

# High Volume Low Air Loss Surfaces in Burn Patients

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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%<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 are particularly at risk of developing PI based on admission Braden scores<sup>3</sup>. The aim of this pilot study was to examine, with the use of a high volume low air loss therapeutic mattress, the incidence of PI of a small group of patients admitted to an acute burn unit. The study was conducted in the southern part of the US. The average hospital-acquired pressure injury (HAPI) can cost a facility \$70,000<sup>1</sup>. This amount may be higher in the burn population due to multiple comorbidities, such as immobility and protein loss.

## Methods

After obtaining IRB approval, consecutive adult patients were admitted from January to June 2016 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, as well as the type of burn, percentage of burn, and degree of burn. All subjects were assessed upon admission for pre-existing pressure injuries. All subjects were followed the length of the admission and reassessed upon discharge. For those patients with a PI, the location and stage of the PI was noted. Qualitative survey data was also collected from the nursing staff using the mattress.

## Results

Eighteen patients were enrolled in the study. Of those, twelve were male and six were female. The average age was 57 years old. Four of the subjects were not burned but were followed because of complex skin diagnoses such as necrotizing fasciitis and Stevens-Johnson syndrome. Five of the subjects

experienced an inhalation burn. Twelve had thermal burns of varying degrees. Of those burned, all had second degree burns and eight had third degree burns. The length of time on the high volume low air loss surface ranged from 1 to 91 days. The average length of time on the surface was 19.61 days, with total patient days on the surface 353 days. Four patients were admitted with pre-existing pressure injuries. One patient received a hospital-acquired pressure injury—a Stage 2 PI to the coccyx.

## Qualitative Data

The nursing staff reported that the mattress was easy to use and patients could be turned easily. Staff also reported that the mattress could accommodate all sizes and weights of patients.

## Conclusion

While this was a pilot study of 18 patients, only one patient obtained a pressure injury on the high volume low air loss mattress. A high volume low air loss mattress shows promise for the burn population. This mattress may reduce the number of facility-acquired pressure injuries in the burn population. The results of this pilot study warrant further study with a larger sample.

## References

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