J et al. A blinded clinical study using subepidermal moisture biocapacitance measurement device for early detection of pressure injuries. Wound Repair & Reg 2020;1-11. https://doi.org/10.1111/wrr.12790
8. Bates-Jensen BM, McCreath HE, Pongquan V. Sub-epidermal moisture is associated with early pressure ulcer damage in nursing home residents with dark skin tones: pilot findings. J Wound Ostomy Continence Nurs. 2009;36(3):277-284
9. Section 5: Skin and Tissue Assessment. Recommendation 2.6 Conducting Skin and Tissue Assessment. **Page 78**
10. Section 5: Skin and Tissue Assessment. Recommendation 2.7 Assessing darkly pigmented skin and soft tissue. **Page 79**
11. Section 10: Support Surfaces. Recommendation 7.1 Support Surface Selection and Use. **Page 156**
12. Section 10: Support Surfaces. Recommendation 7.7 Alternating Support Surfaces. **Page 165**
13. Section 10: Support Surfaces. Implementation considerations for Recommendation 7.7 Alternating Support Surfaces. **Page 166**
14. Phillips L, Goossens R, Takahashi M et al. Defining active pressure redistribution. Wounds International. 2012; 3(3): **Page 52–56**
15. Section 10: Support Surfaces. Recommendation 7.9 Mattress and Bed Support Surfaces for Individuals with Existing Pressure Injuries. **Page 169**
16. Section 10: Support Surfaces: Recommendation 7.5 Reactive Air Pressure Mattresses. **Page 163**
17. Section 10: Support Surfaces Introduction. **Page 155**
18. Section 10: Support Surfaces. Recommendation 7.4 Single Layer Specification Foam Mattress. **Page 160**
19. Section 10: Support Surface Selection and Use. **Page 156**
20. Section 9: Heel Pressure Injuries. Recommendation 6.2 Positioning to Prevent and Treat Pressure Injuries. Implementation Considerations. **Page 147**
21. Section 9: Heel Pressure Injuries. Recommendation 6.3 Positioning to Prevent and Treat Pressure Injuries. **Page 150**
22. Section 10: Support Surfaces. Implementation Considerations for Recommendation 7.9: Mattress and Bed Support Surfaces for Individuals with Existing Pressure Injuries. **Page 169**
23. Section 2: The Aetiology of Pressure Injuries. Ongoing Research: Current and Future Perspectives. **Page 22**
24. Section 10: Support Surfaces – Selecting a Support Surface in All Care Settings. **Page 157**
25. Section 10: Support Surfaces. Recommendation 7.12 Seating Support Surfaces for Individuals with or at Risk of Pressure Injuries. **Page 173**
26. Section 10: Support Surfaces. Recommendation 7.13 Seating Support Surfaces for Individuals with or at Risk of Pressure Injuries. **Page 173**
27. Section 10: Support Surfaces. Seating Support Surfaces for Individuals with or at Risk of Pressure Injuries. **Page 172**
28. Section 8: Repositioning and Early Mobilisation. Evidence discussion **Page 116**
29. Section 8: Repositioning and Early Mobilisation. Recommendation 5.6 Repositioning Techniques. **Page 121**
30. Section 8: Repositioning and Early Mobilisation. Recommendation 5.6 Repositioning Techniques. **Page 121**
31. Section 6: Preventive Skin Care. Recommendation 3.4 Bed Linen. **Page 88**
32. Product performance testing whitepaper, Arjo Inc, Repositioning Slings A00492.1.0.INT.EN
33. Section 8: Repositioning and Early Mobilisation. Recommendation 5.9 Repositioning Individuals in Bed. **Page 124**
34. Section 8: Repositioning and Early Mobilisation. Implementation Considerations for Recommendation 5.9. **Page 124**
35. Section 8: Repositioning and Early Mobilisation. Repositioning Individuals in Bed. **Page 124-125**
36. Section 8: Repositioning and Early Mobilisation. Recommendation 5.15 Early Mobilisation. **Page 132**
37. Section 8: Repositioning and Early Mobilisation **Page 132.**
38. Section 24: Implementing Best Practice in Clinical Settings. Recommendation 20.4 Attitudes and Cohesion. **Page 325**
39. Section 24: Implementing Best Practice in Clinical Settings. Recommendation 20.5 Quality Improvement Initiatives. **Page 326**
40. Section 24: Implementing Best Practice in Clinical Settings. Recommendation 20.11 Quality Improvement Initiatives. **Page 334**

At Arjo, we believe that empowering movement within healthcare environments is essential to quality care. Our products and solutions are designed to promote a safe and dignified experience through patient handling, medical beds, personal hygiene, disinfection, diagnostics, and the prevention of pressure injuries and venous thromboembolism. With over 6500 people worldwide and 65 years caring for patients and healthcare professionals, we are committed to driving healthier outcomes for people facing mobility challenges.

Arjo Inc., 2349 West Lake Street · Addison, Illinois 60101 · 1-800-323-1245 · www.arjo.us