Domus Auto Bariatric

Design for Bariatric Pressure Injury Prevention

Sales Kit

Wellell Inc.

2023.03.13

Be well, Live well

Wellell

Table of Content

Company Introduction

Wellell is a global leader in medical solutions for post-acute care and acute care.

Wellell operates in over 70 countries via a dedicated distribution and service network. Founded in 1990, the company integrates pressure area care solutions, respiratory therapy, compression therapy, and digital healthcare services to deliver improved clinical outcomes and digital well-being for patients, caregivers, and healthcare stakeholders.

Since first stepping into the global arena in 1990 as Apex, we have achieved more than we ever imagined, and now, as Wellell, we have even more ambitious goals for the future. Wellell aspires to help all inpatients, outpatients, and those who support them to live healthy and carefree.

Prioritize customer needs, and provide friendly and reliable user experience.

Wellell’s digital healthcare innovations enable comprehensive solutions for acute and post-acute care environments, provide peace of mind, and optimize the recovery journey for patients and healthcare stakeholders.

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Clinical Background

BMI above 40 kg/m^2 correlates to 26% pressure injury prevalence.

Large, deep, and heavy skin folds (panniculus) significantly increase the risks of skin and tissue maceration, inflammation, and necrosis.[1]

BMI positively correlates with skin fold severity and pressure injury prevalence.[2]

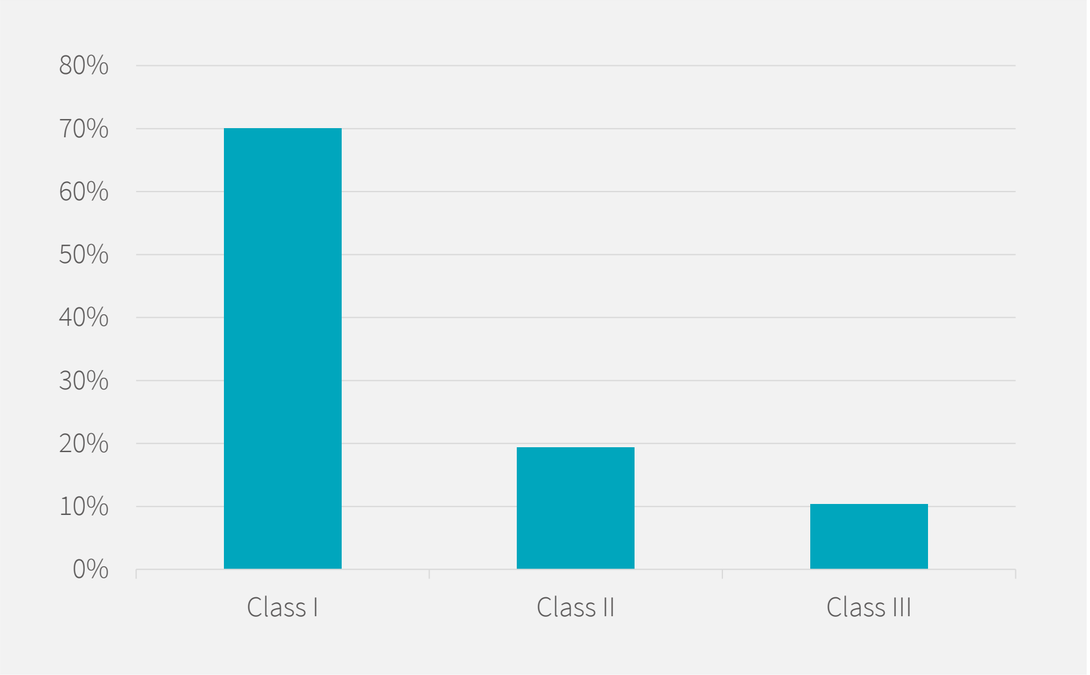
- BMI < 40 kg/m^2 reports 12.5%
- BMI > 40 kg/m^2 reports 26%

UK: Obesity nursing home residents tend to be younger, less dependent on care, fewer cases of dementia, and higher cases of diabetes mellitus, endocrine, metabolic, and skin diseases.

A 2023 study concluded, 13% of UK nursing home residents are obese, and research shows over 26% of the residential and nursing home population develops pressure injuries.[3,4]

United Kingdom

- Healthy weight: BMI 18.5 to 24.9
- Overweight: BMI 25 to 29.9
- Obesity class 1: BMI 30 to 34.9
- Obesity class 2: BMI 35 to 39.9
- Obesity class 3: BMI 40 or more.



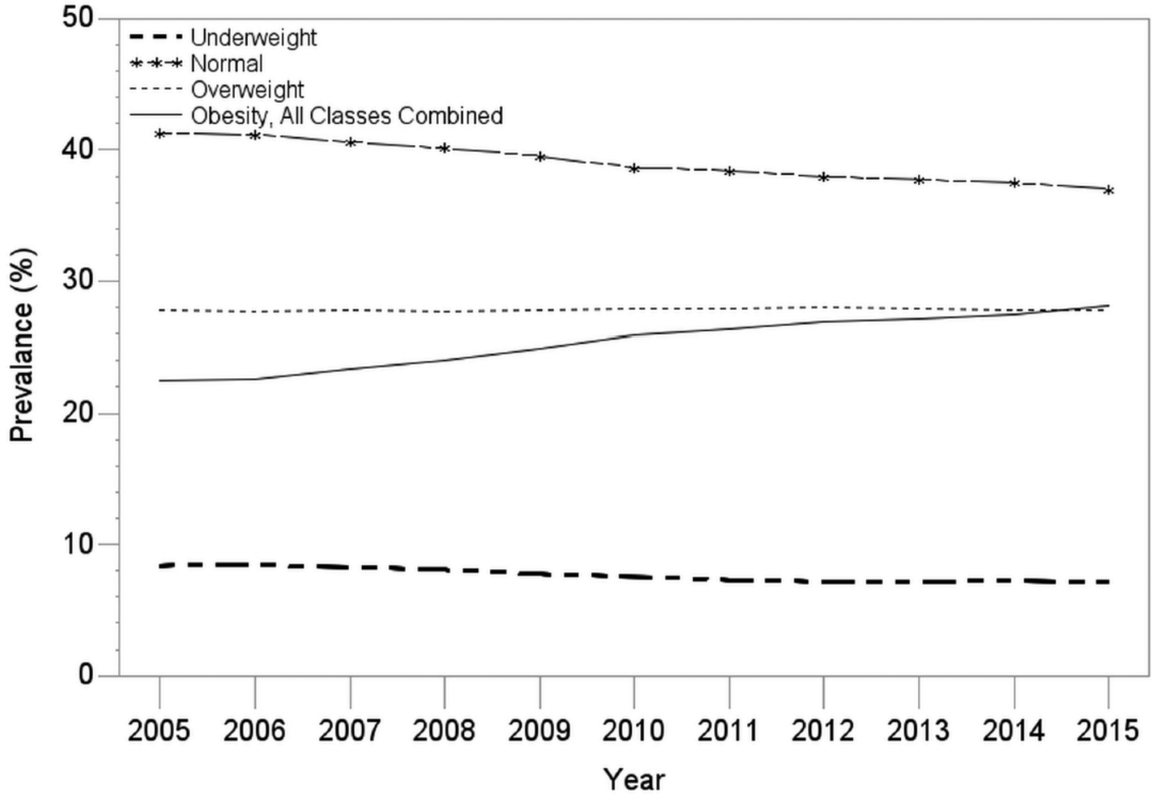
Rates of obesity classes amongst UK nursing home residents.[3]

US: Obese nursing home residents are typically younger with lower mortality and cognitive complications, lengthening their residence.

From 2005 to 2015, US long-stay nursing home resident obesity rose from 22% to 29% (Class I, 13% to 15%; Class II, 5% to 7%; Class III, 4% to 6%), and 36% net increase in Class III residents.[5,6]

United States

- Underweight: BMI below 18.5
- Normal weight: BMI 18.5 to 25
- Overweight: BMI 25 to 30
- Obese: BMI above 30
- Class I obesity: BMI 30 to 35
- Class II obesity: BMI 35 to 40
- Class III obesity: BMI above 40



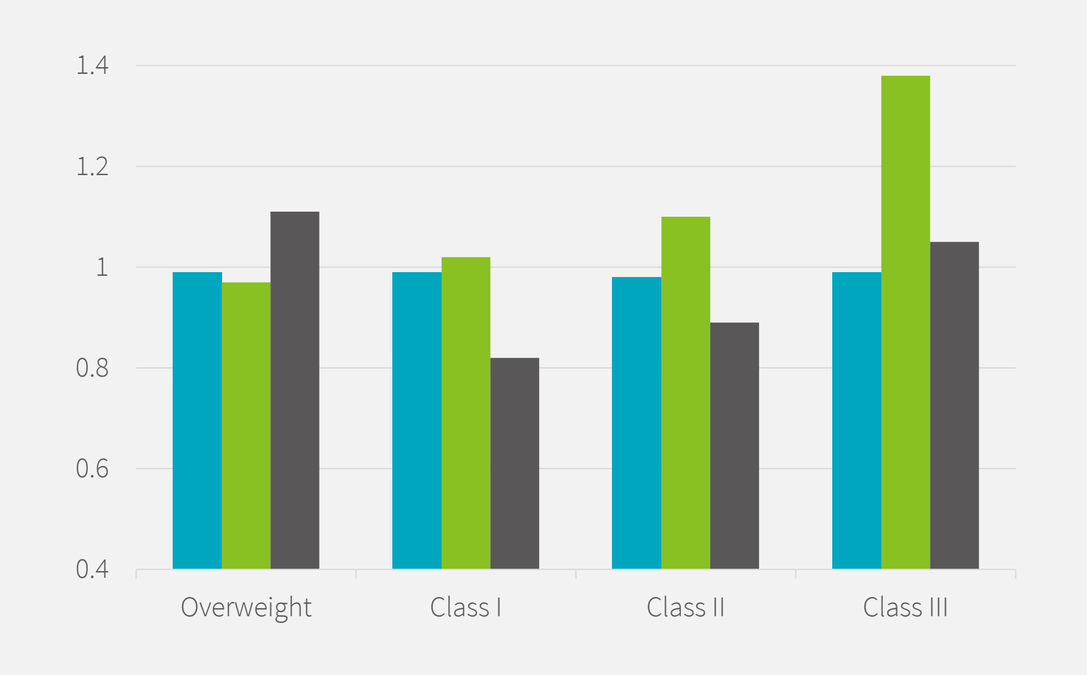
Trends in overall obesity and according to classes of obesity in US long-stay nursing home residents from 2005 to 2015.[6]

Federal regulations for maintaining bariatric care exist for acute care facilities but, not for long-term care facilities.

The lack of reimbursement for obesity-related expenses (same, regardless of weight) and facility resources increases pressure injury prevention complexity.[4,7-9]

Obese residents generally reside in rural, for-profit facilities with fewer resources, lower occupancy and quality rating, and a higher proportion of Medicaid beneficiaries.[9]

Moderate and severely obese residents have an 18.9% higher chance of pressure injuries in long-term care facilities with low certified nursing assistant (CNA) levels.[3]



Odds ratios for body mass index (BMI)-based categories among long-stay nursing home residents (2015) — comparisons are to residents with normal weight. Blue represents need for assistance in performing activities of daily living. Green represents mobility impairment. Grey represents pressure ulcers.[4]

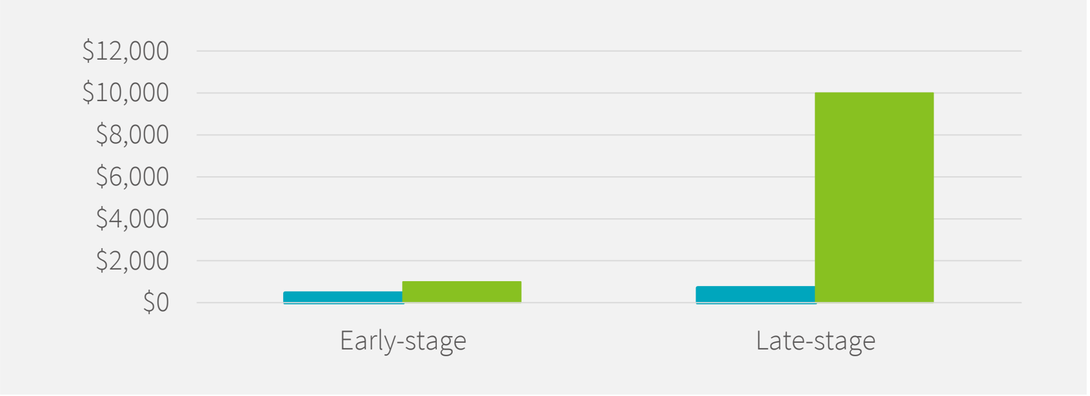
New Pressure Injuries Develop Within 4 Weeks of Long-term Facility Admission

New pressure injuries commonly develop 4 weeks after nursing home admission — incidence rate: 0.38 ulcers per person-year. Managing unhealed pressure injuries costs 2.4 more than healed.

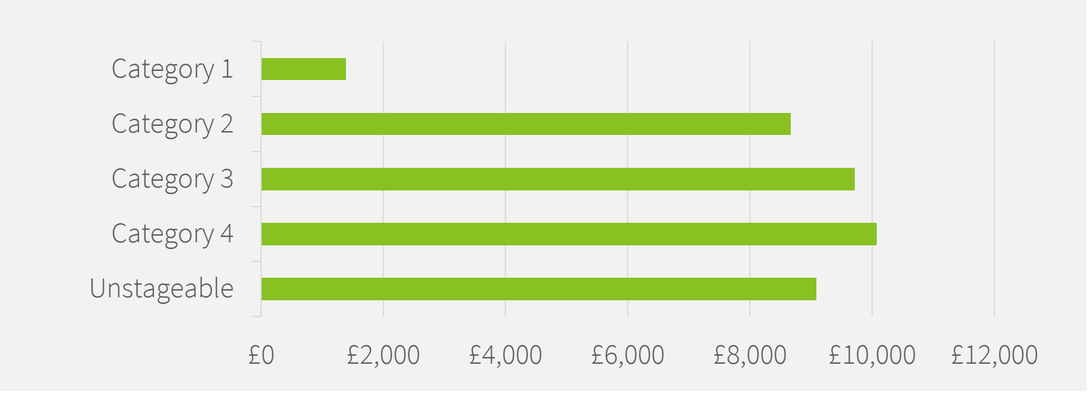
Pressure injury treatment in US nursing homes is expensive, $21,000 to $151,000 per patient, costing nursing homes $3.3 billion annually.[10-13]

Each pressure ulcer case costs the NHS an estimated £8720. Developing late-stage pressure ulcers increase healthcare cost by 86%, primarily in nursing visits and wound care supplies. 98% of the overall cost incurs in community and secondary care.[13]

Nursing time accounts for over 90% of early-stage pressure injury management costs, and mechanical ventilation significantly increases pressure injury-related costs.[12,14]



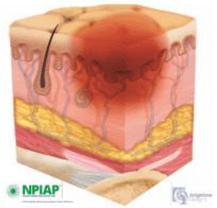
The cost of treating an ulcer in the long-term care setting. Blue represents cost per ulcer. Green represents potential acute care admission cost.[14]



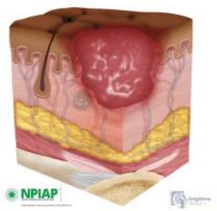
Cost of healthcare resource use associated with managing PUs in clinical practice at 2015/2016 prices.[14]

NPIAP Pressure Ulcer Classification

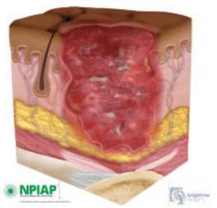
Stage	Description
Stage 1	Intact skin with non-blanchable redness of a localized area usually over a bony prominence.
Stage 2	Partial-thickness loss of skin with exposed dermis. The wound bed is viable, pink or red, moist, and may also present as an intact or ruptured serum-filled blister.
Stage 3	Full-thickness loss of skin, in which adipose (fat) is visible in the ulcer and granulation tissue and epibole (rolled wound edges) are often present. Slough and/or eschar may be visible.
Stage 4	Full-thickness skin and tissue loss with exposed or directly palpable fascia, muscle, tendon, ligament, cartilage or bone in the ulcer. Slough and/or eschar may be visible.
Unstageable	Full-thickness skin and tissue loss in which the extent of tissue damage within the ulcer cannot be confirmed because it is obscured by slough or eschar. If slough or eschar is removed, a Stage 3 or Stage 4 pressure injury will be revealed.
Suspected Deep Tissue Injury	Intact or non-intact skin with localized area of persistent non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wound bed or blood filled blister.



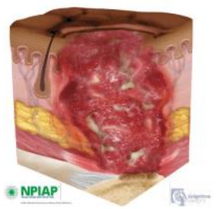
Stage 1



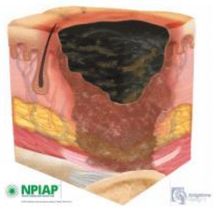
Stage 2



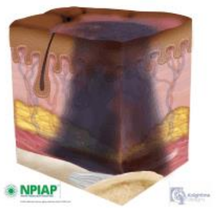
Stage 3



Stage 4



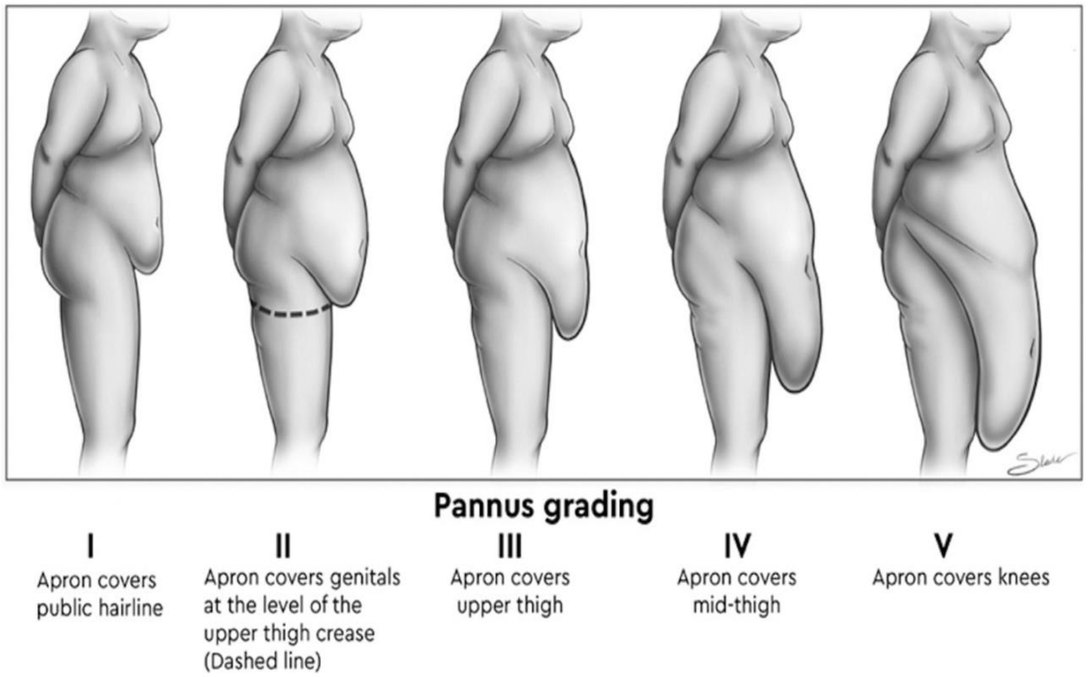
Unstageable Pressure Injury



Deep Tissue Pressure Injury

According to Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline 2019, features of obesity include:

- Loading excessive tissue weight and pressure on dependent tissues and causing vascular occlusion and tissue deformation.
- Impaired mobility increases the dragging of heels and sacrum when getting off beds and furniture, adding shear and friction to vulnerable areas.
- Excess tissue surrounding the respiratory area compromise diaphragmatic function, resulting in decreased tissue perfusion.
- Severe obesity is characterized by large, deep skin folds that trap heat and moisture between the hanging tissues. These heavy skin folds increase the pressure, friction, and shear exerted on the underlying skin, leading to maceration, inflammation, tissue/skin necrosis, and pressure injuries underneath the folds.
- The pannus (the abdominal fat and the skin fold apron) adds substantial weight to the underlying tissue, increasing pressure injury development at vulnerable areas, including the sacrum, heels, hip, pubis, thighs and torso.[15]



Pannus grading. Copyright 2019 Regents of the University of Colorado. All rights reserved. Created by Jodi Slade.[16]

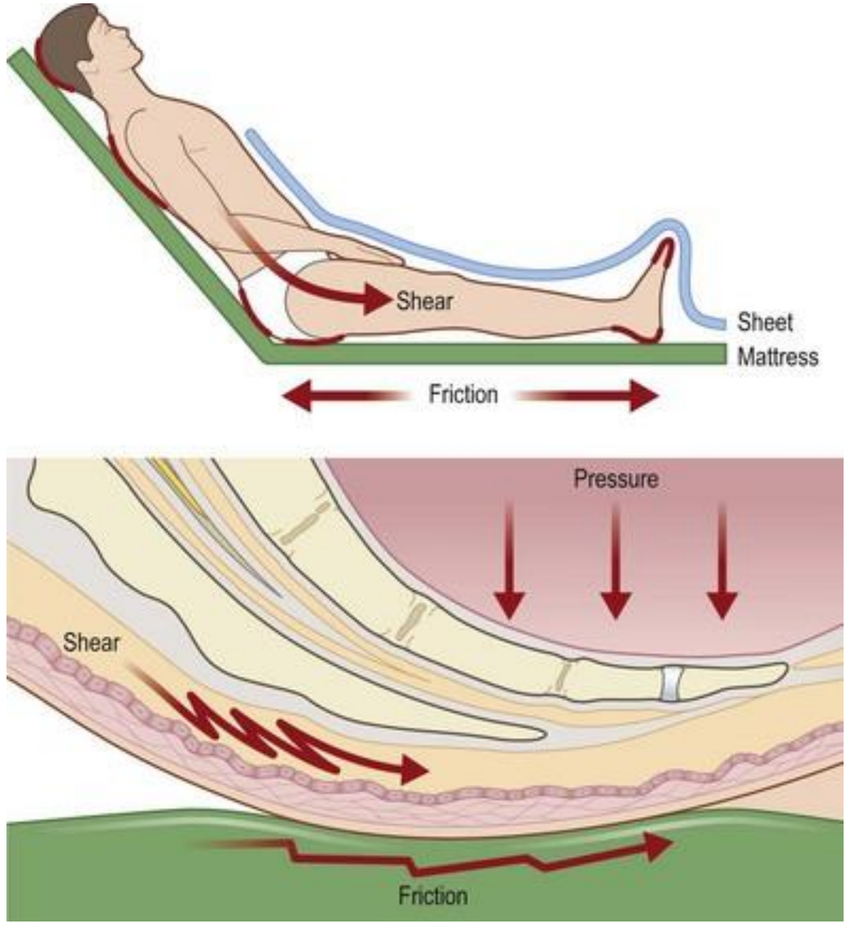
Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline 2019 definitions:

Shear

- External mechanical load that exerts force parallel to the skin surface.
- Fixed (no sliding) or slip (sliding) occurs between the skin and contact surface.[15]

Friction

- Contact force parallel to the skin surface due to internal bodyweight loads or forces exerted by a medical device.
- Static (no movement) or dynamic (relative movement) between the skin and contact surface.[15]



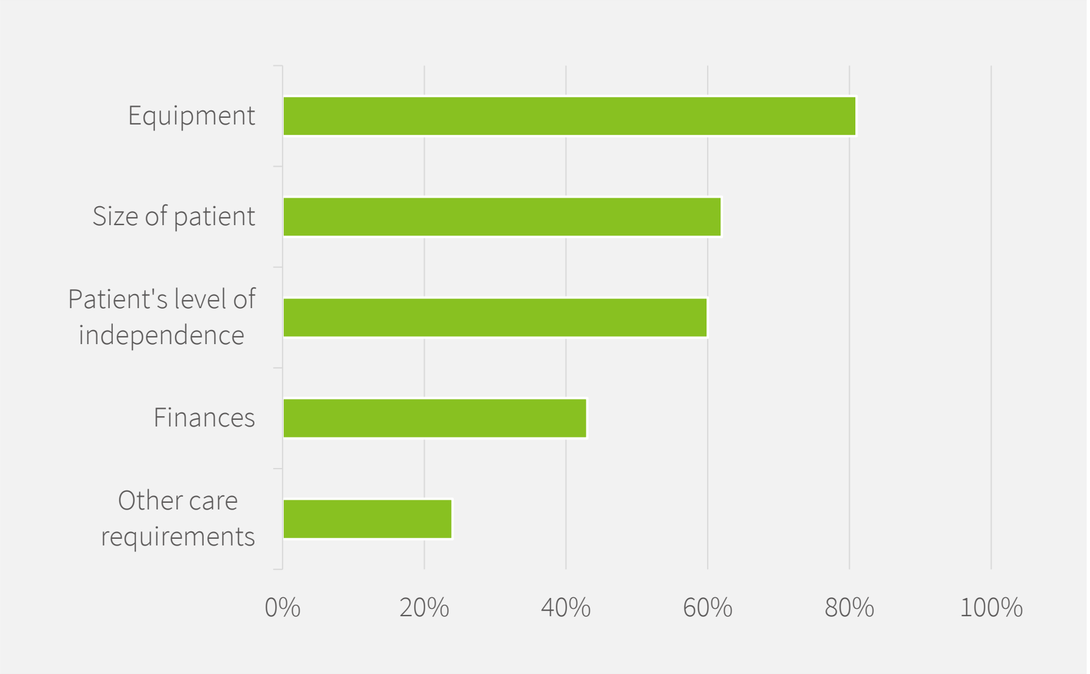
Pressure, shear, and friction are related but distinct forces which contribute to pressure sore development.[17]

Clinical Unmet Needs

Obesity may prevent admission into high-quality long-term care facilities.

62% of long-term care facilities turn obese patients away from placements due to concerns over lack of reimbursement and resources, staff injuries, and patient safety during injuries and emergencies.[6-9]

Obese residents are 72% more likely to need 2 or more trained nursing staff to complete activities of daily living (ADL). 48% of severely obese patients require extensive assistance.[7,9]



Percentage of long-term care facilities reporting transition barriers (by type).[7]

Bariatric care significantly increases cumulative lifted weight of 1.8 tons in a typical 8-hour shift, complexity of coordinating and scheduling care units, and acquiring special equipment and space.

Caring for obese residents weighing over 160 kg (350 lbs.) is challenging and problematic because that is the weight limitation for standard beds and lifts. 136 kg (300 lbs.) is the weight limit for standard assistive devices for moving.[19,5-7]

Caregivers are reluctant to care for heavier residents due to worries over work-related injuries and require bariatric-appropriate beds and equipment that accommodates residents weighing over 272 kg (600 lbs.).[6,7]

Category III (Highest risk)	• Manually transferring patient from wheelchair/bathtub to toilet/bed or from toilet/bed to wheelchair/bathtub • Repositioning a patient a dependency chair or wheelchair • Making an occupied bed • Dressing a patient (clothing) • Manually transferring a patient from bed to stretcher • Performing neurogenic bowel care in bed • Transferring a patient from bed to chair using a stand-assist lift
Category II (Higher risk)	• Transferring patient from bed to wheelchair using a mechanical lift • Repositioning a patient in bed (moving to head of bed) • Repositioning patient in bed (side to side) Weighing patient using sling lift/bed scale • Lifting patient from floor using a mechanical lift • Manually transferring a patient from bed to shower trolley • Bathing patient in bed
Category I (High Risk)	• Pushing patient in a wheelchair • Transporting patient in a shower trolley/ stretcher • Bathing patient in a shower chair/shower trolley • Applying anti-embolism stockings (TED hose)

Patient-handling tasks by risk category.[18]

46% of the global nursing staff report injuries from patient handling - lifting, repositioning, and transferring patients.

Healthcare workers worldwide have one of the highest musculoskeletal disorders (MSD) records. Most workers are overwhelmed with the risk of sustaining on-the-job injuries (back injuries make up 40% of patient handling injuries), intensifying their fear of repositioning overweight or obese patients.[20]

Slower healing and high vulnerability to infections result in complex medical complications (such as pneumonia and pressure ulcers), frequent acute care treatments, and long lengths of stay. The significant increase in caregivers' workload and institutional costs intensifies the caregivers' fear of repositioning and administering care for overweight or obese patients.[20]

Consequently, nurse staff retention declines, causing a significant labor shortage and increasing the caregiver-patient ratio.[20]

	Bariatric	Nonobese
Workdays associated with patient handling injuries	53.6	38.5
Workdays lost due to patient handling injuries	6.3	7.0

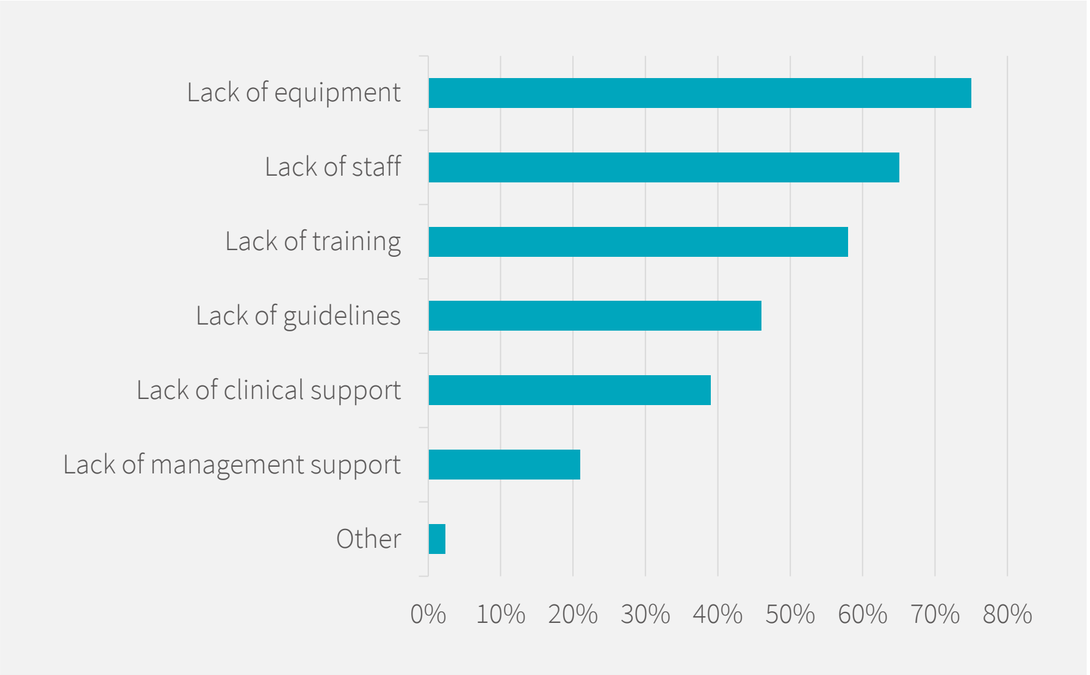
Comparison of workdays associated with injuries incurred with obese and nonobese patient handling.[21]

Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline 2019 states that bariatric-appropriate equipment is necessary to reduce pressure injury risks.

The lack of appropriate supportive equipment and adequate resources interferes with implementing preventative measures for bariatric care.[22]

Healthcare organizations must recognize and alleviate the potential harm to caregivers caused by repositioning overweight and obese patients, particularly the severely or morbidly obese. Over-exertion injures frontline workers, worsens the deteriorating resource shortage, and decreases care quality.[20]

It is critical to select more expansive support surfaces that accommodate bariatric bodies to improve pressure redistribution, shear reduction, and microclimate management, simplifying pressure injury prevention and caregivers' workload.[22]



Barriers to providing moving and handling care.[23]

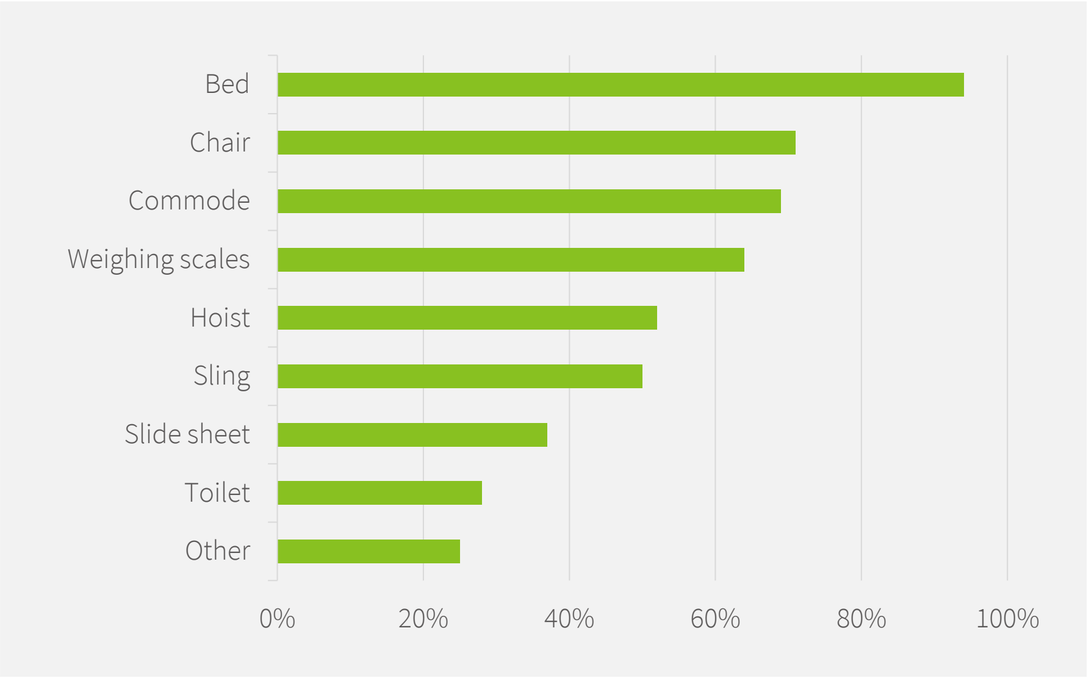
Clinical Guideline Recommends Bariatric-Specific Equipment to Reduce PI Risks

Increasing obesity services in facilities with inadequate staffing, training, and equipment for bariatric care may negatively impact the quality of care for all residents.

The availability of specialized equipment that can care for morbidly obese and above patients (BMI ≥ 40, Class) significantly improves caregivers' perception of morbid obesity as a caregiving barrier.[6-8]

Specialized equipment includes:

- Wider, larger beds,
- Special mattresses to reduce pressure injuries risks,
- Chairs and cushions,
- Wheelchairs,
- Scales,
- Hydraulic lifts, and
- Assistive devices for moving.



Frequency of delays in the delivery of specific types of rented bariatric equipment.[23]

Solution

Domus Auto Bariatric

A specialized pressure relieving support surface solution effectively improves caregivers' workflow efficiency, accuracy, and handling injury risks and pressure injury prevention, comfort, and outcome for overweight and obese bariatric patients.

1. Automated mattress firmness calibration

Automated firmness calibration optimizes pressure redistribution and caregiver workflow, lowering injury risks and setting errors.

2. Extra protection with sacral area cushioning

Sacral area combines pressure-adjustable air cells with a layer of rigid air cells, ensuring constant protection and comfort during sitting.

Whom & Where in Healthcare

- Healthcare stakeholders
  - Clinical users
    - Physical Therapist
    - Nurse Practitioner
    - Nursing Technician
    - Wound Care Physician & Nurse (tissue viability)
- Post-acute care facilities
    - Nursing Staff
    - Nursing Assistants

Auto-Adjusting Mattress Firmness Improves Caregiving Efficiency and Accuracy

Automatically adjusting the mattress firmness to the patient’s weight ensures proper pressure relief and redistribution efficiently and effectively.

Auto-adjustment enables Domus Auto Bariatric to detect and calibrate the optimal mattress firmness upon the placement of the patient's body, minimizing labor intensity and maximizing pressure injury prevention care.

Panel lock enhances security against other frequent staff and visitors from tempering with Domus Auto Bariatric’s panel to provide patients with continuous and consistent comfort and pressure distribution therapy.[24]

Increased Sitting Area Cushioning at the Sacrum Optimizes Patient Safety and Comfort

Clinical Guideline 2019 recommends supporting overweight and obese patients with air cell-based (ACB) cushions to prevent fat/tissue strain and stress.

Clinical Guideline — selecting support surfaces that maintain adequate firmness and structure during sitting improves sacrum pressure injury prevention for overweight and obese patients.[15]

Additional considerations include pressure settings, accommodation for different postural deformities, and mobility and lifestyle needs.[25]

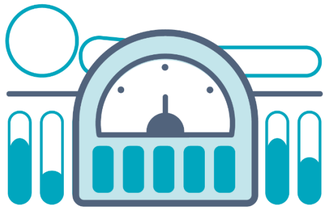
The layer of rigid air cells beneath pressure-adjustable air cells in Domus Auto Bariatric's sacral area ensures pressure relief, protection against bottom outs, and patient comfort. A double-layered design optimizes fat/tissue loading cushioning and pressure injury prevention.

Product Highlight

Features

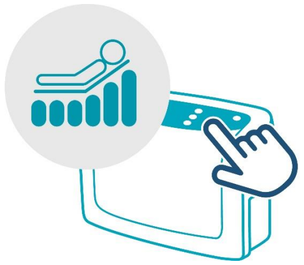
Wider, sturdier design

Wider mattress surface accommodates overweight and obese patients' larger and heavier bodies, improving pressure redistribution coverage and injury risks.
Support surface width: 120 cm.
Cell material: Nylon TPU.



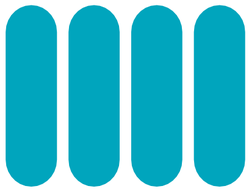
Auto-adjustment

Proprietary pressure sensing technology automates the pressure setting process and eliminates manual intervention, giving caregivers more time, hands, and focus on therapy preparations.
Maximum patient weight: 350 kg/772 lbs.



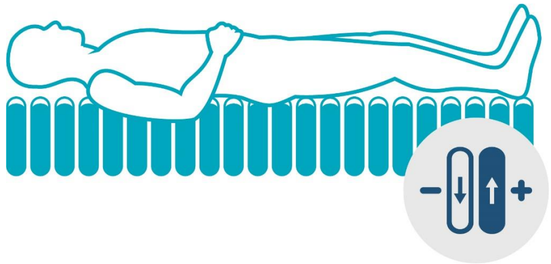
Seat inflation mode

Manually manage inflation and deflation of the air cells in the sacrum region to improve stability and comfort during sitting and activities.



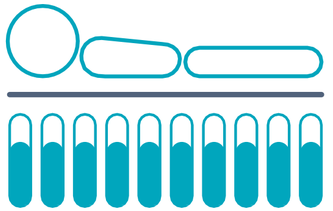
Max firm

Surface firmness maximization provides a stable and secure surface to perform supine and prone procedures efficiently and safely, preventing injury risks for patients and caregivers.



Firmness tuning

Improve patient comfort by manually micro-adjust mattress firmness. Tuning can be implemented simultaneously with alternating or continuous low pressure therapy (CLP).



Continuous low pressure (CLP)

Consistent low-pressure relief powered by a proprietary algorithm prevents pressure injuries throughout a patient's entire body for long treatment hours, increasing patient outcomes.

Specification

Model		Domus Auto Bariatric	
	Pump	Dimension	29 x 18.5 x 12.6 cm ; 11.4 x 7.3 x 5.0 in
		Weight	2.2 kg / 4.9 lbs
		Case material	Fire Retardant ABS
		Supply voltage	220 – 240 V / 50 Hz
		Operating cycle	10 minutes
	Mattress	Mattress type	20 cm / 8 in replacement
		Dimension	200 x 120 x 20 cm ; 78.7 x 47.2 x 8 in
		Cell height	20 cm ; 8 in cells
		Weight	8 kg / 17.6 lbs
		Top cover material	4-way stretch PU
		Cell material	Nylon TPU
		Maximum patient weight	350 kg / 772 lbs
		Flame retardant standards	EN597-1 ; EN597-2 ; BS7175 Crib 5

Pump: water resistant standards (IP21); Mattress: flame retardant standards (EN597-1, EN597-2), RoHS, WEEE

Citation

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