

NURSE-LED INTERVENTIONS IN THE PREVENTION OF HOSPITAL-ACQUIRED PRESSURE INJURIES: A NARRATIVE REVIEW

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Abstract

Hospital-acquired pressure injuries (HAPIs) remain one of the most persistent nurse-sensitive quality indicators worldwide, contributing substantially to patient morbidity, prolonged hospital stay, and avoidable healthcare expenditure. Because pressure injury prevention sits within the direct scope of bedside nursing practice, nurse-led strategies have become the primary lever through which healthcare systems attempt to reduce incidence. This narrative review synthesises recent evidence (2023-2025) on nurse-led approaches to HAPI prevention, including structured risk-assessment protocols, multicomponent care bundles, staff education and competency programmes, and quality-improvement (QI) methodologies. Across the reviewed literature, multicomponent, nurse-driven bundles combined with sustained staff education produced the most consistent reductions in HAPI incidence, in some settings exceeding a 60% relative reduction. Risk-assessment tools such as the Braden Scale continue to show good inter-rater reliability but only modest predictive precision, underscoring the need to pair assessment with clinical judgement and consistent documentation. The review concludes with practice implications for nursing leadership, education, and future research, emphasising standardisation, interprofessional accountability, and technology-supported documentation as priorities for sustaining gains in skin-integrity outcomes.

Keywords: pressure injury; pressure ulcer; nurse-led intervention; care bundle; Braden Scale; patient safety; quality improvement

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Introduction

A hospital-acquired pressure injury (HAPI) is localised damage to the skin or underlying soft tissue, usually over a bony prominence, that develops during an inpatient episode as a result of sustained pressure, shear, or a combination of both. HAPIs are formally classified by international guidelines as a largely preventable adverse event and are widely used as a nurse-sensitive indicator of care quality, meaning that their incidence is considered directly reflective of nursing surveillance, repositioning practice, and risk-based care planning.

The clinical and financial burden associated with HAPIs is considerable. Facility-level quality data have reported per-patient treatment costs for advanced-stage and unstageable pressure injuries ranging from several hundred to tens of thousands of dollars, with one United States health system reporting an average cost of roughly \$14,500 per Stage 3, Stage 4, or unstageable injury and a cumulative annual cost exceeding half a million dollars for a single hospital campus. Global prevalence estimates vary widely by setting and population, with recent systematic reviews reporting hospital-acquired prevalence figures ranging from roughly 20% to over 50% in high-risk cohorts prior to targeted intervention, falling substantially once multicomponent prevention programmes are introduced.

Because pressure injury prevention depends on frequent skin inspection, repositioning, moisture management, nutritional support, and consistent documentation, nurses

occupy a uniquely central role in both causation and prevention. This narrative review therefore examines the recent evidence base for nurse-led interventions in HAPI prevention, drawing on quality-improvement projects, systematic reviews, and clinical audits published largely between 2023 and 2025, with the aim of identifying which nursing strategies produce the most consistent and sustainable reductions in incidence.

2. Review Methodology

This is a narrative review rather than a systematic review or meta-analysis. Recent peer-reviewed literature, quality-improvement reports, and clinical audits addressing nurse-led pressure injury prevention were identified and synthesised thematically. Priority was given to studies and reports published between 2023 and 2025 to ensure the review reflects current practice standards, including updates aligned with the 2019 International Pressure Injury Guideline issued jointly by the European Pressure Ulcer Advisory Panel, the National Pressure Injury Advisory Panel, and the Pan Pacific Pressure Injury Alliance. As a narrative synthesis, this review does not follow a PRISMA protocol and does not report a formal risk-of-bias assessment; its purpose is to orient nursing practitioners, educators, and administrators to current intervention themes rather than to provide an exhaustive quantitative synthesis.

3. Nurse-Led Intervention Strategies

3.1 Structured Risk Assessment

Systematic, validated risk assessment remains the foundation of nurse-led prevention. The Braden Scale, comprising six subscales covering sensory perception, moisture, activity, mobility, nutrition, and friction/shear, continues to be the most widely used and most extensively studied instrument in acute care. A recent systematic review of its psychometric properties reported high inter-rater reliability, with intraclass correlations generally above 0.90, but only moderate internal consistency, with Cronbach's alpha values reported in the range of 0.64 to 0.78 across included studies. This pattern suggests that while nurses using the Braden Scale tend to agree closely with one another, the tool's six subscales do not always move together in a fully consistent way, reinforcing that Braden scoring should inform, rather than replace, clinical judgement.

Emerging work has also begun to refine how Braden data are used operationally. A large cohort analysis of skilled nursing facility stays found that a recent decline in Braden score, combined with low nutrition, friction, and activity subscores, was more predictive of subsequent injury than a single static score, suggesting that trend-based monitoring may outperform one-off assessment. Separately, an audit conducted at a teaching hospital in Sudan found that a structured educational intervention paired with a standardised documentation form meaningfully improved the completeness of Braden Scale documentation across a two-cycle audit, highlighting that assessment tools are only as effective as the consistency with which nursing staff apply and record them.

3.2 Multicomponent Care Bundles

The strongest and most consistent evidence for HAPI reduction comes from multicomponent, nurse-delivered care bundles rather than any single intervention in isolation. The SSKIN bundle, an acronym for Surface selection, Skin inspection, Keep moving, Incontinence and moisture management, and Nutrition, has been widely adopted as a structured framework for bedside nursing practice. A nurse-led quality-improvement initiative at a large hospital corporation in Qatar applied the Comprehensive Unit-Based Safety Program model alongside SSKIN-based audits, staff training, and enhanced use of pressure-relieving surfaces, achieving a 64.4% reduction in overall HAPI incidence and a 66% reduction in medical device-related injuries specifically. A broader systematic review of multifaceted prevention interventions similarly found that combining educational components with structured skin-integrity care bundles and wound care protocols produced substantial prevalence reductions; in one included study, overall pressure injury prevalence fell from 60.9% to 28.7% following bundle implementation, with hospital-acquired cases falling from 52.9% to 21.3%. A separate meta-analysis focused specifically on care bundle interventions likewise concluded that standardised, bundled nursing practices outperform ad hoc or single-element approaches to prevention.

3.3 Staff Education and Competency-Based Training

Sustained staff education is repeatedly identified as a necessary companion to structured assessment and care bundles rather than a standalone solution. A quality-improvement project targeting ICU nurses used a multimodal educational approach, including posters, accessible reference materials, and a QR-code-linked Braden Scale guideline, to improve nursing knowledge and attitudes toward HAPI prevention. Reviews of multifaceted interventions have similarly found that educational components measurably improved nurses' comprehension of prevention protocols, which in turn correlated with reduced hospital-acquired ulcer rates. This suggests that competency-based, repeated education, rather than one-time training, is a key mechanism by which bundle and assessment interventions translate into sustained clinical improvement.

3.4 Quality Improvement and Implementation Science Methodologies

Several recent initiatives have applied formal quality-improvement and implementation-science frameworks to structure and sustain nurse-led prevention efforts. A multisite health system used implementation-science methods to guide the rollout of a HAPI prevention bundle across six critical care units, focusing on how nursing teams adapted and sustained the intervention over time rather than solely on the intervention's clinical content. Unit-level nursing quality initiatives have also linked structured two-person skin assessment documentation, sustained compliance monitoring, and standardised protocols to measurable year-over-year reductions in HAPI counts, with one nursing quality report documenting an 11% year-to-date reduction following protocol standardization efforts. These examples indicate that the durability of nurse-led prevention gains depends heavily on organisational infrastructure, including audit cycles, feedback loops, and nursing leadership engagement, rather than on clinical protocols alone.

3.5 Special Populations

Prevention needs vary across patient populations. A scoping review focused on patients with a body mass index of 30 or higher found that nurses frequently encounter practical barriers in this population, including insufficient bariatric equipment, inadequate staffing ratios, and gaps in staff education specific to high-BMI skin assessment, even though the review did not find a consistent association between high BMI and pressure injury occurrence across the majority of included studies. Medical device-related pressure injuries also warrant distinct nursing attention, as several of the reviewed quality-improvement projects found that devices such as tubing, monitoring leads, and respiratory equipment accounted for approximately half of all HAPI cases in some settings, indicating that device-specific skin checks should be built into routine nursing assessment rather than treated as an extension of general skin care.

4. Discussion

Taken together, the reviewed literature points to a consistent conclusion: no single nurse-led intervention is sufficient on its own to meaningfully reduce HAPI incidence. Structured risk assessment identifies at-risk patients but has only moderate predictive precision when used as a static, single-point score. Care bundles translate assessment into consistent bedside action but depend on staff who are adequately trained and organisationally supported to apply them reliably. Education improves knowledge and attitudes but shows its strongest effect when embedded within a broader quality-improvement structure that includes audit, feedback, and leadership accountability. The most successful initiatives identified in this review, most notably the CUSP-based programme in Qatar, combined all of these elements simultaneously, which may explain why their reported reductions in HAPI incidence were larger than those achieved by single-component interventions.

This synthesis also highlights a documentation gap that deserves greater nursing research attention. Several audits found that inconsistent or incomplete Braden Scale documentation, rather than the tool's inherent limitations, was a major barrier to timely intervention, suggesting that investment in structured electronic documentation and standardised forms may yield outsized returns relative to their cost. Finally, the evidence on special populations, particularly patients with high BMI and those with multiple medical devices, indicates that generic prevention bundles may need targeted adaptation, an area where nursing-led protocol development is well positioned to lead.

5. Implications for Nursing Practice and Education

Adopt structured, multicomponent care bundles (e.g., SSKIN) as the default nursing standard for at-risk patients, rather than relying on risk assessment alone.

Treat Braden Scale scoring as a trend to be monitored over time, with particular attention to acute declines in nutrition, activity, and friction/shear subscores, rather than a single static threshold.

Embed pressure injury prevention education within recurring competency-based training cycles rather than one-time orientation sessions.

Standardise documentation, ideally through electronic prompts or structured forms, to close the gap between assessment and recorded, actionable nursing intervention. Develop population-specific prevention protocols, particularly for high-BMI patients and patients with multiple medical devices, supported by adequate equipment and staffing.

Position nursing leadership and unit-based quality-improvement structures, such as audit cycles and interprofessional rounds, as essential infrastructure for sustaining prevention gains over time.

6. Conclusion

Hospital-acquired pressure injuries remain a largely preventable but persistent challenge in inpatient care, and nursing practice sits at the centre of effective prevention. Current evidence indicates that nurse-led, multicomponent strategies, structured risk assessment paired with standardised care bundles, sustained staff

education, and formal quality-improvement infrastructure, achieve substantially greater and more durable reductions in HAPI incidence than any single intervention applied in isolation. As nursing education and health-system leadership continue to prioritise skin-integrity outcomes, future research should focus on refining risk-assessment precision, standardising documentation practices, and tailoring prevention bundles to high-risk and special populations.

References:

1. Al-Managil Teaching Hospital Nursing Quality Team. (2025). Improving Braden Scale risk assessment documentation: A two-cycle clinical audit at Al-Managil Teaching Hospital, Sudan. [Clinical audit report]. PubMed Central.
2. Alshahrani, B., et al. (2024). Prevalence and predictors of hospital-acquired pressure injuries: Findings from a multicentre study. As cited in: Impact of multifaceted interventions on pressure injury prevention: A systematic review. BMC Nursing.
3. Burston, A., Fulbrook, P., & Mehicic, A. (2025). The psychometric properties of the Braden Scale to assess pressure injury risk in acute care: A systematic review. Journal of Clinical Nursing.
4. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, & Pan Pacific Pressure Injury Alliance. (2019). Prevention and treatment of pressure ulcers/injuries: Clinical practice guideline (International Guideline).
5. Hamad Medical Corporation Nurse-Led Quality Improvement Team. (2025). Hospital-acquired pressure injury reduction: A nurse-led quality improvement initiative in Qatar. PubMed Central (PMC12050131).
6. Impact of care bundles prevention of hospital-acquired pressure injuries: A systematic review and meta-analysis. (2024). PubMed Central (PMC11906361).
7. Impact of multifaceted interventions on pressure injury prevention: A systematic review. (2024/2025). BMC Nursing.
8. Jollimore, C. P. (2024). Improving hospital-acquired pressure injury prevention knowledge and awareness among ICU nurses [Doctor of Nursing Practice scholarly project]. Seattle Pacific University Digital Commons.
9. Kohlbrand, M., Scholz, T., Belin, L., & Moore, J. (2024). Beyond the surface: Nursing strategies for hospital-acquired pressure injury reduction and protocol standardization [Conference presentation]. Advocate Health Midwest Region Nursing Research & Professional Development Conference.
10. Marshall, A., et al. (2024). Hospital-acquired pressure injury prevention in people with a BMI of 30.0 or higher: A scoping review. Journal of Advanced Nursing, 80, 1262-1282.

11. McCray, S., & Donaldson, A. (2024). Early identification, intervention, and prevention of hospital-acquired pressure injuries using a nurse-driven pressure injury prevention program. *Clinical Nurse Specialist*, 38(5), 210-220.
12. Otts, J. A., Pittman, J., Riley, B., Mestas, L., & Hall, H. (2023). Academic-practice partnership to prevent and manage pressure injuries: An evidence-based quality improvement initiative. *Journal of Wound, Ostomy and Continence Nursing*, 50(6), 463-473.
13. Wynn, M., et al. (2024). Improving pressure injury risk assessment using real-world data from skilled nursing facilities: A cohort study. *International Wound Journal*.