CHAPTER 10

Long-term care hospital services

RECOMMENDATION

10 The Secretary should eliminate the update to the payment rates for long-term care hospitals for fiscal year 2013.

COMMISSIONER VOTES: YES 17 • NO 0 • NOT VOTING 0 • ABSENT 0

CHAPTER 10

Long-term care hospital services

Chapter summary

Long-term care hospitals (LTCHs) furnish care to patients with medically complex problems—such as prolonged mechanical ventilation or multiple organ failure—who need hospital-level care for relatively extended periods. To qualify as an LTCH for Medicare payment, a facility must meet Medicare's conditions of participation for acute care hospitals and have an average length of stay greater than 25 days for its Medicare patients. Medicare is the predominant payer for most LTCHs, accounting for about two-thirds of LTCH discharges. In 2010, Medicare spent $5.2 billion on care furnished in roughly 412 LTCHs nationwide. About 118,300 beneficiaries had almost 134,700 LTCH stays.

Assessment of payment adequacy

Beneficiaries' access to care—We have no direct measures of beneficiaries' access to LTCH services. Instead, we consider the capacity and supply of LTCH providers and changes over time in the volume of services furnished.

- ***Capacity and supply of providers—***In spite of the moratorium imposed by the Medicare, Medicaid, and SCHIP Extension Act of 2007 and subsequent amendments, the number of LTCHs filing Medicare cost reports increased 6.1 percent between 2008 and 2010. Almost all of this growth took place in 2009. As expected, the entry of new LTCHs into the

In this chapter

market slowed significantly during the later years of the moratorium. Only one new LTCH filed a Medicare cost report in 2010.

- ***Volume of services*—**Controlling for the number of fee-for-service beneficiaries, we found that the number of LTCH stays rose 3.5 percent between 2009 and 2010, suggesting that access to care is not a problem.

***Quality of care*—**Unlike most other health care facilities, LTCHs currently do not submit quality data to CMS. Using claims data, we found stable or declining rates of readmission, death in the LTCH, and death within 30 days of discharge for most of the top 25 diagnoses in 2010.

***Providers' access to capital*—**The moratorium on new beds and facilities reduces the need for capital in the industry by eliminating opportunities for LTCH expansion. However, in 2011 the two major LTCH chains, which together own slightly more than half of all LTCHs, acquired the capital needed to purchase other LTCHs as well as other post-acute care providers. Smaller LTCH chains and nonchain LTCHs likely do not have the same access to capital.

***Medicare payments and providers' costs*—**Between 2005 and 2008, growth in cost per case outpaced that for payments, as regulatory changes to Medicare's payment policies for LTCHs slowed growth in payment per case to an average of 1.4 percent per year. However, between 2008 and 2009, growth in payments per case accelerated to 5.3 percent, about twice as much as the growth in costs. This surge was due in part to congressional actions that halted or rolled back implementation of CMS regulations designed to reduce total payments to LTCHs. Between 2009 and 2010, payment growth slowed to 2 percent, while cost growth was held under 1 percent. The 2010 Medicare margin for LTCHs was 6.4 percent. We expect growth in costs to be modest, albeit somewhat greater than the current pace—roughly similar to the latest forecast of the market basket for 2012 of 2.3 percent. As a result, we estimate LTCHs' aggregate Medicare margin will be 4.8 percent in 2012.

Issues in Medicare payment for LTCH services

Research by the Commission and others has been unable to clearly distinguish LTCH patients from the medically complex patients receiving care in acute care hospitals and some skilled nursing facilities. Such research has also consistently found that the cost of treatment for many medically complex cases is higher for beneficiaries who are admitted to LTCHs than for those who are not and has shown that outcomes for most medically complex beneficiaries who receive care in LTCHs are comparable to those observed in acute care hospitals.

If LTCHs are to continue to be recognized as a distinct entity for purposes of Medicare payment, then it is crucial that providers be able to distinguish medically complex patients in need of hospital-level care from those who can be appropriately treated in post-acute settings. Further, if medically complex cases in LTCHs are, in essence, indistinguishable from medically complex cases in acute care hospitals, then Medicare must ensure that its payments for the same set of services are equitable, regardless of where the services are provided. Finally, policymakers must consider whether certain models of care will best serve the needs of medically complex patients. These steps will help ensure that Medicare beneficiaries receive appropriate, high-quality care in the least costly setting consistent with their clinical conditions. ■

Background

Patients with medically complex problems—such as prolonged mechanical ventilation or multiple organ failure—may need hospital-level care for relatively extended periods. Some are treated in long-term care hospitals (LTCHs). These facilities can be freestanding or colocated with other hospitals as hospitals within hospitals or satellites. To qualify as an LTCH for Medicare payment, a facility must meet Medicare's conditions of participation for acute care hospitals and have an average length of stay greater than 25 days for its Medicare patients. (By comparison, the average Medicare length of stay in acute care hospitals is about five days.) There are no other criteria defining LTCHs, the level of care they furnish, or the patients they treat.[1] Because of the relatively long stays and the level of care provided, care in LTCHs is expensive. Medicare is the predominant payer for most LTCHs, accounting for about two-thirds of LTCH discharges. In 2010, Medicare spent $5.2 billion on care furnished in an estimated 412 LTCHs nationwide. About 118,300 beneficiaries had almost 134,700 LTCH stays.

Since October 2002, Medicare has paid LTCHs prospective per discharge rates based primarily on the patient's diagnosis and the facility's wage index.[2] Under this prospective payment system (PPS), LTCH payment rates are based on the Medicare severity long-term care diagnosis related group (MS–LTC–DRG) patient classification system, which groups patients based primarily on diagnoses and procedures. MS–LTC–DRGs are the same groups used in the acute inpatient PPS but have relative weights specific to LTCH patients, reflecting the average relative costliness of cases in the group compared with that for the average LTCH case. The LTCH PPS has outlier payments for patients who are extraordinarily costly. The PPS pays differently for short-stay outlier cases (patients with shorter than average lengths of stay), reflecting CMS's contention that Medicare should pay adjusted rates for patients with relatively short lengths of stay to reflect the reduced costs of caring for them.[3]

LTCH discharges are concentrated in a relatively small number of diagnosis groups. In fiscal year 2010, the top 25 LTCH diagnoses made up 62 percent of all LTCH discharges (Table 10-1, p. 262). The most frequently occurring diagnosis was MS–LTC–DRG 207, respiratory diagnosis with ventilator support for 96 or more hours. Nine of the top 25 diagnoses, representing 33 percent of LTCH patients, were respiratory conditions.

The past few years have seen significant growth in the number of cases admitted to LTCHs with infections. Between 2008 and 2010, the number of beneficiaries admitted with osteomyelitis with major comorbidities or complications grew 27 percent, nine times as fast as the number of all LTCH admissions. Over the same period, the number of beneficiaries admitted with postoperative or post-traumatic infections with major comorbidities or complications climbed 22 percent, while the number of beneficiaries admitted with sepsis and cellulitis increased 20 percent and 19 percent, respectively. At the same time, the number of beneficiaries admitted to LTCHs with skin ulcers fell 21 percent.

Over the past decade, there has been marked growth in the number and the share of critically ill patients transferred from acute care hospitals to LTCHs. Kahn and colleagues found that, though the overall number of Medicare admissions to acute care hospital intensive care units (ICUs) fell 14 percent between 1997 and 2006, the number of Medicare ICU patients discharged to LTCHs almost tripled. As a result, the share of all critical care hospitalizations ending in transfer to an LTCH climbed from 0.7 percent in 1997 to 2.5 percent in 2006 (Kahn et al. 2010).[4]

The number of LTCHs has grown in concert. But many LTCHs that have entered the Medicare program are located in markets where LTCHs already existed instead of in new markets with few or no LTCHs.[5] This practice is somewhat counterintuitive, because these facilities are supposed to be serving unusually sick patients, and one would expect such patients to be relatively rare. Indeed, the Commission's analysis of LTCH claims from 2010 found that average case mix for LTCH admissions is lower in communities with the highest use of LTCHs compared with communities with the lowest use of LTCHs.[6] This finding suggests that an oversupply of LTCH beds in a market may result in admissions to LTCHs of less complex cases that could appropriately be treated in less costly settings.

LTCHs are not distributed evenly across the nation (Figure 10-1, p. 263). Some areas have many LTCHs; others have none. The absence of LTCHs in many areas of the country underscores the fact that medically complex patients can be treated appropriately in other settings. One recent analysis found that among all Medicare ICU patients receiving mechanical ventilation in 2006, only 16 percent of patients discharged alive were discharged to LTCHs, while 46 percent were discharged to skilled nursing

TABLE 10–1 **The top 25 MS–LTC–DRGs made up two-thirds of LTCH discharges in 2010**

MS–LTC–DRG	Description	Discharges	Percentage	Change 2008–2010
207	Respiratory system diagnosis with ventilator support 96+ hours	16,024	11.9%	6.9%
189	Pulmonary edema and respiratory failure	11,148	8.3	27.5
871	Septicemia or severe sepsis without ventilator support 96+ hours with MCC	7,474	5.5	15.3
177	Respiratory infections and inflammations with MCC	5,067	3.8	16.8
592	Skin ulcers with MCC	3,568	2.6	–10.9
949	Aftercare with CC/MCC	3,046	2.3	–18.8
208	Respiratory system diagnosis with ventilator support <96 hours	2,851	2.1	14.7
193	Simple pneumonia and pleurisy with MCC	2,847	2.1	5.6
190	Chronic obstructive pulmonary disease with MCC	2,654	2.0	3.8
539	Osteomyelitis with MCC	2,415	1.8	26.9
573	Skin graft and/or debridement for skin ulcer or cellulitis with MCC	2,059	1.5	7.7
862	Postoperative and post-traumatic infections with MCC	2,033	1.5	21.6
314	Other circulatory system diagnosis with MCC	1,983	1.5	33.4
919	Complications of treatment with MCC	1,950	1.4	17.5
682	Renal failure with MCC	1,937	1.4	11.4
166	Other respiratory system OR procedures with MCC	1,911	1.4	12.9
559	Aftercare, musculoskeletal system and connective tissue with MCC	1,877	1.4	–3.4
291	Heart failure and shock with MCC	1,821	1.4	7.9
4	Tracheostomy with ventilator support 96+ hours or primary diagnosis except face, mouth, and neck without major OR	1,656	1.2	17.1
593	Skin ulcers with CC	1,646	1.2	–36.4
178	Respiratory infections and inflammations with CC	1,644	1.2	–16.3
602	Cellulitis with MCC	1,593	1.2	40.0
870	Septicemia or severe sepsis with ventilator support 96+ hours	1,592	1.2	47.7
603	Cellulitis without MCC	1,432	1.1	2.3
194	Simple pneumonia and pleurisy with CC	1,285	1.0	–22.3
	Top 25 MS–LTC–DRGs	83,513	62.0	8.5
	Total	134,683	100.0	2.9

Note: MS–LTC–DRG (Medicare severity long-term care diagnosis related group), LTCH (long-term care hospital), MCC (major complication or comorbidity), CC (complication or comorbidity), OR (operating room). MS–LTC–DRGs are the case-mix system for LTCHs. Columns may not sum due to rounding.

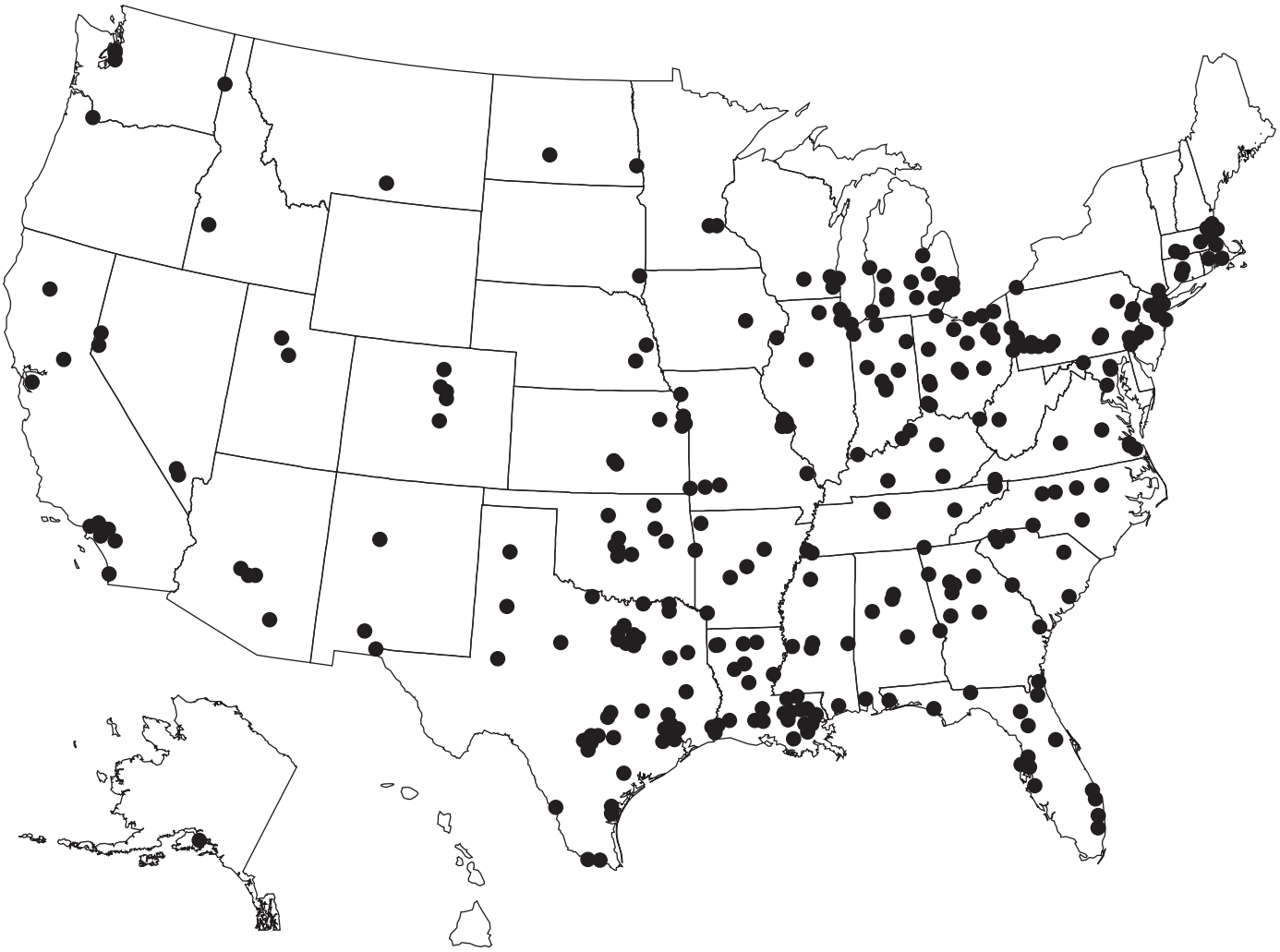
Source: MedPAC analysis of MedPAR data from CMS.

facilities (SNFs) or inpatient rehabilitation facilities (IRFs) (Kahn et al. 2010).[7] In market areas without LTCHs, the very sickest patients may stay longer in an acute care hospital before being discharged to a lower level of care.

LTCH care may have value for very sick patients. Numerous studies have looked at the differences in Medicare payments for patients with similar conditions and levels of acuity who are referred to LTCHs and those who are not. Previous Commission research found that Medicare pays more for patients using LTCHs than for similar patients in other settings; however, the payment differences were not statistically significant when LTCH care was targeted to the most severely ill patients (Medicare Payment Advisory Commission 2004).[8] CMS-funded research by RTI International and a study funded by an industry association found similar results (Gage et al. 2007, Kandilov and Dalton 2011, National Association of Long Term Care Hospitals 2010, RTI International 2007). (See text box, p. 264–265.)

But not all cases in LTCHs are high severity. In 2010, about 13 percent of LTCH cases were of minor or moderate severity, as measured by all patient refined

FIGURE 10–1 **Long-term care hospitals are not distributed evenly across the nation, 2010**



Source: MedPAC analysis of cost report data from CMS.

DRGs. Lower severity cases tend to be concentrated in some LTCHs. LTCHs with the smallest shares of high-severity patients are far more likely than those with higher shares to be located in rural areas (20 percent vs. 5 percent of all LTCHs) and are somewhat more likely to be not for profit (28 percent vs. 19 percent for all LTCHs). The Commission previously suggested that Medicare develop criteria to define the type of long-term acutely ill patient who is appropriate for admission to an LTCH as well as to other similar settings, such as a step-down unit of an acute care hospital, a specialized SNF, or a specialized IRF.[9] Such criteria would help determine whether LTCH care—or other medically complex care—is appropriate for individual beneficiaries. Those who can be appropriately treated in settings of lower acuity should not be admitted to LTCHs, because the cost of care in LTCHs is so high.

Are Medicare payments adequate in 2012?

To address whether payments for 2012 are adequate to cover the costs providers incur and how much providers' costs should change in the coming year (2013), we examine several indicators of payment adequacy. Specifically, we assess beneficiaries' access to care by examining the capacity and supply of LTCH providers and changes over

CMS-sponsored research on long-term care hospitals and the beneficiaries who use them

Beginning in 2005, CMS has contracted with RTI International to conduct research on the efficiency and effectiveness of care in long-term care hospitals (LTCHs) and to assess the feasibility of developing patient and facility criteria that could be used to define LTCHs (Gage et al. 2005, Gage et al. 2007). As outlined below, this research has been unable to clearly distinguish LTCH patients from the medically complex patients receiving care in acute care hospitals and some skilled nursing facilities (SNFs). In addition, RTI's work has confirmed the Commission's finding that the cost of treatment for many medically complex cases is higher for beneficiaries who are admitted to LTCHs than for those who are not. RTI has also shown that outcomes for most medically complex beneficiaries who receive care in LTCHs are no better than those for similar patients who do not have an LTCH stay.

In one analysis, RTI looked at episodes of care only for Medicare beneficiaries assigned to ventilator-related diagnosis related groups during an initial acute care admission and compared average outcomes across patients living in metropolitan areas that had access to LTCH beds with average outcomes for clinically similar patients living in matched metropolitan areas that had no LTCHs. This area-level analysis found no systemic differences in mortality and readmissions between episodes in areas that have LTCHs and those that do not. The analysis also found strong evidence that for beneficiaries with a high likelihood of using LTCHs (such as those with prolonged ventilator support, tracheotomies, or a high use of intensive care unit resources), LTCHs substituted primarily for extended stays in acute care facilities, while for the less complex ventilator cases LTCHs substituted for care at a SNF or an inpatient rehabilitation facility.

RTI used the same ventilator-related episodes to examine episode-level differences in outcomes (rather than average area-level differences) only for beneficiaries in Texas, Louisiana, and Oklahoma—states with a history of high LTCH use. RTI found that for cases that were most likely to be referred to LTCHs (almost exclusively episodes with long-term ventilator dependency and tracheotomy in the acute care hospital), Medicare payments were the same or lower, mortality was lower, and the chance of being discharged home was higher for those referred to LTCHs relative to those who remained in acute care settings for the duration of their episode. But among the least likely referral groups (the least complex ventilator cases), those referred to LTCHs had higher Medicare payments, longer hospital stays, and similar or worse outcomes. Further, the analysis found that, in those three states, only about a third of LTCH admissions with prolonged mechanical ventilation could be classified in the referral groups where the most benefit was observed, while one-fifth were classified in the groups where the least benefit was observed. As these states were chosen for analysis because of their unusually large supply of LTCH beds, the admission patterns cannot be considered representative of those in other areas.

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time in the volume of services furnished, quality of care, providers' access to capital, and the relationship between Medicare payments and providers' costs.

Beneficiaries' access to care: Increase in volume indicates favorable access

We have no direct measures of beneficiaries' access to LTCH services. Instead, we consider the capacity and supply of LTCH providers and changes over time in the volume of services they furnish.

Capacity and supply of providers: Number of LTCHs stable in 2010

The Medicare, Medicaid, and SCHIP Extension Act of 2007 (MMSEA) and subsequent amendments imposed a limited moratorium on new LTCHs and new beds in existing LTCHs from December 29, 2007, to December 28, 2012 (text box, p. 268). We examined Medicare cost report data to assess the number of LTCHs and found that, in spite of the moratorium, the number of LTCHs filing Medicare cost reports increased 6.1 percent between 2008

CMS-sponsored research on long-term care hospitals and the beneficiaries who use them (cont.)

RTI's most recent study created episodes of care from 2007 claims and identified 74 acute care hospital Medicare severity–diagnosis related groups (MS–DRGs) in which LTCH referral is more common (Kandilov and Dalton 2011). The 74 MS–DRGs were collapsed into 7 condition groups: ventilator; infection; aftercare, wound, and skin care; complex rehabilitation; pneumonia; heart failure; and chronic obstructive pulmonary disease and other respiratory failure. Episodes in each of these condition groups were compared with episodes for clinically similar patients who did not use LTCHs. Once again, this analysis found that, for all seven condition groups, patients transferred to LTCHs had longer stays, higher total payments, and higher provider costs than clinically similar patients who did not use LTCHs, with the smallest proportional differences seen for patients in the ventilator condition group.

RTI also simulated aggregate average Medicare margins for the full episodes of care, modeling all patients as if they were LTCH users and then all patients as if they remained in the acute care hospital. This analysis included only those patients within each condition group with clinical characteristics that made them most likely to use LTCHs. Only payments and costs for hospital-level care (whether furnished in an acute care hospital or an LTCH) were included. (Calculated margins are an average across different sites of care and therefore are not representative of the profitability of any one care setting.) Margins for episodes in the ventilator group were 1.3 percentage points lower for the LTCH referral episodes than for non-LTCH episodes, but in all other condition groups the margins for the full episode of care were higher if all patients were referred to LTCHs than if all patients were not. Higher margins for the full episode of care for LTCH users indicate that LTCH margins are higher than acute care hospital margins, suggesting a payment parity problem between acute care hospitals and LTCHs for at least some MS–DRGs. With the exception of the ventilator group, all the aggregate simulated margins for the episodes of care—whether all patients remained in acute care hospitals or were transferred to LTCHs—were negative.

One important limitation in this study and others is the absence of payments and costs for SNF and other post-acute care services used during a medically complex episode. As Kandilov and Dalton pointed out, if LTCH stays are substituting, even in part, for high-level SNF care, then their models will overstate the episode payment and cost differentials attributable to LTCH use. To explore the effects of this limitation, RTI looked at episodes that included SNF days and found that, on the basis of days of care, there was little evidence of a substitution effect between SNFs and LTCHs. Overall, 41.2 percent of LTCH cases and 42.7 percent of matched non-LTCH controls had a SNF stay within the episode.

Although RTI went to great lengths to control for selection bias, the ability to compare cases that use LTCHs with similar cases that do not is somewhat hampered by the lack of patient assessment data. Even after careful patient matching, it is possible that some unmeasured differences remain. For this reason, current research projects contracted by CMS involve primary data collection to better distinguish patients who are appropriate for LTCH care. ■

and 2010. Almost all of this growth took place in 2009 (Table 10-2, p. 266). New LTCHs were able to enter the Medicare program because they met specific exceptions to the moratorium. Most of the new LTCHs filing cost reports were for-profit facilities, and almost all of them were freestanding. As expected, entry of new LTCHs into the market slowed significantly during the later years of the moratorium.

Other measures of capacity include the number of beds and occupancy rates. Nationwide, the number of LTCH beds remained steady, declining 0.3 percent between 2009 and 2010. As mentioned above, LTCHs are not distributed evenly across the nation, so some areas have many LTCH beds, while others have none. In areas without LTCH beds, medically complex patients receive care in other settings. In 2010, the average occupancy rate was 67 percent.

Volume of services: Use of LTCHs by fee-for-service beneficiaries suggests access has increased

Beneficiaries' use of services suggests that access has not been a problem. Controlling for the number of fee-for-

TABLE 10–2

Growth in the number of LTCHs slowed in 2010

Type of LTCH	2003	2004	2005	2006	2007	2008	2009	2010	Average annual change 2003–2005	Average annual change 2005–2009	Average annual change 2009–2010
All	277	315	366	373	382	388	411	412	14.9%	2.9%	0.2%
Urban	264	299	342	348	358	362	388	385	13.8	3.2	–0.8
Rural	13	16	24	25	24	26	23	27	35.9	–1.1	17.4
Freestanding	182	195	221	225	226	230	252	254	10.2	3.3	0.8
Hospital within hospital	95	120	145	148	156	158	159	158	23.5	2.3	–0.6
Nonprofit	57	67	78	76	76	77	79	79	17.0	0.3	0.0
For profit	202	229	265	274	283	291	313	313	14.5	4.2	0.0
Government	18	19	23	23	23	20	19	20	13.0	–4.7	5.3

Note: LTCH (long-term care hospital).

Source: MedPAC analysis of Medicare cost report files from CMS.

service beneficiaries, we found that the number of LTCH cases rose 3.5 percent between 2009 and 2010, suggesting that access to care increased during this period (Table 10-3).

Compared with all Medicare beneficiaries, those admitted to LTCHs are disproportionately under age 65, over age 85, disabled, and diagnosed with end-stage renal disease. They are also more likely to be African American. The higher rate of LTCH use by African American beneficiaries may be due to a greater incidence of critical illness in this population (Mayr et al. 2010). At the same time, African American beneficiaries may be more likely to opt for LTCH care given that they are less likely to choose withdrawal from mechanical ventilation in the ICU and to have do-not-resuscitate orders (Borum et al. 2000, Diringer et al. 2001). The concentration of LTCHs in urban areas also may be a contributing factor (Kahn et al. 2010). Further, as noted, a disproportionate number of Medicare beneficiaries who use LTCHs are under age 65, a subgroup that is more likely to be African American.

Quality of care: Meaningful measures not currently available while gross indicators show stability

Unlike most other health care facilities, LTCHs do not submit quality data to CMS (see text box, p. 270). As we discussed in the Commission's March 2010 report, adopting existing acute care hospital quality indicators would not be appropriate or reliable for LTCHs, and LTCH-specific quality measures need to be developed (Medicare Payment Advisory Commission 2010). The Patient Protection and Affordable Care Act of 2010 requires CMS to collect data on quality in LTCHs and implement a pay-for-reporting program by 2014 (see text box, p. 270). Until new quality measures are available, the Commission instead uses aggregate trends in rates of in-facility mortality, mortality within 30 days of discharge, and readmissions from LTCHs to acute care hospitals. Although we use risk-adjusted measures to assess changes in quality in other health care settings, we do not risk-adjust measures of LTCH quality because the available data are not adequate for this purpose. Medicare does not collect assessment data for LTCH patients. Claims data, which are used to risk-adjust acute care hospital measures of quality, do not provide the level of detail needed to adequately adjust for differences in risk across LTCH patients, because the variation in patient severity and complexity in LTCHs is small compared with that in other health care settings. LTCH cases are highly concentrated in a few MS–DRGs; in addition, the vast majority of LTCH patients have multiple diagnoses and comorbidities. Participants in a Commission panel on LTCH quality measures agreed that risk adjustment was unnecessary for some proposed LTCH quality measures (Medicare Payment Advisory Commission 2011).

We focus on examining trends in readmissions, rather than levels, because levels can include planned

TABLE 10–3

Medicare LTCH spending per FFS beneficiary continues to rise

	2003	2004	2005	2006	2007	2008	2009	2010	Average annual change 2003–2005	2005–2009	2009–2010
Cases	110,396	121,955	134,003	130,164	129,202	130,869	131,446	134,683	10.2%	–0.5%	2.5%
Cases per 10,000 FFS beneficiaries	30.8	33.4	36.4	36.0	36.3	37.0	37.1	38.4	8.8	0.5	3.5
Spending (in billions)	$2.7	$3.7	$4.5	$4.5	$4.5	$4.6	$4.9	$5.2	29.1	2.2	6.0
Spending per FFS beneficiary	$75.2	$101.3	$122.2	$124.3	$126.5	$130.2	$138.3	$148.1	27.5	3.1	7.1
Payment per case	$24,758	$30,059	$33,658	$34,859	$34,769	$35,200	$37,465	$38,582	16.6	2.7	3.0
Average length of stay (in days)	28.8	28.5	28.2	27.9	26.9	26.7	26.4	26.6	–1.0	–1.6	0.8

Note: LTCH (long-term care hospital), FFS (fee-for-service).

Source: MedPAC analysis of MedPAR data from CMS.

readmissions as well as unplanned incidents and can be skewed by coding practices. We considered mortality and readmission trends for the top 25 LTCH diagnoses in 2010 (Table 10-1, p. 262). For most of these diagnoses, we found stable or declining rates of readmission, death in the LTCH, and death within 30 days of discharge. The exceptions were simple pneumonia and pleurisy with major complications or comorbidities (MCCs), renal failure with MCCs, and heart failure and shock with MCCs, all of which experienced increases in readmissions disproportionate to their volume growth.

The highest rates of in-LTCH death in 2010 (27 percent) occurred in patients receiving mechanical ventilation (MS–LTC–DRGs 208, 207, and 4). An additional 15 percent of patients with these diagnoses died within 30 days of discharge from the LTCH. A multicenter study in 2002 of 1,419 patients admitted to 23 LTCHs offering weaning from prolonged mechanical ventilation found that 52 percent died within 12 months of the LTCH admission (Scheinhorn et al. 2007). Kahn and colleagues (2010) reported that in 2006, 69 percent of Medicare beneficiaries transferred to LTCHs needing mechanical ventilation after treatment for critical illness in an acute care hospital died within a year of discharge. These death rates speak to the frailty of many LTCH patients and the complexity of their conditions.

Providers' access to capital: Moratorium on growth restricts opportunities for expansion

Access to capital allows LTCHs to maintain and modernize their facilities. If LTCHs were unable to access capital, it might in part reflect problems with the adequacy of Medicare payments, since Medicare accounts for about half of LTCH total revenues. However, at the present time, the availability of capital says more about regulations and legislation governing LTCHs than it does about current reimbursement rates. The moratorium on new beds and facilities imposed by the MMSEA and subsequent amendments reduces opportunities in the near future for expansion and the need for capital. However, the two major LTCH chains, which together own slightly more than half of all LTCHs, continued in 2011 to acquire other LTCHs as well as other post-acute care providers. As reported on 10-K and 10-Q forms filed with the Securities and Exchange Commission, both chains have access to capital that was tapped to finance these acquisitions.

Provisions of recent legislation for long-term care hospitals

The Medicare, Medicaid, and SCHIP Extension Act of 2007 (MMSEA) included several provisions related to long-term care hospitals (LTCHs), including a moratorium on new LTCHs, changes to the 25 percent rule, and changes to the short-stay outlier policy. Subsequent amendments in the American Recovery and Reinvestment Act of 2009 (ARRA) and the Patient Protection and Affordable Care Act of 2010 (PPACA) revised some of the MMSEA provisions and added new ones.

Moratorium on new LTCHs

The MMSEA, as amended by ARRA and PPACA, imposes moratoria on new facilities and new beds in existing facilities until December 29, 2012. Exceptions include: (1) LTCHs that began their qualifying period demonstrating an average Medicare length of stay greater than 25 days on or before December 29, 2007; (2) entities that had a binding written agreement with an unrelated party for the construction, renovation, lease, or demolition of an LTCH, with at least 10 percent of the estimated cost of the project already expended on or before December 29, 2007; (3) entities that had obtained a state certificate of need on or before December 29, 2007; (4) existing LTCHs that had obtained a certificate of need for an increase in beds issued on or after April 1, 2005, and before December 29, 2007; and (5) existing LTCHs that are located in a state with only one other LTCH and that seek to increase beds after the closure or decrease in the number of beds of the state's other LTCH.

The 25 percent rule

The MMSEA as amended by ARRA and PPACA rolls back the phased-in implementation of the 25 percent rule for hospitals within hospitals (HWHs) and satellites, limiting the proportion of Medicare patients who can be admitted from an HWH's or a satellite's host hospital during a cost-reporting period to not more than 50 percent and holding it at this level until October 1, 2012 (July 1, 2012, for certain satellites). (The applicable threshold for HWHs and satellites in rural and urban areas with a single or dominant acute care hospital is 75 percent.)[10] In addition, the Secretary is prohibited from applying the 25 percent rule to freestanding LTCHs (and certain HWHs) before cost-reporting periods beginning July 1, 2012.

Short-stay outliers

The MMSEA as amended by ARRA and PPACA prohibits the Secretary from further reducing payments for LTCH cases with the shortest lengths of stay (so-called "very short-stay outliers") until December 29, 2012.

Budget neutrality

When the LTCH prospective payment system (PPS) was implemented in fiscal year 2003, CMS set payments at a level calculated to be equal to the estimated aggregate payments that would have been made if the LTCH PPS had not been implemented. This budget-neutrality adjustment was required by statute. CMS cautioned, however, that when data were available on actual payments made in the first year of the PPS, an additional adjustment to the LTCH PPS rates might be necessary so that the effect of any significant differences between actual payments and estimated payments for the first year of the PPS would not be perpetuated for future years, and the agency provided for the possibility of this adjustment by July 1, 2008 (Centers for Medicare & Medicaid Services 2008). The MMSEA as amended by ARRA and PPACA prohibits the Secretary from applying any budget-neutrality adjustment until December 29, 2012.

Pay for reporting

PPACA requires CMS to implement a pay-for-reporting program for LTCHs by 2014. The program will require LTCHs to report a specified list of quality measures—as discussed in the text box (p. 270)—each year in order to receive a full update to Medicare payment rates in the ensuing year.

Reductions in payment

PPACA specifies that any annual update to the LTCH standard rate shall be reduced by a quarter of a percentage point in 2010 and by half of a percentage point in 2011. For rate years 2012 through 2019, any update shall be reduced by the specified productivity adjustment. ■

Smaller LTCH chains and nonchain LTCHs likely do not have the same access to capital.

LTCH companies are increasingly diversified, vertically as well as horizontally. Both major chains operate IRFs and outpatient rehabilitation clinics in addition to LTCHs. One also has a significant business providing contract rehabilitation services to a wide variety of health care providers. The other is pursuing a strategy whereby the company owns SNFs and home health agencies, as well as LTCHs, within a single market in order to position itself as an integrated provider of post-acute care. These strategies are intended to improve the chains' ability to control costs and limit the impact of payment policy changes.

Medicare payments and providers' costs: Growth in per case payments leads to increased margins

Between 2009 and 2010, Medicare payments increased faster than costs, resulting in an aggregate 2010 Medicare margin of 6.4 percent. Medicare margins increased for all types of LTCHs except nonprofits. Examining the range in financial performance, we found that high-margin LTCHs had considerably lower costs than low-margin LTCHs. We also found that they served more patients overall and had a higher aggregate occupancy rate, which suggests that economies of scale may be important.

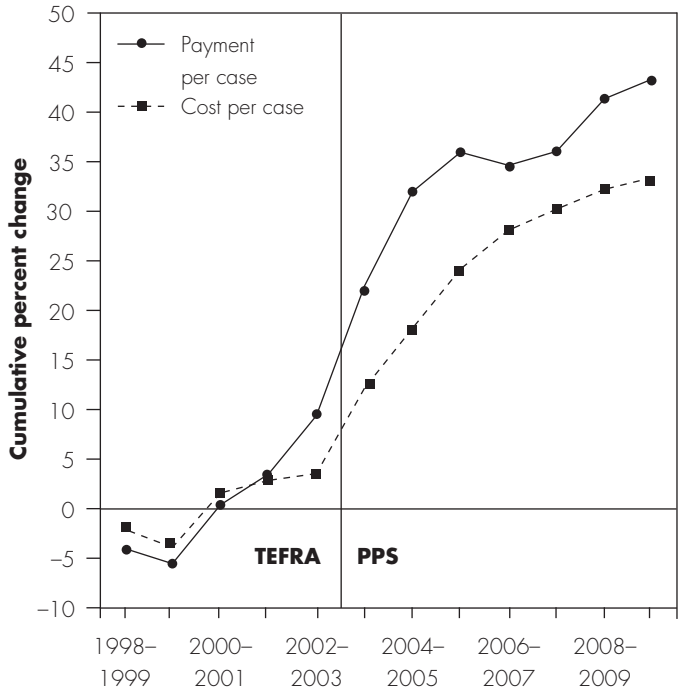
Program spending has doubled since 2002

In the first three years of the LTCH PPS, Medicare spending for LTCH services grew rapidly, climbing an average of 29 percent per year. Subsequent changes in payment policies and growth in the number of beneficiaries enrolling in Medicare Advantage plans slowed growth in fee-for-service spending between 2005 and 2009 to about 2 percent per year (Table 10-3, p. 267). Between 2009 and 2010, however, spending jumped more than 6 percent. CMS estimates that total Medicare spending for LTCH services was $5.4 billion in fiscal year 2011, more than twice the level of spending in 2002. CMS estimates that LTCH spending will reach $6.6 billion by 2015 (Bean 2011).

Per case payments continue to exceed costs in 2010

In the first years of the PPS, LTCHs appeared to be responsive to changes in payment, adjusting their costs per case when payments per case changed. Payment per case increased rapidly after the PPS was implemented, climbing an average 16.6 percent per year between 2003 and 2005. Cost per case also increased rapidly during this period, albeit at a somewhat slower pace (Figure 10-2). Between 2005 and 2008, however, growth in cost per case outpaced that for payments, as regulatory changes to Medicare's payment policies for LTCHs slowed growth in payment per case to an average of 1.4 percent per year.

FIGURE 10–2 **LTCHs' per case payments rose more quickly than costs in 2010**



Note: LTCH (long-term care hospital), TEFRA (Tax Equity and Fiscal Responsibility Act of 1982), PPS (prospective payment system). Percent changes are calculated based on consistent two-year cohorts of LTCHs.

Source: MedPAC analysis of Medicare cost report data from CMS.

Between 2008 and 2009, growth in payments per case accelerated to 5.3 percent, about twice as much as the growth in costs. This surge was due in part to congressional actions that halted or rolled back the implementation of CMS regulations designed to reduce total payments to LTCHs. Another factor was growth in the reported patient case-mix index, which measures the expected costliness of a facility's patients (Centers for Medicare & Medicaid Services 2006, Centers for Medicare & Medicaid Services 2007, Centers for Medicare & Medicaid Services 2008, Centers for Medicare & Medicaid Services 2009, Centers for Medicare & Medicaid Services 2010). Refinements to the LTCH case-mix classification system, implemented in October 2007, likely led to more complete documentation

Developing quality measures for long-term care hospitals

The Commission has long been concerned about the lack of reliable quality measures for long-term care hospitals (LTCHs) and has urged CMS to collect the data necessary to compare quality and outcomes in LTCHs and across the post-acute care spectrum. The Patient Protection and Affordable Care Act of 2010 calls on CMS to design and implement a pay-for-reporting program for LTCHs by 2014.[11] In August 2011, CMS finalized its decision to initiate the pay-for-reporting program by collecting data on three measures:

- urinary catheter-associated urinary tract infections,
- central line catheter-associated bloodstream infections, and
- new or worsened pressure ulcers.

Data on urinary tract infections and central line infections will be collected through the National Healthcare Safety Network, an Internet-based surveillance system maintained by the Centers for Disease Control and Prevention. The data elements necessary to calculate the pressure ulcer measure are identical to those collected through the Minimum Data Set, the reporting instrument used in nursing homes. LTCHs will use a subset of the instrument relevant only to pressure ulcers. Data collection will begin October 1, 2012. CMS has stated that it will propose additional measures in the future. These measures could include rates of other health care–acquired infections, such as ventilator-associated pneumonia and surgical-site infections; avoidable adverse events such as unplanned acute care hospitalizations, injuries secondary to polypharmacy, and air embolisms; and nursing care measures, such as rate of restraint use, rate of falls with injury, and skill mix.

The Commission does not support pay-for-reporting programs but rather supports pay-for-performance programs that base a portion of the provider's payment on performance on quality and outcomes measure scores. As soon as possible, the Congress should change the incentives of the LTCH payment system by mandating such a program. Linking a portion of payment to performance will create stronger incentives for LTCH providers to improve care delivery.

Quality measures will initially provide information about processes and outcomes across LTCHs. Results from CMS's post-acute care demonstration, which tested the use of a uniform assessment tool in different post-acute care settings, should provide much needed information about the extent to which consistent quality and outcome measures can be used in different settings. Ultimately, policymakers must be able to compare quality of care and patient outcomes across the post-acute care spectrum to measure the value Medicare gets from the money it spends and to help ensure that beneficiaries receive appropriate, high-quality care in the least costly setting consistent with their clinical conditions. CMS's demonstration report to the Congress is forthcoming. ■

and coding of the diagnoses, procedures, services, comorbidities, and complications that are associated with payment, thus raising the average case-mix index even though patients may have been no more resource intensive than they were previously (Centers for Medicare & Medicaid Services 2009, Medicare Payment Advisory Commission 2009, RAND Corporation 1990). Although some part of the increase in LTCHs' case-mix index between 2008 and 2009 was due to growth in the intensity and complexity of the patients admitted, CMS estimated that the case-mix increase attributable to documentation and coding improvements was 2.5 percent (Centers for Medicare & Medicaid Services 2009, Centers for Medicare & Medicaid Services 2010). Those improvements contributed to growth in payments to providers.[12] Between 2009 and 2010, payment growth slowed to 2 percent, while cost growth was held under 1 percent.

High margins reflect economies of scale

After the LTCH PPS was implemented in 2003, margins rose rapidly for all LTCH provider types, climbing to 11.9 percent in 2005 (Table 10-4). At that point, margins began to fall, as growth in payments per case leveled off. However, in 2009, LTCH margins began to climb again,

TABLE 10–4 **Aggregate average LTCH Medicare margin rose in 2010**

Type of LTCH	Share of discharges	2003	2004	2005	2006	2007	2008	2009	2010
All	100%	5.2%	9.0%	11.9%	9.8%	4.8%	3.5%	5.6%	6.4%
Urban	96	5.2	9.2	11.9	10.0	5.1	3.8	5.9	6.7
Rural	5	4.5	2.6	10.1	4.9	–0.7	–3.3	–2.8	–0.5
Freestanding	70	5.6	8.4	11.3	9.3	4.4	3.1	4.7	5.6
Hospital within hospital	30	4.2	10.6	13.1	10.8	5.8	4.4	7.6	8.1
Nonprofit	16	1.7	6.9	9.1	6.4	1.3	–2.5	–0.6	–1.2
For profit	83	6.3	10.0	13.1	10.9	5.9	5.1	7.2	8.0
Government	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: LTCH (long-term care hospital), N/A (not applicable). Share of discharges column groupings may not sum to 100 percent due to rounding or missing data. Margins for government-owned providers are not shown. They operate in a different context from other providers, so their margins are not necessarily comparable.

Source: MedPAC analysis of Medicare cost report data from CMS.

consistent with the growth in payments described above. In 2010, the aggregate LTCH margin was 6.4 percent.

Financial performance in 2010 varied across LTCHs. Margins increased between 2009 and 2010 for all types of LTCHs except nonprofits, whose margins fell from –0.6 percent to –1.2 percent. The aggregate Medicare margin for for-profit LTCHs (which account for 76 percent of all LTCHs) in 2010 was 8.0 percent. The aggregate margin for rural LTCHs—which are 7 percent of all LTCHs—was –0.5 percent, compared with 6.7 percent for their urban counterparts. Rural LTCHs tend to be much smaller than urban LTCHs, caring for a smaller volume of patients on average and benefiting less from economies of scale.

We looked closely at the characteristics of established LTCHs with the highest and lowest margins.[13] As with SNFs and home health agencies, lower unit costs—rather than higher payments—were the primary driver of differences in financial performance between LTCHs with the lowest and highest Medicare margins (those in the bottom and top 25th percentiles of Medicare margins) (Table 10-5, p. 272). Low-margin LTCHs had standardized costs per discharge that were 36 percent higher than high-margin LTCHs ($36,251 vs. $26,660). The average Medicare length of stay was one day longer in low-margin than in high-margin facilities. After controlling for the number of short-stay outliers, high-margin LTCHs had a higher case-mix index, indicating a sicker patient population.

High-cost outlier payments per discharge for low-margin LTCHs were almost four times those of high-margin LTCHs ($5,005 vs. $1,316).[14] At the same time, short-stay outliers made up a larger share of low-margin LTCHs' cases (34 percent vs. 26 percent). Low-margin LTCHs thus cared for disproportionate shares of patients who were both high-cost outliers and patients who had shorter stays.

High-margin LTCHs were much more likely to be for profit than were their low-margin counterparts (Table 10-5, p. 272). They tended to have slightly higher Medicare and Medicaid shares. They also served more patients overall (an average of 576 in 2010 compared with 444 for low-margin LTCHs) and had a higher average occupancy rate (74 percent vs. 62 percent). Low-margin LTCHs therefore benefit less from economies of scale.

How should Medicare payments change in 2013?

To estimate 2012 payments, costs, and margins with 2010 data, the Commission considered policy changes effective in 2011 and 2012. Those that affect our estimate of the 2012 Medicare margin include:

- a market basket increase of 2.5 percent for 2011, offset by an adjustment of 2.5 percent for past coding improvements and, as required by PPACA, a 0.50

TABLE 10–5

LTCHs in the top quartile of Medicare margins in 2010 had much lower costs

Characteristics	High-margin quartile	Low-margin quartile
Mean Medicare margin	20.9%	–11.3%
Mean total discharges (all payers)	576	444
Medicare patient share	68%	64%
Medicaid patient share	8	5
Occupancy rate	74	62
Average length of stay (in days)	26	27
Adjusted CMI	0.9743	0.8981
Mean per discharge:		
Standardized costs	$26,660	$36,251
Total Medicare payment*	$38,557	$38,157
High-cost outlier payments	$1,316	$5,005
Share of:		
Cases that are SSOs	26%	34%
Medicare cases from primary-referring ACH	35	41
LTCHs that are for profit	90	64

Note: LTCH (long-term care hospital), CMI (case-mix index), SSO (short-stay outlier), ACH (acute care hospital). Includes only established LTCHs—those that filed valid cost reports in both 2009 and 2010. Top margin quartile LTCHs were in the top 25 percent of the distribution of Medicare margins. Bottom margin quartile LTCHs were in the bottom 25 percent of the distribution of Medicare margins. Standardized costs have been adjusted for differences in case mix and area wages. Adjusted case-mix indexes have been adjusted for differences in SSOs across facilities. Average primary referring ACH referral share indicates the mean share of patients referred to LTCHs in the quartile from the ACH that refers the most patients to the LTCH. Government providers were excluded.
*Includes outlier payments.

Source: MedPAC analysis of LTCH cost reports and MedPAR data from CMS.

percentage point reduction, for a net update of –0.49 percent;[15]

- a market basket increase of 2.9 percent for 2012, offset by a 1.1 percent reduction, as required by PPACA, for a net update of 1.8 percent; and
- adjustments to outlier payments in 2011 and 2012, which increase payments.

We estimate that LTCHs' aggregate Medicare margin will be 4.8 percent in 2012.

The Secretary has the discretion to update payments for LTCHs; there is no congressionally mandated update. In anticipation of the expiration of temporary legislative relief from some of CMS's payment regulations, LTCHs are likely to continue to constrain their cost growth. We expect growth in costs to be modest, albeit somewhat greater than the current pace—roughly similar to the latest forecast of the market basket for 2012 of 2.3 percent.

Update recommendation

On the basis of our review of payment adequacy for LTCHs, the Commission recommends that the Secretary eliminate the update to the LTCH payment rates.

RECOMMENDATION 10

The Secretary should eliminate the update to the payment rates for long-term care hospitals for fiscal year 2013.

RATIONALE 10

In sum, the supply of facilities and beds remained stable in 2010, and the number of cases per fee-for-service beneficiary increased, suggesting that access to care has been maintained. The limited quality trends we measure appear stable. LTCHs appear to have adequate access to capital, although the moratorium on LTCH growth limits opportunities for expansion. Margins for 2010 were positive, and we expect they will remain so. These trends suggest that LTCHs are able to operate within current payment rates. We will closely monitor our payment update indicators and will be able to reassess our recommendation for the LTCH payment update in the next fiscal year.

IMPLICATIONS 10

Spending

- Because CMS typically uses the market basket as a starting point for establishing updates to LTCH payments, this recommendation would decrease federal program spending by between $50 million and $250 million in one year and by less than $1 billion over five years. The spending implication of this recommendation is based on Medicare spending projections that were made prior to a sequester, as the recommendation was developed and voted on before the sequester was triggered and became current law. If a Medicare sequester does occur, it will change the spending implication of the recommendation.

Beneficiary and provider

- This recommendation is not expected to affect Medicare beneficiaries' access to care or providers' ability to furnish care.

Issues in Medicare payment for LTCH services

Previous research by the Commission found that the types of patients LTCHs treat are often cared for in alternative settings, such as acute care hospitals and SNFs (Medicare Payment Advisory Commission 2004). The Commission found that Medicare pays more for patients using LTCHs than for similar patients using other settings; however, the payment differences narrowed considerably if LTCH care was targeted to the most severely ill patients (Medicare Payment Advisory Commission 2004). On the basis of these findings, the Commission recommended that CMS develop patient and facility criteria that could be used to define LTCHs and ensure that patients admitted to such facilities were medically complex and had a good chance of improvement.

But developing criteria to identify those patients who could most benefit from admission to LTCHs has proven more difficult than anticipated. Following the Commission's recommendation, CMS contracted with RTI International to conduct further research on the efficiency and effectiveness of LTCH care and to assess the feasibility of developing patient and facility criteria that could be used to define LTCHs. As discussed in the text box (pp. 264–265), this research has been unable to clearly distinguish LTCH patients from the medically complex patients receiving care in acute care hospitals and some SNFs. In addition, RTI's work has confirmed the Commission's finding that the cost of treatment for many medically complex cases is higher for beneficiaries who are admitted to LTCHs than for those who are not and has shown that outcomes for most medically complex beneficiaries who receive care in LTCHs are comparable to those observed in acute care hospitals.

That similar patients are treated in these different settings seems increasingly clear. This development led the Commission to suggest that any criteria developed by CMS should define the level of care typically furnished not only in LTCHs but also in other settings that provide similar services, such as step-down units of acute care hospitals and some specialized SNFs (Medicare Payment Advisory Commission 2008a). If LTCHs are to continue to be recognized as a distinct entity for purposes of Medicare payment, then it is crucial that providers be able to distinguish medically complex patients in need of hospital-level care from those who can be appropriately treated in post-acute settings. Further, if medically complex cases in LTCHs are, in essence, indistinguishable from medically complex cases in acute care hospitals, then Medicare must ensure that its payments for the same set of services are equitable, regardless of where the services are provided. Finally, policymakers must consider whether certain models of care will best serve the needs of medically complex patients. These steps will help ensure that Medicare beneficiaries receive appropriate, high-quality care in the least costly setting consistent with their clinical conditions.

Ensuring that appropriate patients are treated in long-term care hospitals

In 2004, the Commission recommended that the Secretary develop patient criteria, such as clinical characteristics and required treatment modalities, to ensure that patients admitted to LTCHs are medically complex and have a good chance of improving.[16] In a comment letter to CMS on its rate year 2009 proposed rule on the LTCH prospective payment system, the Commission noted that, because the types of cases treated by LTCHs are also treated in other settings, CMS should seek to define the level of care appropriately furnished in LTCHs as well as in step-down units of many acute care hospitals and some specialized SNFs and IRFs (Medicare Payment Advisory Commission 2008a). Defining these types of cases will be the first step in evaluating costs, quality, and outcomes across different types of providers.

Developing patient criteria with available data, however, has proven to be more difficult than anticipated. Data to compare types of patients, payments and costs, quality of care, and outcomes across the different types of providers that furnish medically complex care are needed. However, researchers have suggested some definitions of medically complex patients that may prove to be useful. In a report prepared for CMS, Kennell stated that the most commonly used definition of these patients was proposed by Nierman and Nelson (Kennell and Associates 2010). They noted that the chronically critically ill patient exhibited metabolic, endocrine, physiologic, and immunologic abnormalities that resulted in profound debilitation and often ongoing respiratory failure, abnormalities that slowed or precluded recovery from a wide range of

acute forms of medical, surgical, and neurologic critical illness (Nierman and Nelson 2002). On the basis of this definition, Kennell suggested the following as specific attributes of medically complex patients:

- prolonged mechanical ventilation (for weeks or months),
- multiple organ failure,
- multiple or chronic comorbidities (such as coronary artery disease, chronic obstructive pulmonary disease, stroke, diabetes, and renal failure), or
- multiple community-acquired or hospital-acquired infections or ulcers.

Research suggests that relatively few critically medically complex patients return to their previous level of health and function and that most end up with significant physical and cognitive limitations (Carson et al. 1999, Cox et al. 2007, Nelson et al. 2004, Scheinhorn et al. 2007, Unroe et al. 2010). It is important, therefore, that any potential patient criteria identify those medically complex patients who are likely to benefit from an LTCH program of care. Some of the most severely ill medically complex patients may not be appropriate for LTCH admission because they are too sick to benefit from specialized LTCH care or because their prognosis for improvement is so poor. Other options (e.g., remaining in the acute care hospital or transferring to hospice care) may be better suited to the patient's needs and may cost Medicare less. At the same time, other medically complex patients may not be appropriate for admission to LTCHs because they are less severely ill and can be cared for in other post-acute care settings.

Predicting outcomes for medically complex patients is a difficult task, but researchers have identified some factors that may be useful for clinicians and policymakers. Among mechanically ventilated patients admitted to an LTCH, patient age, previous level of function, the presence of diabetes, renal failure, low platelet counts, and the need for vasopressors have been shown to be useful in determining which patients admitted to LTCHs have a good chance of improving and surviving (Carson et al. 1999, Carson et al. 2008). In addition, a 2003 study of 300 LTCH admissions (not limited to patients receiving mechanical ventilation) found that postdischarge outcomes were highly dependent on the number of organ system failures a patient had when admitted to the LTCH (Dematte-D'Amico et al. 2003). For patients with no organ system failures, 75 percent survived at time of discharge and 44 percent went home. By comparison, only 31 percent of patients with four or more organ system failures survived, and none went home.

Disparities in payment for medically complex care

Payment incentives for acute care hospitals to reduce their costs have likely sparked some of the growth in use of LTCH services. The Commission and other policymakers have long been concerned about the possibility that acute care hospitals discharging patients to LTCHs may be unbundling services paid under the acute care hospital PPS. To the extent that this practice occurs, Medicare pays twice for the same service—once to the acute care hospital and once to the LTCH. Further, early discharges from acute care hospitals may distort the acute inpatient PPS relative weights by reducing the costs of caring for certain types of cases in acute care hospitals that routinely discharge to LTCHs. To the extent that such distortion occurs, even after recalibration, acute care hospital payments may be too low for some patients in areas without LTCHs.

Growth in the use of LTCH services may also be the result of disparities in Medicare's payments across sites of service. Recent research showed that aggregate average Medicare margins for full episodes of care (calculated across different sites of care and therefore not representative of the profitability of any one care setting) would be higher for patients who used LTCHs than for similar patients who did not (Kandilov and Dalton 2011). These findings suggest a disparity in profitability between acute care hospitals and LTCHs for at least some MS–DRGs. Such disparities can influence providers' decisions about patient admission, transfer, and discharge. The Commission has long held that payment for the same set of services should be the same regardless of where the services are provided to help ensure that beneficiaries receive appropriate, high-quality care in the least costly setting consistent with their clinical conditions (Medicare Payment Advisory Commission 2009).

CMS needs more data to compare types of patients, payments and costs, quality of care, and outcomes across facilities that furnish medically complex care and other post-acute care. Such data will provide the information needed to determine whether care is appropriate and of high quality and whether payments are sufficient. CMS's post-acute care payment reform demonstration—which tested the use of a single assessment tool in multiple post-acute care settings, including LTCHs—and pay for

reporting should begin to provide the data CMS needs. Ongoing CMS research on differences in LTCHs' and acute care hospitals' clinical composition, payments and costs, and outcomes will further enhance understanding in this area.

Referral centers for medically complex care

The Commission pointed out previously that providers may need a critical mass of medically complex patients to maintain treatment expertise and achieve a high quality of care (Medicare Payment Advisory Commission 2008a, Medicare Payment Advisory Commission 2008b, Medicare Payment Advisory Commission 2010). Research has shown that higher patient volume is associated with better outcomes for certain procedures, such as surgery for cancers of the pancreas and esophagus (Birkmeyer et al. 2002, Institute of Medicine 2000). Studies have also found a positive relationship between volume and outcomes for patients admitted to ICUs in acute care hospitals, notably those receiving mechanical ventilation (Durairaj et al. 2005, Kahn et al. 2006, Kahn et al. 2009). The Commission's analysis of LTCHs with high and low Medicare margins, discussed above, suggests that a critical mass of patients might also be needed to achieve economies of scale.

If LTCHs with higher patient volume can provide more value for the Medicare program and its beneficiaries by demonstrating better outcomes with greater efficiency, then it may be appropriate to view LTCHs (and other providers of medically complex care) as regional referral centers serving wider catchment areas. Seen in this light, the proliferation of LTCHs in some markets is cause for concern. The quality measures that will be reported starting in October 2012 will allow policymakers to begin to compare quality across LTCHs. In the future, additional measures may allow outcome comparisons as well. Such analyses will provide much needed information about the best models of care for medically complex patients. ■

Endnotes

1 The Medicare, Medicaid, and SCHIP Extension Act of 2007 also requires LTCHs to have: a patient review process that screens patients to ensure appropriateness of admission and continued stay, active physician involvement with patients during their treatment with physician on-site availability on a daily basis, and interdisciplinary treatment teams of health care professionals.

2 More information on the prospective payment system for LTCHs is available at: http://medpac.gov/documents/MedPAC_Payment_Basics_11_LTCH.pdf.

3 Short-stay outliers are identified as those patients with a length of stay less than or equal to five-sixths of the geometric mean length of stay for the patient's MS–LTC–DRG. A geometric mean is useful for analyzing data that are skewed.

4 Kahn and colleagues found that the share of Medicare critical acute care hospitalizations ending in transfer to skilled nursing facilities (SNFs) and inpatient rehabilitation facilities (IRFs) also has increased, while the percentage of critical acute care hospitalizations ending in discharge to the home has decreased. Among critical acute care patients receiving intensive ventilator support, discharges to SNFs and IRFs have remained relatively constant, while discharges to LTCHs have increased (Kahn et al. 2010).

5 New LTCHs often are located in states without certificate-of-need programs.

6 This analysis looked at non-short-stay outlier cases by core-based statistical areas (CBSAs). CBSAs with no LTCH claims were eliminated from the analysis.

7 Kahn and colleagues included only Medicare beneficiaries who were 65 or older in their study. The researchers found that almost half of the Medicare beneficiaries who received mechanical ventilation in acute care hospital ICUs in 2006 died in the hospital. Of those discharged alive, 21 percent were discharged home. Patients who were discharged home may have received home health care.

8 In the Commission's analysis, episodes did not include the costs of readmission to the acute care hospital. That could have resulted in an understatement of the average costs of patients who did not use LTCHs, because these patients were more likely than LTCH users to be readmitted to the hospital. However, we compared LTCH users and nonusers without readmissions and found similar results: LTCH users without readmissions cost Medicare more for the total episode than patients without readmissions who used alternative settings. Among patients most likely to use LTCHs, we found a positive but statistically insignificant difference in total episode spending between LTCH users and nonusers without readmissions.

9 The hospital industry generally uses the term "step-down unit" to describe an acute care hospital unit for patients who need more monitoring than is typically provided in a medical or surgical unit but who do not require the intensity of care provided in an ICU.

10 Under the law, "grandfathered" satellite facilities (those that were operating as of September 30, 1999) are treated differently from grandfathered HWHs. Grandfathered satellites continued to operate under the 75 percent threshold established for rate year 2008, transitioning to a 50 percent threshold in 2009 and a 25 percent threshold in 2010. By comparison, grandfathered HWHs have no threshold applied under the law.

11 Such a policy has been in place for acute care hospitals since 2003. Under Medicare's Hospital Inpatient Quality Reporting Program, CMS requires hospitals to report a specified list of quality measures each year in order to receive a full update to Medicare payment rates in the ensuing year. This program creates incentives for providers not only to report the quality of their care but also to take steps to improve it and raise their quality scores. CMS makes some of the quality data available to consumers on Medicare's Hospital Compare website. More than 95 percent of acute care hospitals opt to participate in the program.

12 CMS reduced the update to the LTCH base payment rate in fiscal years 2010 and 2011 to offset, in part, payment increases due to documentation and coding improvements between 2007 and 2009.

13 Many new LTCHs operate at a loss for a period of time after opening. For this analysis of high- and low-margin LTCHs, we examined only LTCHs that submitted valid cost reports in both 2009 and 2010. We excluded government-owned LTCHs.

14 LTCHs are paid outlier payments for patients who are extraordinarily costly. High-cost outlier cases are identified by comparing their costs with a threshold that is the MS–LTC–DRG payment for the case plus a fixed-loss amount ($17,931in 2012). Medicare pays 80 percent of the LTCH's costs above the threshold.

15 Numbers do not sum due to rounding.

16 To help ensure that providers are capable of furnishing care to medically complex beneficiaries, the Commission also recommended that the Secretary develop facility criteria for LTCHs. Such criteria might include requirements for staffing, the availability of physicians, and patient assessment.

References

Bean, T., Office of the Actuary, Centers for Medicare & Medicaid Services, Department of Health and Human Services. 2011. E-mail message to the author, December 5.

Birkmeyer, J. D., A. E. Siewers, E. V. Finlayson, et al. 2002. Hospital volume and surgical mortality in the United States. *New England Journal of Medicine* 346, no. 15 (April 11): 1128–1137.

Borum, M. L., J. Lynn, and Z. Zhong. 2000. The effects of patient race on outcomes in seriously ill patients in SUPPORT: an overview of economic impact, medical intervention, and end-of-life decisions. Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments. *Journal of the American Geriatrics Society* 48, no. 5, supplement (May): S194–198.

Carson, S. S., P. B. Bach, L. Brzozowski, et al. 1999. Outcomes after long-term acute care. An analysis of 133 mechanically ventilated patients. *American Journal of Respiratory Critical Care Medicine* 159, no. 5 Pt 1 (May): 1568–1573.

Carson, S. S., J. Garrett, L. C. Hanson, et al. 2008. A prognostic model for one-year mortality in patients requiring prolonged mechanical ventilation. *Critical Care Medicine* 36, no. 7 (July): 2061–2069.

Centers for Medicare & Medicaid Services, Department of Health and Human Services. 2006. Medicare program; prospective payment for long-term care hospitals RY 2007; annual payment rate updates, policy changes, and clarification. Final rule. *Federal Register* 71, no. 92 (May 12): 27798–27939.

Centers for Medicare & Medicaid Services, Department of Health and Human Services. 2007. Medicare program; prospective payment system for long-term care hospitals RY 2008; annual payment rate updates and policy changes; and hospital direct and indirect graduate medical education policy changes. Final rule. *Federal Register* 72, no. 91 (May 11): 26870–27029.

Centers for Medicare & Medicaid Services, Department of Health and Human Services. 2008. Medicare program; prospective payment system for long-term care hospitals RY 2009; annual payment rate updates, policy changes, and clarifications; and electronic submission of cost reports: Revision to effective date of cost reporting period. Final rule. *Federal Register* 73, no. 91 (May 9): 26787–26874.

Centers for Medicare & Medicaid Services, Department of Health and Human Services. 2009. Medicare program; changes to the hospital inpatient prospective payment systems for acute care hospitals and fiscal year 2010 rates; and changes to the long term care hospital prospective payment system and rate years 2010 and 2009 rates. Final rule. *Federal Register* 74, no. 165 (August 27): 43754–44236.

Centers for Medicare & Medicaid Services, Department of Health and Human Services. 2010. Medicare program; hospital inpatient prospective payment systems for acute care hospitals and the long term care hospital prospective payment system changes and FY2011 rates; provider agreements and supplier approvals; and hospital conditions of participation for rehabilitation and respiratory care services; Medicaid program: Accreditation for provider of inpatient psychiatric services. Final rule. *Federal Register* 75, no. 157 (August 16): 50042–50677.

Cox, C. E., S. S. Carson, J. H. Lindquist, et al. 2007. Differences in one-year health outcomes and resource utilization by definition of prolonged mechanical ventilation: A prospective cohort study. *Critical Care* 11, no. 1: R9.

Dematte-D'Amico, J. E., H. K. Donnelly, G. M. Mutlu, et al. 2003. Risk assessment for inpatient survival in the long-term acute care setting after prolonged critical illness. *Chest* 124, no. 3 (September): 1039–1045.

Diringer, M. N., D. F. Edwards, V. Aiyagari, et al. 2001. Factors associated with withdrawal of mechanical ventilation in a neurology/neurosurgery intensive care unit. *Critical Care Medicine* 29, no. 9 (September): 1792–1797.

Durairaj, L., J. C. Torner, E. A. Chrischilles, et al. 2005. Hospital volume-outcome relationships among medical admissions to ICUs. *Chest* 128, no. 3 (September): 1682–1689.

Gage, B., W. Bartosch, and J. Green. 2005. *Long-term care hospital (LTCH) project approach phase I report.* Prepared by RTI International for the Centers for Medicare & Medicaid Services. Baltimore, MD: CMS.

Gage, B., N. Pilkauskas, K. Dalton, et al. 2007. *Long-term care hospital (LTCH) payment system monitoring and evaluation: Phase II report*. Prepared under contract to the Centers for Medicare & Medicaid Services. Waltham, MA: RTI International.

Institute of Medicine. 2000. *Interpreting the volume-outcome relationship in the context of health care quality: Workshop summary.* Washington, DC: IOM.

Kahn, J. M., N. M. Benson, D. Appleby, et al. 2010. Long-term acute care hospital utilization after critical illness. *Journal of the American Medical Association* 303, no. 22 (June 9): 2253–2259.

Kahn, J. M., C. H. Goss, P. J. Heagerty, et al. 2006. Hospital volume and the outcomes of mechanical ventilation. *New England Journal of Medicine* 355, no. 1 (July 6): 41–50.

Kahn, J. M., T. R. Ten Have, and T. J. Iwashyna. 2009. The relationship between hospital volume and mortality in mechanical ventilation: An instrumental variable analysis. *Health Services Research* 44, no. 3 (June): 862–879.

Kandilov, A., and K. Dalton. 2011. *Utilization and payment effects of Medicare referrals to long-term care hospitals (LTCHs).* Prepared under contract to the Centers for Medicare & Medicaid Services. Research Triangle Park, NC: RTI International.

Kennell and Associates, Inc. 2010. *Determining medical necessity and appropriateness of care for Medicare long-term care hospitals.* Prepared under contract to the Centers for Medicare & Medicaid Services. Falls Church, VA: Kennell and Associates, Inc.

Mayr, F. B., S. Yende, W. T. Linde-Zwirble, et al. 2010. Infection rate and acute organ dysfunction risk as explanations for racial differences in severe sepsis. *Journal of the American Medical Association* 303, no. 24 (June 23): 2495–2503.

Medicare Payment Advisory Commission. 2004. *Report to the Congress: New approaches in Medicare.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2008a. Comment letter to CMS on IPPS proposed rule. March 24.

Medicare Payment Advisory Commission. 2008b. *Report to the Congress: Medicare payment policy.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2009. *Report to the Congress: Medicare payment policy.* Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2010. *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.

National Association of Long Term Care Hospitals. 2010. *Do long term care hospitals save Medicare money? Findings and an alternative to the 25% threshold rule.* Prepared by KNG Health Consulting for the National Association of Long Term Care Hospitals. West Hartford, CT: NALTH.

Nelson, J. E., D. E. Meier, A. Litke, et al. 2004. The symptom burden of chronic critical illness. *Critical Care Medicine* 32, no. 7 (July): 1527–1534.

Nierman, D. M., and J. E. Nelson, 2002. A structure of care for the chronically critically ill. *Critical Care Clinics* 18, no. 3 (July): 477–491, v.

RAND Corporation. 1990. *Methodology for measuring case-mix change: How much change in the case mix index is DRG creep?* E–90–5. Arlington, VA: RAND Corporation. April.

RTI International. 2007. *Long-term care hospital (LTCH) payment system monitoring and evaluation: Phase II report.* Waltham, MA: RTI.

Scheinhorn, D. J., M. S. Hassenpflug, J. J. Votto, et al. 2007. Post-ICU mechanical ventilation at 23 long-term care hospitals: A multicenter outcomes study. *Chest* 131, no. 1 (January): 85–93.

Unroe, M., J. M. Kahn, S. S. Carson, et al. 2010. One-year trajectories of care and resource utilization for recipients of prolonged mechanical ventilation: A cohort study. *Annals of Internal Medicine* 153, no. 3 (August 3): 167–175.