

## Pressure Reducing Devices Versus Other Interventions Reducing Pressure Ulcer Development

**By: Kayla Mueller and Stephanie Walter**

### Overview:

1. Purpose of Study: The purpose of this study was to compare multiple interventions to reduce pressure ulcers. It was used to determine which interventions seemed to be the most effective and how current interventions can be improved.
2. Design: Randomized study that included multiple hospitals and multiple interventions geared towards decreasing the incidence of pressure ulcers. It included patients in all stages, but focused mainly on surgical and ICU patients.
3. Sample: It included multiple hospitals all of which continued to use their current protocol in preventing pressure ulcers, but also implementing new interventions.

### Results

The study revealed that four interventions seemed to stand out in their success compared to others. These included nutrition, skin, visual tools, and hospital acquired pressure ulcer (HAPU) staging. Other interventions were still effective in preventing pressure ulcers, however, these four were highlighted as the most influential. The study concluded with the recognition of all interventions as being potentially helpful.

### Strength of the Study

Level of the Study: II

Quality of the Study: High

### Clinical Significance

The results of this study were found to draw attention especially to continual monitoring and the nutritional aspect of care. It seemed to display that the simply task of monitoring your patients skin and their diet seemed to be one of the main factors contributing to the decrease in pressure ulcer development. Emphasizing the importance of skin care and nutrition, along with turning patients, as well as many other interventions will decrease pressure ulcers in hospitalized patients.

### Reference

- Pahola, W., Malik, M., Mishra, M., Campbell, J., Nair, K., Wald, H., & Vialeck, R. (2015, June). Comparative Effectiveness of Quality Improvement Interventions for Pressure Ulcer Prevention in Academic Medical Centers in the United States. *The Joint Commission Journal on Quality and Patient Safety*, 41(6).

### PICOT Question

In the immobile population, do the use of pressure reducing devices versus other nursing interventions reduce the occurrence of pressure ulcers?

Pressure ulcers have been an ongoing problem in the medical field for decades. It has been seen in many nursing areas, from older adult to neonatal medicine. It is defined as a "localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear" (*Coleman, Susanne, et al., 2014*). Pressure

ulcers can be classified from a Category I, only presenting signs of redness in a particular area, to a Category IV, where fat, muscle, and even bone have been damaged or lost. Not only do these pose a strain on someone's quality of life, but also the finances of healthcare facilities. Due to nurse workload, finding time to simply turn a patient to ensure their skin integrity,

can be impossible. Posing the issue of nurse-to-patient ratio as a problem that contributes to pressure ulcer development.

The patients that are most likely to develop pressure ulcers are those that are extremely ill and/or immobile. This state of immobility can cause a whole host of issues in a severely ill or immobile patient including, but not limited to, muscle atrophy, swelling, redness, atelectasis, pulmonary embolism, deep vein thrombosis, etc. All of which can lead to even further complications in a hospitalized patient.



### Overview:

1. Purpose of Study: The purpose of the study was to compare the usage of pressure reducing mattresses and pressure reducing overlays
2. Design: A Quasi experimental study that included patients in an icu setting with patients being on a mechanical ventilator for more than 24 hours.
3. Sample: It included one hospital with multiple patients who were in an icu setting on mechanical ventilation for more than 24 hours.

**Results:** The results revealed that a pressure reducing mattress reduced the number of pressure ulcers in the icu patient population versus the overlay that was also provided.

### Strength of the Study

Level of the Study: III

Quality of the Study: High

### Clinical Significance:

The results of the study found that using a pressure reducing mattress versus an overlay helped to reduce the number of pressure ulcers in patients in an icu on mechanical ventilation. The mattress had a greater cell capacity; meaning that there would be more of a difference in the shifting on the air versus the overlay having a smaller cell height that would have minimal air shifting. While the mattress and overlay were doing a lot of the shifting of the weight, there was also the standard protocol of repositioning the patient as well.

### References

- Manzano, F., Perez, A., Colmenero, M., Aguilar, M., Sanchez, C. E., Reche, A., Talavera, J., Lopez, F., Barco, S. F., & Fernandez, M. E. (2013). Comparison of alternating pressure mattresses and overlays for prevention of pressure ulcers in ventilated intensive care patients: a quasi-experimental study. *Journal of Advanced Nursing* (John Wiley & Sons, Inc.), 69(9), 2099-2106. <https://doi.org/ezproxy.libraries.wright.edu/10.1111/jan.12077>

# Pressure Ulcer Effect on Immobile Patients

Made by: Tyler & Corrine

## Overview: Pressure Ulcer Effect on Older Immobile Population

**Purpose of Study:** Pressure ulcers have remained a persistent problem in the immobile population in health facilities and prevention has been evasive. The diversity of available support systems offers some options of choice, but a lack of direct comparison of performance in randomized controlled trials makes it difficult to determine which is superior. The primary endpoint of the study was development of PUs over the 30-day monitoring period.

**Design:** The design was patients 70 and older, PU free on enrollment, confined to be for more than 15 hours daily, reduced mobility and absent or minimal positioning ability, and Braden score of <15.

**Results:** The conclusion of the study found the APAMs to be superior to the VFM for PU prevention in elderly patients who were bedridden for more than 15 hours daily, severely dependent and at moderate to high risk of pressure ulcers (Sauvage et al, 2017). The study determined the risk for appearance of pressure ulcers was 7.57 times greater in the VFM group as compared to the APAM group (Sauvage et al, 2017).

**Clinical Significance:** There are recognized predisposing factors that contribute to the formation of PUs. Bluestein & Javaheri (2008) identify these as intrinsic and extrinsic factors. Intrinsic factors include things such as limited mobility, poor nutritional status, comorbidities, and aging skin. Extrinsic factors are friction, shear, and moisture. Age is an intrinsic factor that has significant bearing on development of PUs because it contributes to decreased mobility, and increased probability of comorbidities and a decreased rate of healing.

**Recommendations:** One recommendation was to discontinue VFMd and movement to mandatory use of APAMs. Another recommendation would be repositioning of patients every 2-4 hours performed by the staff. Continual monitoring of the patients would help to control any pain or areas being affected with pressure that is being applied due to lack of movement.

## PICOT Question:

In the immobile population, does the use of pressure reducing devices versus other nursing interventions reduce the occurrence of pressure ulcers?



Prevention has been the primary focus of pressure ulcer reduction in the healthcare industry. Pressure ulcers (PUs) also known as decubitus ulcers, pressure sores and bedsore are an unfortunately common condition encountered in both acute and long-term facilities, as well as home health settings. They are a significant cause of pain, suffering, morbidity and possible mortality in the patient population, affecting approximately 3 million adults annually in the United States alone. Despite being actively addressed over the past two decades, the prevalence rate for PUs has remained relatively constant while costs associated with their care have continued to increase

## Overview: Efficiency of Repositioning Patients as PU prevention intervention

**Purpose of Study:** Repositioning has often been conceptualized as simply turning the patient from side to side on the surface that he or she is lying upon IN practice, the patient is placed in a side-lying position with the pelvis rotated 30° from supine. Placing a patient in a true lateral position is typically discouraged because it is believed to cause higher tissue contact points over the trochanter compared to the 30° tilt (The prone position, while it decreases sacral area pressure, is rarely used due to lack of patient comfort and physiologic considerations following surgery. There has been conflicting research regarding positioning of the head of the bed and knees. One mentioned study found the optimal head of the bed to be 60° for prevention of sacral pressure points. While another study found lowest tissue pressure when the head of the bed and the patient's knees were also elevated at 30°.

**Sample:** Studies were limited to prospective randomized clinical trials or quasi-experimental studies that compared patient repositioning to any other preventative interventions or any study that compared various techniques of repositioning such as turning frequency

**Results:** The conclusion obtained by the study authors was that they felt, in their clinical experience, validation of the practice of regular repositioning of immobilized patients for prevention of PUs, but that the "evidence documenting the efficacy is clearly lacking: further comment that while current pressure ulcer repositioning recommendations reflect both historical and established practices, they do not provide any guide when clinical circumstances require deviation or modification Patient repositioning is a labor-intensive measure which, therefore, requires its efficacy to be proven worthwhile in a cost-benefit analysis in comparison to other possible preventative measures. The authors also mention that the current population is growing older, sicker, and heavier, resulting in a growing group of patients that will require PU prevention, placing a strain on the current nursing workforce.

**Clinical Significance:** Treatment for PUs can be performed in an acute or long-term care facility depending on the severity of the ulcer and the overall health of the patient. More acute and less severe cases require less invasive procedures or may heal spontaneously. While deeper injury involving cutaneous tissues require debridement or surgery. Overall, the best treatment for pressure ulcers is prevention. This prevention includes the elimination of extrinsic causative factors and the modification of intrinsic factors when possible. While the standard of care has been manual repositioning, studies have indicated that the use of pressure redistributing devices provide better prevention efficacy.

**Implications:** Patients who develop pressure ulcers can have other problems later on. The risk for infection becomes increased as well as the risk for the pressure ulcer becoming more serious. Many of the immobile population suffer these due to not being repositioned enough or as often as needed. Not having the proper interventions or techniques being used can be the primary cause for this.