Implementing a Pressure Ulcer Prevention Program - Heels First

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Introduction
The estimated prevalence of pressure ulcers (PUs) in Canada is 25.1% in acute care settings, 29.9% in non-acute care settings, and 15.1% in community-care settings; with heel ulcers accounting for 25% to 30% of PUs.1 PUs result from anoxia in the tissues caused by local pressure that exceeds the mean capillary closing pressure or by shearing forces that damage local microcirculation.2 Heel skin is thin and located over a prominent bony surface, which prevents pressure dissipation and can lead to rapid full thickness necrosis.3 Factors that increase risk of pressure ulceration include age, decreased sensory perception, local moisture, immobility, poor nutritional status, and friction and shear forces against the skin.4 Use of a risk assessment tool together with a device that keeps the heel off the bed surface can reduce the rate of heel ulceration and reduce treatment costs.5 The cost of per heel PU (hPU) is estimated at US$15,760,6 and hospitalization costs range from US$227,234 to US$505,669 for patients hospitalized with PUs.7

In 2004 Saskatchewan became the first province to require formal reporting of Stage 3 and 4 pressure ulcers acquired after admission to a regional health authority or health care organization. In 2006, a Saskatchewan Health Quality Council (HQC) committee, including key wound care clinicians from across the province, finalized provincial skin and wound care guidelines for the prevention and treatment of pressure ulcers. In response to the Saskatchewan Critical Incident Reporting Guidance, the HQC’s initiative and to improve health system quality performance by supporting evidence-based standards in healthcare delivery, the Regina Qu’Appelle Health Region (RQHR) Skin and Wound Care Committee decided to implement the HQC guidelines in increments. Recognizing that the RQHR does not have a risk assessment and heel pressure ulcer (hPU) prevention program and that the occurrence of pressure ulcers is often viewed as an indicator of poor quality care, the committee chose to target heel ulcer prevention as one step toward implementing the guidelines.

Objective
The primary goals were to prevent and treat PUs by maintaining heel suspension and to help prevent plantar flexion by maintaining the neutral position of the foot. This initiative had 4 objectives: 1) identify the prevalence of hPUs, 2) establish a prevention program, 3) implement a practice intervention to improve patient outcomes, and 4) assess the effectiveness of the practice intervention (currently underway).

Methods
The Ostomy and Wound Care Centre conducted a study to determine the baseline prevalence of hPUs. The hPU prevention protocol was developed by using evidence reported in the literature and the 2006 Saskatchewan Skin and Wound Care Guidelines.1 A risk assessment tool was developed to help identify patients who would benefit from interventions for hPU prevention. In January 2008, the staff was educated regarding the prevention initiative, who would benefit from interventions for hPU prevention. The risk identification and hPU prevention program was initiated by the end of January 2008. A post-intervention survey measured hPU prevalence relative to baseline to determine the effectiveness of the intervention.

Results
A tool to identify patients at risk of pressure ulceration was developed (Table 1). This tool is based on the Braden score (Figure 1) and identifies patients at risk if they meet 3 criteria: have a score of 15, are non-ambulatory, and have 2 predetermined comorbidities. A heel protector boot is indicated in patients identified as “at risk,” and the protocol used is detailed in Table 2.

In November 2007, 11% (19/169) of patients at Pasqua Hospital, 3% (5/193) at Regina General Hospital, and 19% (44/234) at Wascana Rehabilitation Centre had hPUs. The post-intervention survey (June 2008) indicated a decrease in prevalence of 2 of the 3 facilities: 3% (3/120) for Pasqua, 5% (7/144) for Regina General Hospital, and 6% (13/209) for Wascana. The average prevalence (all 3 facilities) decreased from 11% before the intervention to 4.7% by June 2008 (Figure 2).

Conclusions
The prevalence rate for hPUs in this study patient population at baseline was 11%. The risk assessment tool and intervention protocol using a heel protector boot was developed based on evidence in the medical literature and these appeared to reduce the incidence of hPUs to 4.7%. This demonstrates that interventions are useful in reducing hPU rates and improving patient care.

References

Table 1: How to determine if a Prevalon™ Pressure-Relieving Heel Protector is Indicated

<table>
<thead>
<tr>
<th>Key Indicators</th>
<th>Yes</th>
<th>No</th>
</tr>
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<tbody>
<tr>
<td>1. Total Braden Score of 15 or less (includes Activity &amp; Mobility score 1 or 2)</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>2. Non-ambulatory patient</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>3. Have 2 of the following comorbidities (below)</td>
<td>Yes</td>
<td>No</td>
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Table 2: Protocol for Use of Prevalon Heel Protectors in At-Risk Patients

1. Follow skin care procedures for assessment, cleansing, moisturizing and treatment of the heel and foot.
2. Put the heel protector on the patient.
3. Apply the heel protector on the heel if the grey layer is facing up.
4. Place the heel protector on the heel with the grey layer facing up.
5. Identify the size and position heel on the opening. Support the base to prevent displacement.
6. Place the heel protector on the heel of the patient with the grey layer facing up. Make sure each heel is up and supporting.
7. Adjust the stretch panel on the heel protector’s sides with the black stretch panel first, then the white stretch panel, until the stretch panel is relaxed against the skin.
8. Use a pillow or cushioning to support the leg(s) for additional comfort and positioning.
9. Check both heelpads to ensure that the heel is floating in the opening at the bottom of the heel protector. If not, reposition the heel and readjust the stretch panels.
10. Follow procedures for assessing pedal pulses and performing range of motion exercises.
11. Make sure the tubing is not kinked or compressed against the patient’s skin.
12. Before attaching the stretch panels, feed the tubing through opening in the wide black stretch panel.
13. Adjust the stretch panel on the heel protector’s sides starting with the wide black panel, then the white panel, until the stretch panel is relaxed against the skin.
14. Check both heelpads to ensure that the heel is floating in the opening at the bottom of the heel protector. If not, reposition the heel and readjust the stretch panels.
15. Follow the recommended procedure.

Table 2: Protocol for Use of Heel Protector Boots in At-Risk Patients

1. Follow skin care procedures for assessment, cleansing, moisturizing and treatment of the heel and foot.
2. Put the heel protector on the patient.
3. Apply the heel protector on the heel if the grey layer is facing up.
4. Place the heel protector on the heel with the grey layer facing up.
5. Identify the size and position heel on the opening. Support the base to prevent displacement.
6. Place the heel protector on the heel of the patient with the grey layer facing up. Make sure each heel is up and supporting.
7. Adjust the stretch panel on the heel protector’s sides with the black stretch panel first, then the white stretch panel, until the stretch panel is relaxed against the skin.
8. Use a pillow or cushioning to support the leg(s) for additional comfort and positioning.
9. Check both heelpads to ensure that the heel is floating in the opening at the bottom of the heel protector. If not, reposition the heel and readjust the stretch panels.
10. Follow procedures for assessing pedal pulses and performing range of motion exercises.
11. Make sure the tubing is not kinked or compressed against the patient’s skin.
12. Before attaching the stretch panels, feed the tubing through opening in the wide black stretch panel.
13. Adjust the stretch panel on the heel protector’s sides starting with the wide black panel, then the white panel, until the stretch panel is relaxed against the skin.
14. Check both heelpads to ensure that the heel is floating in the opening at the bottom of the heel protector. If not, reposition the heel and readjust the stretch panels.
15. Follow the recommended procedure.

Figure 1: Braden Scale for Predicting Pressure Ulcer Risk

Figure 2: Pre- and Post-Intervention Average hPU Prevalence