



Changes in Health Care Financing & Organization (HCFO)

# findings brief

## key findings

- Between 1995 and 2009, growth in Medicare inpatient prices varied widely across hospital markets. Faster growth typically occurred in less urban areas that had a large market share of for-profit hospitals.
- By 2008–2009, elderly patients were going to the hospital at the same rate as in the mid-1990s, but their stays were much shorter, and they received much more intensive services.
- Medicare price cuts, largely attributable to the Balanced Budget Act of 1997, were associated with a decrease in the number of elderly discharges and a decrease in the number of staffed hospital beds, highlighting possible effects of hospital price cuts under health reform.

## What Happens When Medicare Cuts Hospital Prices? Assessing the Impact on Inpatient Discharges among the Elderly

### Overview

Among the major provisions of the Patient Protection and Affordable Care Act (ACA) is the tightening of Medicare payment policy. Specifically, the ACA permanently lowers the default rate of growth in Medicare prices for hospitals and most other providers by applying a downward adjustment each year equal to the growth in productivity throughout the economy. This policy change is expected to reduce Medicare expenditures by \$379 billion from 2012 through 2021, according to estimates by the Congressional Budget Office. However, the implications for provider behavior and the care received by patients are unclear. Hospitals may attempt to recoup projected losses by increasing the volume of services they provide, raising private prices, or increasing the number and severity of reported diagnoses and procedures, also known as upcoding. Hospitals could also respond by reducing capacity or even by closing.

Of the possible responses to Medicare price cuts, changes in inpatient volume have received relatively little attention in the academic literature, and the few existing studies in this area offer contradictory results.<sup>1</sup> In a HCFO-funded study, Chapin White, Ph.D., Center for Studying Health System Change, and Tracy Yee, Ph.D., Truven Health Analytics, examined how changes in Medicare payment rates to hospitals affect Medicare inpatient volumes.<sup>2</sup> While the study focused on changes to hospital reimbursement that occurred before passage of the ACA, its findings have implications for Medicare savings under health reform. The study did not examine changes in payment to physicians or providers in other care settings, which could also affect hospitalization rates.

### Sample and Methods

The study approach involved several steps. First, the researchers used Medicare Hospital Cost Reports to measure Medicare prices for inpatient hospital care in 120 Metropolitan



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Statistical Areas (MSAs) for each year from 1995 through 2009. The MSAs chosen for the study came from 10 geographically diverse states where inpatient utilization data was available and affordable from the Healthcare Cost and Utilization Project State Inpatient Databases (HCUP-SID). Next, the researchers measured hospital capacity (staffed beds) and the volume and intensity of hospital inpatient services provided to the elderly (people age 65 or older) in each market-year. They then analyzed the relationship between market-level price trends and trends in their outcomes of interest—namely, the number of inpatient hospital discharges among the elderly, calculated by summing the number of stays in the HCUP-SID. Other outcomes of interest included mean length of stay, mean case-mix for the elderly, the number of staffed hospital beds, and the occupancy rate among short-term general hospitals.

The researchers used descriptive analyses and regression analyses to test whether markets experiencing relatively slow growth in Medicare prices experienced relatively slow (or fast) growth in volume. To predict market-level Medicare prices, the researchers used instrumental variables, an econometric technique that employed other hospital characteristics to statistically isolate the effect of three policy-driven price changes on hospital admissions: changes in the hospital-specific rate; changes in a hospital's designation as a "sole community hospital" or a "Medicare-dependent hospital;" and changes in the outlier payment formula. The researchers controlled for other differences across different geographic markets, as well as trends over time.

## Results

Study results show wide variation in Medicare price growth among markets between 1995 and 2009. The markets with high growth in prices tended to be less urban and include a larger share of for-profit hospitals while low-growth markets tended to be located in urban areas

with higher concentrations of teaching hospitals. After adjusting for changes in patient case-mix, the researchers found that Medicare prices were 37.5 percent higher in 2008–2009 than in 1995–1996. This price increase was smaller than the increase in prices that hospitals paid for labor and equipment, indicating that Medicare prices fell in real terms over the study period.

The results also highlight trends in hospital staffed beds and discharge rates among the elderly. Between 1995–1996 and 2008, the number of short-term general hospital staffed beds per 10,000 population declined by 21.1 percent, with larger declines occurring in markets with low price growth. Hospital occupancy rates increased by 6.6 percentage points over the same period, indicating that hospitals now operate closer to capacity. Meanwhile, trends in inpatient hospital utilization among the elderly were mixed. Mean length of stay fell by 20.1 percent while mean case-mix increased by 17.5 percent. According to the researchers, the results indicate that, while the elderly went to the hospital at roughly the same rate at either end of the study period, their stays were much shorter and they received much more intensive services by 2008–2009. Hospital markets with lower growth in Medicare prices exhibited smaller increases in hospital utilization and greater decreases in length of stay compared to markets with higher growth in Medicare prices.

In a key finding from the instrumental variables regressions, the researchers found a large, positive association between the Medicare price and the volume of discharges of elderly patients. When the researchers simulated the effect of a 10 percent decrease in the Medicare price, they found that discharges of elderly patients decreased by 4.6 percent and that the number of hospital staffed beds decreased by 6.3 percent, both of which were statistically significant changes. Regression results also indicated that the number of elderly discharges was

inversely associated with changes in the local hospital wage index. In addition, the researchers found small and non-significant associations between Medicare price and hospital occupancy, length of stay for elderly patients, and case-mix for elderly patients. Testing the sensitivity of these results to alternative assumptions reinforced the robustness of the researchers' major findings.

## Limitations

The researchers note that the study sample's inclusion of MSAs in only 10 states makes the generalizability of study results somewhat limited. In addition, the analysis drew on historical changes in the Medicare payment formula that differ from the across-the-board price cuts included in the ACA. The researchers observe that hospitals may respond differently to the ACA's across-the-board price cuts than to the price changes examined in the study. Further, while the Medicare price used in the analysis was based only on services provided to Medicare fee-for-service enrollees, the researchers' volume measure included both fee-for-service and Medicare Advantage enrollees. Finally, the researchers acknowledge that their instrumental variables may not be truly independent of hospital behavior, thus confounding their ability to isolate price changes driven solely by policy.

## Discussion and Policy Implications

The study findings provide several insights into the effect of Medicare inpatient price reductions on the volume of Medicare inpatient discharges. Notably, the researchers found that markets facing lower growth in Medicare prices exhibited larger-than-average declines in the number of hospital beds and relatively slow growth in the volume of hospital discharges among the elderly, compared to markets with higher price growth. Meanwhile, changes in the Medicare price did not appear to affect case-mix and length of stay.

As the researchers note, the study results suggest that Medicare price cuts lead hospitals to reduce capacity and provide fewer services to the elderly. Rather than leave beds empty, hospitals appear to reduce their scale of operations by shutting down beds. In this way, hospitals appear to behave as profit-maximizing firms that increase output when they are paid higher prices and decrease output when the costs of production rise.

As the researchers observe, study results run counter to the notion that hospitals will attempt to recoup losses from Medicare price cuts by increasing inpatient volume. Considered in the context of the ACA price cuts, the findings suggest that Medicare savings may actually be greater than expected because of hospitals' volume response. Conversely, if the ACA's Medicare provisions were repealed, Medicare spending might increase by

more than projected. Given that the study does not explore the impact of Medicare price cuts on quality of care, the results do not reflect how changes in quality could affect projected savings.

### Conclusion

As policymakers continue to consider how best to rein in Medicare spending, the results of this study suggest that cuts to Medicare prices may increase projected savings as a consequence of hospitals' volume responses. The findings also point to important questions for future research—in particular, the impact of Medicare price reductions on the quality of care beneficiaries receive and on their overall health outcomes.

### For More Information

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### Endnotes

1. For more information, see the following:  
Bazzoli GJ, Lindrooth RC, Hasnain-Wynia R, Needleman J. The Balanced Budget Act of 1997 and US hospital operations. *Inquiry*. 2004; 41(4):401-17. Dafny LS. How do hospitals respond to price changes? *Am Econ Rev*. 2005; 95(5):1525-47. He D, Mellor JM. Hospital volume responses to Medicare's Outpatient Prospective Payment System: evidence from Florida. *J Health Econ*. 2012; 31(5):730-43.
2. For complete study results, see White C, Yee T. When Medicare cuts hospital prices, seniors use less inpatient care. *Health Aff*. 2013; 32(10):1789-95.