D-CARE Technique: A Proactive Approach to Preventing Pressure Injuries among Inpatients

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Case Reports

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Background

Manipal Hospital, Varthur Road, established in 2014, is a 142-bed multispecialty healthcare facility committed to providing high-quality healthcare services. Over the past decade, the hospital has expanded its scope of services, incorporating advanced medical technology, dedicated specialty units, and a strong focus on patient safety and quality improvement. One of the hospital's key quality initiatives was the "D-CARE Technique" for preventing hospital-acquired pressure injuries (HAPU). Pressure injuries, also known as pressure ulcers or bedsores, occur due to sustained pressure on the skin, leading to localized damage, particularly for immobile or critically ill patients. The D-CARE initiative was implemented to minimize the incidence of pressure injuries through a structured, multifactorial approach that emphasized assessment, repositioning, use of protective devices, and staff and patient education.

Distinctiveness of the Practice

The "D-CARE Technique" was a systematic and evidence-based approach to preventing pressure injuries in hospitalized patients. This technique stands out from standard practices due to its comprehensive nature, combining multiple preventive strategies into a cohesive program. The components of the D-CARE technique include:

- **D– Device Utilization:** The use of pressure redistributing mattresses and support surfaces to alleviate pressure on vulnerable areas. The hospital used pressure-relieving mattresses and cushions for patients admitted in wards and ICU.
- **C– Colloid Usage:** Application of barrier films and hydrocolloid dressings to protect the skin from shear forces and moisture damage. The use of hydrocolloid and silicone dressings for added skin protection and barrier film sprays to protect against moisture-associated damage was also undertaken by the hospital.
- **A– Assessment:** Systematic risk assessment using the Braden Scale upon patient admission and regular reassessments throughout the hospital stay. The Braden Scale is a clinical tool used to assess a patient's risk of developing pressure injuries by evaluating six factors: sensory perception, moisture, activity, mobility, nutrition, and friction or shear. Each factor is scored, with a total score ranging from 6 to 23, where lower scores indicate higher risk. Risk levels are categorized as mild (15–18), moderate (13–14), high (10–12), and very high (≤9). It is widely used in hospitals and long-term care facilities to guide preventive measures such as repositioning, skin care, pressure-relieving devices, and nutritional support to reduce the likelihood of pressure injuries. In addition, the hospital used the PUSHtool (Pressure Ulcer Scale for Healing) is a standardized assessment tool developed by the National Pressure Injury Advisory Panel (NPIAP) to monitor the healing progress of pressure injuries. This tool assessed the wound in terms of size, drainage and tissue damage. The use of this toll facilitated the treatment

plan according to the healing stage of the patient.

- **R– Repositioning:** The hospital implemented 'Hospital Acquired Pressure Ulcer Clock' that tracks patient positioning changes to ensure timely repositioning. In addition, the hospital used pillows and other comfort devices to alleviate pressure on high-risk areas.

Fig. 1 HAPU Clock

- **E– Education:** Comprehensive training for healthcare staff on pressure injury prevention, including mandatory sessions for new nurses during induction, as well as ongoing education for patients and their families to encourage adherence to preventive measures.

This structured approach ensured early detection, proactive intervention, and sustained prevention of pressure injuries, differentiating it from conventional reactive treatment strategies.

Further, the hospital also implemented a periodic root cause analysis through 5 WHYs technique to understand the real-time documentation of pressure injuries in the hospital's incident reporting system and address gaps in prevention efforts.

Measured Effects

The implementation of pressure injury prevention protocols resulted in significant improvements in patient care and hospital efficiency. Before the intervention, Hospital-Acquired Pressure Ulcers (HAPUs) were recorded in 2023 for the months of July (2 cases), August (1 case), September (1 case), and November 2023 (1 case). However, following the intervention, from January to July 2024, no new cases of HAPU were reported, marking a 100% reduction in hospital-acquired pressure injuries. Additionally, compliance with prevention protocols improved, leading to enhanced patient and family satisfaction. The initiative also optimized hospital workflow and resource utilization, reinforcing the effectiveness of structured prevention strategies in reducing pressure injuries.

Challenges

The hospital encountered several challenges while implementing the pressure injury prevention program, requiring targeted interventions to ensure success.

- **Lack of Staff Awareness:** Initially, many healthcare providers had limited knowledge of best practices for pressure injury prevention. To address this, the hospital introduced structured training sessions and competency assessments, ensuring that staff understood proper repositioning techniques, risk assessment tools, and

effective use of preventive devices.

- **Patient Non-Cooperation:** Some patients, especially those experiencing pain or reduced mobility, were reluctant to participate in repositioning protocols. This was mitigated through pain management strategies and family involvement, where caregivers were educated on the importance of preventing pressure injuries and encouraged to assist in patient mobility.
- **Financial Constraints:** Budget limitations initially posed a challenge in acquiring pressure-relieving mattresses, pillows, and other assistive devices. To overcome this, hospital leadership allocated dedicated funds to ensure that necessary resources were available, demonstrating institutional commitment to pressure injury prevention.
- **Staff Turnover:** Frequent turnover among healthcare workers risks knowledge gaps in prevention protocols. To ensure continuity, the hospital implemented ongoing education programs, integrating pressure injury prevention into new staff orientation and periodic refresher courses.

Lessons Learned

The hospital's experience in preventing HAPU provided several valuable insights that contributed to sustained improvements in patient care and clinical outcomes.

- **Early Risk Identification is Key to Prevention**

  Early recognition of at-risk patients was critical in preventing pressure injuries. Regular Braden Scale assessments allowed healthcare providers to identify high-risk patients and implement preventive measures before skin breakdown occurred. By integrating risk assessments into routine patient evaluations, the hospital ensured timely interventions.

- **Consistent Repositioning and Skin Assessments Reduce Injury Risk**

  Implementing a structured repositioning schedule using tools like the HAPU Clock significantly minimized prolonged pressure on vulnerable areas. Regular skin assessments enabled early detection of redness, moisture-related damage, or friction injuries, allowing for prompt corrective action before pressure injuries developed.

- **Ongoing Education Ensures Sustained Adherence to Best Practices**

  Staff education was essential for the long-term success of pressure injury prevention. Through regular competency training, refresher courses, and hands-on demonstrations, healthcare providers remained informed about the latest evidence-based practices, leading to consistent compliance with preventive strategies.

- **Engaging Patients and Families Fosters Better Outcomes**

  Active involvement of patients and their families improved adherence to preventive interventions. By educating families on the importance of repositioning, skin care, and hydration, caregivers became partners in prevention, reinforcing best practices even when nurses were not present.

- **Auditing and Feedback Loops Help Refine and Improve Strategies**

  Continuous monitoring, auditing, and real-time feedback enabled the hospital to assess the effectiveness of implemented protocols. By reviewing compliance data, incident reports, and staff observations, the hospital identified areas for improvement and adjusted protocols to enhance overall prevention efforts.

These lessons reinforced the importance of a multidisciplinary, proactive approach to pressure injury prevention, leading to zero reported cases post-intervention.

Sustainability of Practice:

The D-CARE Technique was institutionalized within hospital policies to ensure its long-term sustainability and effectiveness in pressure injury prevention. By integrating D-CARE into Standard Operating Procedures (SOPs), the hospital made it a mandatory

component of patient care protocols. This ensured that all healthcare providers followed structured guidelines for early risk assessment, repositioning, skin care, and preventive interventions, embedding best practices into daily workflows.

To maintain competency and adherence, the hospital established a system of continuous training and competency assessments. Nurses, caregivers, and support staff underwent periodic refresher courses and hands-on demonstrations, reinforcing their knowledge of D-CARE techniques and keeping them updated on advancements in pressure injury prevention. Regular audits and feedback mechanisms played a crucial role in sustainability. By monitoring compliance rates, patient outcomes, and incident reports, the hospital evaluated the effectiveness of the program and identified areas for improvement. Real-time feedback allowed for timely corrective actions and refinement of strategies. Leadership support was instrumental in ensuring sustained policy enforcement and resource allocation.

Conclusion

The implementation of the D-CARE Technique significantly enhanced pressure injury prevention in the hospital, leading to zero reported cases post-intervention. By integrating it into hospital policies, staff training, and standard operating procedures, the hospital ensured long-term sustainability and adherence to best practices. Regular audits, competency assessments, and leadership support reinforced compliance and improved patient care. The initiative not only optimized hospital workflows and resource utilization but also enhanced patient and family satisfaction. Through a structured, evidence-based approach, the hospital successfully institutionalized a sustainable model for pressure injury prevention, setting a benchmark for quality care and patient safety.

References

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1 Target Population

Hospitalized patients at risk of developing hospital-acquired pressure injuries (HAPUs), particularly immobile and critically ill individuals.

2 Phenomenon of Interest

Prevention of pressure ulcers using a structured, multifactorial intervention (D-CARE Technique).

3 Context

Manipal Hospital, Varthur Road, a 142-bed multispecialty hospital, integrated the D-CARE Technique into its standard care protocols to achieve positive patient related outcomes.

Conclusion

The D-CARE Technique successfully eliminated pressure injuries, setting a benchmark for hospital-acquired infection prevention.

Key Findings

1 Improved Compliance and Patient Satisfaction

Structured prevention protocols, staff training, and regular risk assessments enhanced adherence to best practices leading to higher patient and family satisfaction.

2 100% Reduction in Hospital-Acquired Pressure Injuries (HAPUs)

After implementing the D-CARE Technique, the hospital reported zero cases of pressure injuries from January to July 2024.

3 Optimized Workflow and Resource Utilization

The initiative streamlined hospital operations, ensuring timely repositioning, effective use of preventive devices, and proactive patient care reducing complications.