



In the Literature

TEACHING HOSPITALS AND QUALITY OF CARE: A REVIEW OF THE LITERATURE

John Z. Ayanian
Joel S. Weissman

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please contact:

JOHN Z. AYANIAN
Dept. of Health Care Policy
Harvard Medical School
TEL 617-432-3455
E-MAIL
ayanian@hcp.med.harvard.edu

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Teaching hospitals are widely perceived to provide high-quality care, and that reputation is thought to justify these institutions' comparatively higher charges relative to nonteaching hospitals. Despite their reputation for specialized care, teaching hospitals have traditionally relied on revenue from routine services, such as treatment of heart disease, pneumonia, and stroke, to subsidize the costs of specialized services and medical training. However, with managed care and competition creating pressures for cost containment, these higher costs have come into question. Do teaching hospitals provide higher-quality care for such routine services, or do nonteaching hospitals provide comparable quality at lower costs?

In "Teaching Hospitals and Quality of Care: A Review of the Literature," (*The Milbank Quarterly*, 2002), Harvard Medical School researchers John Z. Ayanian and Joel S. Weissman review major studies that compare the quality of care in teaching and nonteaching hospitals. They conclude that teaching hospitals generally offer better care for common conditions than do nonteaching hospitals, particularly for conditions affecting elderly patients.

In their literature review, which was supported by the Commonwealth Fund Task Force on Academic Health Centers, Ayanian and Weissman considered 20 articles from academic journals dating from 1985 to 2001 that examined quality of care in relation to hospital characteristics. Studies based on medical records were reviewed separately from studies that relied on administrative data.

In reviewing nine studies that used data culled from medical records, six found major teaching institutions provided higher quality of care than did nonteaching hospitals. Two of the three studies finding a higher quality of care in nonteaching hospitals were focused on pediatric and neonatal intensive care.

In one of the earliest and most rigorous studies, the researchers found overall quality of care, based on five conditions, was substantially better in major teaching hospitals than in nonteaching hospitals. A 1998 study examining 1,767 Medicare patients hospitalized for congestive heart failure or pneumonia demonstrated adjusted overall quality of care was significantly better in major teaching hospitals than in nonteaching hospitals, and other teaching hospitals also provided better care than did nonteaching facilities for both conditions. A more recent study showed greater use of aspirin, beta-blockers, and ACE inhibitors for patients with myocardial infarction in major and other teaching hospitals than in nonteaching hospitals.

The studies relying on administrative records to compare quality of care were more evenly split in their findings. Five of 11 such studies found higher quality in teaching hospitals—as measured by mortality rates, patient assessments, or other data—compared with nonteaching facilities. The other six studies either found no significant differences in quality of care between teaching hospitals and nonteaching hospitals, or found higher quality in nonteaching hospitals.

Ayanian and Weissman identified several important gaps in the literature, and concluded that the reasons that major teaching hospitals provide better care and outcomes have not yet been determined. The researchers found that few studies examined obstetric, neonatal, or pediatric care, or interpersonal aspects of care. No relevant studies were found comparing quality of care in ambulatory care settings at teaching and nonteaching hospitals, or comparing functional outcomes or health-related quality of life for patients by different facility types.

The question of comparative quality in teaching and nonteaching hospitals is of considerable importance. Changes in hospital payment policies in the public and private arenas over the last decade have placed financial stresses on major teaching hospitals and put their traditional missions in jeopardy. Comparing costs and quality of care provided in teaching hospitals and other hospitals allows policymakers, health care purchasers, insurers, and patients to make informed decisions about the best hospitals for patients with different medical and surgical conditions.

**Comparison of Quality of Care in Teaching and Nonteaching Hospitals:
Results of Nine Studies Based on Medical Record Analysis**

Study	Population	Key Findings
Brennan et al. 1991	31,429 patients with all diagnoses in 51 New York City hospitals, 1984	More frequent adverse events in major teaching hospitals vs. nonteaching hospitals but less likely due to negligence
Keeler et al. 1992	14,008 Medicare patients with congestive heart failure, acute myocardial infarction, pneumonia, stroke, or hip fracture in 297 hospitals from 5 states, 1981–82 and 1985–86	Better overall process measures of quality and lower 30-day mortality in major teaching hospitals vs. nonteaching hospitals
Zimmerman et al. 1993	15,297 patients with all diagnoses in ICUs of 35 U.S. hospitals, 1988–90	Lower in-hospital mortality in major teaching hospitals vs. other hospitals
Pollack et al. 1994	5,415 admissions of patients with all diagnoses in national sample of pediatric ICUs in 16 hospitals, 1989–92	Adjusted in-hospital mortality rates higher in teaching hospitals vs. nonteaching hospitals
Horbar et al. 1997	7,672 low birth weight infants in neonatal ICUs of 62 hospitals in Vermont Oxford Network Database, 1991–92	Similar risk of mortality within 28 days of birth in teaching and nonteaching hospitals
Rosenthal et al. 1997	89,851 patients with myocardial infarction, congestive heart failure, pneumonia, stroke, obstructive airway disease, or gastrointestinal hemorrhage in 30 hospitals in northeast Ohio, 1991–93	Lower in-hospital mortality rates in major teaching hospitals for all study diagnoses as a group and for individual diagnoses of congestive heart failure and obstructive airway disease; similar but non-significant trend for acute myocardial infarction
Ayanian et al. 1998	1,767 Medicare patients with congestive heart failure or pneumonia in 571 hospitals in Illinois, Massachusetts, New York, and Pennsylvania, 1991–92	Better overall quality of care in major teaching hospitals than in nonteaching hospitals by process measures, particularly physicians' cognitive care and testing; similar quality of therapeutic care; worse quality of nursing care in major teaching hospitals
Allison et al. 2000	114,411 elderly Medicare patients with acute myocardial infarction in 4,361 U.S. hospitals, 1994–95	Greater use of aspirin, beta blockers, and ACE inhibitors and lower 30-day mortality rates in major and other teaching hospitals than in nonteaching hospitals; no difference in reperfusion therapy for ideal candidates
Thomas, Orav, and Brennan 2000	14,700 records of patients with all diagnoses in 28 hospitals in Utah and Colorado, 1992	Lower rates of preventable adverse drug events in government-owned major teaching hospitals than in other hospitals; similar rates of preventable adverse events in general and related to procedures or diagnoses

Source: John Z. Ayanian and Joel S. Weissman, "Teaching Hospitals and Quality of Care: A Review of the Literature," *The Milbank Quarterly* 80 (September 2002): 569–93.