



EPUAP – NPIAP-PPIA – CLINICAL PRACTICE GUIDELINE 2019:

# Pressure ulcer/injury prevention and treatment solutions

Considerations on support surfaces, safe patient handling and pressure ulcer/injury prevention for clinicians

# Arjo pressure ulcer/injury prevention & management solutions

## Prevention and treatment of pressure injuries: clinical practice guideline<sup>1</sup>

The launch of the 2019 guideline represents a truly international perspective of pressure ulcer/injury 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.

As a leading global provider of solutions to help you deliver preventable harm for patients at risk from pressure injuries and other avoidable complications of immobility, we would like to share with you how Arjo's range of products 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 mobilisation, to hygiene and pressure injury prevention, we can help you meet the new and continually evolving challenges of today's acute care and long term care settings.

As the scope of the new guidelines is substantial, this document will focus on subject areas related to the management of pressure, tissue tolerance and immobility- areas closely aligned to our philosophy and expertise.

*“Select a Support Surface that meets the individuals need for pressure redistribution based on the following Factors”<sup>2</sup>*

- 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

## Pressure injury development: new insights

New insights and perspectives on pressure injury development suggest three major contributors to cell damage and tissue necrosis, namely deformation, inflammation and Ischemia<sup>3</sup>. It is suggested that deformation damage can happen in a matter of minutes with ischemia taking several hours before it manifests itself<sup>3</sup>. 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 ischemic response.<sup>4</sup>

## Arjo support surface solutions

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

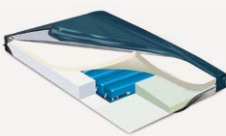
As a company we aspire to deliver class leading clinical performance and technological innovation to assist healthcare facilities in reducing avoidable harm. We recognise that each healthcare provider has its own unique blend of clinical and financial objectives to consider when considering and addressing 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 mattresses and cover options, Arjo can help tailor flexible, user-friendly and guideline aligned solutions to help meet a range of requirements.

## ARJO SUPPORT SURFACE RANGE

### Reactive non powered range

ATMOSAIR PLUS



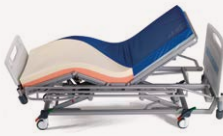
ATMOSAIR



RIK OVERLAY



CONFORM X



PENTAFLEX



SIMULFLEX



Product availability may differ by market. Please check product availability with your local Arjo Representative.

### Active and reactive powered range

CITADEL™ C200



NIMBUS® RANGE



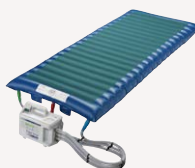
THERAKAIR® VISIO



AURALIS



FIRST STEP CIRRUS



ALPHA ACTIVE®



ALPHA TRANCELL DELUXE



## Microclimate management

Skin IQ™



Skin IQ™ Advanced Microclimate Management cover designed for compatibility with pressure redistribution mattresses on the market today.



Active (alternating) support surfaces for prevention & management of Pressure Injuries

“Assess the relative benefits of using an alternating pressure air mattress or overlay for individuals at risk of pressure injuries”<sup>5</sup>

Considerations:

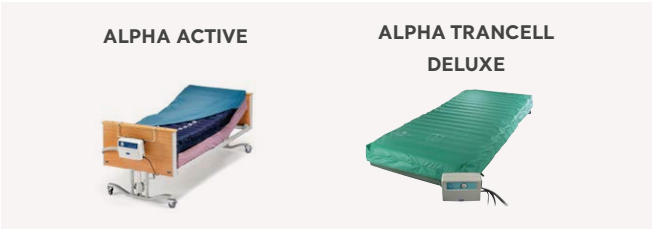
- An alternating air pressure mattress overlay will require a quality base mattress. Substandard base mattresses may affect performance<sup>6</sup>
- Where possible continue a regular turning and repositioning regimen with frequency based on the needs of the individual<sup>6</sup>



Automatic Cell Pressure Adjustment



Manual Cell Pressure Adjustment



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<sup>7</sup>. 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**  
Arjo’s most recent Therapeutic Surface – 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 4 with Wound Valve Technology™

**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™.



Support surfaces for individuals with existing pressure Injuries

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

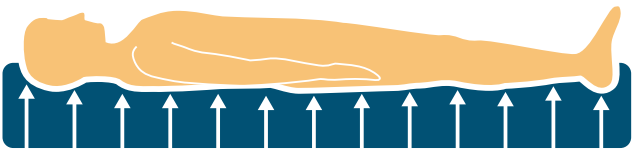
- Cannot be positioned off the pressure injury
- Has pressure injuries on two or more turning surfaces that limit repositioning options
- Has a pressure injury that fails to heal or that deteriorates
- Is at high risk for additional pressure injuries
- Has undergone flap or graft surgery
- Is uncomfortable
- Bottoms out on the current support surface”<sup>8</sup>

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 fluidised beds (Expert Opinion)<sup>8</sup>.

Reactive (constant Low pressure) powered support surfaces for prevention and management of pressure Injuries

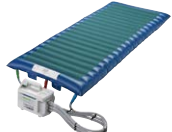
“Consider using a reactive air mattress or overlay for individuals at risk for developing pressure injuries”<sup>9</sup>



THERAKAIR VISIO



FIRST STEP CIRRUS



ATMOSAIR 9000A AIR/FOAM HYBRID



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, 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<sup>10</sup>.

With a choice of non-powered technologies including AtmosAir 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

The Auralis & 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

“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” <sup>11</sup>



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.

“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” <sup>12</sup>

“Ensure the heels are free from the surface of the bed” <sup>13</sup>

“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.” <sup>14</sup>

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” <sup>14</sup>.

“wherever possible, do not position an individual on an existing pressure injury” <sup>15</sup>

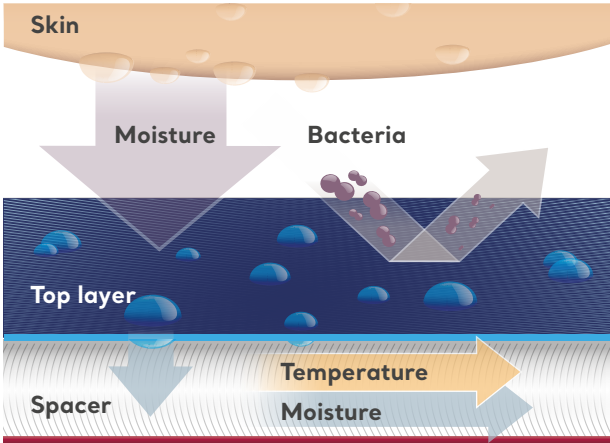


**Specialist off-loading for prevention & management**

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.

Managing microclimate

“An increasing body of evidence suggests that microclimate between the skin and supporting surface plays a role in the development of Pressure Injuries” <sup>16</sup>



Skin IQ MCM mode of action

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<sup>16</sup>.

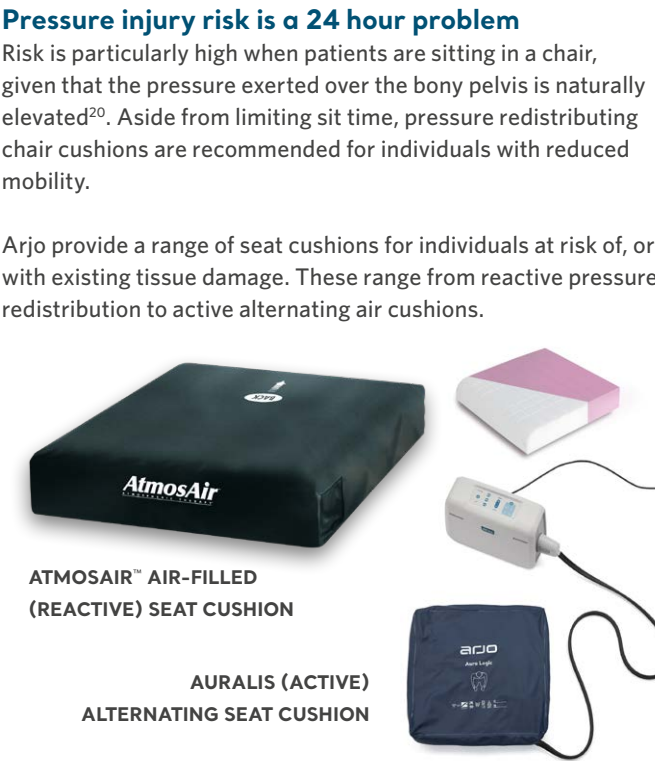
Any surface that is in contact with the skin has the potential to affect the microclimate. The overall effect is dependent on the nature of the support surface and the cover<sup>17</sup>.

Skin IQ is an adjunctive therapeutic mattress cover, which adds microclimate control to a pressure redistributing surface used with patients presenting with complex skin care issues, including full thickness tissue injury.

Seating

“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 manoeuvres” <sup>18</sup>

“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 manoeuvres” <sup>19</sup>





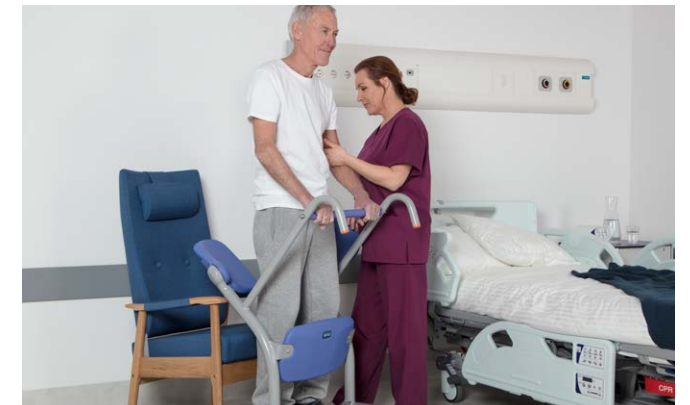


## Standing & Raising aids

For chair bound patients, 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

*“Reposition the individual to relieve or redistribute pressure using manual techniques and equipment that reduce friction and shear.”<sup>22</sup>*

Implementation considerations:

*“Use moving and handling equipment to reposition the individual.*

*Appropriate equipment assists in lifting the individual and reduces unintended drag”<sup>23</sup>*

## Repositioning

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<sup>21</sup>.

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 lifters and standing aids. The variety of sling solutions helps to facilitate both patient repositioning in bed and transfers out of bed.

*“Do not leave moving and handling equipment under the individual after use, unless the equipment is specifically designed for this purpose”<sup>23</sup>*

*“Consider using textiles with low friction coefficients for individuals with or at risk of pressure injuries”<sup>24</sup>*

## Maxi Transfer Sheet

The dual purpose Maxi Transfer Sheet, 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<sup>25</sup>, enables it to remain in place under the patient after use.



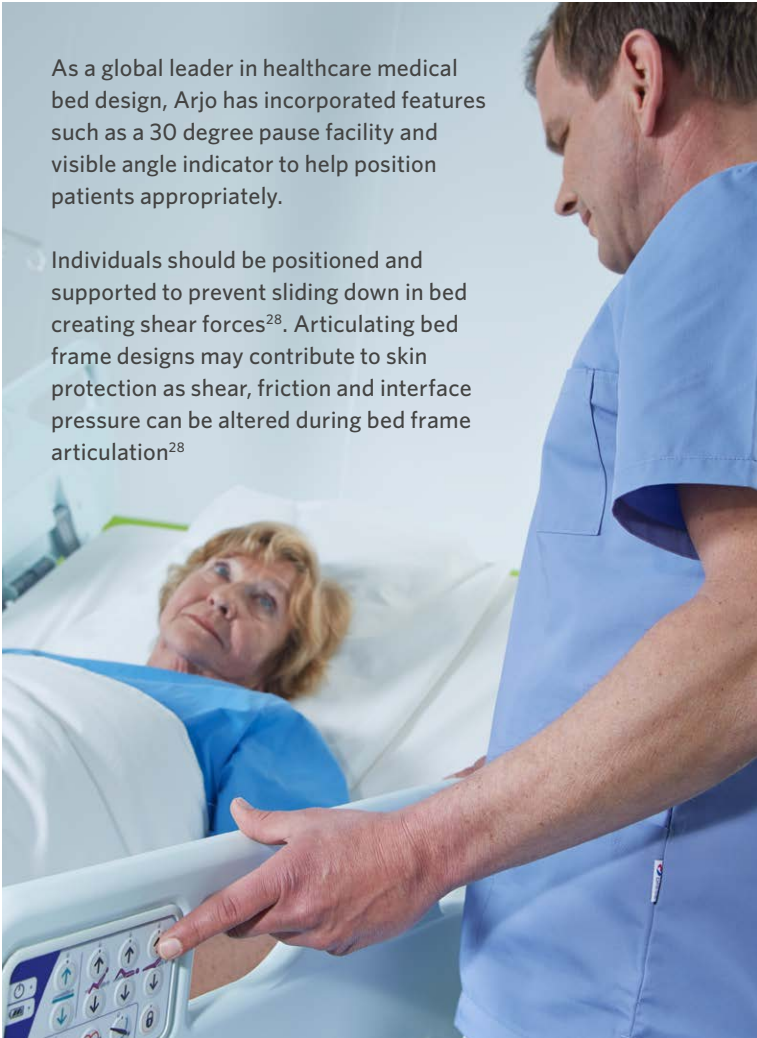
Maxi Transfer Sheet



Positioning in Bed

“Keep the head of the bed as flat as possible” <sup>26</sup>

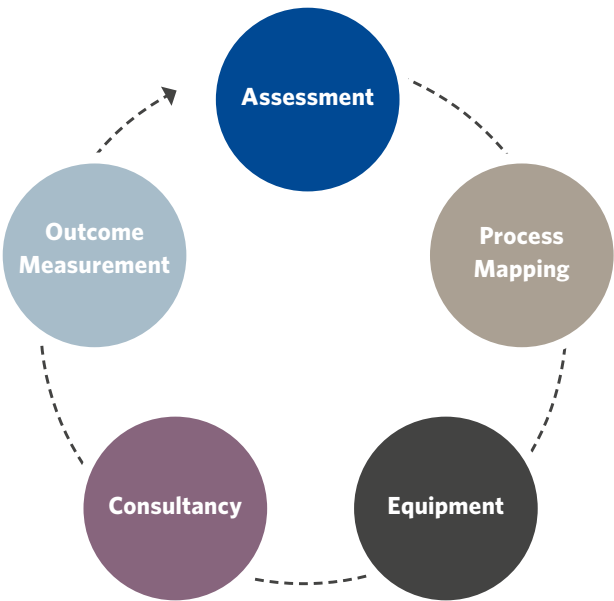
“Maintaining a flat position should be evaluated with consideration to the individuals clinical needs. When elevating the head of the bed maintain elevations at 30° or lower to minimise soft tissue deformation.” <sup>27</sup>



As a global leader in healthcare medical bed design, Arjo has incorporated features such as a 30 degree pause facility and visible angle indicator to help position patients appropriately.

Individuals should be positioned and supported to prevent sliding down in bed creating shear forces<sup>28</sup>. Articulating bed frame designs may contribute to skin protection as shear, friction and interface pressure can be altered during bed frame articulation<sup>28</sup>

Guideline implementation



Pressure injuries occur, not because of a single event, but due to failures within the continuum of care. System wide strategies are recommended to ensure preventative measures are successful:

- 1. Assess and maximise the availability and quality of equipment and standards of use as part of quality improvement to reduce the incidence of pressure injuries<sup>31</sup>
- 2. At an organisational level develop and implement a structured, tailored & multifaceted quality improvement program to reduce incidence of pressure injuries<sup>32</sup>
- 3. Regularly monitor, analyse and evaluate performance against quality indicators for pressure injury prevention and treatment<sup>33</sup>

Arjo outcomes programs and audit solutions provide healthcare facilities with a pressure injury monitoring and improvement service utilising appropriate quality indicators and a suite of dedicated monitoring tools.

Early Mobilisation

“Implement an early mobilisation program that increases activity and mobility as rapidly as tolerated” <sup>29</sup>

“Ambulation schedules may offset the clinical deterioration often seen in patients subjected to prolonged bed rest” <sup>30</sup>



Arjo Walker

Bed rest not only places patients at an increased risk of pressure ulcers and venous thromboembolism events, but also reduces pulmonary function and significantly increases

muscle loss and decreases muscle strength. Mobilisation early in the patients pathway is encouraged in the new international guidelines to help prevent many of these issues<sup>30</sup>.



Maxi Move™ Passive Lifter



Sara Combilizer™ Patient Positioning and Mobilisation aid



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

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

**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.

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 10: Support Surfaces. Recommendation 7.1 Support Surface Selection and Use. **Page 156**
3. Section 2: The Aetiology of Pressure Injuries - contributors to cell damage and tissue necrosis in pressure injuries. **Pages 22–23**
4. Gefen A (2018). The future of pressure ulcer prevention is here: Detecting and targeting inflammation early. EWMA Journal, Vol 19 (2):7-13
5. Section 10: Support Surfaces. Recommendation 7.7 Alternating Support Surfaces. **Page 165**
6. Section 10: Support Surfaces. Implementation considerations for Recommendation 7.7 Alternating Support Surfaces. **Page 166**
7. Phillips L, Goossens R, Takahashi M et al. Defining active pressure redistribution. Wounds International. 2012; 3(3): **Page 52–56**
8. Section 10: Support Surfaces. Recommendation 7.9 Mattress and Bed Support Surfaces for Individuals with Existing Pressure Injuries. **Page 169**
9. Section 10: Support Surfaces: Recommendation 7.5 Reactive Air Pressure Mattresses. **Page 163**
10. Section 10: Support Surfaces Introduction. **Page 155**
11. Section 10: Support Surfaces. Recommendation 7.4 Single Layer Specification Foam Mattress. **Page 160**
12. Section 10: Support Surface Selection and Use. **Page 156**
13. Section 9: Heel Pressure Injuries. Recommendation 6.2 Positioning to Prevent and Treat Pressure Injuries. Implementation Considerations. **Page 147**
14. Section 9: Heel Pressure Injuries. Recommendation 6.3 Positioning to Prevent and Treat Pressure Injuries. **Page 150**
15. Section 10: Support Surfaces. Implementation Considerations for Recommendation 7.9: Mattress and Bed Support Surfaces for Individuals with Existing Pressure Injuries. **Page 169**
16. Section 2: The Aetiology of Pressure Injuries. Ongoing Research: Current and Future Perspectives. **Page 22**
17. Section 10: Support Surfaces – Selecting a Support Surface in All Care Settings. **Page 157**
18. Section 10: Support Surfaces. Recommendation 7.12 Seating Support Surfaces for Individuals with or at Risk of Pressure Injuries. **Page 173**
19. Section 10: Support Surfaces. Recommendation 7.13 Seating Support Surfaces for Individuals with or at Risk of Pressure Injuries. **Page 173**
20. Section 10: Support Surfaces. Seating Support Surfaces for Individuals with or at Risk of Pressure Injuries. **Page 172**
21. Section 8: Repositioning and Early Mobilisation. Evidence discussion **Page 116**
22. Section 8: Repositioning and Early Mobilisation. Recommendation 5.6 Repositioning Techniques. **Page 121**
23. Section 8: Repositioning and Early Mobilisation. Recommendation 5.6 Repositioning Techniques. **Page 121**
24. Section 6: Preventive Skin Care. Recommendation 3.4 Bed Linen. **Page 88**
25. Pressure ulcer prevention: keep it safe, keep it simple. In, Duffy V, Lightner N (eds). Advances in human aspects of healthcare. Proceedings Applied Human Factors and Ergonomics. USA:2014;3:19-24
26. Section 8: Repositioning and Early Mobilisation. Recommendation 5.9 Repositioning Individuals in Bed. **Page 124**
27. Section 8: Repositioning and Early Mobilisation. Implementation Considerations for Recommendation 5.9. **Page 124**
28. Section 8: Repositioning and Early Mobilisation. Repositioning Individuals in Bed. **Page 124-125**
29. Section 8: Repositioning and Early Mobilisation. Recommendation 5.15 Early Mobilisation. **Page 132**
30. Section 8: Repositioning and Early Mobilisation **Page 132**.
31. Section 24: Implementing Best Practice in Clinical Settings. Recommendation 20.4 Attitudes and Cohesion. **Page 325**
32. Section 24: Implementing Best Practice in Clinical Settings. Recommendation 20.5 Quality Improvement Initiatives. **Page 326**
33. Section 24: Implementing Best Practice in Clinical Settings. Recommendation 20.11 Quality Improvement Initiatives. **Page 334**

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At Arjo, we are committed to improving the everyday lives of people affected by reduced mobility and age-related health challenges. With products and solutions that ensure ergonomic patient handling, personal hygiene, disinfection, diagnostics, and the effective prevention of pressure injury and venous thromboembolism, we help professionals across care environments to continually raise the standard of safe and dignified care. Everything we do, we do with people in mind.

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