



Effects of Medicare's Prospective Payment System on the Quality of Hospital Care

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Faced with sharply escalating Medicare costs in the early 1980s, the federal government completely revised the way Medicare pays hospitals for treating elderly patients. The governing agency, the Health Care Financing Administration, switched from a retrospective fee-for-service system to a prospective payment system (PPS). Under PPS, hospitals receive a fixed amount for treating patients diagnosed with a given illness, regardless of the length of stay or type of care received.

PPS proved effective at curbing cost growth. However, because it contained incentives for hospitals to shorten stays and to choose the least expensive methods of care, PPS raised concerns about possible declines in the quality of care for hospitalized Medicare patients.

A study conducted jointly by RAND and the University of California, Los Angeles, examined the question of how the PPS reform affected the quality of hospital care for Medicare patients. It found that, overall, PPS had no negative effect on patient outcomes and did not alter an already existing trend toward improved processes of care. However, Medicare patients were more likely to be discharged in unstable condition, which was associated with a higher rate of mortality, even though overall mortality fell.

RAND Study Approach

Gauging the effects of PPS proved to be challenging. It was not possible to conduct a controlled experiment, since the entire coun-

Key findings:

- Medicare's prospective payment system (PPS) did not lead to significant declines in the quality of hospital care.
- Mortality rates declined for all patient groups examined, and other outcome measures also showed improvement.
- However, more Medicare patients were discharged from hospitals in unstable condition after PPS was implemented. Determining the seriousness of this problem requires further monitoring and study.

try was placed under PPS at the same time. Instead, the RAND team undertook a massive data-collection effort. They assembled a nationally representative data set containing cost, outcome, and process-of-care information on 16,758 Medicare patients hospitalized in one of 300 hospitals across five states (California, Florida, Indiana, Pennsylvania, and Texas). Half of the patients were hospitalized in 1981 and 1982, prior to PPS, and the other half were hospitalized in 1985 and 1986, after PPS. This distribution across time periods allowed before-and-after comparisons among patient groups.

The study team chose patients admitted for one of five conditions:

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- congestive heart failure (CHF)
- acute myocardial infarction (AMI)
- pneumonia
- hip fracture
- cerebrovascular accident (CVA), or stroke.

These conditions were chosen because they are severe and have high mortality rates. For each group, two categories of quality measures were analyzed: outcomes and process of care. The principal outcome of interest was mortality: short-term mortality, including in-hospital mortality and deaths within 30 days of acute-care admission, and medium-term mortality, measured by looking at deaths within 180 days of admission. Other measures included length of hospital stay, status at discharge, discharge destination (home or other care facility), prolonged nursing-home stays, and readmissions. All these measures were adjusted to take into account the severity of patient sickness at admission. Process-of-care measures included overall quality of care as judged by implicit physician review and explicit measures related to diagnosis and treatment.

PPS Did Not Lead to Declines in Hospital Quality of Care . . .

The study found that quality of care actually improved after PPS for three of the patient groups (AMI, CVA, and CHF), and did not change significantly for the other two (pneumonia, hip fracture).

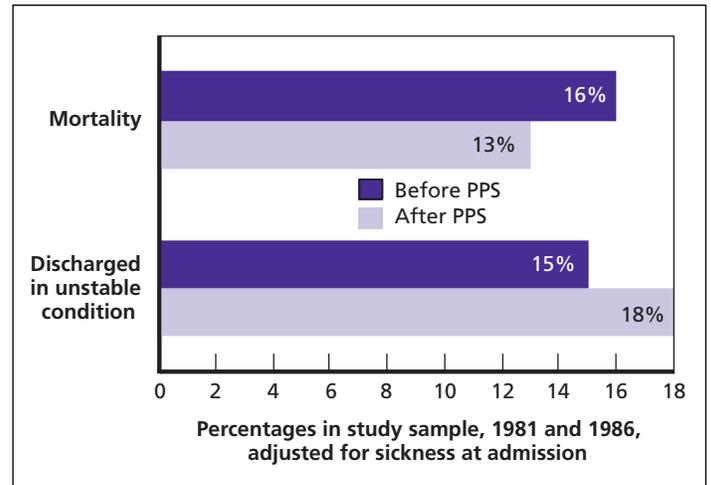
Mortality rates for patients with the given conditions did not increase after PPS. Across all of these measures, mortality declined for all five patient groups. Similarly, the other outcome measures evidenced no post-PPS declines in quality of care. For each disease, readmission rates were unchanged; a slightly but not significantly higher percentage of patients who had been admitted from home were discharged to nursing care facilities.

The study also found that process measures of quality of care improved for the post-PPS group. This improvement was consistent with long-standing nationwide trends toward improved quality of care under way when PPS was implemented.

. . . Although More Medicare Patients Were Discharged in Unstable Condition

The only negative post-PPS change was an increase in the number of patients discharged in unstable condition. As noted in the figure, the number of such patients increased by 3 percentage points (a 22-percent rise). This change is a consequence of shorter lengths of stay; in effect, some of the recovery period was transferred outside the hospital.

Aggregate mortality rates declined, but discharges in unstable condition increased after implementation of PPS



The seriousness of this problem is open to debate. It is true that patients discharged in unstable condition had a higher likelihood of dying within 90 days of discharge (16 percent) than did patients in stable condition (10 percent). There was also a significant increase (43 percent) in the number of patients discharged home in unstable condition, suggesting a potentially greater burden for families in providing home care. However, the impact on mortality of discharge in unstable condition did not outweigh other quality improvements, because overall mortality fell.

Policy Recommendations

The study made two major recommendations. First, to eliminate possible problems with patients discharged in unstable condition, a more systematic assessment should be made of patients' readiness to leave the hospital and receive care in another setting. Second, to provide current information about the effects of Medicare's payment methods on quality of care, clinically detailed data should be collected to monitor sickness at admission, processes of care, discharge status, and outcomes on a regular basis as long as PPS is in place. ■

This Highlight summarizes RAND Health research reported in the following publications:

Draper D, Kahn KL, Reinisch EJ, Sherwood MJ, Carney MF, Kosecoff J, Keeler EB, Rogers WH, Savitt H, Allen H, et al., "Studying the Effects of the DRG-Based Prospective Payment System on Quality of Care. Design, Sampling, and Fieldwork," *JAMA*, Vol. 264, No. 15, 1990, pp. 1956–1961.

Keeler EB, Kahn KL, Draper D, Sherwood MJ, Rubenstein LV, Reinisch EJ, Kosecoff J, and Brook RH, "Changes in Sickness at Admission Following the Introduction of the Prospective Payment System," *JAMA*, Vol. 264, No. 15, 1990, pp. 1962–1968.

Kahn KL, Rogers WH, Rubenstein LV, Sherwood MJ, Reinisch EJ, Keeler EB, Draper D, Kosecoff J, and Brook RH, "Measuring Quality of Care with Explicit Process Criteria Before and After Implementation of the DRG-Based Prospective Payment System," *JAMA*, Vol. 264, No. 15, 1990, pp. 1969–1973.

Rubenstein LV, Kahn KL, Reinisch EJ, Sherwood MJ, Rogers WH, Kamberg C, Draper D, and Brook RH, "Changes in Quality of Care for Five Diseases Measured by Implicit Review, 1981 to 1986," *JAMA*, Vol. 264, No. 15, 1990, pp. 1974–1979.

Kosecoff J, Kahn KL, Rogers WH, Reinisch EJ, Sherwood MJ, Rubenstein LV, Draper D, Roth CP, Chew C, and Brook RH, "Prospective Payment System and Impairment at Discharge. The 'Quicker-and-Sicker' Story Revisited," *JAMA*, Vol. 264, No. 15, 1990, pp. 1980–1983.

Kahn KL, Keeler EB, Sherwood MJ, Rogers WH, Draper D, Bentow SS, Reinisch EJ, Rubenstein LV, Kosecoff J, and Brook RH, "Comparing Outcomes of Care Before and After Implementation of the DRG-Based Prospective Payment System," *JAMA*, Vol. 264, No. 15, 1990, pp. 1984–1988.

Rogers WH, Draper D, Kahn KL, Keeler EB, Rubenstein LV, Kosecoff J, and Brook RH, "Quality of Care Before and After Implementation of the DRG-Based Prospective Payment System. A Summary of Effects," *JAMA*, Vol. 264, No. 15, 1990, pp. 1989–1994.

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