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### **The State of the Science: Focus on Chronic Illness**

Reports on papers presented at the National Congress on the State of the Science in Nursing Research, October 7 to 9, 2004, Washington, DC, sponsored by the Council for the Advancement of Nursing Science and the National Institute of Nursing Research. This is the second article in a series.

#### **Doing What You're Told**

*Factors that influence adherence to chronic illness treatment regimens.*

Adherence to treatment regimens presents a special challenge to chronically ill patients and the nurses who treat them. What factors influence a patient's adherence? Researchers from the University of Pittsburgh School of Nursing have been examining whether the existence of comorbidities influences treatment adherence. Their studies have focused on patients with different chronic conditions, including rheumatoid arthritis (RA), urinary incontinence, hypertension, and HIV.

Susan Sereika, PhD, was on a team of researchers examining whether comorbidities affect treatment adherence among people with RA. The patients had an average of almost five comorbid conditions, with a range of 1 to 16. Hypertension was the most frequent comorbidity, occurring in 34% of those studied. In addition to RA, 21% of the patients had anemia, which has been increasingly recognized as a common condition among people with chronic illnesses and is referred to as "anemia of chronic disorders." The participants took an average of 6.5 medications, with a range of zero to 18. The researchers found no relationship between the number of comorbidities and the percentage of prescribed doses of medication taken or the percentage of days of adherence to the prescribed regimen.

Researcher Sandra J. Engberg, PhD, RN, CRNP, suggested that it may not be the number of comorbidities that dictates adherence to treatment regimens, but the burden of other conditions on the individual. In a study funded by the National Institute of Nursing Research, Engberg found no relationship between the number of comorbidities among community-dwelling older adults with urinary incontinence and their adherence to pelvic floor muscle exercises. Adherence to the exercise regimen was higher than compliance with other strategies that were taught to reduce urge and stress incontinence. Medication treatment adherence is particularly important among people with HIV who are on antiretroviral therapy, as poor adherence has been associated with the development of drug resistance. Judith Erlen, PhD, RN, FAAN, studied 200 men and women with HIV infection and found that the average rate of adherence to daily drug regimens was 65%. The prescribed number of doses was taken only 44% of the time. Erlen recommended that future research examine whether adherence is influenced by depression, which is high in this population.

Although many people with chronic illnesses have multiple health problems, these studies suggest that the number of comorbidities doesn't necessarily affect treatment adherence. Future research needs to examine depression, the burden of comorbidities, and other factors that might influence treatment adherence.- written by *Diana Mason*

## **The Advantage of Nurse Case Management**

*Follow-up by advanced practice nurses yielded shorter hospital stays.*

Patients who have had a long stay on an ICU and have required mechanical ventilation experience high rates of readmission. Barbara J. Daly, PhD, RN, FAAN, of the Frances Payne Bolton School of Nursing at Case Western Reserve University in Cleveland, Ohio, was principal investigator of a study, "Disease Management of the Chronically Critically Ill," where a team of advanced practice nurses (APNs) coordinated patient care for two months after discharge to try and reduce the readmission rate.

All patients in this study had been on mechanical ventilation at least four days; the average time on the ventilator was 12 days. The average length of stay on the ICU was 17 days. Although most of these patients had been living at home before hospitalization, less than one-third of the patients were discharged home; most went to another level of care, such as a nursing home.

In the two months following discharge, the APNs made an average of 34 contacts with the 231 patients assigned to the disease-management group. The 103 patients in the control group, who received standard follow-up care, had only four contacts in the same period (for data collection purposes).

The rates of readmission during the two months after the initial hospitalization were similarly high in the two groups. During this time, 40.4% of the disease management patients and 41.9% of control patients were readmitted. Multiple readmissions were common; 29% of the disease management group and 35.9% of the control group were readmitted more than once in the two months. But the length of stay was quite different between the two groups. The average stay upon readmission was 11 days for the patients who were followed by the APNs, compared with 16 days for patients receiving standard follow-up.

By reducing the length of readmission, the disease management program saved \$481,000. The main cost of the program was the salary of the APNs.

Daly concluded that "this study suggests that the frequent rate of readmission cannot be altered in this chronically critically ill population. But costs can be reduced significantly because of the shorter length of stay on readmission."— written by *Laurie Lewis*

## **Arginine and Chronic Wound Healing**

*Vacuum-assisted wound therapy may stimulate changes in biochemical activity.*

Chronic wounds occur in 2% to 29% of patients in acute care settings and in 20% to 30% of patients in nursing homes. These wounds are associated with increased lengths of hospitalization and costs of care. Joyce Stechmiller, PhD, ARNP, CS, associate professor at the University of Florida College of Nursing in Gainesville, hypothesized that the metabolism of arginine, a semiessential amino acid that plays an important role in wound healing, accounts for the difference between healing and nonhealing wounds. Stechmiller examined the metabolic activity of arginine and other substances in the wound drainage fluid of 11 patients with chronic wounds. She measured metabolic activity at baseline, 24 hours, 72 hours, and seven days after the initiation of therapy with V.A.C., a vacuum-assisted wound drainage device manufactured by the KCI Corp. (the company that funded this study). Statistically significant differences in arginine levels were seen between baseline and day 3, but not day 7. Stechmiller remarks, "One limitation of the

study is that we had no comparison group, so we don't know for sure if the V.A.C. is producing the results we found. But we know it stimulates lots of activity in the wound tissue.”- written by *Diana Mason*