Evidence-Based Pressure Injury Prevention: Setting the Standard

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This is a brief summary of a presentation given at the fall conference of Wounds Canada, in Mississauga, Ontario, on November 17th, 2017. It has been produced with the financial support of Mölnlycke Health Care. The presenters were Chester Ho, MD, professor and Director of the Division of Physical Medicine and Rehabilitation in the Department of Medicine, and Chair of Spinal Cord Injury Research at the University of Alberta; and Marlene Varga, MSc RN BScN IIWCC, wound care nurse at the Grey Nuns Community Hospital, also in Edmonton.

Pressure Injury Etiology

Pressure injuries are an internal response to an external load that is either perpendicular, as in pressure, or parallel, as in shear. To avoid severe injuries, it is important to minimize magnitudes and exposure durations to shear loads, to reduce pressure over bony prominences and to implement timely pressure and shear redistribution interventions. These considerations are especially important for individuals deemed to be at high risk of developing pressure injuries.

Use of Prophylactic Foam Dressings

The NPUAP suggests considering the use of dressings as part of a pressure injury prevention program. In a large randomized controlled trial,[1] an intervention group in an emergency department received a dressing and standard care while the control group received a different, randomized form of standard care. The research team concluded that multi-layered soft silicone foam dressings were effective in preventing pressure injuries in critically ill patients. In the study, the total treatment cost for the control group was 3.6 times higher than the intervention group, with time spent by health-care providers being the major driver of overall treatment cost.

Another study[2] demonstrated a 64% reduction in spending on pressure injury treatments per patient over the study period when sacral dressings were used as a preventative measure. In this study, total spending on pressure injuries decreased from $120 to $43 per patient.

Pressure Injuries on the Heel

The heel is particularly at risk for developing a pressure injury because of the curvature of the bony prominence and the relatively thin overlying soft tissue, both of which contribute to higher levels of compression and greater mechanical loading intensity. It is important to note that in persons with diabetes the risk is elevated significantly, not only due to lack of sensation and poor perfusion but because diabetes affects connective tissue, making it stiffer, which results in reduced ability of the tissues to distribute mechanical loads.

Supine position and head of bed elevation also contribute to compressive and shear loading.

Because health-care professionals generally cannot change the duration of pressure, it is important to change the intensity of the pressure. Complete offloading is the most effective treatment. Unfortunately, decreasing the pressure in one area may increase it in another. For example, one study demonstrated that offloading the heels with two pillows significantly increased sacral pressure.[3] The use of prophylactic foam dressings on both heel and sacrum is one strategy clinicians can use to reduce the intensity of pressure.[4,5]

In Summary

Minimizing magnitudes and exposure durations of mechanical compression and shear stress is key in preventing pressure injuries. Prophylactic multi-layer foam dressings can be an effective and cost-effective adjunct to enhance existing pressure injury prevention practices.

A study of the mechanical loading at the soft tissues[6] demonstrated that multi-layer heel foam dressings:

- Reduced the effective, compressive and maximal shear stressed by 49%, 36% and 48%, respectively
- Reduced the volumetric exposure to elevated strain levels
- Dissipated internal shear to a greater extent than a single-layer foam dressing

The AHS Provincial Committee for Pressure Injury/Ulcer Prevention (PI.UP)

The Alberta Health Services committee was formed in March 2014, with the goal of devising a provincial standard for the prevention of pressure injuries. The 25 members of the committee included operational representatives, clinical experts, provincial representatives, partners (Covenant Care and Covenant Health), ad-hoc policy members and the accreditation department.

The initial activity of the committee was an environmental scan survey focused on:

- Risk assessment
- Best practice
- Standardized protocols
- Wound care team concept
- Documentation
- Education
- Tracking/monitoring

This survey found that, while most staff were using a pressure injury risk assessment tool, knowledge of the evidence was lacking and there was a systematic lack of documentation, tracking, and data review.

An Evidence-Based Approach

The results of the survey demonstrated the need for a systematic approach for addressing pressure injury prevention at a provincial level. The next steps were to use existing evidence-based guidelines and resources for pressure injury prevention and identify—through auditing (looking at processes) and prevalence data (looking at outcomes)—how well healthcare professionals were doing with pressure injury prevention.

Achievements

To date, the PI.UP has made several noteworthy achievements in the area of pressure injury prevention and treatment, including:

- Implementation of standardized tools and guidelines to facilitate an accreditation survey
- Implementation of standardized screening tools (the Braden for adults and the Braden Q for pediatrics)
- Development of educational resources such as the pediatric pamphlet, the patient pamphlet and staff education
- Collaborations with sub-specialty health-care providers such as pediatrics, continuing care and surgery
- Alignment with other complementary programs such as Clinical Knowledge and Content Management Services (CKCM) and Clinical Information System (CIS)
- Implementation of improvements to monitoring and quality of care, including 10 audits per unit per quarter
- Implementing governance to the resources available on inSite[7]

Looking Ahead

In the coming years, the PI.UP is aiming to finalize prevalence tools and processes, to increase the number of educational materials and to further review collaboration opportunities in specialty areas such as pediatrics, continuing care and surgery. The PI.UP is also looking for new ways to deal with issues of compliance and to have staff understand the benefit of prevention measures.

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