

# Pressure Injury Prevention Using Low Air Loss in the Burn ICU

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## Introduction

Low air loss support surfaces have been used for the prevention and treatment of pressure injuries (PI), formerly pressure ulcers, for many years<sup>1</sup>. Incidence rates for an intensive care unit (ICU) may be as high as 38 percent<sup>1</sup>. The risk factors and incidence of PI in the burn population are not well known<sup>2</sup>. There is some data to suggest burn patients and possibly Stevens-Johnson Syndrome patients are particularly at risk of developing PIs based on admission Braden Scale scores<sup>3</sup>. The average hospital-acquired pressure injury (HAPI) can cost a facility \$70,000<sup>1</sup>, and possibly more in the burn population due to multiple comorbidities such as immobility and protein loss. The aim of this pilot study was to examine—with the use of a high-volume low air loss therapeutic mattress—the incidence of PIs in an initial group of patients admitted to an acute burn unit. The study was conducted in the southern part of the US.

## Methods

After obtaining IRB approval, eligible consecutive adult patients were admitted from Jan. 2016 to June 2017 to a regional burn center and enrolled. Subjects who would normally be placed on air fluidized therapy were placed instead on a high-volume low air loss surface. All other routine unit protocols were followed. General demographic data included age, gender, height, and weight. Medical history, major comorbidities, and pre-albumin were also collected, along with type, percentage, and degree of burn. All subjects were assessed upon admission for pre-existing pressure injuries, and were followed

the length of the admission and reassessed upon discharge. When applicable, the location and stage of the PI was noted. Qualitative survey data was also collected from the nursing staff who used the surface.

## Results

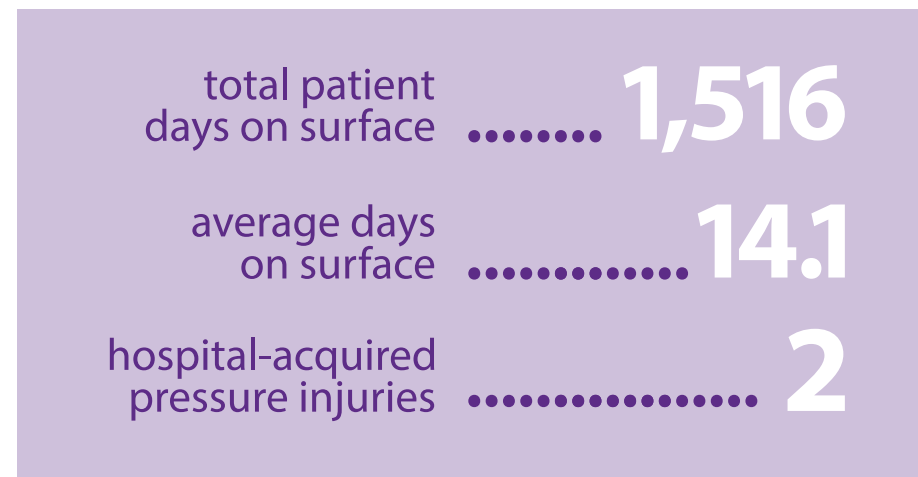
108 patients were enrolled in the study. Of those, 76 were male and 32 were female. Fourteen of the subjects were not burned but were followed because of complex skin diagnoses such as necrotizing fasciitis and Stevens-Johnson syndrome. Of those burned, the majority had second to fourth degree burns. The length of time on the high-volume low air loss surface ranged from one to 91 days. The average length of time was 14.1 days, with 1,516 total days on the surface. Twenty-one patients were admitted with pre-existing pressure injuries. Two received a hospital-acquired pressure injury; both had a Stage 2 PI to the coccyx.

## Conclusion

While this was a pilot study of 108 patients, only two patients obtained a pressure injury on the high-volume low air loss mattress, showing promise for the reduction of HAPIs in the burn population. The results of this pilot study warrant further study with a larger sample.

## References

1. National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. Emily Haesler (Ed.). Cambridge Media: Osborne Park, Western Australia; 2014
2. Redelings, M. D., Lee, N. E., & Sorvillo, F. (2005). Pressure ulcers: more lethal than we know. *Advances in Skin in Wound Care*, 18(17), 367-372.
3. Lewis, G. M., Pham, T. N., Robison, E., Otto, O., Honari, S., Heimbach, D. M., Gibran, N. S. (2012). Pressure ulcer and risk assessment in severe burns. *Journal of Burn Care*, 33(5), 619-623.



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