Let’s get comfortable: Preventing pressure ulcers

By Amy B. Stafford, MSN, RN, CMSRN, and Jeanne C. Brower, MSN, RN-BC

Pressure ulcer prevention presents many challenges to nurse administrators. Pressure ulcers are defined as 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. The negative effects of pressure ulcers are significant; they can impede recovery, cause pain or infection, and increase hospital length of stay and costs. In addition, pressure ulcers are associated with poor prognosis and may lead to sepsis and death in some patients. The cost of pressure ulcer treatment is substantial; annually, 2.5 million adult patients are treated for pressure ulcers in U.S. acute care facilities at a cost of $11 billion.

The need for support

According to the Centers for Medicare and Medicaid Services (CMS) pressure ulcer guidelines, preventing pressure ulcers is a priority for healthcare professionals. Updated clinical guidelines keep prevention and treatment of pressure ulcers central to safe patient care. According to the Agency for Healthcare Research and Quality, the average pressure ulcer-related hospitalization ranges from 13 to 14 patient days and costs between $16,755 and $20,430, depending on medical circumstances. The Institute for Healthcare Improvement reports that nearly 60,000 hospital patients die every year due to pressure ulcer complications. Adults over age 65 represent the majority of patients with pressure ulcers.

Specialized support surfaces, such as mattresses, beds, and cushions, reduce or relieve the pressure that the patient’s body weight exerts on skin and subcutaneous tissues as it presses against the surface of a bed or chair. Use of support surfaces, along with other interventions, is an appropriate strategy to prevent pressure ulcers in both institutional and noninstitutional settings.

Air mattress overlays (also called waffle mattresses) and cushions are static support surfaces with layered air inserts that are applied to the top of a mattress or chair. Support surfaces are specialized devices used for pressure redistribution and are designed for management of tissue loads, microclimate, and other therapeutic functions. Pressure management, comfort, and postural control are the hallmarks of overlays. Despite the increasing use of support surfaces over the last 30 years, there’s limited published research on their effectiveness. Randomized clinical research studies on the efficacy of these surfaces will add to the body of knowledge on the subject. The pressure ulcer data that we collect and report quarterly to the National Database of Nursing Quality Indicators (NDNQI®) were initially used for a quality improvement project on a 30-bed medical-surgical unit located in our 140-bed rural community acute care hospital. We began evaluating methods to decrease the rate of pressure ulcers because our prevalence of pressure ulcers exceeded the national benchmark. Before the study, air mattress overlays and seat cushions were available; however, use was limited by inadequate storage on the units and a remote warehouse location.

How effective are support surfaces?

We conducted research to investigate the efficacy of the use of air mattress overlays and seat cushions on pressure ulcer prevalence in patients admitted to the medical-surgical unit. Sacral ulcers were the primary area of skin breakdown.

Before the study, we educated patients, staff members, and families about the proper use of air mattress overlays and seat cushions to ensure proper use during data collection. Environmental services staff placed air mattress overlays on patient beds as they were cleaned and readied for use and added seat...
cushions and hand pumps for the mattress overlays in patient rooms. Nursing staff members were responsible for correct mattress inflation and maintenance.

Our study population consisted of adult medical-surgical patients with varying primary diagnoses. We excluded patients who were transferred from other hospitals or units, bariatric patients already on specialty mattresses, patients who required another type of specialty bed, and those who weren’t on air mattresses and cushions from admission to discharge.

The sample size and unit census of this study was 22 patients. The average patient age in this sample was 67, and 59% of the patients were women. Ninety percent of the patients had one or more of the following contributing risk factors: albumin level less than 3.5 g/dL, bed bound/bed rest, chair bound, dehydration, diabetes/hyperglycemia, fecal incontinence, multisystem failure, obesity, peripheral vascular disease/poor circulation, and/or urinary catheter in place.

A hospital survey coordinator followed the NDNQI RN survey data collection protocol by assessing all 22 patients assigned to the unit during data collection. These data provided the comparison sample used in our study. We observed a significant decrease in the rate of pressure ulcers for patients using the air mattress overlays and seat cushions; the rate was below the NDNQI benchmark mean.

**Comfort for the future**

Based on the CMS nonpayment for hospital-acquired pressure ulcers (HAPUs), hospitals need to implement pressure ulcer prevention programs. From an evidence-based practice perspective, results of this research can be used to inform nursing administrators on medical-surgical units regarding best practices for utilization of air mattress overlays and seat cushions. These interventions to decrease the potential for pressure ulcer development are important, and strategies for pressure ulcer prevention must be consistent. Routine education on the use of these interventions is also imperative for staff members, patients, and families, and must be implemented on a regular basis.

One limitation of this study is its small sample size. Because this study was conducted in a rural hospital in the Mid-Atlantic region, these results may not be comparable to other types of hospitals or those with differing standards of practice for medical-surgical patients. Further, the decrease in the pressure ulcer rate observed in this study may have been impacted by staff education on other pressure ulcer prevention strategies, such as more frequent repositioning and moisture prevention, during the study.

The use of air mattress overlays and seat cushions significantly reduced HAPUs on our rural community hospital’s medical-surgical unit.

Despite our positive results, additional research with larger sample sizes is warranted to determine the true efficacy of air mattress overlays and seat cushions.

**REFERENCES**


At Shore Health System in Easton, Md., Amy B. Stafford is an educator, Professional Nursing Practice, and Jeanne C. Brower is a clinical nurse specialist.

The authors have disclosed that they have no financial relationships related to this article.