

# Vacuum-Assisted Closure Therapy

Maureen E. O'Rourke, RN, PhD

**Case Study:** A.R., an 89-year-old man with end-stage non-small cell lung cancer, was evaluated at an oncologist's office and treated palliatively at home. He received 24-hour care provided by his family; however, the family was overburdened and unable to manage his care. As a result, they sought nursing home placement. Following placement, A.R. developed a stage III decubitus ulcer of his left gluteus region (see Figure 1) and was hospitalized. Standard management of the lesion required surgical debridement and evaluation of the wound. His wound cultures were infectious and revealed methicillin-resistant *Staphylococcus aureus*. A.R. received IV vancomycin for 10 days to treat the decubitus ulcer. The nursing staff caring for A.R. during his hospitalization was challenged by the location of the wound and copious amounts of drainage. The patient was evaluated by the wound care team, which recommended the use of a vacuum-assisted closure ([VAC®], KCI Licensing, Inc., San Antonio, TX) system in an attempt to promote healing.



Figure 1. Decubitus Ulcer of the Left Gluteal Region

## Pressure Ulcers

Nurses frequently are faced with the challenge of caring for and monitoring an infectious pressure ulcer. Chronic wounds can pose a serious threat to the quality of life for patients because of their slow healing process. VAC therapy is a new addition to the armamentarium available for chronic wound management and offers a treatment option that improves skin care. Argenta and Morykwas developed the cutting-edge equipment in 1997 (see Figure 2). The VAC therapy system promotes healing by removing fluids and other infectious

waste materials via a continuous or intermittent negative-pressure feedback control. The therapy demonstrates a hastened wound-healing process by promoting tissue granulation, reducing localized edema and bacterial colonization, improving epithelial migration, increasing regional blood flow, and mechanically enhancing wound closure (Hartnett, 1998).

Studies have demonstrated improved chronic wound management with VAC therapy. In studies that specifically assessed patients' chronic wound management after use of the VAC system, faster wound healing and fewer courses of antibiotic therapy were reported (Chen, Li, Li, & Xu, 2005). In addition to the benefit of promoting wound healing with a VAC system, data support the benefit of using a VAC GranuFoam® (KCI Licensing, Inc.) dressing application with pressure ulcers. Evaluation of the foam sponge has revealed

high levels of granulocytes, CD4, CD5, and helper T cells, indicating that GranuFoam acts as a habitat for immune cell recruitment (Lambert, Hayes, & McCarthy, 2005). Mustoe (2004) suggested that chronic wounds exist because of three contributing factors: cellular and system alterations associated with the aging process, ischemia-reperfusion injury, and bacterial colonization with resultant inflammatory host response. Nurses must understand chronic wound development in their efforts to provide optimal therapy for patients. Various types of wounds can benefit from the VAC system, but in the case study, a pressure ulcer is the focus. The VAC system has been used successfully in patients after resection of large musculoskeletal tumors and those with partial-thickness burns, acute and chronic wounds, diabetic ulcers, flaps, and compromised skin grafts (Argenta & Morykwas, 1997).

Maureen E. O'Rourke, RN, PhD, is a clinical professor of nursing in the School of Nursing at the University of North Carolina in Greensboro and an adjunct assistant professor of medicine and hematology/oncology in the School of Medicine at Wake Forest University in Winston-Salem, NC. Mention of specific products and opinions related to those products do not indicate or imply endorsement by the *Clinical Journal of Oncology Nursing* or the Oncology Nursing Society.

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