

## **Expenditures Associated with Acute Renal Failure in Medicare Beneficiaries.**

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Acute renal failure (ARF) often occurs unexpectedly, and requires substantial treatment resources. There is no national data on ARF treatment costs. This study assessed hospital stays and costs associated with ARF in Medicare patients.

The study cohort included hospitalized patients in the 5% sample of Medicare patients, 1992-2001. Analysis was based on hospital admissions: those with ARF coded as principal (ARF-P) or secondary diagnosis (ARF-S), and those without ARF (non-ARF). We evaluated length of hospital stay and cost for admissions, and determined if an admission had an intensive care unit (ICU) stay and renal dialysis. We used  $\chi^2$  test to analyze categorical data, and general linear model to analyze continuous data. Age, sex, and race-ethnicity were included in the multivariate analysis. Total admissions numbered 5,403,015 in the 10-year period: 30,910 for ARF-P (0.6%), 96,704 for ARF-S (1.8%), and 5,275,401 for non-ARF (97.6%). After adjusting for age, sex, and race-ethnicity, ARF rates increased approximately 10% per year, from 14 cases per 1,000 admissions in 1992 to 36 in 2001. Patients admitted with ARF were 2 years older ( $P < 0.0001$ ) than those without. Men were more likely ( $P < 0.0001$ ) to have ARF than women, and blacks more likely ( $P < 0.0001$ ) than whites. Compared with non-ARF, ARF admissions had longer hospital stays, a higher percentage of ICU stays, and greater ( $P < 0.0001$  for all) costs. For non-ARF, ARF-P, and ARF-S, respectively, the average length of stay was 6.7, 9.1, and 13.5 days; percent admissions with an ICU stay were 19.3%, 27.4%, and 46.8%; and mean costs per admission were \$6,367, \$7,532, and \$15,571. Inpatient renal dialysis occurred in 21.9% of ARF-P and 14.0% of ARF-S admissions.

We conclude ARF hospital costs are much higher than for non-ARF admissions. This is likely due to longer hospital stays, more ICU stays, and renal dialysis, and is secondary to other principal diseases or procedures. Further analysis by DRG category may help ascertain the ARF-specific component of increased costs, particularly for ARF coded as a secondary diagnosis.