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The ProActive Air Pressure Redistribution System A Convertible Therapy for the Long-Term Care Environment

Abstract

Maintaining skin integrity is a critical component of quality care in the long-term care environment. With advancing age, skin integrity becomes more compromised and, as such, the potential for skin breakdown increases. (1) Similar to the acute care environment, adverse health outcomes, along with high treatment costs, can occur in the long-term care environment as well. (2) This paper will review the current regulatory and clinical issues as they relate to the prevention of pressure ulcers and explore the clinical advantages of a stand-alone pressure redistribution surface that can incorporate an optional alternating air feature. Use of the alternating air feature is clinically driven, based on patient need.

Introduction

A major concern in the long-term care environment today is the development of pressure ulcers. The National Pressure Ulcer Advisory Panel (NPUAP) defines a pressure ulcer 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. A number of contributing or confounding factors are also associated with pressure ulcers; the significance of these factors is yet to be elucidated. (3) Pressure ulcers occur most often on the sacrum, coccyx, trochanter, and femur. Additionally, infections can occur in up to 65% of pressure ulcers potentially leading to infections in the bone and to sepsis requiring aggressive therapy and increasing costs. (1)

Prevalence

Recent prevalence data (2011) from the Centers for Medicare and Medicaid Services (CMS) found 67.8% of Nursing Home residents (identified as "long-stay") were considered high risk for the development of pressure ulcers. It further found that 6.9% of the high risk long-stay residents had pressure ulcers on their target assessment. CMS established the reduction of pressure ulcers as a goal in long-term care facilities (LTCF) and mandated that individual states address pressure ulcers in their respective quality improvement programs. Furthermore, to receive payments from CMS, LTCF are required to comply with federal guidelines for the treatment of pressure ulcers. (4)

Prevention

Pursuant to the above CMS regulations, LTCF must comply with the following:

- * Ensure that a resident admitted to a facility does not develop pressure ulcers unless the individual's clinical condition demonstrates the pressure ulcer was unavoidable.
- * Promote the prevention of pressure ulcer development.
- * Promote the healing of pressure ulcers that are present to include the prevention of infection.
- * Prevent the development of additional pressure ulcers.

Evidence-based practices for maintaining skin integrity and preventing the development of pressure ulcers include a skin breakdown risk assessment for all residents with special attention to the sacrum, trochanter, femur, elbows, heels, and occiput (back of head); reassessment of risk conducted on a regular basis; inspection of skin daily; maintaining optimum nutrition and hydration; moisture management; and minimization of pressure. (1) Each of these measures is significant toward the goal of preventing pressure ulcers. NPUAP has identified pressure as the major cause in the formation of pressure ulcers.

Pressure Redistribution Surfaces

In the past, pressure redistribution surfaces were classified into two categories, "static" and "dynamic." These have also been referred to as "non-powered" and "powered," respectively. The terminology was interpreted to mean that a "static" mattress provided pressure redistribution consistently across the surface without the need for external air pumps to manipulate the pressurized cells of the mattress.

A "dynamic" mattress was designed to provide alternating or sequential pressure across the internal component cells by connecting to an external electric pump that would adjust the internal component cells cyclically, hence the term "powered." However, recent changes in technology have led to the development of surfaces that are engineered to dynamically react to patient movement to redistribute air without the need of an electrically powered pump.

The ProActiveAir Pressure Redistribution System

The ProActiveAir pressure redistribution system is comprised of a dynamic therapeutic support surface that can be utilized by itself or with the addition of an optional pump to provide alternating air therapy. The system's inner core consists of eight air chambers, interconnected with a valve/tubing mechanism, which allow for the easy transfer of air from chamber to chamber without the need of a pump. A simple repositioning of the patient - or self-repositioning by the patient - will facilitate the transfer of air from one chamber to another which will accommodate the new position in which the patient is resting. This will result in clinically beneficial weight distribution allowing for reduced interface pressure.

The distinct properties of the top layer of foam, i.e. density and indentation load deflection, provide varying levels of support that correspond to the particular needs of the patient's body. For example, a firmer (yet still soft) support is provided under the sacral region, while a softer heel section featuring a sloped design allows a 'floating' of the heel to minimize the potential for pressure ulcers in this highly sensitive area.

Firmer foam around the perimeter encases the system's core and provides increased patient stability when entering or exiting the bed. The bottom layer of foam supports the mattress on the bed frame and incorporates vertical cut outs that allow for articulation and gatch points, enabling the mattress to conform to different bed positions. The supportive base layer also helps prevent the mattress from "bottoming-out," rendering the surface less effective than one that properly supports the patient.

The Alternating Air Option

The need for alternating air pressure therapy has been debated at length and, according to an NPUAP publication, there is currently no definitive reference or study to support the use of one type of therapeutic support or another. (5) Rather, the need for alternating air therapy is at clinician discretion for patients who are completely immobile or at increased risk for skin breakdown.

The ProActiveAir may be easily converted to deliver alternating air therapy as necessary. The eight air chambers in the system's core are plumbed for the delivery of alternating air with the addition of the pump, which inflates and deflates the interconnecting chambers in an ordered pattern which has shown to be effective while preserving patient comfort.

Conclusion

Pressure ulcers in the long-term care environment are a significant problem. One tool to help combat them is the use of pressure redistribution surfaces on all beds in a facility. Pressure redistribution surfaces provide excellent therapy with or without the addition of alternating air therapy. The selection of a specific support surface should be based on the assessment of the clinical characteristics or condition of the patient and support surface characteristics. (6) Incorporating the specific needs of the patient into the care planning will help ensure the most effective clinical outcome possible.

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