CHAPTER 3

Hospital inpatient and outpatient services

RECOMMENDATION

3 For 2019, the Congress should update the 2018 Medicare base payment rates (inpatient and outpatient) for acute care hospitals by the amount determined under current law.

COMMISSIONER VOTES: YES 15 • NO 0 • NOT VOTING 0 • ABSENT 2

CHAPTER 3

Hospital inpatient and outpatient services

Chapter summary

In 2016, the Medicare fee-for-service (FFS) program paid 4,700 hospitals $183 billion for about 10 million Medicare inpatient admissions and 200 million outpatient services, and for $6 billion of their non-Medicare uncompensated care payments. These sums represent a 2.3 percent increase in hospital spending per FFS beneficiary from 2015 to 2016. On net, inpatient payments increased by roughly $4 billion, outpatient payments increased by almost $3 billion, and uncompensated care payments declined by $1 billion. Inpatient payments increased primarily because of an increase in inpatient surgeries. Outpatient payments rose by almost $3 billion because of rapid growth in Part B drug spending and an increase in physician services billed as hospital outpatient services. This increase in part reflects hospitals' acquisition of physician practices. On net, the $6 billion increase in overall hospital spending between 2015 and 2016 is equivalent to payments per FFS beneficiary increasing from $4,903 to $5,013.

Assessment of payment adequacy

Most payment adequacy indicators (including access to care, quality of care, and access to capital) are positive. Aggregate Medicare margins continue to be negative, although hospitals with excess capacity still have an incentive to see Medicare beneficiaries because Medicare payment rates remain about 8 percent higher than the variable costs associated with Medicare patients.

In this chapter

- Are Medicare payments adequate in 2018?
- How should Medicare payment rates change in 2019?

Beneficiaries' access to care—Access measures for hospital services include the capacity of providers and the volume of services.

- ***Capacity and supply of providers—***The average hospital occupancy rate was 62 percent in 2016, suggesting hospitals have excess inpatient capacity in most markets.
- ***Volume of services—***Inpatient admissions per beneficiary decreased by 2.8 percent in 2016, and outpatient services increased by 1.1 percent. The decline in admissions reflects a 5 percent decrease in medical admissions per capita and a 4.3 percent increase in surgical admissions per capita. For the first time in 20 years, inpatient surgical admissions per capita have increased.

Quality of care—Hospital mortality and readmission rates have improved in recent years. Patient satisfaction has also improved somewhat: The share of patients who rated their hospital a 9 or a 10 on a 10-point scale increased between 2011 and 2016 from 69 percent to 73 percent.

Providers' access to capital—Access to bond markets is very strong, with hospital bond offerings increasing from $25 billion in 2015 to $37 billion in 2016. Much of the increase represented refinancing of older debt. While some hospitals struggle with low occupancy and limited access to capital, most hospitals have good access to capital because of strong all-payer profit margins. After reaching a record high of 7.2 percent in 2013, all-payer margins dipped slightly to 6.4 percent by 2016, which is still well above historical averages.

Medicare payments and providers' costs—In 2016, hospitals' aggregate Medicare margin was −9.6 percent. The decline in margins from 2015 was primarily due to a freeze in outpatient rates in 2016 and a decline in uncompensated care payments as the share of people insured increased from 2015 to 2016. While average Medicare payments were lower than average costs, Medicare payments were higher than the variable costs of treating Medicare patients in 2016—resulting in a marginal profit of about 8 percent. Therefore, hospitals with excess capacity still have a financial incentive to serve more Medicare patients.

Recommendation

For 2019, the Commission recommends that the Congress update the inpatient and outpatient payments by the amount determined under current law. ■

TABLE 3–1 **Growth in Medicare inpatient and outpatient spending**

Hospital services	2006	2015	2016	Average annual percent change 2006–2015	Percent change 2015–2016
Inpatient services					
Total FFS payments (in billions)	$110.4	$111.7	$116.0	0.1%	3.9%
Payments per FFS beneficiary	3,084	2,961	3,047	–0.5	2.9
Outpatient services					
Total FFS payments (in billions)	29.3	57.9	60.6	7.9	4.6
Payments per FFS beneficiary	885	1,740	1,797	7.8	3.3
Uncompensated care payments					
Total (in billions)	N/A	7.6	6.4	N/A	–16.0
Payments per FFS beneficiary	N/A	201	168	N/A	–16.0
Inpatient, outpatient, and uncompensated care payments					
Total FFS payments (in billions)	139.6	177.2	183.0	2.7	3.3
Payments per FFS beneficiary	3,970	4,903	5,013	2.4	2.3

Note: FFS (fee-for-service), N/A (not applicable). Reported hospital FFS spending includes all hospitals covered by Medicare's inpatient prospective payment system along with critical access hospitals and Maryland hospitals. Fiscal year 2016 payments include partial imputation to account for the hospitals that had not yet submitted cost reports covering fiscal year 2016. The combined amount for inpatient and outpatient services per capita is based on a weighted average of the Part A and Part B services. Percent change columns were calculated before rounding and may not be computable from the payment data in the table, which were rounded.

Source: MedPAC analysis of CMS Medicare hospital cost reports and Medicare Provider Analysis and Review files.

Background

Medicare spending on hospitals

In 2016, the Medicare fee-for-service (FFS) program paid acute care hospitals $116 billion for inpatient care, almost $61 billion for outpatient care, and slightly more than $6 billion in uncompensated care payments (Table 3-1). From 2015 to 2016, payments for inpatient care increased by about $4 billion, resulting from an increase in payment rates of about 2 percent and an increase in inpatient surgery volume. In the same period, outpatient payments per FFS beneficiary grew by 3.3 percent (Table 3-1), driving a 2.3 percent increase in overall Medicare inpatient, outpatient, and uncompensated care payments per beneficiary in 2016.[1] The nearly $3 billion rise in outpatient payments reflects a 20 percent increase in payments for Part B drugs, growing outpatient visit volume, and an increase in physician services billed as hospital outpatient services after hospitals acquired physician practices. Given the increase in outpatient payments, the increase in inpatient payments, and a $1 billion decline in uncompensated care payments, overall payments increased by almost $6 billion from 2015 to 2016.

Medicare's payment systems for inpatient and outpatient services

Medicare's inpatient and outpatient prospective payment systems (PPSs) have a similar basic structure. Each PPS has a base rate that is modified for the differences in type of case or service as well as for geographic differences in input prices. However, the inpatient and outpatient PPSs have different units of service and a different set of payment adjustments.

Medicare FFS payment rates have implications that go beyond the FFS program. Thirty-two percent of Medicare beneficiaries are in Medicare Advantage (MA) plans, and most MA plans contract with hospitals to pay rates that are benchmarked and almost exactly equal to Medicare FFS

Effect of expanded payment bundles in the outpatient prospective payment system

CMS has designed the outpatient prospective payment system (OPPS) so that a single payment is made for a bundle of items and services. Each bundle consists of a primary service and ancillary items and services that are packaged with the primary service. In 2014 and 2015, CMS took substantial steps to expand the size of payment bundles in the OPPS so that the OPPS has fewer primary services (also called "separately payable services") and more packaged items and services. The main purpose was to encourage hospitals to consider the most cost-effective ways to treat their patients. The most important changes to the payment bundles include:

- Comprehensive ambulatory payment classifications (C–APCs), which (for select services) combine all services (with exceptions) on a claim into a single payment bundle, whether they have separately payable status or packaged status under the OPPS.
- Packaging clinical diagnostic tests covered under the clinical lab fee schedule (CLFS) when provided on the same date as a primary service. Previously, clinical diagnostic tests had always been paid separately under the CLFS. Exceptions include molecular pathology.
- Packaging ancillary services that are in ambulatory payment classifications with geometric mean costs of less than $100 when provided on the same date as a primary service. Such services include wound debridement, electrocardiograms, X-rays, and some pathology and hearing tests.

The expanded payment bundles represent a fairly large portion of OPPS spending. For example, spending on C–APCs was about $7 billion in the OPPS in 2015. Consequently, the expanded payment bundles have the potential to affect hospital behavior.

We evaluated whether the expanded payment bundles have had the desired effect of inducing hospitals to be more cost-effective in their treatment of patients. We focused our evaluation on three of the policies listed above: C–APCs, the packaging of clinical diagnostic tests, and the packaging of ancillary services that cost less than $100.

An attribute of the C–APC policy that makes it unique in the OPPS is that when a hospital provides a primary service designated as a C–APC, all items and services listed on the same claim are bundled into a single payment (with a few exceptions), including items and

(continued next page)

rates (Berenson et al. 2015). In addition, the Department of Veterans Affairs (VA) annually pays for about $2 billion of inpatient care at community hospitals. The VA began setting hospital rates equal to Medicare FFS rates in 2012 (Government Accountability Office 2013). The rates uninsured individuals pay are also often benchmarked to Medicare due to limits on rates charged to low-income uninsured individuals that were enacted in the Patient Protection and Affordable Care Act of 2010 (PPACA).

Acute inpatient prospective payment system

Medicare's inpatient prospective payment system (IPPS) pays acute care hospitals a predetermined amount for most discharges. The payment rate is the product of a base rate and a relative weight that reflects the expected costliness of cases in a particular clinical category compared with the average of all cases. The labor-related portion of the base payment rate is adjusted by a hospital geographic wage index to account for differences in hospital input prices among market areas. Payment rates are updated annually.

To set inpatient payment rates, CMS uses a clinical categorization system called Medicare severity–diagnosis related groups (MS–DRGs). The MS–DRG system classifies each patient case into 1 of 756 groups, which reflect similar principal diagnoses, procedures, and severity levels. The severity levels are determined according to whether patients have a complication or comorbidity (CC) associated with the base MS–DRG (the categories are no CC, a nonmajor CC, or a major CC). A more detailed description of the acute IPPS, including

Effect of expanded payment bundles in the outpatient prospective payment system (cont.)

services that would otherwise be paid separately under the OPPS. This bundling has the effect of moving the OPPS closer to the concept of the diagnosis related groups used in the inpatient prospective payment system. We investigated the extent to which hospitals responded to this incentive by reducing cost growth for services that were packaged into C–APCs in 2015. To evaluate the behavioral response, we compared cost growth after the policy was implemented (2014 to 2015) with cost growth before it was implemented (2013 to 2014). Our results suggest that hospitals have responded to this incentive:

- From 2014 to 2015, the average cost of C–APC services decreased by 1.8 percent, and the average cost for ancillary items and services in C–APC services decreased by 1.6 percent.
- From 2013 to 2014 (before CMS implemented the C–APC policy in 2015), the average cost of C–APC services increased by 0.5 percent, and the average cost of ancillary items and services in C–APCs increased by 0.3 percent.

CMS also implemented the policy that packages ancillary items and services that cost less than $100 in 2015. From 2013 to 2014 (before CMS implemented this policy), per capita use of these packaged items and services increased by 0.2 percent. From 2014 to 2015 (the first year of this policy), per capita use decreased by 1.4 percent. Together, these findings suggest that greater outpatient packaging has created modest reductions in costs.

In 2014, CMS established a policy that packages laboratory tests that had previously been paid separately under the CLFS—with some exceptions—with the primary service provided in a hospital outpatient department visit. A laboratory test is not packaged when (1) it is the only service provided to a beneficiary on that date of service or (2) it is conducted on the same date as a primary service but is ordered for a purpose different from the primary service by a practitioner different from the practitioner who ordered the primary service. Under these circumstances, the laboratory test is paid under the CLFS. The exceptions to this policy may have resulted in little effect on the use of laboratory tests. From 2012 to 2013, use of clinical laboratory tests in outpatient departments increased by about 0.1 percent. From 2013 to 2014 (the first year of this packaging policy), they decreased by just 0.6 percent. ■

payment adjustments, can be found at http://www.medpac.gov/-documents-/payment-basics.

Hospital outpatient prospective payment system

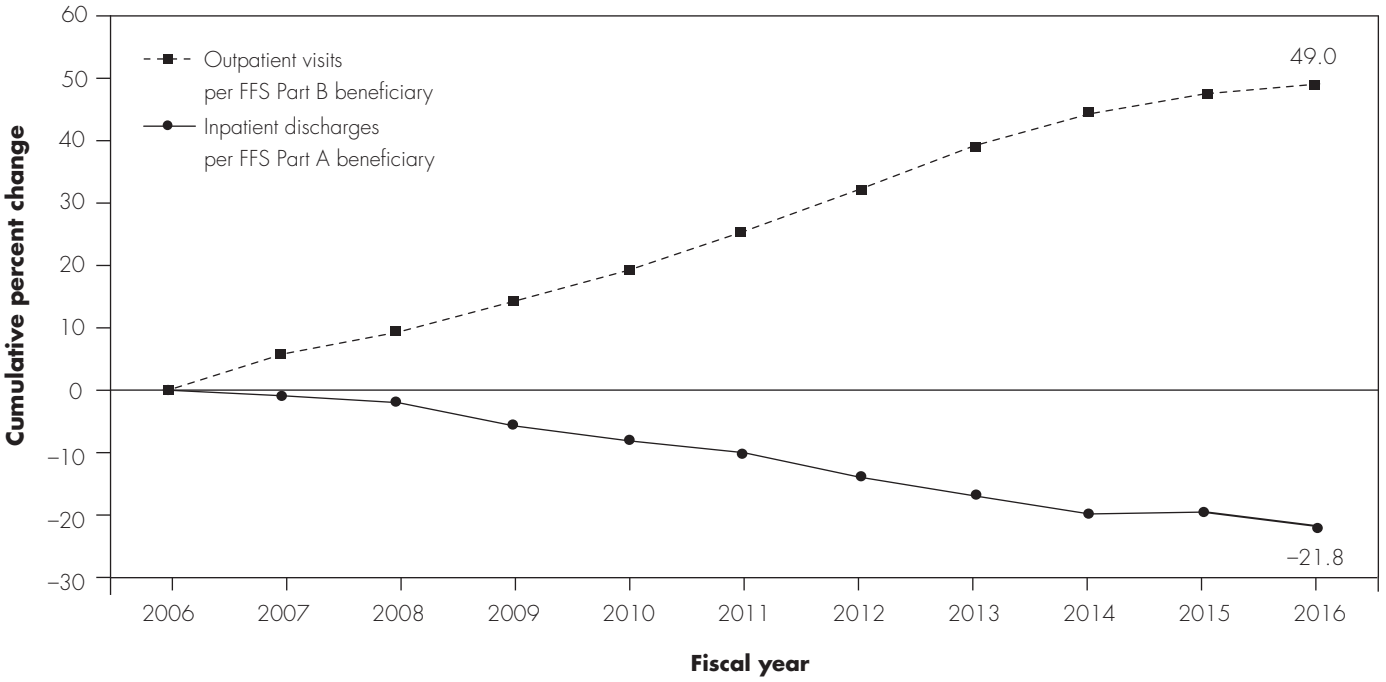
The outpatient prospective payment system (OPPS) pays hospitals a predetermined amount per service. CMS assigns each outpatient service to 1 of about 700 ambulatory payment classification (APC) groups. Each APC has a cost-based relative weight, and a conversion factor translates these relative weights into dollar payment amounts. In 2014 and 2015, CMS implemented several policies that expanded the size of the OPPS payment bundles so that the OPPS has fewer primary services (also called "separately payable services") and more packaged items and services. The main purpose was to encourage hospitals to consider the most cost-effective ways to treat their patients. Data from 2015 outpatient claims suggest that these policies had the intended effect of inducing hospitals to be slightly more cost-effective in the services they provide (see text box on expanded payment bundles).

Are Medicare payments adequate in 2018?

To judge whether payments in 2018 are adequate for relatively efficient hospitals, we examine several indicators of payment adequacy. We consider beneficiaries' access to care, changes in the quality of care, hospitals' access to capital, and the relationship of Medicare's payments to hospitals' costs for both average and relatively efficient

FIGURE 3–1

Medicare inpatient discharges per beneficiary declined as outpatient visits per beneficiary continued to increase



Note: FFS (fee-for-service). Data include general and surgical, critical access, and children's hospitals.

Source: MedPAC analysis of CMS's inpatient and outpatient claims and enrollment data.

hospitals. Most of our payment adequacy indicators for hospitals are positive, but 2016 Medicare margins remained negative for most hospitals and were –1 percent for the median relatively efficient provider.

Beneficiaries' access to care remained good: Excess inpatient capacity persisted

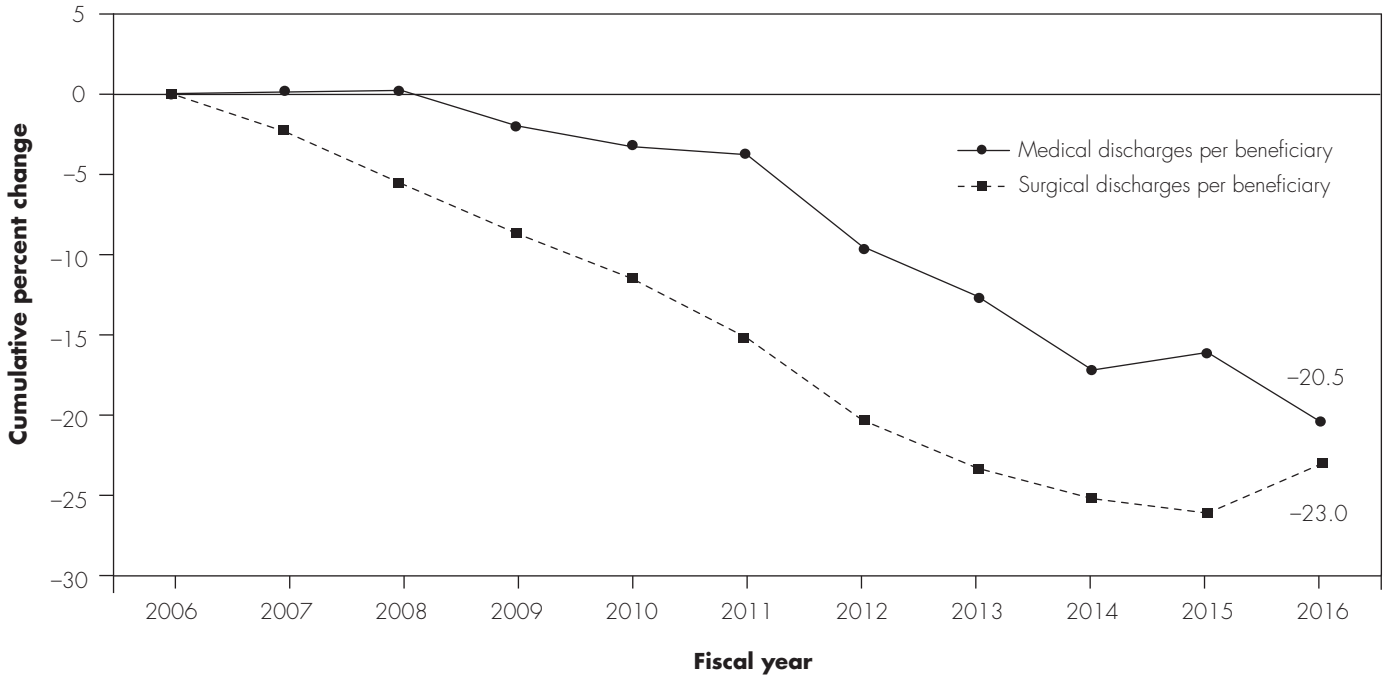
To evaluate access to care, we examine the availability of hospital services to Medicare beneficiaries by analyzing inpatient and outpatient utilization, hospital service offerings, hospital openings and closures, hospital occupancy rates, and other measures. Our framework also includes an evaluation of hospitals' access to capital, which provides an outlook on the industry's ability to sustain or expand its existing resources.

Medicare beneficiaries' access to hospital services remains good, in part because of inpatient excess capacity in most markets. Between 2015 and 2016, discharges per beneficiary decreased by 2.8 percent (data not shown). In contrast, outpatient visits per FFS beneficiary increased by 1.1 percent. These annual changes reflect a continuation of long-term trends. From 2006 to 2016, inpatient discharges per beneficiary decreased 21.8 percent, and outpatient visits per beneficiary increased 49.0 percent (Figure 3-1).

The decline in inpatient cases from 2015 to 2016 reflects a 5.2 percent per FFS beneficiary decline in medical discharges and a 4.3 percent per FFS beneficiary increase in surgical discharges (data not shown). This annual change in medical discharges conforms to the long-term trend, but the change in surgical discharges differs from the long-term trend. From 2006 to 2016, medical discharges declined a cumulative 20.5 percent per beneficiary, and surgical discharges declined by 23.0 percent per beneficiary (Figure 3-2). The volume of inpatient surgeries had been consistently declining since the 1990s until the 4.3 percent per beneficiary increase in 2016. The category of hospitals with the largest increases

FIGURE 3–2

Medical discharges per beneficiary declined, despite a recent increase in surgical discharges



Note: Data include general and surgical, critical access, and children's hospitals.

Source: MedPAC analysis of CMS's inpatient claims and enrollment data.

in inpatient surgeries were major teaching hospitals (5.5 percent per beneficiary).

The increase in inpatient surgical discharges in 2016 is in large part attributable to growth in orthopedic, infectious disease–related, and digestive system inpatient surgeries. Major joint replacements for lower extremities (MS–DRGs 469 and 470) accounted for approximately 28 percent of this increase. Infectious and parasitic disease procedures (MS–DRGs 853–855) accounted for another 21 percent. Stomach or esophageal procedures (MS–DRGs 326–328) accounted for 14 percent of the increase. The growth in infectious disease cases could be attributable to the change in the definition of sepsis cases, which are classified in the infectious disease MS–DRGs (Seymour et al. 2016, Townsend et al. 2016).[2] The growth in surgical stomach or esophageal discharges may be the result of changes in practice patterns and the greater use of surgical procedures to treat these patients; we observe a corresponding decline in medical gastroenterology cases (discussed later). Further research is needed to evaluate the degree to which the introduction of payment bundling for hip and knee replacements resulted in surgical volume increases. The Comprehensive Care for Joint Replacement (CCJR) payment model started bundled payment incentives in April 2016, and the Bundled Payments for Care Improvement (BPCI) initiative was started in 2013 but continued to grow, with additional entrants in April and July 2015. Both models create incentives to reduce the cost of care within an episode and increase the volume of episodes.[3] The per capita volume of change in hip and knee replacements (MS–DRG 469 and 470) increased by 7.1 percent from 2015 to 2016, a significantly faster increase than the –1.2 to 2.4 percent growth rates from 2010 to 2015.

The decrease in overall medical discharges in 2016 stems from declines in respiratory, circulatory, and digestive cases. Respiratory cases for pneumonia (MS–DRGs 193–195) and chronic obstructive pulmonary disease (MS–DRGs 190–192) individually accounted for 17 percent

TABLE 3–2

Hospital outpatient departments have had strong spending growth for observation care, ED visits, clinic visits, chemotherapy administration, and separately payable drugs, 2011–2016

Service or item	Spending (in billions) 2011	2016	Percent change, 2011–2016
Observation care	$0.69	$3.11	349%*
ED visits	2.27	3.90	76
Clinic visits	1.74	3.07	76
Chemotherapy administration	0.33	0.66	102
Drugs	5.15	10.18	98
Total	39.78	60.01	51

Note: ED (emergency department). Spending amounts include both program outlays and beneficiary coinsurance amounts. "Drugs" are those that are separately payable under the outpatient prospective payment system, which includes pass-through drugs and drugs that are separately payable but do not have pass-through status. *A large portion of the growth in observation spending is due to packaging more services into the observation stay.

Source: MedPAC analysis of 2011 and 2016 hospital outpatient standard analytic claims files and data from the CMS Office of the Actuary.

of the decrease each, which may in part reflect lower readmission rates for these conditions. Taken together, circulatory system MS–DRGs (e.g., syncope, chest pain, and cardiac arrhythmia) accounted for 14 percent of the decrease, perhaps due to shifting these discharges to observation status. Taken together, digestive conditions such as gastrointestinal hemorrhage (MS–DRGs 377–379) and esophagitis and miscellaneous digestive disorders (MS–DRGs 391 and 392) accounted for 15 percent of the decrease. The largest declines in medical discharges were at small rural hospitals—those with 50 or fewer inpatient beds (–9.5 percent per beneficiary).

Growth in outpatient hospital services reflects growth in drug costs and incentives to shift patients to higher cost sites of care

The hospital outpatient setting has had higher growth in program spending than any other sector in Medicare. From 2011 through 2016, combined program spending and beneficiary cost sharing on services covered under the OPPS increased by 51 percent, from $39.8 billion to $60.0 billion, an average of 8.6 percent per year.

Some of the growth in the hospital outpatient department (HOPD) setting is from a shift of services from the inpatient setting to the outpatient setting. Also, there was an unusually large increase in OPPS spending from 2013 to 2014 (13.0 percent, from $46.5 billion to $52.5 billion, respectively) that was driven, in part, by a CMS decision to package most clinical laboratory tests into the OPPS payment rates; previously, these tests had been paid under the clinical laboratory fee schedule.

OPPS spending also rose substantially for observation care and emergency department (ED) visits (Table 3-2). From 2011 to 2016, OPPS spending for observation care increased by 349 percent (35.0 percent per year) because of packaging more services within the payment for observation care and an increase in observation stays. In this same period, OPPS spending for ED visits increased by 76 percent (11.9 percent per year). It is not clear what caused this increase in observation stays and ED visits, but the increase may be due, in part, to reactions to denials for certain short inpatient stays and the introduction in fiscal year 2014 of a two-midnight rule for inpatient stays (Medicare Payment Advisory Commission 2015a).

From 2015 to 2016, the number of observation stays decreased by 5 percent, while the payment rate per observation stay increased by 76 percent. The net result was an approximately 75 percent increase in payments for observation care. The lower volume of observation care in 2016 was likely caused by slightly stronger criteria that

needed to be met in the OPPS for observation care to be paid separately. The increase in payments per observation stay was due to a CMS decision to redefine observation care as a C–APC in 2016. The idea of C–APCs is to combine all services recorded on an outpatient claim into a single payment, including services that would otherwise be paid separately. Therefore, the payment bundle for observation care provided in 2016 included more services, on average, than the payment bundle for observation care in previous years.

Another large source of growth in spending on HOPD services appears to have been the shift of services from (lower cost) physician offices to (higher cost) HOPDs. From 2011 to 2016, spending for and volume of clinic visits and chemotherapy administration rose substantially in the OPPS setting, while there was a decrease or only slight growth in volume of these services in freestanding physician offices. Over this period, the volume of OPPS clinic visits increased by 43.8 percent (7.5 percent per year) and OPPS chemotherapy administration by 56.1 percent (9.3 percent per year). At the same time, the volume of office visits in freestanding offices rose by only 0.4 percent, and chemotherapy administration decreased by 13.4 percent in physician offices.[4] The growth in volume in HOPDs over this period is reflected in increased spending on clinic visits, which rose by 76 percent (12.0 percent per year) and spending on chemotherapy administration, which rose by 102 percent (15.1 percent per year). This shift in care setting to HOPDs is important in that it increases Medicare program spending and beneficiary cost-sharing liability because Medicare payment rates for the same or similar services are generally higher in HOPDs than in freestanding offices. For example, we estimate that the Medicare program spent $1.8 billion more in 2016 than it would have if payment rates for evaluation and management (E&M) office visits in HOPDs were the same as freestanding office rates. Analogously, beneficiaries' cost sharing was $460 million more in 2016 than it would have been because of the higher rates paid in HOPDs.

To address the increased spending that results when services shift from freestanding physician offices to HOPDs, the Commission recommended lowering OPPS payment rates so that Medicare payment would be equal for E&M office visits in freestanding physician offices and HOPDs (Medicare Payment Advisory Commission 2012). The Commission also recommended adjusting OPPS rates for a set of other services so that payment rates would be equal or more closely aligned across these two settings (Medicare Payment Advisory Commission 2014b). A review of the Commission's proposals to make rates comparable across sectors is in last year's report (Medicare Payment Advisory Commission 2017b).

Finally, growth in spending on Part B drugs that are separately paid under the OPPS—including those that have pass-through status and those that are not pass through but have costs per day that exceed the packaging threshold—has been exceptionally large. From 2011 through 2016, OPPS spending for these drugs increased from almost $5.2 billion to about $10.2 billion, an increase of 98 percent (14.6 percent per year). About two-thirds of the increased spending on separately payable drugs was for those that are used to treat cancer. During the same period, OPPS spending on cancer drugs increased by 109 percent, from $3.2 billion to $6.6 billion. The growth in spending on Part B drugs reflects both price increases in existing drugs and the introduction of new expensive cancer drugs (Medicare Payment Advisory Commission 2017a).

Excess inpatient capacity

Between 2015 and 2016, aggregate occupancy rates for hospitals remained largely unchanged at 62 percent. Occupancy rates of urban hospitals were higher, at approximately 66 percent, also relatively unchanged from the prior year. By contrast, occupancy rates at rural hospitals declined from 41 percent in 2015 to 40 percent in 2016. In 2016, rural hospitals with fewer than 50 beds had the lowest occupancy rates at 31 percent.

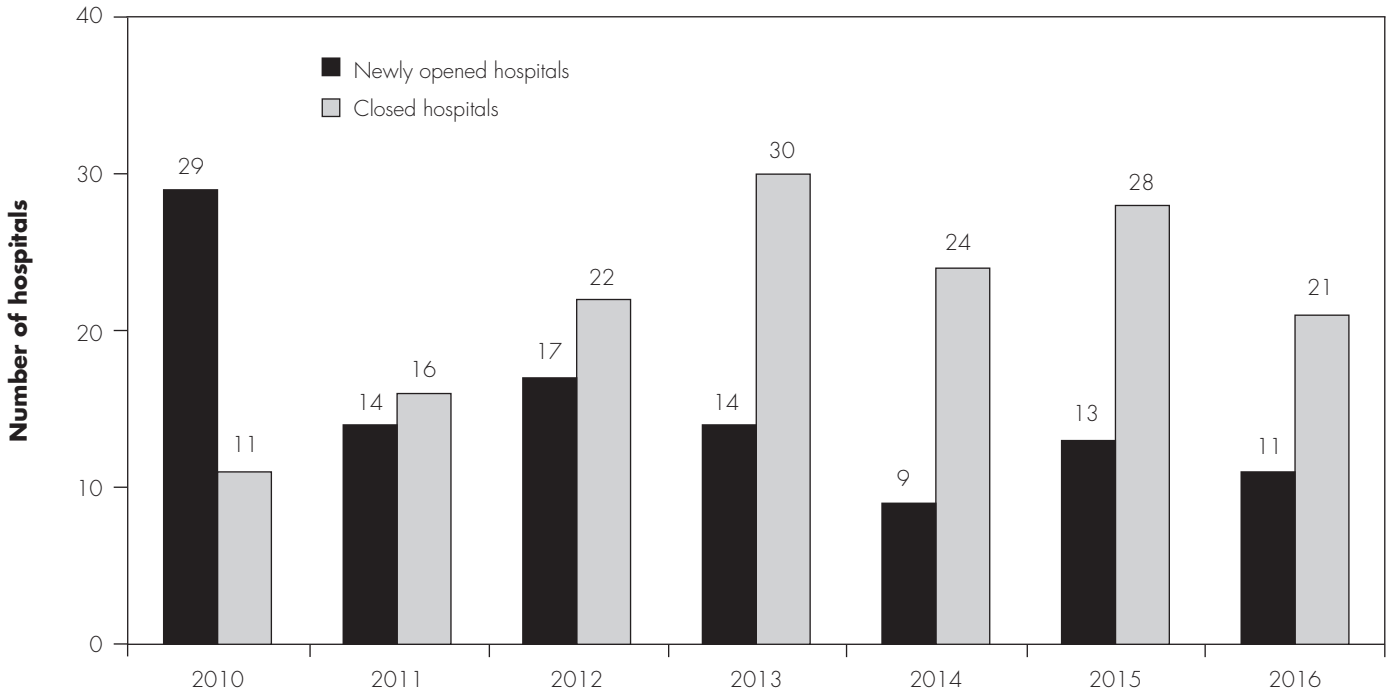
Nationally, from 2010 to 2015, inpatient bed capacity declined from 2.7 inpatient hospital beds per 1,000 residents to 2.5 beds per 1,000 residents (American Hospital Association 2016). However, bed capacity varied by market. In 2015, Phoenix had 2.0 beds per 1,000 residents while Philadelphia had 3.8 beds per 1,000 residents. We did not observe any metropolitan statistical areas with bed capacity losses that pose an obvious access concern for Medicare beneficiaries.

Hospital closures increased slightly

While closures are still relatively rare events, there have been slightly more hospital closures than hospital openings over the past six years. In 2016, we identified 21 closures and 11 openings (Figure 3-3, p. 74). Among those that closed in 2016, 15 were in rural counties and 6 were in urban counties. Only two of the openings were in rural areas.

FIGURE 3–3

More hospital closures than openings from 2010 through 2016



Source: MedPAC analysis of the CMS Provider of Services file, Internet searches, and personal communication with the Department of Health and Human Services Office of Rural Health Policy.

Hospitals that closed in 2016 were smaller than average and had low occupancy and poor profitability. The 21 closed hospitals had an average of 50 inpatient beds and an average occupancy rate of 32 percent. Their average total all-payer margin in 2013 was –3 percent. Sixty percent of hospitals that closed in 2016 were in states that did not expand their Medicaid programs under PPACA. In addition, urban hospitals that closed were an average of 5 miles from the nearest hospital, and the rural hospitals were an average of 19 miles from the nearest hospital. One-third of the hospitals that closed converted to outpatient-only or post-acute care facilities. Specifically, 14 hospitals closed completely, 4 became stand-alone EDs, 2 became outpatient facilities without ED services, and 1 became a nursing home. The 11 hospitals that opened in 2016 had an average of 61 beds, and 9 (82 percent) were urban. Six of the 11 are general hospitals; 2 are urban micro-hospitals with only 4 inpatient beds and a focus on ED, imaging, and certain surgical services; and 3 are urban surgical hospitals.

Quality of care has been improving

The quality of hospital care has been improving in recent years, and at least part of this improvement appears to be because of various financial incentives included in recent years in the Medicare program. While these incentives are not perfect and the Commission has discussed refinements to quality improvement programs, the data suggest that even imperfect incentives can lead to improved quality (see text box on value incentive programs).

In 2018, hospitals' performance on quality metrics has the potential to increase a hospital's base IPPS payment rates by as much as 3.5 percent and lower payments by as much as 6 percent. Three payment adjustments are responsible for these potential changes: the Hospital Readmissions Reduction Program (HRRP) (which accounts for up to a 3.0 percent reduction), the hospital value-based purchasing program (which accounts for between a 3.5 percent increase and a 2.0 percent reduction to payments), and the Hospital-Acquired Condition Reduction Program (which accounts for a 1.0 percent reduction to payments for 25 percent of hospitals). While these adjustments have the

Redesigning Medicare's hospital value incentive programs

The Medicare program currently adjusts hospital payments based on these four quality payment programs: the Hospital Inpatient Quality Reporting Program, the Hospital Readmissions Reduction Program, the Hospital-Acquired Condition Reduction Program, and the hospital value-based purchasing program. The Commission has four main concerns about the design of these current hospital quality programs. First, the Commission has taken the position that there are currently too many hospital quality payment and reporting programs, many of which overlap, creating unneeded complexity in the Medicare program. Second, the Commission asserts that all-condition measures are more appropriate to measure the performance of hospitals, rather than the condition-specific readmissions and mortality measures that are currently used. Third, the programs include process measures and measures that may be inconsistently reported by providers. Fourth, the programs score hospitals using "tournament models," not clear, absolute, and prospectively set performance targets.

During the October 2017 meeting, the Commission discussed redesigning the hospital quality payment programs to make a single hospital value incentive program (HVIP) that will be patient oriented, encourage coordination across providers and time, and promote delivery system change. We believe that CMS has the authority to make some changes to hospital quality payment without congressional action (e.g., using all-condition measures versus condition-specific measures, using fixed performance targets in the scoring methodology, and improving public reporting), but other changes would require statutory authority. The Commission began discussions around possible HVIP measures and scoring methodology in the fall of 2017 and will discuss the results of modeling HVIP scores and payment adjustments during the spring of 2018. ■

potential to change inpatient payments, they do not alter outpatient payments. In 2018, about a quarter of hospitals will see a net increase in payments (averaging about $113,000) and a little less than three-quarters will see a net decrease in payments (averaging around $443,000) under the combined effect of these programs. On net, these three programs lower Medicare payments by about $940 million, or 0.5 percent of overall Medicare payments.

Overall hospital quality metrics show improvement

To assess aggregate trends in quality of care across all IPPS hospitals, we use mortality rates, readmission rates, and patient experience. We find that, from 2012 to 2016, mortality and readmissions declined. In addition, patient experience measures (e.g., communication with nurses and doctors, quietness of hospital environment) improved from 2011 to 2016. The share of patients rating their overall hospital experience a 9 or 10 on a 10-point scale has increased from 69 percent to 73 percent. The quality improvements reflect the efforts hospitals have made to improve patient outcomes, but also reflect the closure or restructuring of some of the poorest performing hospitals. In 2014, we examined hospitals that, from 2009 through 2011, had a combination of low occupancy, high readmission rates, and poor patient experience ratings (Medicare Payment Advisory Commission 2014b). By 2015, 13 of the 112 hospitals closed, a quarter of the hospitals changed ownership, and others replaced their facilities. This finding is consistent with a recent study that suggests market share is flowing to higher quality hospitals (Chandra et al. 2015).

Readmission rates have been declining The Congress enacted a Medicare HRRP in 2010, and since that time readmission rates have continued to fall. Last year we also showed that readmission rates declined for all of the conditions covered by the readmission policy from 2010 to 2015 (Medicare Payment Advisory Commission 2017b). This year we examined the readmission rates across all conditions for those over 65. We found that the risk-adjusted unplanned readmission rate declined from about 17 percent in 2010 down to 15 percent in 2015. It declined

TABLE 3–3 **Risk-adjusted 30-day postdischarge mortality rates have declined**

Mortality rate	2010	2011	2012	2013	2014	2015	2016
Unadjusted mortality	7.2%	7.9%	8.1%	8.4%	8.4%	8.6%	8.4%
Expected mortality	7.5	8.1	8.5	9.0	9.4	9.9	10.2
Risk-adjusted mortality	8.4	8.0	7.7	7.5	7.2	7.0	6.7

Source: MedPAC analysis of 2012 through 2016 Medicare claims using 3M all-patient refined–diagnosis related group risk of mortality V32 grouper and beneficiary age and gender to calculate risk-adjusted mortality rates (using 2010 through 2012 data to set expected rates).

further to about 14.4 percent in 2016.[5] In fiscal year 2018, hospitals are penalized if they have above-average readmission rates (from a prior three-year period (July 1, 2013, through June 30, 2016)) for any one of six clinical conditions (acute myocardial infarction, heart failure, pneumonia, congestive obstructive pulmonary disease, elective total hip or knee replacement, or coronary artery bypass graft surgery).

In 2013, the Commission suggested a budget-neutral package of improvements to the HRRP. The first suggestion was to set a fixed target for readmission rates so aggregate penalties would go down when industry performance improves. Second, we suggested fixing the penalty formula to make the penalty per excess readmission close to the cost of each excess readmission. Third, to create greater precision in measuring relative performance and to offset the cost of fixing the penalty formula, we discussed expanding the policy to cover all conditions.[6] Fourth, we discussed evaluating hospitals' readmission rates against rates for peer hospitals with similar shares of low-income patients as a way to adjust penalties for the effects of socioeconomic status on hospitals' readmission rates, which the Congress adopted in the 21st Century Cures Act (Public Law 114–255) (Medicare Payment Advisory Commission 2013a). Section 15002 of the Act requires the Secretary to compare cohorts of hospitals in determining the extent of excess readmissions beginning in fiscal year 2019. Through rulemaking, CMS has defined a methodology for calculating the adjustment factor based on a hospital's performance relative to other hospitals treating a similar proportion of dual-eligible patients (i.e., quintile cohorts).

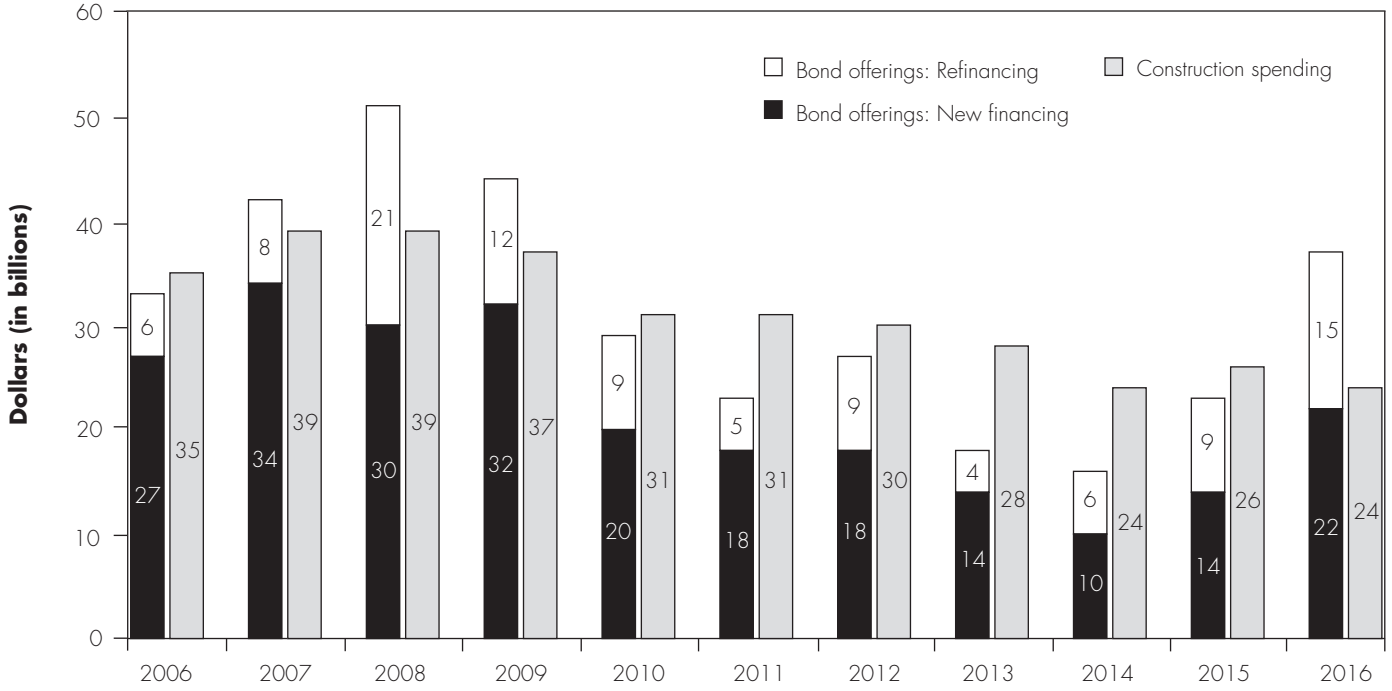
Mortality rates declining From 2010 to 2016, risk-adjusted mortality rates declined by 1.7 percentage points; 0.3 percentage point of that decline occurred in 2016 (Table 3-3). Since 2013, raw mortality rates were relatively constant, suggesting that beneficiaries admitted in recent years tended to have more comorbidities and thus a higher risk of mortality. The higher expected mortality per discharge is consistent with Figure 3-1 (p. 70), which shows a decline in Medicare admissions per capita in recent years. Other studies have found similar improvements for condition-specific mortality (Hines 2015, Krumholz 2015). The combination of a decline in readmissions and a decline in hospital mortality is strong evidence of improving quality.

Hospitals' access to capital and employment remains strong

Hospitals' access to capital remained strong in 2016. Nonprofit hospitals issued $37 billion in bonds in 2016 ($22 billion in new financing and $15 billion in refinancing), surpassing the $23 billion of bond offerings in 2015 (Figure 3-4) (Thomson Reuters 2017). The rebound of bond offerings in 2016 reflects hospitals' strong financial position (high all-payer margins and strong balance sheets) and continuing low interest rates. The average interest rate for double-A tax-exempt 30-year nonprofit hospital bonds remained low at 3.10 percent in December 2017 compared with 3.95 percent in December 2016 (Cain Brothers 2017). Hospital construction spending was $24 billion in 2016, approximately the same level as 2015 and roughly equivalent to the level of bond issuances for new financing (Census Bureau 2017). The data suggest that the increase in bond offerings in 2016 reflects refinancing and hospitals taking advantage of low interest rates rather than a big increase in construction. Construction

FIGURE 3–4

Nonprofit hospital bond offerings for new financing roughly equal to hospital construction spending in 2016



Source: Nonprofit hospitals' bond offering data from Thomson Reuters and hospital construction spending data from the U.S. Census Bureau.

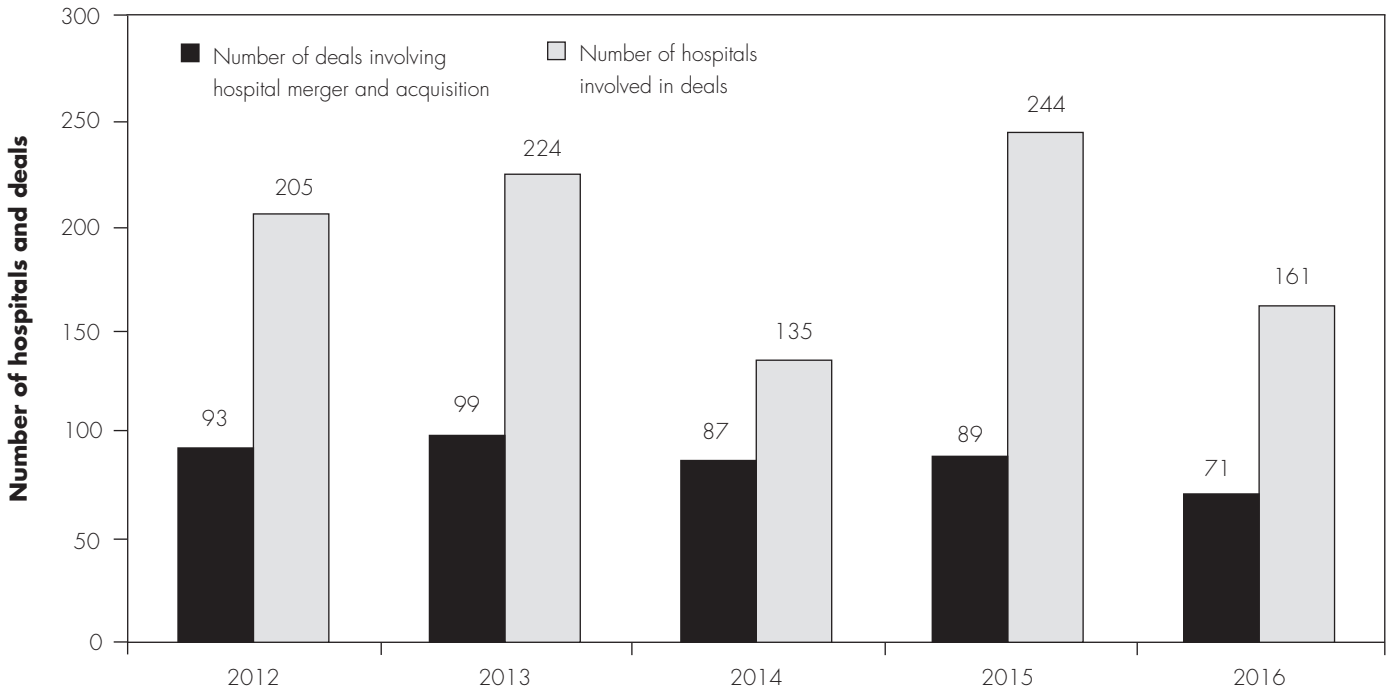
spending in 2016 was lower than levels observed between 2006 and 2009 because the industry is focused on building less expensive outpatient capacity rather than inpatient capacity (Conn 2017).

While the financial condition of hospitals remains strong, hospital all-payer profit margins fell slightly from their recent record highs in 2013. The three major bond-rating agencies (Fitch Ratings, Moody's Investor Services, Standard & Poor's Ratings Services) reported that nonprofit hospitals in 2016 experienced slower revenue growth than the previous year, rising expense growth, and slightly lower facility-wide operating profits in 2016 (Fitch Ratings 2017, Moody's Investors Service 2017b, Standard & Poor's Ratings Services 2017). The three largest for-profit hospital systems reported similar trends in 2016 (Community Health Systems 2017, Morningstar Document Research 2017a, Morningstar Document Research 2017b).

In 2017, hospital revenues continue to grow, but at a slower pace than in previous years because the peak of Medicaid expansion has passed (Fitch Ratings 2017, Moody's Investors Service 2017b, Standard & Poor's Ratings Services 2017). In addition, as more patients shift toward higher deductible plans, increases in bad debt in 2016 and the first half of 2017 have been reported (Moody's Investors Service 2017a). For-profit hospital systems also report slowed revenue growth. For example, HCA's same-facility revenues increased 6.4 percent in 2015 and 4.1 percent in 2016 (Morningstar Document Research 2017a).

Hospital expense growth increased in 2016 because of increases in the cost of nursing labor, information technology, and pharmaceutical and medical supplies. All three rating agencies cited the growth in nursing wages as the reason for labor cost growth at nonprofit hospitals (Fitch Ratings 2017, Moody's Investors Service 2017b, Standard & Poor's Ratings Services 2017).

FIGURE 3–5 **Hospital merger and acquisition activity has been high in recent years**



Source: MedPAC analysis of 2016 data from Irving Levin Associates Inc.

Three for-profit hospital systems similarly cited labor, pharmaceutical, and medical supply costs as key reasons for expense growth (Community Health Systems 2017, Morningstar Document Research 2017a, Morningstar Document Research 2017b).

Mergers and acquisitions

Hospitals and hospital systems also continued to expand through acquisition. In 2016, 161 individual hospitals were acquired in 71 transactions, a decline in the level of transactions in recent years (Figure 3-5) (Irving Levin Associates Inc. 2017). Smaller hospitals and health systems were more often the target of acquisition in 2016. Approximately one-third of these transactions involved single-facility acquisitions rather than multiple-facility transactions. These acquisitions have resulted in greater market power for hospitals in negotiating contracts with insurers, physicians, and drug and device manufacturers.

Hospital employment increased

Between October 2015 and October 2017, the number of individuals employed by hospitals grew from 4.9 million to 5.1 million, an increase of 3.9 percent, slightly slower than the rest of the health care sector (4.4 percent), but faster than the rest of the economy (3.1 percent) (Bureau of Labor Statistics 2017b). Over 10 years (2007 to 2017), hospital employment increased 13 percent while employment in the rest of the economy increased 5 percent.

Hospitals have hired individuals in certain high-skill occupational categories and reduced the number of staff in certain lower skilled occupations. From 2014 to 2016, the number of physicians employed by hospitals increased by 2.3 percent but varied by type of physician (Bureau of Labor Statistics 2017a). For example, the number of family and general physicians rose 15 percent, and the number of anesthesiologists fell 17 percent. Overall, the number of nurses employed by hospitals rose 1.4 percent during this period, with the number of higher skilled registered nurses increasing by about 40,000 individuals and the number of licensed practice or vocational nurses declining by about 17,000. Hospitals also reduced operational staff from categories such as

health care support (–1.5 percent) and food services (–3.0 percent). Hospital employment growth and occupational employment growth within hospitals may have been more rapid than the Bureau of Labor Statistics (BLS) reports because BLS estimates of workers in hospitals do not include contract workers paid outside hospitals' payroll systems, which some suggest have increased in recent years (Government Accountability Office 2015). For example, the decline in food-service workers could reflect a decrease in employment or an increase in the use of outside contractors.

Medicare payments and providers' costs

In assessing payment adequacy, the Commission also considers the relationship between Medicare payments and the costs of providing care to Medicare patients. We assess the adequacy of Medicare payments for the hospital as a whole (across all Medicare services), thus measuring the relationship between payments and costs using an overall Medicare margin. This margin includes all Medicare payments and Medicare-allowable costs for the six hospital departments covered by the inpatient, outpatient, and post-acute (PAC) PPS systems, as well as uncompensated care payments and graduate medical education payments and costs.[7]

We report the overall Medicare margin across service lines because no hospital service line is a purely independent line of business. For example, we find that operating any PAC provider improves the profitability of acute inpatient care services because an in-hospital PAC provider allows hospitals to safely discharge patients sooner from their acute care beds, thus reducing the cost of inpatient stays. The overall Medicare margin also takes into account revenues that are not included in the service-line payments for inpatient and outpatient care. These revenues include Medicare payments for health information technology (beginning fiscal year 2011) and uncompensated care payments (beginning fiscal year 2014). Excluding these Medicare revenues would understate Medicare payments to hospitals. Another benefit of focusing on overall margins is that we can avoid the challenges of precisely allocating overhead and administrative costs among the different service lines.

To determine whether hospitals have an incentive to treat additional Medicare patients, we also examine the marginal profits for treating additional Medicare patients. This measure examines whether Medicare payments cover the variable cost of treating an additional Medicare patient. We find that, while average Medicare payments do not cover all costs (fixed and variable), they are sufficient to cover the variable costs of treating additional Medicare patients, which is an indicator of whether hospitals with excess capacity have an incentive to see more Medicare patients.

To measure the overall pressure that hospitals are under to control costs, we also examine hospital total (all-payer) profit margins and hospital cash flows. When total margins and cash flows are strong, hospitals are under less pressure to control their costs, which in turn affects their Medicare margin.

Medicare payment growth

Changes in Medicare inpatient hospital payments per discharge under the IPPS depend primarily on three factors: (1) annual updates to base payment rates; (2) changes in reported patient case mix (a measure of relative patient complexity); and (3) policy changes that are not implemented in a budget-neutral manner. In 2016, the average Medicare inpatient payment per case increased 4.6 percent. While inpatient payments increased, uncompensated care payments declined in 2016 because of an increase in the number of insured patients. In 2016, hospitals received $9.9 billion in disproportionate share (DSH) and uncompensated care payments (down from $11 billion in 2015). Between 2015 and 2016, three key changes to inpatient payments occurred:

- a 0.9 percent increase in base payment rates,
- a 3.4 percent increase in inpatient case mix, and
- a $1.1 billion reduction in DSH and uncompensated care payments.

Medicare continues to see growth in the use of outpatient services, attributable to a combination of increases in the number of beneficiaries, the number of outpatient visits, and a $1.7 billion increase (19 percent growth) in payments for separately payable Part B drugs administered in hospitals' outpatient departments. The 19 percent increase was due to an increase in both the volume and prices of Part B drugs. Medicare pays hospitals 106 percent of pharmaceutical companies' average sales prices for most Part B drugs. Because hospitals and the Medicare program do not set pharmaceutical prices, manufacturer price increases for Part B drugs can drive up hospitals' drug costs and Medicare program payments.

TABLE 3–4 **Cost growth, case-mix change, and hospital input price inflation, 2012–2016**

Cost measure	Annual cost growth 2012	2013	2014	2015	2016	Average annual cost growth 2012–2016
Inpatient costs per discharge	3.3%	2.7%	2.2%	2.3%	4.2%	2.9%
Inpatient case-mix-index change	1.4	2.0	2.0	0.8	3.4	1.9
Input price inflation*	2.1	1.9	1.8	1.7	1.6	1.8

Note: Cost-growth numbers are not adjusted for reported changes in case mix. Analysis excludes critical access hospitals and Maryland hospitals.
*Input price inflation reflects a four-quarter moving and weighted average of changes in the hospital operating and capital market basket indexes calculated for the second quarter of each year.

Source: MedPAC analysis of Medicare cost reports, claims files, and hospital input price inflation estimates from CMS.

Rate of cost growth remains close to rate of input price inflation

Hospitals' per case cost increases were relatively low between 2012 and 2015, averaging 2.6 percent annually, and were about 0.6 percentage points faster than input price inflation (the hospital market basket index) (data not shown). The per discharge cost increased by about 4.2 percent in 2016, in large part reflecting a shift in services toward inpatient surgeries (Table 3-4). Although more rapid than the annual increase between 2012 and 2015, this growth is still slower than experienced through most of the 2000s, when costs per case increased an average of 5.6 percent per year, or 1.4 percentage points faster than underlying input price inflation (data not shown).

The lower cost growth from 2012 through 2015 was partly due to lower input price inflation facing hospitals, reflecting low economy-wide inflation and slow wage growth. Hospitals benefited from this low economy-wide wage growth, with compensation costs for hospital workers growing by less than 2 percent in each year from 2012 through 2015 (Bureau of Labor Statistics 2016). In 2016, compensation costs for hospital workers grew 2.2 percent, about equal to that of the rest of the economy at 2.5 percent (Bureau of Labor Statistics 2017a).

From 2015 to 2016, inpatient case mix increased 3.4 percent, the most significant increase in Medicare inpatient case mix in over 10 years, and it is being driven by the corresponding increase in surgical cases (4.3 percent) and decrease in medical cases (–5.2 percent). In 2016, surgical cases had an average case mix of 3.05 and medical cases had an average case mix of 1.21. The growth in the share of surgical cases in 2016 drove up the overall average case mix. However, if we control for the increase in the number of surgical cases, the hospital cost increase for the past three years would be roughly equivalent to underlying input price inflation.

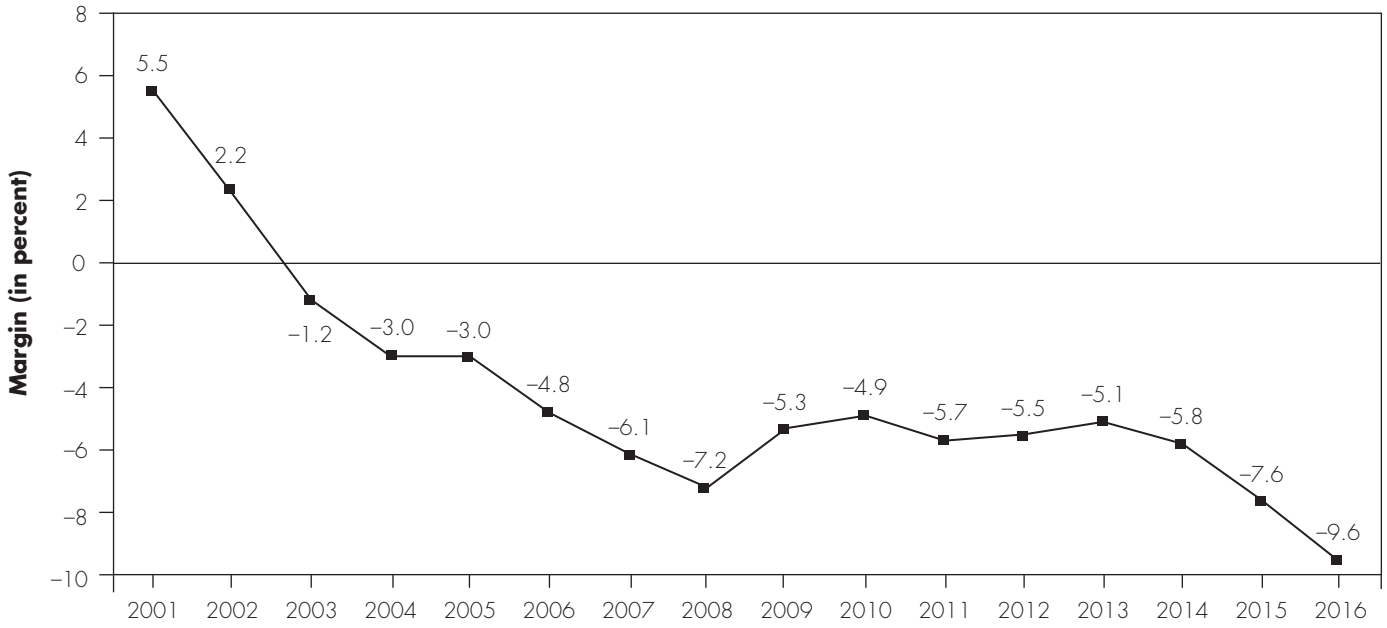
The increasing volume of inpatient surgeries (in particular, hip and knee replacements) could also have contributed to higher device costs. From 2014 through 2016, the cost per discharge (averaged across medical and surgical discharges) grew by 7.9 percent. Drug costs grew even faster during that period, increasing by 12.4 percent over the two-year period. On a combined basis, drugs and devices represented 19 percent of all hospital costs in 2016 and 26 percent of all cost growth per Medicare discharge. Consistent with a growth in inpatient surgery, cost report data indicate anesthesiology, operating rooms, and recovery rooms grew at 8.5 percent, 6.5 percent, and 5.9 percent, respectively, from 2015 to 2016.

Trend in the overall Medicare margin

We define Medicare margins as Medicare payments minus the allowable costs of treating Medicare patients divided by Medicare payments. In analyzing hospital margins, we compute margins with and without critical access hospitals (CAHs), which are 1,300 rural hospitals whose payments are based on their incurred costs. We also exclude hospitals in Maryland, which are not part of the IPPS but rather are paid under a statewide all-payer prospective payment system. From 2001 through 2008, the overall

FIGURE 3–6

Overall Medicare margin continued to trend downward after holding relatively steady between 2009 and 2014



Note: A margin is calculated as payments minus costs, divided by payments; margins are based on Medicare-allowable costs. Analysis excludes critical access and Maryland hospitals. Medicare inpatient margins include services covered by the acute inpatient prospective payment systems. "Overall Medicare margin" covers acute inpatient, outpatient, hospital-based skilled nursing facility (including swing beds), hospital-based home health, and inpatient psychiatric and rehabilitation services, plus graduate medical education and electronic health record incentive payments and payments for uncompensated care.

Source: MedPAC analysis of Medicare cost reports from CMS.

Medicare margin trended downward from 5.5 percent in 2001 to –7.2 percent in 2008 (Figure 3-6).[8] However, from 2008 to 2010, the overall Medicare margin went up, from –7.2 percent to –4.9 percent, largely because of increases in reported case mix—the result of documentation and coding changes hospitals made with the introduction of MS–DRGs in 2008—and lower cost growth as a result of the economy's downturn from the recession (Medicare Payment Advisory Commission 2013b). From 2010 to 2014, the overall Medicare margin held relatively steady, varying from –4.9 to –5.8 percent. From 2014 to 2016, the overall Medicare margin dropped from –5.8 percent to –9.6 percent. The decrease in the overall Medicare margin that occurred from 2014 to 2016 is not unexpected given several payment adjustments required by statute, including reductions to the annual payment update adjustments for documentation and coding improvement, decreases in incentive payments for the adoption of electronic health records, and decreases in uncompensated care payments that correspond to increases in the insured population.

As discussed in our March 2016 report to the Congress, the Medicare margin held relatively steady from 2009 through 2014 in part because CMS overestimated hospital wage inflation. Each year, the hospital update is based on a forecast of input price inflation. In every year from 2012 to 2016, the forecast inflation exceeded actual input price inflation. This forecast error added over 2 percentage points to hospital payment rates from 2012 to 2014 and allowed hospital margins to remain relatively constant during this period. In 2015 and 2016, the forecast error added close to another 2 percentage points to hospital payment rates. However, four factors contributed to the decrease in the overall Medicare margin that exceeded this forecast error. First, PPACA-mandated reductions to the hospital market basket update equaled 0.8 percent in 2015 and 0.7 percent in 2016. Next, the Congress

TABLE 3–5 **Overall Medicare margins by hospital type**

Hospital group	2009	2010	2011	2012	2013	2014	2015	2016
All hospitals (excluding CAHs)	–5.3%	–4.9%	–5.7%	–5.5%	–5.1%	–5.8%	–7.6%	–9.6%
Urban	–5.4	–5.1	–6.1	–5.9	–5.9	–6.0	–7.9	–9.8
Rural								
Excluding CAHs	–4.0	–2.6	–2.6	–1.1	2.4	–3.6	–5.0	–7.4
Including CAHs	–2.8	–1.7	–1.4	0.3	2.5	–1.9	–3.2	–5.3
Nonprofit	–6.6	–6.3	–7.2	–7.1	–6.5	–7.4	–9.1	–11.0
For profit	–0.2	–0.1	–0.3	1.2	1.1	0.7	–1.4	–2.4
Major teaching	–1.1	–0.9	–2.3	–2.8	–3.6	–4.5	–6.4	–8.6
Other teaching	–5.0	–4.7	–5.5	–5.1	–4.8	–4.9	–6.3	–8.5
Nonteaching	–8.5	–8.0	–8.5	–7.8	–6.4	–7.6	–9.7	–11.3
High DSH	1.4	0.9	–0.5	–0.3	–0.4	–1.1	–3.2	–6.2
Moderate-to-low DSH	–7.7	–6.9	–7.4	–7.1	–6.4	–7.1	–8.6	–10.4
No DSH	–13.4	–12.4	–13.2	–13.2	–12.6	–13.5	–15.2	–15.5

Note: CAH (critical access hospital), DSH (disproportionate share). Data are for all hospitals covered by the Medicare acute inpatient prospective payment system in 2016 and for CAHs where indicated. A margin is calculated as payments minus costs, divided by payments; margins are based on Medicare-allowable costs. "Overall Medicare margins" covers acute inpatient, outpatient, hospital-based skilled nursing facility (including swing beds), hospital-based home health, and inpatient psychiatric and rehabilitation services, plus uncompensated care, graduate medical education, and electronic health record incentive payments. The rural margins are shown with and without 1,300 CAHs, which are paid 101 percent of costs for inpatient and outpatient services. The margins without CAHs illustrate the profitability of rural inpatient prospective payment system hospitals; the rural margins with CAHs give a fuller picture of rural hospital profitability. "High DSH" incudes hospitals with the highest disproportionate share adjustments (top quartile). "Moderate-to-low DSH" includes hospitals with disproportionate share adjustments that exceed zero but are not included in the top quartile.

Source: MedPAC analysis of Medicare cost reports, Medicare Provider Analysis and Review files, and impact files from CMS.

mandated reductions in the inpatient base rate in 2015, 2016, and 2017 because of documentation and coding improvements that occurred earlier in the decade. Third, the American Recovery and Reinvestment Act of 2008 provided payments to hospitals for the adoption of health information technology for a limited number of years. The program expired for IPPS hospitals at the end of fiscal year 2016, and payments have been declining since 2014. From 2014 to 2016, these subsidy payments decreased by over $1.7 billion. Finally, by design, as the number of insured individuals increases, CMS decreases the amount available to hospitals through uncompensated care payments. Thus, the increase in the number of insured individuals resulted in the lower level of uncompensated care payments to hospitals.

Medicare margins by hospital type, 2016

In 2016, rural IPPS hospitals (excluding CAHs) had a –7.4 percent overall Medicare margin, which was 2.4 percentage points higher than the –9.8 percent margin for urban hospitals (Table 3-5). Major teaching hospitals (i.e., hospitals with a high resident-to-bed ratio) had an overall Medicare margin of –8.6 percent. In large part, major teaching hospitals had higher overall Medicare margins than the average IPPS hospital because of the extra payments they receive through the indirect medical education and DSH hospital adjustments and uncompensated care payments.

In 2016, for-profit hospitals had the highest overall Medicare margins (–2.4 percent), well above the –11.0 percent overall Medicare margin for nonprofit hospitals (Table 3-5). Much of this differential reflects lower outpatient costs at for-profit hospitals. A detailed analysis of 2009 outpatient services indicated that for-profit hospitals' outpatient margins also benefit somewhat from a more favorable service mix and from being less likely to incur outpatient teaching costs (Medicare Payment Advisory Commission 2014b).

In 2016, hospitals that treated the highest shares of low-income patients (high-DSH hospitals) had a –6.2 percent overall Medicare margin (Table 3-5). In contrast, hospitals treating the lowest share of low-income patients (non-DSH hospitals) had the lowest overall Medicare margin (–15.5 percent). The difference in margins was attributable in part to the DSH adjustments and uncompensated care payments received by hospitals. In addition, hospitals with high shares of Medicare and Medicaid patients tend to have more pressure to control costs and therefore tend to have lower costs per discharge (see p. 84 for a discussion of financial pressure and costs).

Marginal profits

Another factor we consider when evaluating the adequacy of payments is whether providers have any financial incentive to expand the number of Medicare beneficiaries they serve. In considering whether to treat a patient, a provider with excess capacity compares the marginal revenue it will receive (i.e., the Medicare payment) with its marginal costs—that is, the costs that vary with volume. If Medicare payments exceed the marginal costs of treating an additional beneficiary, a provider has a financial incentive to increase its volume of Medicare patients. In contrast, if payments do not cover the marginal costs, the provider may have a disincentive to care for Medicare beneficiaries.

To operationalize this concept, we compare payments for Medicare services with marginal costs, which is approximated as:

Marginal profit = (payments for Medicare services – (total Medicare costs – fixed building and equipment costs)) / Medicare payments

On average, the marginal profit across hospital service lines was approximately 8 percent in 2016.[9] Because hospitals would be expected to generate about 8 percent profit on a marginal increase in Medicare volume, hospitals with excess capacity would have a financial incentive to serve more Medicare beneficiaries.

Total (all-payer) profitability remains strong

Hospitals' total (all-payer) profit margins are an indicator of how much financial pressure hospitals are under to control costs (Figure 3-7, p. 84). In 2016, total margins for hospitals were 6.4 percent, slightly lower than the preceding 3 years, but still near their highest levels since the beginning of the prospective payment system more than 30 years ago (historical data not shown). All-payer margins remain strong because the growth of private-payer rates continues to rise faster than costs (Bureau of Labor Statistics 2013, Health Care Cost Institute 2015, Health Care Cost Institute 2014, Health Care Cost Institute 2012). While Medicare represents about one-third of all-payer revenues, commercially insured patients represent slightly more than one-third of patient revenues and generate almost all of the operating profits for a typical hospital.[10] Operating margins, which exclude charitable donations and income from investments, peaked in 2015 at 6.4 percent following a growth in insured patients. Other measures of all-payer profitability are also strong. Cash flow—as measured by earnings before interest, taxes, depreciation, and amortization—has remained steady and strong for the past seven years, between 10 percent and 11 percent.

In 2016, total margins varied across hospital types. For the second year in a row, for-profit hospitals had a high total (all-payer) margin, 11.2 percent, more than 4 percentage points higher than in 2007. In addition, the frontier IPPS hospitals (those in low population–density counties) had an average total margin of 10.8 percent, suggesting that isolated hospitals can do well in frontier areas when they have sufficient volumes of insured individuals. The total margin for CAHs was 3.6 percent, a slight decrease from 2015, which was the highest level since 2007. In contrast, rural hospitals adjacent to urban areas had low total margins (–0.1 percent in aggregate).

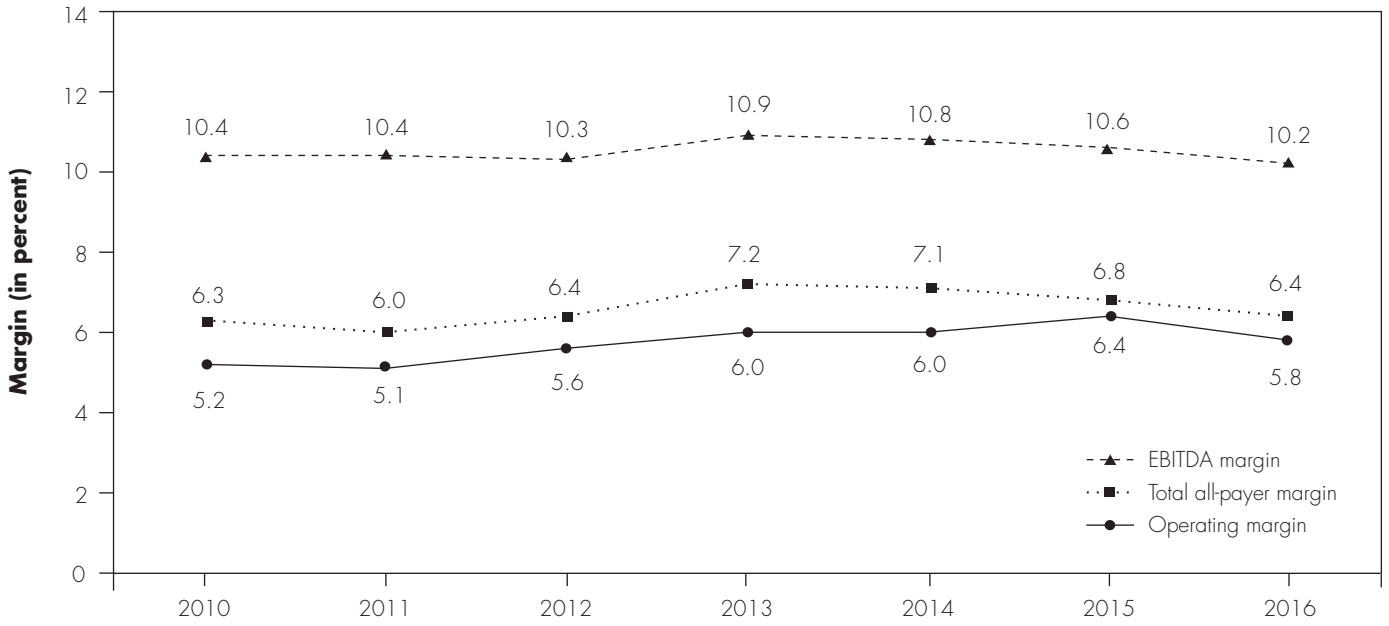
Fiscal pressure constrains costs

Hospitals under financial pressure tend to have lower costs. To illustrate this finding, we compare hospitals under low and high financial pressure in the analysis below. In addition to financial pressure affecting the level of costs, the literature shows that changes in Medicare rates can affect the rate of cost growth. Hospitals that receive larger increases in Medicare payment rates tend to have larger increases in costs.

To determine the association between financial pressure and costs, we grouped hospitals into three levels of financial pressure from private payers—high, medium, and low—based on their median non-Medicare profit margins and other factors from 2011 to 2015. For these years,

FIGURE 3–7

Hospitals' financial performance has remained stable since 2010



Note: EBITDA (earnings before interest, taxes, depreciation, and amortization). A margin is calculated as revenues minus costs, divided by payments. Analysis excludes critical access hospitals.

Source: MedPAC analysis of Medicare hospital cost report data.

the hospitals under high pressure historically had non-Medicare profit margins of less than 1 percent, while the low-pressure hospitals had non-Medicare profit margins of more than 5 percent. We found that hospitals under high pressure during the five-year period ended up with lower standardized Medicare costs per discharge in 2016 than hospitals under low levels of financial pressure. For more details on our analytic methods, see our earlier analysis of payment adequacy (Medicare Payment Advisory Commission 2011).

The following are key findings from our analysis of financial pressure on hospitals:

- ***High pressure equals low cost:*** The 26 percent of hospitals under the most financial pressure had median standardized Medicare costs per case that were 7 percent lower than the national median for the 2,762 IPPS hospitals with available data. Because of their lower Medicare costs, hospitals under pressure broke even on Medicare (0 percent margin), which is 8 percentage points above the national median. High-pressure hospitals tended to be paid government rates for larger shares of patients (51 percent of inpatient days were Medicare and Medicaid patients).
- ***Low pressure equals high cost:*** The 62 percent of hospitals under a low level of financial pressure had median standardized Medicare costs per case that were 3 percent above the national median. Because of higher costs, they generated a median Medicare profit margin of nearly –11 percent, scoring 3 percentage points below the national median. Low-pressure hospitals tended to be paid government rates for smaller shares of patients (46 percent of inpatient days were Medicare and Medicaid patients).

In addition to cost differences at the hospital level, cost differences appear at the state level. The literature generally finds that a dominant insurer in a state can reduce the relative market power of hospitals and the prices commercial insurers pay hospitals (Trish and Herring 2015). We find that lower commercial prices may then result in lower costs. For example, in Alabama

and North Dakota, where there is one dominant insurer (each) and relatively low commercial payment rates, hospital wage rates are relatively low. (By "relatively low," we mean that the ratio of hospital wages to wages paid by other employers for comparable employees is lower in Alabama and North Dakota than the average state) (Medicare Payment Advisory Commission 2007).

Another way to examine the relationship between financial pressure and costs is to see how changes in financial pressure affect changes in costs. For example, White and Wu found that hospitals that received higher Medicare payment increases because of policy changes tended to have higher cost growth (White and Wu 2014). Contrary to "cost-shift" theory, they also found that lower Medicare price growth did not cause hospitals to increase prices negotiated with commercial insurers. Instead, they found lower Medicare prices led to lower cost growth (White 2013). Similar findings have been reported by others (Clemens and Gottlieb 2017, Frakt 2015). A recent study examined how hospitals responded when they received a large increase in their wage index because of Section 508 of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003. The study found that the hospitals that received higher Medicare payments through the 508 program "treated more patients, increased payroll, hired nurses, added new technology, raised CEO pay, and ultimately increased their spending by over $100 million annually" (Cooper et al. 2017). The implication of these studies is that constraining Medicare prices should help constrain hospital costs. This finding that costs vary with income is consistent with a recent press account of how a hospital (with a history of receiving relatively high commercial prices) started to feel more pressure to reduce costs and did find ways to reduce staffing and supply expenses (Boghosian 2017).

Relatively efficient hospitals

The Commission follows two principles when identifying a set of efficient providers. First, the providers must do relatively well on cost and quality metrics. Second, the performance has to be consistent, meaning that the provider cannot have poor performance on any metric over the past three years. In the hospital sector, the variables we use to identify relatively efficient hospitals are hospital-level mortality rates (3M® risk-adjusted all-condition mortality), readmission rates (3M® potentially preventable readmissions), and standardized inpatient Medicare costs per case. Our assessment of efficiency is not in absolute terms but, rather, relative to other IPPS hospitals.

Categorizing hospitals as relatively efficient We assigned hospitals to the relatively efficient group or the control group according to each hospital's performance relative to the national median on a set of risk-adjusted cost and quality metrics for the period 2013 to 2015.[11] We then examined the performance of the two hospital groups in fiscal year 2016.

Hospitals were identified as relatively efficient if they met four criteria in each year from 2013 to 2015:

- Risk-adjusted mortality rates were among the best two-thirds of all hospitals.
- Risk-adjusted readmission rates were among the best two-thirds of all hospitals.
- Standardized costs per discharge were among the best two-thirds of all hospitals.
- Risk-adjusted mortality or standardized costs per discharge were among the best one-third of all hospitals.

The objective was to identify hospitals that consistently performed at an above-average level on at least one measure (cost or quality) and that always performed reasonably well on all measures. The rationale for this methodology and the details of computing the various measures are discussed in our March 2011 report (Medicare Payment Advisory Commission 2011). As a secondary check on hospital quality, we also require that at least 60 percent of the hospital's patients rated the hospital a 9 or 10 on a 10-point scale.[12]

Examining performance of relatively efficient and other hospitals from 2013 to 2015 Of the 2,190 hospitals that met our screening criteria during the 2013 to 2015 period, 331 (15 percent) were found to be relatively efficient. We examined the performance of relatively efficient hospitals on three measures by reporting the group's median performance divided by the median for the set of hospitals in our analysis (Table 3-6, p. 86). The median efficient hospital's relative risk-adjusted 30-day mortality rate for the 3-year assessment period was 90 percent of the national median, meaning that the 30-day mortality rate for the efficient group was 10 percent below (that is, better than) the national median. The median readmission rate for the efficient group was 6 percent below the national median. The standardized Medicare cost per discharge for the efficient group was 11 percent lower than the national median. These relatively efficient hospitals were spread

TABLE 3–6

Performance of relatively efficient hospitals

Relative performance measure	Type of hospital: Relatively efficient, 2013–2015	Type of hospital: Other hospitals
Number of hospitals	331	1,859
Share of hospitals	15%	85%
Historical performance, 2013–2015 (percent of national median)		
Risk-adjusted:		
Composite 30-day mortality (3M™)	90%	102%
Readmission rates (3M)	94	102
Standardized Medicare costs per discharge	89	103
Performance metrics, 2016 (percent of national median)		
Risk-adjusted:		
Composite 30-day mortality (3M)	93%	101%
Composite 30-day readmission (3M)	94	101
Standardized Medicare costs per discharge	92	102
Median:		
Overall Medicare margin, 2016	–1%	–9%
Non-Medicare margin, 2016	9	9
Total (all-payer) margin, 2016	7	5

Note: Relative measures are the median for the group as a share of the median of all hospitals. Per case costs are standardized for area wage rates, case-mix severity, prevalence of outlier and transfer cases, interest expense, low-income shares, and teaching intensity. Composite mortality was computed using the 3M methodology to compute risk-adjusted mortality for all conditions. We removed hospitals with low Medicaid patient loads (the bottom 10 percent of hospitals) and hospitals in markets with high service use (top 10 percent of hospitals) because of concerns that socioeconomic conditions and aggressive treatment patterns can influence unit costs and risk-adjusted quality metrics.

Source: MedPAC analysis of 2013 to 2016 Medicare cost report and claims-based quality data.

across the country and had a set of diverse characteristics, but they were more likely to be larger nonprofit hospitals because those hospitals tend to have better performance on the quality metrics we analyzed. (For a more complete description of the methodology and other characteristics of relatively efficient providers, see online Appendix 3-B from our 2016 report to the Congress, available at http://www.medpac.gov.)

Historically strong performers had lower mortality and costs in 2016 Lower costs allowed the relatively efficient hospitals to generate less negative overall Medicare margins. The median hospital in the efficient group had an overall Medicare margin of –1 percent in 2016, while the median hospital in the comparison group had an overall Medicare margin of –9 percent (Table 3-6). The relatively efficient group also continued to perform better on quality metrics in 2016, with risk-adjusted mortality equal to 93 percent of the national median and risk-adjusted readmissions equal to 94 percent of the national median.

Summary of hospitals' financial performance

The financial measures presented for 2016 present a mixed picture. All-payer margins were 6.8 percent, but Medicare margins were lower, at –9.6 percent in aggregate and –1.0 percent for the relatively efficient providers. While Medicare payments do not cover the full costs (fixed and variable) of the average hospital, they are approximately 8 percent higher than the marginal cost of adding additional Medicare patients. Therefore, hospitals with

excess capacity have an incentive to serve more Medicare patients.

How will current law changes for 2017, 2018, and 2019 affect hospitals' Medicare payments and beneficiaries' access?

We project Medicare margins for 2018 based on margins in 2016 and policy changes that took or take place in 2017 and 2018. The 2017 update for inpatient and outpatient payments was 1.65 percent. In 2018, the update is 1.35 percent for both inpatient and outpatient services. Other changes in payment policy largely offset each other. Some regulatory changes increased payments (e.g., higher uncompensated care payments in 2018), but other changes decreased payments (e.g., offset for coding practices in 2017). The net result is that, from 2016 to 2018, payment rates increased by about 3 percent over two years. We expect cost growth per discharge to have remained about 2.5 percent per year in 2016 and 2017, resulting in cost growth of about 5 percent over two years. Given that costs are expected to increase about 2 percent faster than payments, we expect overall Medicare margins to decline from –9.6 percent in 2016 to about –11 percent in 2018. We also expect the efficient provider margins to remain negative.

Current law payment changes in 2019

The hospital market basket is projected to be 2.8 percent in 2019. The hospital update will be lower than 2.8 percent because of a 0.8 percent adjustment for productivity and another 0.75 percent reduction mandated by PPACA. The net result is a projected update of 1.25 percent (2.8 – 0.8 – 0.75). The change in Medicare margins for 2019 will depend on whether cost growth exceeds hospitals' payment rate growth on a case-mix-adjusted basis.

Hospitals will continue to have a financial incentive to see Medicare patients

Despite Medicare margins of –9.6 percent in 2016, hospitals' all-payer margins (which include Medicare) in 2016 remained high at 6.4 percent. The all-payer margins reflect continued strong rate increases from private insurers, resulting in high margins for patients with commercial insurance (Health Care Cost Institute 2016, Health Care Cost Institute 2014, Medicare Payment Advisory Commission 2014a). Despite the growing gap between Medicare margins and commercial margins, we do not expect to see any near-term material reductions in Medicare beneficiaries' access to care for several reasons:

- Most hospitals have excess inpatient capacity.
- Medicare payment rates, while less than the total cost of care, are still sufficient to generate a marginal profit of about 8 percent on each additional Medicare patient. Therefore, it is still profitable for the average hospital to fill its empty beds with Medicare patients.
- Nonprofit hospitals have an incentive to admit Medicare patients to maintain their nonprofit status.

Because hospitals have a financial incentive and the capacity to serve Medicare patients, we do not believe beneficiaries' access to care is at risk in the near term. However, in the long run, if the disparity between Medicare rates and commercial rates continues to grow, the disparity in incentive to see Medicare patients and commercially insured patients will have to be addressed. The gap cannot be closed by increasing Medicare rates 3 percent or 4 percent every year; the Medicare Trust Fund would not be able to absorb those price increases. Therefore, commercial payment rate growth must be constrained, or eventually the difference between commercial rates and Medicare rates will grow so large that some hospitals will have an incentive to focus primarily on patients with commercial insurance. Thus, in the long term, Medicare beneficiaries' access to care may in part depend on commercial payers restraining rates paid to hospitals.

How should Medicare payment rates change in 2019?

The Commission's recommendation for updating Medicare hospital payments for fiscal year 2019 is based on indicators of beneficiaries' access to hospital care, hospitals' access to capital, hospital quality, and the relationship between Medicare payments and hospital costs. Specifically, the Commission makes the following recommendation.

RECOMMENDATION 3

For 2019, the Congress should update the 2018 Medicare base payment rates (inpatient and outpatient) for acute care hospitals by the amount determined under current law.

Under current law, the update is expected to equal the projected market basket increase (2.8 percent), less an adjustment for productivity (–0.8 percent), less another adjustment mandated by PPACA (–0.75 percent).

Currently, the net expected update is 1.25 percent, but that amount may change by the time CMS calculates the final 2019 update. If the forecasted percent change in the hospital market basket increases from the current estimate (above 2.8 percent) because of higher expectations regarding input price inflation or the projected 10-year moving average of economy-wide productivity declines from the current estimate, then the update would be larger than 1.25 percent. Alternatively, if the forecasted market basket update declines (below 2.8 percent) or the productivity adjustment increases, the update would be less than 1.25 percent.

RATIONALE 3

In examining our payment adequacy indicators, we found that, in 2016, beneficiaries had good access to care, hospitals maintained strong access to capital markets, and hospital quality improved, despite negative Medicare margins for most providers. Looking forward, we expect beneficiaries' access to care to remain adequate given hospitals' modest occupancy rates and good access to capital. However, the aggregate Medicare profit margin is expected to decline by about 1.4 percentage points to −11 percent by 2018. Given these payment adequacy indicators, an update consistent with current law would be high enough to maintain access to care, but would also be low enough to help maintain some fiscal pressure on hospitals to control their costs.

IMPLICATIONS 3

Spending

- The recommendation reflects the payment update projected under current law and therefore is not expected to affect spending relative to current law.

Beneficiaries and providers

- We do not expect the recommendation to affect beneficiaries' access to care or providers' willingness to treat Medicare beneficiaries relative to current law. ■

Endnotes

1 Payments include roughly $7 billion of inpatient and outpatient payments to critical access hospitals (CAHs), which are paid 1 percent over their costs of inpatient, outpatient, and post-acute services in swing beds. CAHs do not receive disproportionate share payments or uncompensated care payments.

2 In February 2016, a task force convened by the Society of Critical Care Management published a paper in the *Journal of the American Medical Association* altering the definition of *sepsis* and *septic shock*. The updated definition was intended to offer greater consistency for research purposes and facilitate earlier recognition and more timely management of patients with sepsis or at risk of developing sepsis.

3 We have not yet seen results from the CCJR demonstration. However, initial results from the BPCI study indicate that costs within an episode are being reduced because of lower device cost and less use of post-acute care. The effect on the volume of episodes has not yet been evaluated (Lewin Group 2016).

4 In previous years, our discussion of services shifting from freestanding offices to HOPDs also included echocardiography and nuclear cardiology. Service volume in these two categories continued to shift from freestanding offices to HOPDs in 2016. From 2015 to 2016, volume per beneficiary of echocardiography services increased by 5.4 percent in HOPDs and decreased by 0.9 percent in freestanding offices. Also, volume per beneficiary of nuclear cardiology services increased by 0.4 percent in HOPDs and decreased by 4.2 percent in freestanding offices. However, increased packaging of ancillary items in 2016 caused program spending on these services to decline in 2016. For example, OPPS payment for the echocardiography services decreased by $89 million (10 percent).

5 The Commission's analysis of unplanned readmissions from 2010 through 2016 used Medicare claims data.

6 Recent analysis performed by the Office of the Assistant Secretary for Planning found that moving to an all-condition hospital readmission without making any of the other changes suggested in our March 2013 package of changes would result in higher annual penalties (Zuckerman et al. 2017). It is important to note that any increase in penalties because of expanding to all conditions would be fully offset by the other changes we discussed.

7 The six largest services in order of Medicare patient revenues are inpatient acute care (61 percent), outpatient care (29 percent), inpatient rehabilitation (2.1 percent), inpatient psychiatric (1.4 percent), home health care (0.8 percent), and skilled nursing services (0.4 percent).

8 The services included in the overall Medicare margin are Medicare's acute inpatient, outpatient, graduate medical education, hospital-based skilled nursing facility (including swing beds), hospital-based home health care, inpatient psychiatric, and inpatient rehabilitation services. Also included in the overall margin are special payments for health information technology, temporary extra payments to hospitals located in low-spending counties, and uncompensated care payments (as of fiscal year 2015).

9 Using a cost-accounting approach, we find that approximately 20 percent of hospital costs are fixed, resulting in a marginal profit of about 8 percent. This estimate is conservative because it ignores any potential managerial or clinical labor costs that are fixed. In the 2015 report, we also took an econometric approach to estimating hospitals' marginal costs and found that fixed costs were about 20 percent of overall costs. This amount matches the 20 percent figure used in the Medicare outlier policy. For a discussion of our econometric results and the literature on hospital marginal costs, see the online appendix to the 2015 report, available at http://www.medpac.gov (Medicare Payment Advisory Commission 2015b).

10 The Medicare share of hospital admissions rose from 42 percent in 2010 to 44 percent in 2015. However, because Medicare prices rose more slowly than commercial prices and because of additional revenue from the newly insured, Medicare's share of all hospital revenues remained at 33 percent from 2010 through 2015.

11 We use medians rather than means to limit the influence of outliers on our set of efficient providers.

12 While the Hospital Consumer Assessment of Healthcare Providers and Systems®—and similar patient satisfaction surveys—has the limitation of being subjective, we add it as another way to screen out low-value providers because it has the advantage of not being dependent on coding. It is possible that overly aggressive coding by some providers could artificially lower their risk-adjusted cost and risk-adjusted mortality metrics.

References

American Hospital Association. 2016. *AHA hospital statistics: 2016 edition*. Washington, DC: AHA.

Berenson, R. A., J. H. Sunshine, D. Helms, et al. 2015. Why Medicare Advantage plans pay hospitals traditional Medicare prices. *Health Affairs* 34, no. 8 (August): 1289–1295.

Boghosian, A. 2017. Not even the mattress pads were spared: An inside look at a top hospital's struggle to cut costs. *STAT,* September 28.

Bureau of Labor Statistics, Department of Labor. 2017a. Employment cost index – September 2017. Table 4. News release. October 31. https://www.bls.gov/news.release/pdf/eci.pdf.

Bureau of Labor Statistics. 2017b. National current employment statistics, October 2017. https://www.bls.gov/ces/data.htm.

Bureau of Labor Statistics, Department of Labor. 2016. May 2015 national occupational employment and wage estimates: United States. http://www.bls.gov/oes/.

Bureau of Labor Statistics, Department of Labor. 2013. Consumer Price Index–All Urban Consumers. Data for Los Angeles-Riverside-Orange County, CA. http://data.bls.gov/pdq/SurveyOutputServlet?series_id=CUURA421SA0,CUUSA421SA0.

Cain Brothers. 2017. *Industry Insights*. October 30.

Census Bureau. 2017. Value of construction put in place survey at a glance. http://www.census.gov/construction/c30/c30index.html.

Chandra, A., A. Finkelstein, A. Sacarny, et al. 2015. *Healthcare exceptionalism? Performance and allocation in the U.S. healthcare sector*. Working paper 21603. Cambridge, MA: National Bureau of Economic Research.

Clemens, J., and J. Gottlieb. 2017. In the shadow of a giant: Medicare's influence on private physician payments. *Journal of Political Economy* 125, no. 1 (February): 1–39.

Community Health Systems, I. 2017. Form 10–K annual report to the Securities and Exchange Commission. February 26.

Conn, J. 2017. Consumers fueling outpatient construction. *Modern Healthcare*, March.

Cooper, Z., A. Kowalski, E. Powell, et al. 2017. *Politics, hospital behavior, and health care spending*. National Bureau of Economic Research working paper no. 23748. Cambridge, MA: NBER.

Fitch Ratings. 2017. 2017 medians ratios for not for profit hospitals and healthcare systems. September 20.

Frakt, A. 2015. Hospitals are wrong about shifting costs to private insurers. *New York Times*, March 23.

Government Accountability Office. 2015. *Contingent workforce: Size, characteristics, earnings, and benefits*. Washington, DC: GAO.

Government Accountability Office. 2013. *VA health care: Management and oversight of fee basis care need improvement*. GAO–13–441. Washington, DC: GAO.

Health Care Cost Institute. 2016. *2015 health care cost and utilization report*. Washington, DC: HCCI.

Health Care Cost Institute. 2015. *2014 health care cost and utilization report*. Washington, DC: HCCI.

Health Care Cost Institute. 2014. *2013 health care cost and utilization report*. Washington, DC: HCCI.

Health Care Cost Institute. 2012. *Health care cost and utilization report: 2010*. Washington, DC: HCCI.

Hines, A. 2015. *Trends in observed adult inpatient mortality for high-volume conditions, 2002–2012*. Washington: Agency for Healthcare Research and Quality.

Irving Levin Associates Inc. 2017. *The health care services acquisition report: 23rd edition.* Norwalk, CT: Irving Levin Associates Inc.

Irving Levin Associates Inc. 2013. *The health care services acquisition report: 19th edition*. Norwalk, CT: Irving Levin Associates Inc.

Krumholz, H. 2015. Mortaility, hospitalizations, and expenditures for the Medicare population aged 65 years or older 1999–2013. *Journal of the American Medical Association*: 355–365.

Lewin Group. 2016. *CMS Bundled Payments for Care Improvement (BPCI) Initiative models 2–4: Year 2 evaluation & monitoring annual report.* Report prepared by the Lewin Group for the Centers for Medicare & Medicaid Services. Baltimore, MD: CMS. https://innovation.cms.gov/Files/reports/bpci-models2-4-yr2evalrpt.pdf.

Medicare Payment Advisory Commission. 2017a. *Report to the Congress: Medicare and the health care delivery system.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2017b. *Report to the Congress: Medicare payment policy.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2015a. *Report to the Congress: Medicare and the health care delivery system.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2015b. *Report to the Congress: Medicare payment policy.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2014a. *A data book: Health care spending and the Medicare program.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2014b. *Report to the Congress: Medicare payment policy.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2013a. *Report to the Congress: Medicare and the health care delivery system.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2013b. *Report to the Congress: Medicare payment policy.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2012. *Report to the Congress: Medicare payment policy.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2011. *Report to the Congress: Medicare payment policy.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2007. *Report to the Congress: Promoting greater efficiency in Medicare.* Washington, DC: MedPAC.

Moody's Investors Service. 2017a. 2018 outlook changed to negative due to reimbursement and expense pressures. December 4.

Moody's Investors Service. 2017b. Non-profit and public healthcare medians: Key financial metrics underperform as pressures mount. August 21.

Morningstar Document Research. 2017a. HCA holdings, for 10–K. February 22.

Morningstar Document Research. 2017b. Tenet Healthcare Corporation, for 10–K. February 27.

Seymour, C. W., V. X. Liu, T. J. Iwashyna, et al. 2016. Assessment of clinical criteria for sepsis: For the Third International Consensus Definitions for sepsis and septic shock (Sepsis–3). *Journal of the American Medical Association* 315, no. 8 (Feb 23): 762–774.

Standard & Poor's Ratings Services. 2017. U.S. not-for-profit acute health care ratios: Operating performance weakens while balance sheets are stable. August 24.

Thomson Reuters. 2017. Hospital municipal bond issuances: As of October 17, 2017. http://financial.thomsonreuters.com/en/products/data-analytics/market-data/sdc-platinum-financial-securities.html.

Townsend, S. R., E. Rivers, and L. Tefera. 2016. Definitions for sepsis and septic shock. *Journal of the American Medical Association* 316, no. 4 (July 26): 457–458.

Trish, E. E., and B. J. Herring. 2015. How do health insurer market concentration and bargaining power with hospitals affect health insurance premiums? *Journal of Health Economics* 42 (July): 104–114.

White, C. 2013. Contrary to cost-shift theory, lower Medicare hospital payment rates for inpatient care lead to lower private payment rates. *Health Affairs* 32, no. 5 (May): 935–943.

White, C., and V. Y. Wu. 2014. How do hospitals cope with sustained slow growth in Medicare prices? *Health Services Research* 49, no. 1 (February): 11–31.

Zuckerman, R. B., K. E. Joynt Maddox, S. H. Sheingold, et al. 2017. Effect of a hospital-wide measure on the Readmissions Reduction Program. *New England Journal of Medicine* 377, no. 16 (October 19): 1551–1558.