

Pressure Ulcers, Hospital Complications, and Disease Severity: Impact on Hospital Costs and Length of Stay

Allman, Richard M. MD; Goode, Patricia S. MD; Burst, Nickie BS; Bartolucci, Alfred A. PhD; Thomas, David R. MD

Advances in Wound Care 12(1):p 22-30, January 1999.

Abstract

OBJECTIVE:

To determine whether or not the development of a Stage II or greater pressure ulcer in-hospital is associated with increased hospital costs and length of stay after adjusting for admission severity of illness, comorbidities, nosocomial infections, and other hospital complications.

DESIGN:

Prospective, inception cohort study.

SETTING:

Tertiary care, urban, university teaching hospital.

PARTICIPANTS:

286 patients identified within 3 days of admission to a tertiary care, urban teaching hospital were enrolled in a prospective, inception cohort study. Patients were age 55 or greater; expected to be confined to bed or chair or with a hip fracture; and expected to remain in hospital at least 5 days.

MEASUREMENTS:

Baseline data were collected within 3 days of admission. Weekly skin assessments were performed by study nurses to document the development of pressure ulcers. Medical record reviews, patient exams, and physician and nurse interviews were

used to obtain baseline demographic, medical, functional, nutritional, and global measures of disease severity. The incidence of nosocomial infections and the number of other hospital complications were monitored by medical record reviews. Hospital costs were estimated using category-specific cost-to-charge ratios. Diagnostic-related group (DRG) adjusted length of stay was calculated by subtracting the mean length of stay for assigned DRGs from actual stays.

RESULTS:

Incident pressure ulcers were associated with significantly higher mean unadjusted hospital costs (\$37,288 vs \$13,924, $P=0.0001$) and length of stay (30.4 vs 12.8 days, $P=0.0001$). In addition to pressure ulcers, other independent predictors of hospital costs and length of stay after multivariable analyses included: admission to an intensive care unit or surgical service, younger age, nosocomial infection, the physician assessment of disease severity, and the number of other hospital complications. Compared with those who did not develop pressure ulcers, patients who developed pressure ulcers also were more likely to develop nosocomial infections (45.9% [17/37] vs 20.1% [50/249], $P=0.001$) and other hospital complications (86.5% [32/37] vs 43.0% [107/249], $P<0.001$). After adjusting for only the admission predictors of costs and length of stay by multivariable analyses, hospital costs, and length of stay for those who developed pressure ulcers remained significantly greater than for those who did not develop pressure ulcers (\$14,260 vs \$12,382, $P=0.03$, and 16.9 vs 12.9 days, $P=0.02$, respectively). The differences in costs and length of stay for those with and without incident pressure ulcers were even greater when adjusted for admission predictors and also the occurrence of nosocomial infections and other complications (\$29,048 vs \$13,819, $P=0.002$, and 20.9 vs 12.7 days, $P=0.0001$, respectively).

CONCLUSION:

Incident pressure ulcers are associated with substantial and significant increases in hospital costs and length of stay. Nosocomial infections and other hospital complications are additional significant independent predictors of health care utilization among patients at risk for pressure ulcers.

ADV WOUND CARE 1999;12:22-30

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