

Hospital Characteristics and Quality of Care

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Objective.—To compare quality of care measured by explicit criteria, implicit review, and sickness-adjusted outcomes at different types of hospitals.

Design.—Further analysis of data retrospectively abstracted from medical records to evaluate the effects of prospective payment on quality of care for hospitalized Medicare patients.

Setting.—Hospitals in five states were sampled to represent the national Medicare admissions along many dimensions.

Patients.—A total of 14 008 elderly patients with one of the following five diseases: congestive heart failure, acute myocardial infarction, pneumonia, stroke, or hip fracture. These patients were randomly sampled from those with these diseases in 297 hospitals in two time periods, 1981 to 1982 and 1985 to 1986.

Outcome Measures.—Explicit criteria, implicit review, and mortality within 30 days of admission adjusted for sickness at admission.

Results.—Quality of care ratings for hospital types are similar using explicit criteria, implicit review, and outcomes adjusted for sickness at admission. Quality differences between types of hospitals were large, with the lowest group estimated to have four percentage points higher mortality than major teaching hospitals in a cohort of patients with average mortality of 16%. Quality varies from state to state, but teaching, larger, and more urban hospitals have better quality in general than nonteaching, small, and rural hospitals. Hospital quality persists over time, but small nonteaching hospitals narrowed the gap with better quality hospitals between 1981 and 1986.

Conclusions.—The different measures led to consistent and plausible relationships between quality and hospital characteristics. Thus, valid information about hospital quality can be obtained. We need to develop ways to use such information to improve care.

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IN 1855, Florence Nightingale tabulated the death rates from leg amputation of English soldiers who participated in the

Crimean War. She observed that after accounting for the level of amputation above or below the knee, soldiers operated on in large hospitals were more likely to die than those operated on in small hospitals. She identified the causes of this unexpected finding as poor sanitation and the rapid spread of infection from patient to patient in large hospitals. She pleaded with English royalty to do something about the sanitary conditions of English field hospitals.¹

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More than a century later, there is still great interest in characterizing hospitals that provide better or worse care and in using that information in some way to improve care. Many studies have shown that better outcomes for specific procedures are related to the number of such procedures that hospitals and physicians perform.^{2,3} The Health Care Financing Administration (HCFA) administrative data have been used to see whether states with stringent review procedures or with more intense competition have higher in-hospital mortality rates for Medicare patients.⁴ Since 1987, the HCFA has published statistics on the annual adjusted 30-day postadmission mortality rates, adjusted for case mix, for all hospitals that serve Medicare patients. These rates have also been analyzed for their association with hospital characteristics, showing that nonprofit hospitals and teaching hospitals have lower adjusted mortality than average.⁵ However, the validity of comparisons made with administrative data has been questioned by researchers, clinicians, and policymakers.

In our evaluation of the effects of the diagnosis related group-based prospective payment system (PPS) on hospital quality of care,⁶ we used a clinically detailed assessment of the process of care (what physicians and nurses do to patients) in addition to adjusted mortality within a fixed time period after hospital admission to assess quality of care. Data to assess process of care and sickness at admission came from a review of the patient's medical record. Here we use these data to assess how quality of care varies by hospital characteristics. In addition, we use data collected about patients admitted in 1981 to 1982 to see how varia-

