



RESEARCH PAPER

The Use of a No-sting Barrier Film Treatment Protocol Compared to Routine Clinical Care for the Treatment of Stage 1 and 2 Pressure Injuries in Long-term Care



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Abstract Pressure injuries increase morbidity and mortality in geriatric patients by 400%. Residents in long-term care (LTC) are at high risk of developing pressure injuries because of limited mobility, poor nutritional status, impaired cognition, and incontinence. This study aims to determine whether a no-sting barrier film (NSBF) treatment protocol is more effective than current physician practices for treating stage 1 and 2 pressure injuries in LTC. A retrospective cohort study of 129 residents from one LTC facility was performed after a six-month implementation trial of a NSBF treatment protocol. The six-month incidence rate of stage 1 and 2 pressure injuries was 9% and 38% respectively. There was a statistically significant reduction in healing time in those treated with the NSBF protocol. In summary, the NSBF protocol reduces healing time of stage 1 and 2 pressure injuries; this protocol could be easily incorporated into existing pressure injury treatment strategies in LTC.

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Introduction

The prevalence of pressure injuries in Ontario ranges from 22.1% in community based settings to 29.9% in non-acute care settings¹; pressure injuries also increase the risk of

mortality among geriatric patients by as much as 400%.¹ Residents in long-term care (LTC) facilities are at a higher risk of developing pressure injuries because of factors that may include limited mobility, poor nutritional status, impaired mental functioning, and incontinence. These factors increase the chance of skin breakdown and complicate treatment.^{2–4} Furthermore, because LTC residents have multiple chronic diseases and may have increased medication burden,^{5,6} wounds that may be healable in younger populations are deemed as maintenance or unhealable wounds.⁷

Vital to supporting wound healing, current best practice guidelines for treating pressure injuries recommend off-loading pressure, reducing friction and shear forces, appropriate debridement, proper nutrition, infection

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control, and maintaining proper moisture balance.^{1,8} Chronic wound exudates and moisture from fecal or urinary incontinence can damage healthy tissue around the wound leading to peri-wound maceration and infection^{8,9}; this delays pressure injury healing and leads to poor quality of life, longer treatment times, and increased healthcare costs. A 2012 UK study showed the significant economic cost of pressure injuries on the health care system. The study reported the cost of treating a single episode of stage 1 and 4 pressure injuries to be £1214 and £14,108 respectively.¹⁰

One method of maintaining proper moisture balance is the use of barrier products such as no-sting barrier creams and sprays; these have been developed to maintaining appropriate moisture balance.¹¹ No-sting barrier films (NSBF), when applied to intact or damaged skin, have been found to form a long-lasting waterproof barrier to protect the peri-wound skin, and acts as a protective barrier against wound fluids, body wastes, perspiration and friction.¹¹ Despite their routine use in protecting peri-wound skin, there are currently no studies that investigate the effects of NSBF in treating pressure injuries of LTC residents.

Objective

To determine if the application of a barrier cream twice a day (for stage 1 injuries) or a barrier spray twice a day (for stage 2 injuries) is more effective for the treatment of pressure injuries in LTC residents when compared to routine practices.

Methods

Ethics approval was granted by Hamilton Integrated Research Ethics Board (Study #14-103-C).

Study Design

A retrospective cohort study was performed on all residents admitted to one LTC facility in Hamilton, ON, Canada between September 1, 2013 and February 28, 2014 after a 6-month implementation trial of an NSBF protocol (3M™ Cavilon™ No-Sting Barrier Film) developed by the LTC facility clinical staff.

Sample

One hundred twenty-nine LTC residents admitted to the facility between September 2013 and February 2014 were included in this study. They resided in five home areas of approximately equal size. All residents in each home area were assigned to either the NSBF protocol (interventional protocol), or routine care (control arm). Fifty-six residents from two home areas under one LTC attending physician

were assigned to receive the NSBF protocol; 73 residents from three home areas under two different LTC attending physicians were assigned to routine care, the control arm.

NSBF Protocol

Stage 1 and 2 pressure injuries identified during routine clinical care were assessed by nursing staff and documented on the resident's electronic medical record. If the resident resided in the intervention home areas, the nursing staff initiated the NSBF protocol immediately and noted this on the resident's care plan. The NSBF protocol directs staff to apply a barrier cream twice daily to any stage 1 pressure injury, and a barrier spray twice daily to any stage 2 injury until a stop order was received from the LTC attending physician. For those residents residing in the control home areas, routine clinical care and treatments deemed appropriate by their LTC attending physicians were followed.

Regardless of home area, all identified stage 1 or 2 pressure injuries automatically triggered a referral to the facility's wound care nurse. For those residing on the intervention home areas, the wound care nurse could request termination of the NSBF protocol if the wound was misidentified as a stage 1 or 2 pressure injury. LTC attending physicians were notified of any pressure injuries identified.

Outcomes

The primary outcome for this study was the time to healing for identified stage 1 and 2 pressure injuries in each arm.

DATA Collection

Retrospective data abstraction from resident charts identified demographic data and the weekly documented wound status (e.g. worsening/no improvement, improving/healing, healed) over the course of four weeks by the wound care nurse. Data abstraction was completed by one author, who was blinded to the nature of the intervention, and which home areas were assigned to receive the NSBF treatment protocol.

Each pressure injury identified was considered an independent event, even if multiple pressure injuries were identified on a particular resident at the same time, or at different times during the six-month review. Concurrent stage 3, 4 or unstageable pressure injuries, or other wounds including skin tears, friction, sheer and moisture-related injuries were not counted in the data collection.

DATA Analysis

In the literature, the median time to healing of small stage 2 pressure injuries was 33 days.¹² The authors

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