

Including the Emergency Department to break the Cycle of Pressure Injuries: A Comprehensive Approach for Healthcare Providers

Lisa M. Grubb

Department of Oncology, Johns Hopkins Hospital

Article Info

Received: January 23, 2024

Accepted: January 29, 2024

Published: January 31, 2024

***Corresponding author:** Wei Liu, Ph.D., Institute of Digestive Disease, China Three Gorges University, 8 Daxue Road, Yichang 443000, China.

Citation: Lisa M. Grubb, (2024). "Including the Emergency Department to break the Cycle of Pressure Injuries: A Comprehensive Approach for Healthcare Providers". *Nursing and Healthcare Research*, 1(1); DOI: <http://doi.org/01.2024/1.1.001>

Copyright: © 2024 Lisa M. Grubb. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

TEXT

Pressure injuries, previously described as pressure ulcers, are a significant problem in healthcare facilities, particularly among patients who are immobile or have limited mobility.¹ The epidemiology of pressure injuries in healthcare facilities is complex and multifactorial, with many different factors contributing to the incidence and severity of these injuries.¹ Some of the key risk factors for pressure injuries in healthcare facilities include immobility, poor nutrition, dehydration, incontinence, advanced age, and underlying medical conditions such as diabetes and peripheral vascular disease.²⁻⁵ Patients who are confined to a bed or wheelchair for prolonged periods are at particularly high risk for developing pressure injuries, as are those who are unable to reposition themselves or receive regular assistance with turning and repositioning.⁶ A comprehensive analysis of 35 studies through systematic review and meta-analysis showed the overall incidence rate of pressure ulcers within hospital settings at 12% (95% CI: 10–14).⁷ The breakdown of incidence rates across stages indicated 45% (95% CI: 34–56) for both the first and second stages, 4% (95% CI: 3–5) for the third stage, and 4% (95% CI: 2–6) for the fourth stage.⁷ Unlike more settings within the healthcare system, emergency departments, typically prioritizing acute care concerns, face challenges in dedicating sufficient time to preventative skin assessments. Another meta-analysis encompassing 6 studies focused on emergency departments reported a varied incidence of pressure injuries, ranging from 0.38% to 19.1%.⁸ The pooled incidence across these studies was 6.3% in emergency departments.⁸ Furthermore, another systematic review showed that the pressure ulcer/injury prevalence ranged from 5.2% (at admission) to 12.3% (at discharge), reflecting the possibility of developing pressure injuries in emergency care settings.⁹ The most common location of pressure injury has been reported to be back and sacral region.¹⁰ In addition to the human toll of pain, suffering, and decreased quality of life experienced by patients with pressure injuries, these injuries also have significant economic costs. An analysis, based on reported cases of 2.5 million, revealed that, on average, a Hospital-Acquired Pressure Injury (HAPI) could result in an average cost of \$10,708 per patient, translating to an annual total surpassing approximately \$26.8 billion in the United States.¹¹ Through literature search, exploring pressure injury prevention measures in adult patients 80 or older admitted to medical-surgical units through emergency department, using the integrative review methodology, we identified four themes: (a) pressure injury prevention should commence early in the patient's admission, preferably in the emergency department; (b) nurses require specialized education on the importance of pressure injury prevention, identification, classification, and treatment; (c) emergency department utilization is on the rise, and long wait times place patients at a high risk for poor outcomes; and (d) multi-layered bordered foam dressing has been identified as effective in reducing sacral and heel pressure

injuries.¹²⁻¹⁴ In this paper, we present an implementation of an evidence-based practice change, aimed at addressing the prevalent issue of pressure injuries in adult medical-surgical inpatients admitted through the emergency department. Following the receipt of an ethical review exemption from the Institutional Review Board, a pre-post quality improvement initiative was executed within the confines of a 246-bed hospital. This healthcare facility, witnessing an influx of approximately 70,000 annual emergency department visits, contributing to 70% of all inpatient admissions, became the focal point of our project. Notably, the emergency department grappled with an average patient stay of 6-8 hours and was prone to instances of patient boarding, a situation exacerbated by elevated inpatient census. This practice placed patients in the emergency department at an elevated risk for pressure injuries. Within our institution, a comprehensive policy was in effect, mandating weekly skin assessments and the provision of necessary wound dressings and treatments. However, the time constraints inherent in the emergency department setting impeded full adherence to this policy. Emergency department nurses faced challenges in implementing the policy, largely due to the acute nature of the setting, time limitations, the perceived limited relevance of the Braden Scale for pressure ulcer risk assessment to acute conditions, the prevailing focus on immediate medical needs, and the absence of follow-up care responsibilities in this fast-paced environment. Our quality improvement project expanded the existing pressure injury prevention policy by implementing pressure injury bundle in the emergency department for patients 80 and older who were admitted to a medical-surgical unit. Age of 80 and older was chosen as the only risk factor by our emergency department leadership as it was part of emergency department nursing assessment and did not require additional screening. The decision to focus on octogenarians as a screening factor was made with careful consideration of both its relevance to pressure injury prevention and its feasibility within the dynamic emergency department environment. The streamlined nature of screening for octogenarians aligns with the need for quick and effective risk assessment in emergency situations. The pressure injury bundle comprised of the following: (a) skin assessment in the emergency department; (b) application of a bordered foam dressing on an intact sacrum; (c) Wound Ostomy Continence Nurse (WOCN) Consult for patients with pre-existing pressure injury on the sacrum or other locations.^{15,16} The quality improvement initiative involved educating 54 emergency department nurses on the pressure injury bundle before implementation and evaluating patient outcomes in 74 patients. The participants in the project consisted of nurses, including bedside nurses, nurse leaders, nurse educators, charge nurses, and nurse travelers. The education was provided as an online module using an evidence-based PowerPoint slide set created and recommended by the National Pressure Injury Advisory Panel.¹⁵ The slide set included prevention, identification, classification, and treatment of pressure injuries. The education also included information on the pressure injury bundle, and guidelines for documenting the application of the dressing in the Electronic Medical Record. The online module took approximately 30 minutes to complete. After the structured education was provided, the nurses implemented the pressure injury bundle over six weeks. During the six-week time frame, the pressure injury was reviewed and reinforced in daily emergency department huddles to ensure successful implementation. This implementation of the

pressure injury bundle required engagement the emergency department team and using evidence-based practice guidelines to strengthen the standards of care within the emergency department. While our project focuses on nursing interventions for pressure injury prevention, it's important to note the involvement of interprofessional stakeholders. Physicians, transport staff, and the supply chain team were integral to the project's success. Their collaboration and support were essential for a comprehensive, multidisciplinary approach. The first component of the pressure injury bundle, skin assessment, focused on the sacrum, one of the most common sites for pressure injury development. The project team proposed the use of dressings for both sacrum and heels as part of our pressure injury prevention strategy. Due to cost implications, the emergency department leadership approved the use of dressing exclusively on the sacrum. The project team respected the need to make practical decisions that align with the available resources. The second component of the pressure injury bundle was application of a bordered foam dressing. The dressing was applied to the sacrum in the emergency department immediately upon the order for admission, and this action was taken before the transfer to a med-surg inpatient unit while they were boarded in the emergency department waiting for a bed. The dressing remained in place for three days unless earlier change was needed. The nurse notified the WOCN through an electronic medical record system (third component of the bundle) if the patient required further assessment. The process involved in our project also did not require additional risk assessments, as the identification of patients aged 80 and older (i.e., "octogenarians") was the chosen risk factor for our emergency department, given the population's increased risk due to the known slow regenerative capacity of their skin.¹⁷ Data on the incidence of pressure injuries was measured before education of the nurses and during the six-week implementation to evaluate the effectiveness of education and implementation of the evidence-based pressure injury bundle. The incidence of pressure injuries decreased significantly by 53% (19 to 9 pressure injuries) post education of the nurses and implementation of the pressure injury bundle ($p = 0.01$). In addition, the project team also contacted the Director of Materials Management to find that utilization of the bordered foam dressing increased by 80% over the project's duration. Our analysis also revealed that the majority of pressure injuries occurred on medical-surgical units within 24-48 hours following transfer from the emergency department during the pre-intervention period, with 18 out of 19 instances; in the post-intervention phase, there were 6 out of 9 instances of pressure injuries. These outcomes suggest that the education of nurses and implementation of the pressure injury bundle, including early skin assessment, the use of a bordered foam dressing, and WOCN consultation, was effective in increasing the nurses' knowledge and adherence to pressure injury prevention practices, and in reducing incidence or pressure injuries. The incidence of pressure injuries in acute care hospitals remains a significant problem, despite the availability of evidence-based practice guidelines since the late 1990s. The increase in pressure injury incidence in our project, including stage I – III and deep tissue injury, within 24-48 hours of admission to the hospital, suggests that the pressure injury occurred prior to admission to the medical-surgical unit and possibly in the emergency department. According to the National Pressure Injury Advisory Panel's pressure injury prevention guidelines, pressure injury prevention

should occur as early in the patient's stay as possible. Beginning wound care assessments and management in emergency departments where it is typically not done or expected to be done is a novel initiative for many institutions. The findings from our quality improvement project have several implications for clinical practice. Preventing pressure injuries requires a multidisciplinary approach that includes regular assessment of patients' skin integrity, identification and management of risk factors, and the use of appropriate pressure-reducing devices and interventions such as repositioning and turning protocols. Education of healthcare providers, patients, and caregivers is also critical to reducing the incidence and severity of pressure injuries in healthcare facilities. The healthcare facilities should prioritize pressure injury prevention, particularly in the emergency department, and should focus on implementing early interventions that can reduce the incidence of pressure injuries in the emergency department that would impact the rate of pressure injuries in adult medical-surgical inpatients.

Some of the specific actions that healthcare facilities can take include:

1. Expanding the pressure injury prevention policy to include a bundle of interventions that can be implemented in the emergency department, including skin assessments, application of bordered foam dressings, and WOCN Consults for patients with identified pressure injury.
2. Providing education to nurses on pressure injury prevention, identification, classification, and treatment, and evaluating the effectiveness of the education using pre-posttests.
3. Targeting patients aged 80 and older, who are known to be at increased pressure injury risk due to skin regeneration factors, and implementing specific interventions for this population.
4. Engaging emergency department team members in the effort to reduce pressure injuries, and focusing on evidence-based approaches to improve the standards of care, while ensuring that expectations are realistic and within their scope of work.
5. Applying multi-layered bordered foam dressings to decrease sacral and heel pressure injuries, as this has been shown to be an effective intervention.

There were some limitations to the project. First, the documentation of the initial and follow-up applications of the bordered foam dressing in the electronic medical record was lacking. To monitor the rigor of pressure injury bundle implementation, the project lead personnel tracked the utilization of the bordered foam dressing the emergency department throughout the project. Despite the lack of documentation, the utilization of dressing report indicated an increase in usage. Second, data on the presence of pressure injuries of patients who were deemed to be admitted to medical-surgical units were collected from data documented in the electronic medical record rather than from follow-up skin assessments by a wound care specialist for all patients. While age is specifically mentioned in the context of our project, we do not intend to suggest that this is a sole

risk factor. Future quality improvement projects should focus on improving the documentation of dressing applications and follow-up skin assessments, as well as exploring additional factors that increase the risk of pressure injuries in Octogenarians. Additionally, randomized controlled studies should be considered to further explore this phenomenon. In conclusion, effective evidence-based pressure injury prevention should be implemented as early as possible in the emergency department for many patients. However, it is crucial that the intervention is carried out in a manner that is mindful and straightforward, respecting the valuable expertise and limited time of emergency department nurses. While evidence-based practice provides valuable guidance for preventative efforts, we must be willing to embrace this evidence and take proactive steps, such as using preventative dressings on at-risk patients. Risk assessments are crucial in determining best evidence-based practice, but should also consider other risk measures, such as age and Center for Medicare and Medicaid Services admission criteria, to determine when and where to apply preventative measures, accounting for the nurses' workload and risk for burnout. It is important that quality improvement interventions engage the entire team and are as effortless as possible to implement. Ultimately, we must strive for sustainable clinical intervention that will make a lasting positive impact on the lives of those that we serve.

References:

1. Mervis JS, Phillips TJ. Pressure ulcers: Pathophysiology, epidemiology, risk factors, and presentation. *J Am Acad Dermatol.* Oct 2019;81(4):881-890.
2. Alderden J, Cowan LJ, Dimas JB, et al. Risk Factors for Hospital-Acquired Pressure Injury in Surgical Critical Care Patients. *Am J Crit Care.* Nov 1 2020;29(6):e128-e134.
3. Barch DH, Jr., Seibert JH, Kandilov A, et al. Cross-setting Comparison of Risk Factors for Pressure Injuries Acquired in Post-Acute Care. *Adv Skin Wound Care.* Mar 1 2023;36(3):128-136.
4. Kim P, Aribindi VK, Shui AM, et al. Risk Factors for Hospital-Acquired Pressure Injury in Adult Critical Care Patients. *Am J Crit Care.* Jan 1 2022;31(1):42-50.
5. Wang X, Ezeana CF, Wang L, et al. Risk factors and machine learning model for predicting hospitalization outcomes in geriatric patients with dementia. *Alzheimers Dement (N Y).* 2022;8(1):e12351.
6. Sprigle S, McNair D, Sonenblum S. Pressure Ulcer Risk Factors in Persons with Mobility-Related Disabilities. *Adv Skin Wound Care.* Mar 2020;33(3):146-154.
7. Afzali Borojeny L, Albatineh AN, Hasanpour Dehkordi A, Ghanei Gheshlagh R. The Incidence of Pressure Ulcers and its Associations in Different Wards of the Hospital: A Systematic Review and Meta-Analysis. *Int J Prev Med.* 2020;11:171.
8. Liu P, Shen WQ, Chen HL. The Incidence of Pressure Ulcers in the Emergency Department: A Metaanalysis. *Wounds.* Jan 2017;29(1):14-19.
9. Sardo PMG, Teixeira JPF, Machado A, Oliveira BF, Alves IM. A systematic review of prevalence and incidence of pressure ulcers/injuries in hospital emergency services. *J Tissue Viability.* Feb 3 2023;

10. Mortada H, Malatani N, Awan BA, Aljaaly H. Characteristics of Hospital Acquired Pressure Ulcer and Factors Affecting Its Development: A Retrospective Study. *Cureus*. Dec 9 2020;12(12):e11992.
11. Padula WV, Delarmente BA. The national cost of hospital-acquired pressure injuries in the United States. *Int Wound J*. Jun 2019;16(3):634-640. doi:10.1111/iwj.13071
12. Cubit K, McNally B, Lopez V. Taking the pressure off in the Emergency Department: evaluation of the prophylactic application of a low shear, soft silicon sacral dressing on high risk medical patients. *Int Wound J*. Oct 2013;10(5):579-84.
13. Dugaret E, Videau MN, Faure I, Gabinski C, Bourdel-Marchasson I, Salles N. Prevalence and incidence rates of pressure ulcers in an Emergency Department. *Int Wound J*. Aug 2014;11(4):386-91.
14. Fulbrook P, Miles S, Coyer F. Prevalence of pressure injury in adults presenting to the emergency department by ambulance. *Aust Crit Care*. Nov 2019;32(6):509-514.
15. National Pressure Injury Advisory Panel. Definition and staging of pressure injuries slide set. National Pressure Injury Advisory Panel; 2016. <https://npiap.com/store/viewproduct.aspx?id=14035758>
16. Santamaria N, Liu W, Gerdtz M, et al. The cost-benefit of using soft silicone multilayered foam dressings to prevent sacral and heel pressure ulcers in trauma and critically ill patients: a within-trial analysis of the Border Trial. *Int Wound J*. Jun 2015;12(3):344-50.
17. Ayello EA, Sibbal GR. Anatomy and Physiology of the Skin. In: McNichol L, Ratliff C, Yates S, eds. *Wound, Ostomy, and Continence Nurses Society Core Curriculum: Wound Management*. 2nd ed. Wolters-Kluwer; 2021:20:chap 2.