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Hospital-Acquired Pressure Injuries (HAPI): A Quality Indicator from Risk to Recovery

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ABSTRACT

Background: Hospital-acquired pressure injuries (HAPIs) remain a preventable yet persistent concern in hospitalized patients, especially those who are critically ill or immobile. These injuries serve as indicators of care quality and significantly impact patient outcomes and healthcare resources. ^1
Purpose: To review evidence-based nursing strategies for the assessment, prevention, and management of HAPIs, with clinical emphasis on current guidelines.
Methods: This narrative review synthesized literature and clinical guidelines, including EPUAP/NPIAP/PPPIA (2019) ^2 and Wound Healing Society (2023) ^3 recommendations. Two clinical case scenarios were included to illustrate practical application in diverse patient populations.
Findings: Key prevention strategies include timely risk assessment using the Braden Scale, repositioning protocols, nutritional support, and advanced support surfaces. Management requires comprehensive wound care, including appropriate dressing selection, infection control, and debridement techniques. Emerging technologies such as vacuum-assisted closure (VAC) therapy and adjunctive therapies are also noted. Barriers include resource constraints and staff training gaps. ^4,5
Implications for Practice: Integrating evidence-based risk assessment and wound care into daily nursing practice is essential. Continuous education, documentation, and interdisciplinary collaboration enhance prevention efforts and reduce pressure injury incidence.

Keywords: Pressure Ulcer; Risk Assessment; Nursing Care; Negative-Pressure Wound Therapy; Braden Scale; Evidence-Based Practice

INTRODUCTION

Hospital-acquired pressure injuries (HAPIs), previously known as pressure ulcers or bedsores, are defined as localized damage to the skin and/or underlying soft tissue, typically over bony prominences, caused by prolonged pressure, or pressure in combination with shear and/or friction. These injuries are both preventable and considered a key indicator of quality nursing care. Despite extensive awareness campaigns and the implementation of guidelines, HAPIs remain prevalent. They are associated with increased morbidity, prolonged hospital stays, higher healthcare costs, and decreased patient quality of life. Their prevention and management are, therefore, crucial priorities in clinical nursing practice.

EPIDEMIOLOGY AND QUALITY INDICATORS

Pressure injuries are widely recognized as a nursing-sensitive outcome, often used as a benchmark for quality care by institutions such as the National Database of Nursing Quality Indicators (NDNQI). HAPIs fall under outcome indicators, alongside catheter-associated infections and patient falls. While incidence rates vary, immobility, nutritional deficits, advanced age, and comorbidities such as diabetes or vascular disease are well-established risk factors. The increasing aging population and complexity of patient care further underline the urgency of robust HAPI management protocols.

PATHOPHYSIOLOGY AND RISK ASSESSMENT

Pressure injuries result when external pressure exceeds capillary closing pressure (>32 mmHg), leading to ischemia, cell death, and tissue necrosis. Common sites include the sacrum, heels, and other bony prominences.

The Braden Scale, developed in 1987, remains a standard risk assessment tool. It evaluates sensory perception, moisture, activity, mobility, nutrition, and friction/shear. Scores range from 6 to 23, with lower scores indicating higher risk. Scores of 18 or less denote "at risk" status. Despite its utility, the scale has limitations, particularly in failing to account for prior pressure ulcer history. Special consideration must be given to individuals with darkly pigmented skin, where erythema may not be readily apparent. Strategies such as enhanced lighting, palpation, and the use of technology (e.g., subepidermal moisture assessment tools) can improve diagnostic accuracy.

CLASSIFICATION AND STAGING

The National Pressure Injury Advisory Panel (NPIAP) classifies pressure injuries into several stages:

- Stage 1: Non-blanchable erythema of intact skin
- Stage 2: Partial-thickness skin loss with exposed dermis
- Stage 3: Full-thickness skin loss with exposed subcutaneous fat
- Stage 4: Full-thickness skin and tissue loss with exposed bone/muscle/tendon
- Unstageable: Obscured full-thickness skin and tissue loss
- Deep tissue injury: Persistent, non-blanchable deep red or purple discoloration
- Medical device-related pressure injury and mucosal membrane pressure injury are recognized as special categories.

PREVENTION STRATEGIES

Effective prevention is multifactorial and includes:

1. **Repositioning and Support Surfaces**
   - Repositioning every 2 hours
   - Using air-fluidized beds for advanced stages
   - Avoiding high Fowler's position to reduce shear stress o Postural alignment in seated patients
2. **Nutritional Support**
   - Early nutritional assessment and supplementation
   - Caloric goals of 30–35 kcal/kg/day and protein intake of 1.25–1.5 g/kg/day
   - Supplementation of vitamins and minerals when deficiencies are confirmed
3. **Skin Care and Moisture Management**
   - Maintaining skin hygiene o Managing incontinence
   - Using prophylactic dressings (e.g., silicone foam) over high-risk areas in ICU patients
4. **Risk Assessment and Monitoring Tools**
   - Routine use of Braden Scale, Jackson-Cubbin Scale (ICU), and Palliative Performance Scale (end-of-life patients)

CASE ILLUSTRATIONS

- **Case 1:** An elderly woman presented with dehydration, immobility, and incontinence. Her Braden score was >9. Despite early nursing assessment, she

developed Stage 2 pressure injuries on the heels and sacrum, highlighting the need for aggressive intervention.

- **Case 2:** A ventilated, obese male with a pre-existing sacral wound developed additional pressure injuries despite scheduled repositioning. This emphasized the need for advanced surface technology and continuous monitoring.

MANAGEMENT APPROACHES

Management of pressure injuries depends on the severity and presence of infection.

1. **Wound Cleaning and Dressing**
   - Use of pH-balanced, non-toxic solutions for cleansing
   - Avoiding antiseptics that damage granulation tissue
   - Dressing materials include hydrocolloids, foams, films, alginates, and hydrogels
2. **Wound Debridement**
   - Sharp, enzymatic, autolytic, biological, mechanical, or ultrasonic debridement as per wound condition
3. **Antimicrobial Therapy**
   - Culture-based systemic antibiotics for infected wounds
   - Topical antimicrobials such as silver-containing foams or iodine dressings
4. **Advanced Modalities**
   - Negative Pressure Wound Therapy (NPWT or VAC): The VAC dressings are changed on 3rd day. Promotes granulation, reduces edema and bacterial load. Complications include bleeding, pain, and restricted mobility. The machine delivers continuous or intermittent suction, ranging from 50 to 125 mmHg. During VAC therapy aware of red flag signs include active or excessive bleeding, surrounding invasive sepsis, increased pain, signs of infection, such as fever, pus or foul-smelling drainage and allergic reaction to the adhesive.
   - Growth factors, laser therapy, ultrasound, and electrical stimulation: Considered for chronic Stage II–IV injuries not responding to standard care
5. **Documentation and Monitoring**
   - Continuous documentation of wound size, stage, exudate, infection, and pain
   - Use of tools like the PUSH 3.0 (Pressure Ulcer Scale for Healing) scale for progress monitoring

RECOMMENDED NURSING CARE PROCEDURE FOR HAPI MANAGEMENT

Nursing care procedures for HAPI are essential to promote healing, reduce infection risk, and enhance patient comfort. The following standard approach is based on evidence-based hospital protocol and WHS recommendations^3:

1. **Preparation and Infection Control**
   - Identify and explain the procedure to the patient
   - Ensure privacy and optimal positioning
   - Perform hand hygiene and don clean gloves
   - Arrange sterile materials and equipment at bedside
2. **Wound Assessment and Cleaning**
   - Gently remove old dressing (moisten if adhered)
   - Assess using Braden Scale, PUSH Tool, and NPIAP staging^2,3,7
   - Don sterile gloves and collect wound cultures if infection is suspected
   - Irrigate with normal saline, or clean with sterile gauze if irrigation is contraindicated • Dry wound with gauze to minimize moisture
3. **Dressing Application and Documentation**
   - Apply prescribed dressing (e.g., Mepilex, Duoderm)
   - Label with date and time
   - Discard waste properly; perform hand hygiene
   - Document wound characteristics, Braden score, PUSH score, dressing type, and culture collection (if applicable).

4. Repositioning and Monitoring

- Reassess Braden score at least once per shift
- Reposition every 2 hours using support devices
- Educate patient and caregivers on pressure offloading and hygiene

HAPI prevention and management require interdisciplinary collaboration and nurse-led initiatives. Evidence supports the integration of multicomponent care bundles, customized repositioning schedules, and person-centered interventions. Educational initiatives, competency assessments, and leadership support are essential to bridge the gap between evidence and practice. Future research should explore implementation strategies and technology-assisted monitoring in real-world settings.

CONCLUSION

Hospital-acquired pressure injuries remain a major clinical concern. Nursing professionals are pivotal in identifying at-risk patients, initiating preventive strategies, and implementing evidence-based wound care. Adoption of current guidelines and individualized care, combined with thorough documentation and staff training, is essential for improving outcomes and reducing the incidence of HAPIs.

Implications For Practice

- Reinforces the use of validated risk assessment tools such as the Braden Scale
- Promotes guideline-driven wound care
- Supports individualized prevention for high-risk patients
- Encourages ongoing staff education and documentation

Declaration by Authors
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