
Long-Term Care Hospitals Under Medicare: Facility-Level Characteristics

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Though accounting for only a small percentage of total Medicare spending, long-term care hospitals (LTCHs) (defined as having an average length of stay [LOS] of 25 days or more) have been growing, in number and in Medicare expenditures, at a rapid rate in recent years. Because they have not been widely studied, we conducted research to describe the characteristics of this increasingly important Medicare provider type. We found that most LTCHs specialize in the provision of respiratory care or rehabilitation. Information from this study can help inform the development of a Medicare prospective payment system for LTCHs.

INTRODUCTION

Until the mid 1980s, post-acute care—recuperative or rehabilitative services provided to patients after acute care hospital stays—was viewed as a cost-effective and less intensive alternative to extended hospital care. Historically, post-acute care accounted for only a small percentage of total Medicare expenditures. After implementation of Medicare's acute care hospital prospective payment system (PPS) in 1984, however, spending for post-acute care services began to grow rapidly. Much of this growth occurred within major provider groups, notably skilled nursing facilities (SNFs) and home health agencies (HHAs). Though accounting for only a

small percentage of total Medicare spending, one provider group, LTCHs, also experienced rapid growth during this period.¹ Between 1988 and 1996, Medicare payments to LTCHs grew from \$0.2 billion to \$1.7 billion, an average annual growth rate of 31 percent (Medicare Payment Advisory Commission, 1999).

Under Medicare regulations, a hospital can be certified as a LTCH if its average LOS among all its patients—Medicare and other—is equal to or greater than 25 days. As a result of this general definition, LTCHs can be very heterogeneous. In addition, while most LTCH patients transition from acute care hospitals, others are admitted without such prior stays.

As with other post-acute Medicare providers, the trend in LTCH expenditure growth attracted policy attention and caused Congress to call for a reform of LTCH payment policy in the Balanced Budget Act (BBA) of 1997. Legislation passed subsequent to the BBA mandated the Department of Health and Human Services to design and implement a PPS for LTCHs that is based on diagnosis-related groups (DRGs) and uses the discharge as the unit of payment.

Because LTCHs have not been widely studied, we conducted a study to elucidate the characteristics of LTCHs. This article presents findings from our study and focuses on identifying sets of facilities that are similar to each other, while contrasting the characteristics of the different sets. We

The authors are with the Urban Institute. The research for this article was funded under HCFA Contract Number 500-95-0055/04. The views expressed in this article are those of the authors and do not necessarily reflect the views of the Urban Institute or the Centers for Medicare & Medicaid Services (CMS).

¹ Post-acute care is also provided in outpatient settings, such as hospital outpatient departments.

examine how LTCHs differ in terms of patient characteristics, utilization, services provided, and costs. This descriptive analysis of LTCHs is directly relevant to policymakers because it characterizes a group of facilities about which little is known. This detail can be used to help inform the development of the congressionally-mandated PPS for LTCHs.

Besides the rapid growth in the number of LTCHs and Medicare expenditures for them, these facilities are of interest to policymakers because of expectations that some LTCHs may be similar to other types of providers certified by Medicare (for example, rehabilitation facilities and psychiatric hospitals). Hence, our analyses also are intended to provide insight into whether some LTCHs might be appropriately reclassified. Even if individual LTCHs do not resemble other Medicare providers, the heterogeneity of the LTCH population raises the possibility that subsets of these facilities might be appropriately treated under different PPSs. Finally, descriptive findings on the characteristics of LTCHs will help inform policymakers about the possible uniqueness of LTCHs in terms of service provision and patient case-loads, as well as whether these facilities fill a particular niche in the continuum of Medicare post-acute care.

In the following discussion, we first present background on LTCHs, including Medicare's payment policies for them. We next describe the data sources used in our analyses. The subsequent section describes basic structural and utilization characteristics of LTCHs. We then describe our analysis to identify and classify specialty groups within the LTCH population. The specialty groups of LTCHs are compared in terms of LOS, death rates, admission sources, discharge destinations, and resource consumption. Finally, we discuss the research and policy implications of these findings.

BACKGROUND

LTCHs are designed to provide extended medical and rehabilitative care for patients who are clinically complex and have multiple acute or chronic conditions. Most patients in LTCHs have several diagnosis codes on their Medicare claims, which indicates that they have multiple comorbidities and are probably less stable on admission than patients admitted to other post-acute care settings (Prospective Payment Assessment Commission, 1996). Approximately one-half of the patients have five or more diagnoses noted on their claims.

LTCHs generally provide a range of services, including comprehensive rehabilitation, cancer treatment, head trauma treatment, and pain management (Medicare Payment Advisory Commission, 1998b). The typical Medicare patient in a LTCH is admitted following an acute care hospital stay. As of 1997, about 200 facilities were certified by Medicare as LTCHs.²

The country's oldest LTCHs evolved from tuberculosis and chronic disease hospitals. Today, some of these older LTCHs still focus on patients with chronic care needs, including rehabilitation services (physical therapy, occupational therapy, and speech-language services), and even psychiatric care. Other older facilities have evolved to serve a relatively more acute mix of patients needing a range of rehabilitation and other clinical services. In this study, we refer to LTCHs certified before October 1983 as old, because they existed prior to implementation of the Medicare acute care hospital PPS and the payment system set in place for other hospitals, including LTCHs, that were exempt from the PPS. Older facilities likely have different characteristics than ones certified after this major shift in hospital payment

²By early 2000, there were 239 LTCHs.

policy. LTCHs certified after October 1983 reflect a move toward proprietary ownership. A major early proprietary LTCH entrant is Vencor, a corporation that owns many LTCHs and focuses on caring for ventilator-dependent patients (Hotes and Kalman, 2001). The majority of LTCHs certified in the late 1980s and early 1990s are owned by this corporation. We selected September 1993 as a cutoff date and refer to LTCHs certified in this period as "middle" (age) facilities. This period captures the major growth of these facilities, forming a relatively homogeneous group that specializes in respiratory care. In addition, our cutoff date intentionally coincides with the first of several changes in Medicare payment policy aimed at addressing cost differences (and resulting payment problems) emerging between older and newer hospitals exempt from the acute hospital PPS. Finally, we refer to LTCHs certified after September 1993 as new facilities. This includes LTCHs certified through the year of our data—1997. The new group captures a different organizational form of LTCHs that has developed since the mid-1990s—facilities that are located inside acute hospitals rather than being physically separate, freestanding facilities. These particular LTCHs are referred to in Medicare regulations as hospitals within hospitals and LTCH satellites. While both types are located in the buildings or on the campuses of acute care hospitals, the former are owned by individual LTCH entities affiliated with the acute care hospital, and the latter are owned by multi-hospital (chain) LTCH companies. In 1997, approximately 20 percent of LTCHs were old facilities, 30 percent were middle, and 50 percent were new.

LTCHs are distributed unevenly across the United States, with one-third located in Massachusetts, Texas, and Louisiana. This

regional variation is driven by several factors, and is not the result of a systematic national strategy for providing LTCH services. One possible factor driving the variation is differing State policies toward hospital bed conversion. For example, it is possible that States with strict hospital Certificate of Need programs or prohibitions against proprietary (publicly traded) hospitals are less likely to have high LTCH concentrations. In addition, States with larger populations are more likely to have the patient concentration needed to support specialized facilities (for example, respiratory specialty LTCHs). Variation in LTCH distribution is also a consequence of the LTCH evolution process. The high LTCH concentration in Massachusetts, for example, is largely due to the State's many old facilities, which were originally tuberculosis hospitals.

Medicare Payment Policies

LTCHs are exempted from Medicare's acute care hospital PPS, which provides a fixed payment to each acute care hospital for each patient in a given DRG. LTCHs were not included in the acute care hospital PPS because it was thought that the costliness of patients in these facilities was not comparable with that of acute care hospital patients. Instead, LTCHs are paid based on their average per discharge costs, subject to limits initially established under the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982 (Health Care Financing Administration, 1987).

Policy concerns about LTCHs have centered on the TEFRA payment method, with a focus on the way in which a facility's payment limits (known as target amounts) are established. In general terms, a facility's limit is based on the costs it incurs during an initial (base) period, updated for

inflation.³ This method tends to encourage inefficiencies among new providers and results in inflationary Medicare payments. Specifically, a facility that is inefficient in its base period receives relatively high Medicare payments in the future, and has a greater opportunity for profit by increasing its efficiency and restraining cost increases in future years.

The TEFRA limits have created payment inequities between, in particular, providers that existed prior to TEFRA implementation and those established after TEFRA. While newer facilities have had the opportunity to influence their limits, facilities that were operating before TEFRA could not do so. Instead, their 1983 operating costs were used to set their limits. As a result, older facilities are more likely to incur costs above their limits and thus receive payments that are lower than their costs. Newer facilities, on the other hand, are typically paid their full, reported costs and also receive bonus payments for having costs below their limits (Medicare Payment Advisory Commission, 1998a, b).

The BBA addressed many of the concerns regarding TEFRA payment policies. In particular, the BBA eliminated some inflationary incentives for future new facilities by limiting their payments to 110 percent of the national median payment limit. In addition, the BBA also allowed facilities in operation prior to 1991 to rebase (recalculate) their payment limits, using average costs from their five most recent cost reporting periods. In addition, the BBA created a national payment limit, set at the 75th percentile of all facilities' limits. Finally, the BBA reduced the annual update factors and the level of "bonus" and "relief" payments available to facilities under TEFRA. All of these changes were

geared to reduce payment inequities between old and new facilities, as well as to generate overall Medicare savings.⁴

Longer term, the BBA also required the Secretary to develop a PPS for LTCHs to combat the inflationary incentives of TEFRA and to improve the distribution of payments among LTCHs. Subsequently, the BBRA required that the LTCH PPS be designed by October 2001, and implemented by October 2002. The BBRA mandated that the LTCH PPS be based on hospital discharges and adjusted for case-mix based on DRGs. Findings from our analyses were designed to help inform the development of these activities.

DATA SOURCES

Our analyses in this article use the facility as the unit of observation and are based on 1997 Medicare claims data, cost reports, and data from the Online Survey and Certification Reporting System (OSCAR). Medicare claims data contain charges for specific types of services, as well as utilization, patient demographic, and medical information. These data were aggregated to the facility level, which enabled us to compare discharges and covered days, the demographic composition of the patient base, and the percentage of stays with charges for various medical services and conditions. We also matched across claims records for different facility types to obtain facility-level information about related stays, including acute care hospital, SNF, LTCH, rehabilitation facility, and HHA.

Cost reports contain data on costs and charges per revenue center (or area of service). They also include information on the

³ Under TEFRA, the new provider period initially was 3 years. Later this was shortened to 1 year.

⁴ Some of the TEFRA payment restrictions required by the BBA were relaxed by the Balanced Budget Refinement Act (BBRA) of 1999 and the Medicare, Medicaid and the State Children's Health Insurance Program Benefit Improvement and Protection Act of 2000.

number of hospital days, discharges, and costs by payment source, such as Medicare and Medicaid.

The 1997 OSCAR provides information from the State survey and certification process to identify and characterize providers that participate in Medicare and Medicaid. OSCAR data include the number of employees of various types (for example, inhalation therapists, occupational therapists, and physical therapists) and the number of different types of beds and care units. Particularly useful to this study were variables on certification date, ownership, geographic region, and hospital size.

The sample of LTCHs for this study was all facilities contained in the claims data file in 1997 (203 facilities). For analyses that focused on claims data, we omitted LTCHs with fewer than 25 stays to increase the likelihood that facility-level measures were based on enough stays to be statistically stable. These omitted facilities accounted for 8 percent of LTCHs and 0.4 percent of patient stays. Likewise, we included only facilities with complete OSCAR data for tables that involved such data, and we included only facilities that filed cost reports in 1997 and had at least one Medicare stay for tables that utilized cost report data.⁵ Facilities with incomplete OSCAR data accounted for 4 percent of LTCHs and 1 percent of patient stays, and facilities with missing cost report data accounted for 6 percent of LTCHs and 5 percent of patient stays. Some omitted facilities were missing data in more than one source (for example, a facility might not appear in the OSCAR data and also might not have filed a cost report). Overall, the facilities that we omitted for missing data in at least one source totaled 15 percent of LTCHs and 6 percent of patient stays.

⁵ Facilities that receive a minimum threshold of Medicare payments are required to submit cost reports.

In the following sections, we examine statistical information on LTCHs to gain a better understanding of their role in the continuum of care. We first provide a general description of the structural characteristics and utilization patterns of LTCHs. As expected, we find that LTCHs form a heterogeneous group that is difficult to characterize. We classify LTCHs into specialty groups that are relatively homogeneous and more easily described. Finally, we analyze the costs of the different specialty LTCH groups.

STRUCTURAL CHARACTERISTICS AND UTILIZATION

Structural Characteristics

Our analyses examined LTCH characteristics, such as age (date of Medicare certification), type of control, geographic location, and affiliations with other hospitals. Because prior analyses found that the age of a LTCH is an indicator of other key characteristics, such as location and ownership control, as well as operating costs and Medicare payments, we stratified the total sample of LTCHs based on age (old, middle, or new) (Liu et al., 2000; Chan et al., 1997).

Table 1 shows that LTCHs have a range of control types: close to one-half of the LTCHs are proprietary, almost one-third are non-profit, and about one-fifth are government-owned. Most government-owned facilities are old facilities, whereas all proprietary facilities are middle or new. LTCHs are not distributed geographically in proportion to the number of Medicare enrollees; most LTCHs are in the eastern and southern States. For the most part, the geographic distribution of certified beds follows the distribution of facilities (Liu et al., 2000).

In recent years, the LTCH group has evolved to include hospitals within hospitals and satellites, in addition to traditional free-

Table 1
Characteristics of Long-Term Care Hospitals, by Age Cohort¹: 1997

Characteristic	Facilities ²	Medicare Certification Date		
		Old	Middle	New
		Before October 1983	October 1983 to September 1993	After September 1993
Total	195	40	58	97
Percent	100.0	20.5	29.7	49.7
Type of Control			Percent	
Non-Profit	33.3	37.5	29.3	29.9
Proprietary	47.7	0.0	48.3	67.0
Government	21.0	62.5	22.4	3.1
Regional Offices				
Atlanta	14.9	7.5	22.4	14.4
Boston	11.3	40.0	6.9	2.1
Chicago	14.4	7.5	10.3	19.6
Dallas	31.3	2.5	29.3	43.3
Denver	3.1	2.5	6.9	1.0
Kansas City	3.6	2.5	5.2	3.1
New York	4.6	20.0	1.7	0.0
Philadelphia	6.2	12.5	3.4	5.2
San Francisco	9.7	5.0	13.8	9.3
Seattle	1.0	0.0	0.0	2.1
Number of Beds				
Less than 25	11.3	2.5	8.6	16.5
25-49	29.7	7.5	13.8	48.5
50-99	29.2	17.5	46.6	23.7
100-499	28.2	65.0	31.0	11.3
500 or More	1.5	7.5	0.0	0.0
Hospital Affiliation				
Freestanding	67.7	67.5	70.7	66.0
Hospital Within Hospital	21.0	2.5	15.5	32.0
Unknown	11.3	30.0	13.8	2.1

¹ Age cohort refers to the year in which a facility became certified under the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982. Old facilities are defined as those certified before TEFRA was implemented in October 1983, middle facilities are those certified between October 1983 and September 1993, and new facilities are those certified between October 1993 and September 1997.

² Based on a sample of 195 facilities. From the original group of 203 U.S. facilities, this sample excludes 8 facilities with no Online Survey and Certification Reporting System (OSCAR) data.

NOTES: The statistics refer to facility-level averages; hence, they do not reflect differences in the number of patients across facilities. Hospital affiliation status is estimated based on industry communications and internet research.

SOURCE: Health Care Financing Administration: Data from the OSCAR and Medicare claims data and cost reports, 1997.

standing facilities. As of 1997, roughly 21 percent of facilities were hospitals within hospitals and 68 percent were freestanding. The affiliation status of the remaining share (11 percent) could not be definitively identified.⁶

Utilization Patterns

LTCNs also differ in patient utilization patterns by age and by type of payer. The vast majority (71 percent) of LTCN discharges are Medicare patients (Table 2).

⁶ The exact hospitals within hospitals and satellite affiliation of LTCNs is not reported to Medicare. We attempted to categorize using information from industry groups and Internet research.

The next largest share (19 percent) are financed by private sources, while Medicaid accounts for only 9 percent of discharges. Payment sources vary considerably with facility age, however. Among the old facilities, Medicaid and private sources each account for about one-quarter of patient stays, while Medicare accounts for almost one-half. In contrast, the middle and new LTCNs have large shares of Medicare patients (71 percent and 80 percent, respectively) and very small proportions of Medicaid patients (8 percent and 4 percent, respectively).

Table 2
Discharge and Length of Stay (LOS) Statistics of Long-Term Care Hospitals, by Age Cohort¹
and Type of Payer: 1997

Characteristic	Facilities ²	Medicare Certification Date		
		Old	Middle	New
		Before October 1983	October 1983 to September 1993	After September 1993
Total	185	34	56	95
Percent	100.0	18.4	30.3	51.4
Average Number of Discharges	362	619	401	248
Medicare	71.2	47.4	71.4	79.6
Medicaid	9.4	26.3	8.3	4.1
Private	19.4	26.2	20.2	16.4
Average LOS	50.1	112.5	37.8	35.1
Medicare	32.8	34.6	31.5	32.9
Medicaid ³	103.9	251.0	58.4	42.5
Private	102.3	254.2	99.8	51.0
Median LOS	33.0	41.0	34.6	32.3
Medicare	30.4	26.0	30.7	31.7
Medicaid ³	40.2	84.0	41.0	36.0
Private	37.4	39.5	44.4	34.5

¹ Age cohort refers to the year in which a facility became certified under the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982. Old facilities are defined as those certified before TEFRA was implemented in October 1983; middle facilities are those certified between October 1983 and September 1993, and new facilities are those certified between October 1993 and September 1997.

² Based on a sample of 185 facilities. From the original group of 203 U.S. facilities, this sample excludes 8 facilities with no Online Survey and Certification Reporting System (OSCAR) data, 9 facilities with no cost report data, and 1 facility with zero Medicare discharges in the cost reports.

³ Of the 185 facilities in the sample, 70 have no Medicaid stays. These facilities were excluded from the calculation of average and median LOS. Had we included these facilities in the calculations as zero day stays, the average Medicaid stays for total, old, middle, and new facilities would be 65, 229, 38, and 21, respectively. The median stays for total, old, middle, and new facilities would be 25, 72, 17, and 1, respectively.

NOTE: The statistics refer to facility-level averages; hence, they do not reflect differences in the number of patients across facilities.

SOURCE: Health Care Financing Administration: Data from the OSCAR and Medicare claims data cost reports, 1997.

In terms of average LOS, the old facilities again are distinct from the middle and new LTCHs. The average LOS for the old facilities is 113 days, more than three times the average LOS for middle and new LTCHs. While the average LOS of Medicare patients across all three age cohorts are similar (between 32 and 35 days), the average LOS for Medicaid and private-pay patients in the old facilities is much longer (by a factor of 2.5 to 5) than the average LOS for the middle and new LTCHs.

We also consider the median LOS, which provides information about the center of the statistical distribution and, unlike the average, is not affected by outliers. The patterns of the median LOS are similar to those of the average LOS with the excep-

tion of private-pay patients. Here, old and new LTCHs have relatively short stays, while middle LTCHs have the longest median LOS.

In sum, Table 2 shows that old facilities serve a much higher proportion of Medicaid patients and have many patients with very long stays. Old facilities also serve a significant number of private-pay patients, some of whom have LOS patterns that resemble Medicare patients, and others who have extremely long stays. The new facilities serve a predominantly Medicare population and their patients have relatively short stays, regardless of payment source. The middle group has utilization statistics that fall between the old and new facilities, but the group tends to more closely resemble the new facilities than the old ones.

Specialty Groups of LTCHs by Patient Mix

In light of the relatively unrestrictive criterion for hospital certification as a LTCH, there is a widely held view that the population of LTCHs is very heterogeneous. One aim of this study was to explore the composition of this population and to attempt to identify and classify subgroups within it.

Approach

Our general approach was to classify LTCHs according to the medical conditions of their patient caseloads. We chose to use broad categories of conditions as defined by major diagnostic categories (MDCs).⁷ Although we also explored the possibility of grouping patients by DRGs or by selected individual diagnoses, these attempts resulted in many groups that were too small to be readily generalized. Grouping by MDCs, however, creates fewer, larger groups that can be characterized. Using this grouping method we find that, while some LTCHs treat a wide range of conditions, others specialize in one or two types of conditions.

We also explored several other approaches, including classification schemes with two or three primary specialties per LTCH, or LTCHs grouped by MDC and stratified by LOS (to differentiate MDCs by chronicity of conditions). In general, we found that these more complex schemes were impractical due to our small sample.

Patient Caseload

In order to develop a grouping based on patient mix, we first examined the proportion of facilities' caseloads in specific

MDCs (Table 3). There are five MDCs in which at least one LTCH has a majority (that is, more than 50 percent) of its cases. Patients with respiratory system problems are the most common caseload concentration—31 LTCHs have a caseload concentration of 50 percent to 75 percent, and another 13 LTCHs have more than 75 percent of their cases in this MDC. A significantly less common concentration is seen in the three LTCHs that have a majority of their patients in the mental diseases and disorders MDC.

The other three MDCs that make up a majority of at least one LTCHs' patient caseload (nervous system, musculoskeletal and connective tissue disorders, and factors influencing health status) are all related to rehabilitation needs. Six facilities have a majority of their caseload in the nervous system MDC, one LTCH has more than one-half of its caseload in the musculoskeletal and connective tissues disorders MDC, and six LTCHs have a majority of their caseload in the factors influencing health status MDC. (Because rehabilitation-related DRGs are common to LTCHs and fall into this MDC, we classified all cases in this MDC as rehabilitation services.)⁸

Specialty Grouping

Using the Table 3 findings, we developed a grouping that consists of four broad categories of LTCHs based on patient caseload. We assigned facilities with greater than 50 percent of their cases in the respiratory MDC to a respiratory specialty group. Similarly, we designated all facilities with at least one-half of their caseload in the mental MDC as mental specialty facilities. We then combined the three

⁷ MDCs, created as an initial step in developing the DRG hospital inpatient classification system, were formed by dividing all possible principal diagnoses into 25 mutually exclusive categories.

⁸ Table 3 also shows that patients in certain MDCs are found in nearly all LTCHs. For example, all but two LTCHs in our sample have some patients with respiratory system problems.

Table 3
Distribution of Long-Term Care Hospitals, by Percent of Caseload in Major Diagnostic Categories (MDCs): 1997

MDC	Facilities ¹		Percent Caseload Distribution			
	With Patients in MDC	Without Patients in MDC	Less than 25	25 to 50	50 to 75	More than 75
Respiratory System	184	2	80	60	31	13
Circulatory System	181	5	176	5	—	—
Nervous System	175	11	152	17	6	—
Skin, Subcutaneous Tissue and Breast Diseases	174	12	170	4	—	—
Musculoskeletal and Connective Tissue Disorders	173	13	160	12	1	—
Kidney and Urinary Tract	165	21	163	2	—	—
Digestive System	165	21	165	—	—	—
Endocrine, Nutritional and Metabolic Diseases	162	24	160	2	—	—
Infectious and Parasitic Diseases	151	35	151	—	—	—
Hepatobiliary System and Pancreas	128	58	128	—	—	—
Factors Influencing Health Status	121	65	101	14	4	2
Injuries, Poisonings and Toxic Effects of Drugs	119	67	119	—	—	—
Myeloproliferative Diseases and Disorders ²	91	95	91	—	—	—
Mental Diseases and Disorders	79	107	66	10	3	—
Ear, Nose, Mouth and Throat	76	110	75	1	—	—
Blood and Immunological Disorders	71	115	71	—	—	—
Male Reproductive System	51	135	51	—	—	—
Female Reproductive System	46	140	46	—	—	—
Human Immunodeficiency Virus Infections	38	148	38	—	—	—
Alcohol/Drug Use and Alcohol/Drug Mental Disorders	30	156	30	—	—	—
Burns	22	164	22	—	—	—
Eye	22	164	22	—	—	—

¹ Based on a sample of 186 facilities. From the original group of 203 U.S. facilities, this sample excludes 17 facilities with fewer than 25 stays in the claims data.

² Myeloproliferative conditions involve the abnormal proliferation of bone marrow components.

NOTES: No cases were found in three MDCs (multiple significant trauma; pregnancy, childbirth, and the puerperium; and newborns and other neonates with conditions originating in the perinatal period). Dash denotes no facility in range.

SOURCE: Health Care Financing Administration: Data from the Medicare long-term care hospital claims, 1997.

rehabilitation-related MDCs into one rehabilitation-related MDCs category. We assigned facilities with a majority of their cases in this combined category to a rehabilitation specialty group. We grouped all remaining facilities (that did not have high concentrations of patients in the respiratory MDC, the mental MDC, or the rehabilitation-related MDCs category) into a multispecialty facility group. LTCHs in this category provide care to a wider range of patient types than the first three categories.

The proportion of facility caseloads with the respiratory system MDC ranged from 50 to 100 percent among the LTCHs we classified as respiratory specialty facilities. Analogous results were found among rehabilitation specialty facilities. The three mental specialty facilities each have approximately the same percent of cases (65 percent) in the mental MDC.

To better understand the relatively large number of multispecialty LTCHs, we explored their MDC composition. Most of these facilities have high proportions of

cases in the respiratory MDC and the rehabilitation-related MDCs category, although some LTCHs do not serve either of these populations in great numbers. Few LTCHs do not have a significant share of their caseload in either the respiratory MDC or the rehabilitation-related MDCs category. Only 2 percent of multispecialty LTCHs have less than 25 percent of their caseload in either specialty group. Similarly, only 7 percent of multispecialty facilities have less than 35 percent of their caseload in either of the two groups. In contrast, about 60 percent of LTCHs have at least one-half of their caseload in the combination of respiratory MDC and rehabilitation-related MDCs categories. This high share demonstrates that, despite their assignment to the multispecialty category, most LTCHs serve a high percentage of patients with respiratory or rehabilitation problems, or both.

Niche Facilities

Although respiratory and rehabilitation specialty facilities are prevalent in the LTCH population, there are also some niche LTCHs that have unique patient populations or provide uncommon services. These hospitals include, for example, a large hospital at which most admitted individuals (90 percent) die in the facility. This hospital essentially functions as a hospice provider.

Several facilities provide services for special populations. For instance, one facility provides services for a prison population. A large share of its funding is through Medicaid; cost report data show two-thirds of its patient stays are covered by Medicaid. Several facilities provide mostly non-psychiatric services for mentally handicapped persons. Of the two relatively large (over 350 stays) facilities providing such treatment, one LTCH serves working-age, developmentally-challenged

persons, while the other serves an older patient base. The vast majority of patients in each facility come to the LTCH from the community, and most return to the community after their stays. The first facility, which serves working-age persons, is notable for a very short Medicare LOS—the median Medicare stay is only 2 days.

Some other facilities work with similarly specialized populations and have very small Medicare caseloads. In particular, two facilities that focus on developmentally-disabled children and younger adults had fewer than 10 Medicare stays in 1997. Cost reports show that one of these facilities, which provides rehabilitation for its Medicare patients, has few discharges (under 100) regardless of payer source. The other, which provides mostly psychiatric services, relies on public funding for only a small share of its discharges.

Although there are a few niche facilities in the LTCH population, our analyses indicate that a preponderance of the hospitals can be classified in distinct specialty groups that focus on adult rehabilitation and respiratory system care.

LTCH Specialty Groups Characteristics

We examined LTCH specialty groups characteristics to learn about the differences between these groups and determine whether they could be divided further to obtain smaller specialty groups with distinct characteristics. We examined Medicare LOS, death rates, and patterns of LTCH admission sources and discharge destinations.

LOS

Table 4 presents LOS statistics for each of the four specialty groups. The average LOS for all facilities is 27.1 days, and none

Table 4
Medicare Length of Stay in Long-Term Care Hospitals, by Specialty Group: 1997

Specialty Group	Facilities ²	Discharges	Mean (SD)	Length of Stay ¹				Distribution Ratio	
				Percentile Distribution					
				25th	50th	75th	95th		
Total	186	50,272	27.1 (6.3)	24.3	27.6	31.0	36.1	1.28	
Multispecialty	109	31,094	25.8 (6.6)	23.7	26.6	29.9	34.5	1.26	
Respiratory	44	9,571	30.9 (4.8)	27.6	31.2	34.8	38.6	1.26	
Rehabilitation	30	9,177	26.3 (4.9)	23.2	26.9	30.4	34.2	1.31	
Mental	3	430	25.4 (10.2)	14.9	26.1	35.2	—	2.36	

¹ Length of stay statistics calculated based on mean covered day data from the long-term care hospital claims.

² Based on a sample of 186 facilities. From the original group of 203 U.S. facilities, this sample excludes 17 facilities with fewer than 25 stays in the claims data.

NOTES: Numbers in parentheses are standard deviations (SD). The statistics refer to facility-level averages; hence, they do not reflect differences in the number of patients across facilities. Dash denotes no facility in range.

SOURCE: Health Care Financing Administration: Data from the Medicare long-term care hospital claims, 1997.

of the four specialty groups have averages that deviated dramatically from the overall average. Moreover, the standard deviation for each group is relatively small. The percentile distributions also suggest that LOS patterns do not differ much between the different groups, and that most of the cases seem to cluster around the median. For example, the ratio of LOS at the 75th percentile relative to that at the 25th percentile is generally between 1.26 and 1.31 for each specialty group. The mental specialty group has the greatest variation, but it only contains three facilities.

The data in Table 4 do not provide a clear indication that the groups differ by LOS, nor do they indicate that any particular group should be further stratified by LOS. Because of the tight range of LOS for each group, it does not appear that any of the groups contain distinctly heterogeneous LTCHs as would be indicated by, for example, a bimodal distribution.

Death Rates

Unlike LOS statistics, the death rates (number of deaths per 100 discharges) vary considerably among the LTCH specialty groups. As shown in Table 5, the rehabilitation specialty group has an aver-

age death rate of 6.6 percent, whereas the respiratory specialty group has a much higher average death rate of 28.1 percent. These findings are not surprising due to the differences in medical conditions associated with the need for rehabilitation versus for respiratory system care. Also not surprising, the multispecialty hospitals, which treat high proportions of individuals with rehabilitation or respiratory system problems, have an average death rate that is between the other two groups. The range of death rates among LTCHs in the rehabilitation specialty group (the ratio of 75th to 25th percentile is 6.9) is higher than the ranges for respiratory specialty and multispecialty groups (1.6 and 2.7, respectively). Notably, the respiratory specialty group contains LTCHs that generally treat severely ill patients; the death rate is high (22.2 percent) even at the 25th percentile of the distribution, and at the high end of the distribution (the 75th percentile), almost one-half of the patients die in facilities.

Although Table 5 indicates clear differences between the groups in terms of death rates, a distinct division in the distribution is not apparent. Hence, it is difficult to conclude that death rates should be employed as an indicator of illness severity

Table 5
Death Rates in Medicare Long-Term Care Hospitals, by Specialty Group: 1997

Specialty Group	Facilities ¹	Discharges	Mean (SD)	Death Rate				Distribution Ratio	
				Percentile Distribution					
				25th	50th	75th	95th		
Total	186	50,272	17.6 (12.4)	7.7	16.1	25.0	38.4	3.25	
Multispecialty	109	31,094	16.6 (11.6)	8.5	15.3	23.2	32.6	2.72	
Respiratory	44	9,571	28.1 (9.2)	22.2	27.0	35.1	43.6	1.58	
Rehabilitation	30	9,177	6.6 (6.0)	1.8	4.9	12.6	15.7	6.90	
Mental	3	430	6.5 (6.4)	0.5	5.7	13.3	—	26.54	

¹ Based on a sample of 186 facilities. From the original group of 203 U.S. facilities, this sample excludes 17 facilities with fewer than 25 stays in the claims data.

NOTES: Numbers in parentheses are standard deviations (SD). Death rate is the number of deaths per 100 discharges. The statistics refer to facility-level averages; hence, they do not reflect differences in the number of patients across facilities. Dash denotes no facility in range.

SOURCE: Health Care Financing Administration: Data from the Medicare long-term care hospital claims, 1997.

to differentiate further the caseloads of the hospitals. Because of the relatively wide range in death rates among rehabilitation specialty hospitals, one possibility may be to separate them at the median (for example, between a rate of 5 percent or less and more than 5 percent), but further analysis would be required to determine how the two specialty groups compare based on other indicators of severity.

Admission Sources

Another useful perspective on LTCHs is the pattern of sources from which patients are admitted to LTCHs and destinations to which LTCH patients are discharged. This information, presented in Table 6, shows how such transition patterns differ among the specialty groups that we created. In general, the findings in this table are consistent with the notion that LTCHs are heterogeneous in terms of the patients they serve.

The vast majority (70 percent) of LTCH patients are admitted from acute care hospitals. Within this group, we separate acute care patients whose stays are designated as outlier stays. Sixteen percent of LTCH admissions are acute care hospital outlier patients, while 54 percent are admitted from acute care hospitals but do not have extraordinarily long stays. After acute care

hospitals, direct admission from the community is the next most common source of admissions (14 percent) to LTCHs.⁹

The admission patterns vary somewhat by LTCH specialty type. Notably, 85 percent of admissions to respiratory specialty LTCHs are from acute care hospitals, including 22 percent that are acute care hospital outlier cases. A small percentage (7 percent) of admissions to respiratory specialty LTCHs are from the community. In contrast, the admission sources for the rehabilitation specialty LTCHs are more similar to that of the multispecialty LTCHs and, therefore, the sample in general. Notably, a higher than average share of patients come from SNFs and HHAs (8 percent and 7 percent, versus 6 percent and 4 percent, respectively), and a lower percentage of patients transition from acute care hospital outlier stays (12 percent versus an average of 16 percent). A relatively large share (11 percent) of patients at rehabilitation specialty LTCHs are admitted directly from the community, compared with respiratory specialty LTCHs (7 percent). These findings suggest that patients admitted to rehabilitation specialty LTCHs may not be as medically intensive as patients admitted to respiratory specialty LTCHs.

⁹ Because the information on sources of admission and discharge destinations are based on Medicare administrative information, we could not distinguish individuals who were otherwise Medicaid nursing home residents.

Table 6
Admission Sources and Discharge Destinations for Medicare Long-Term Care (LTC) Hospitals, by Specialty Group: 1997

Specialty Group	Total ¹	Multispecialty	Respiratory	Rehabilitation	Mental
Facilities	186	109	44	30	3
Admission Source					
Skilled Nursing Facility	6	6	4	8	0
LTC Hospital	2	2	1	1	1
Acute Care Hospital	70	66	85	69	31
Non-Outlier	54	51	63	57	28
Outlier	16	15	22	12	2
Rehabilitation	1	2	0	2	0
Home Health Agency	4	4	2	7	1
Community	14	16	7	11	40
Other	3	4	0	2	27
Discharge Destination²					
Skilled Nursing Facility	18	18	24	15	4
LTC Hospital	2	2	2	1	2
Acute Care Hospital	18	18	17	20	13
Non-Outlier	15	15	14	18	12
Outlier	2	2	3	2	2
Rehabilitation	2	2	3	1	0
Home Health Agency	21	20	14	34	2
Community ³	38	38	41	28	71
Other	2	2	0	1	7

¹ Based on a sample of 186 facilities. From the original group of 203 U.S. facilities, this sample excludes 17 facilities with fewer than 25 stays in the claims data.

² Excludes all patients who die during LTC hospital stay.

³ Discharge to community includes patients who die after returning to community.

NOTE: The statistics refer to facility-level averages; hence, they do not reflect differences in the number of patients across facilities.

SOURCE: Health Care Financing Administration: Data from the Medicare LTC hospital claims, 1997.

The admission pattern of patients admitted to the mental specialty LTCHs is quite different from those of the other specialties. A relatively small percentage (31 percent) of patients are admitted from acute care hospitals and only 2 percent as acute care outliers. In contrast, a large proportion are admitted directly from the community (40 percent) or from some other type of Medicare providers (27 percent).

Discharge Destinations

Table 6 also presents the pattern of discharge destinations for LTCHs. Note that the distributions describe patterns of individuals who did not die during their LTCH stays.¹⁰ Overall, 38 percent of LTCH stays

are discharged to the community without additional Medicare services. Equal percentages (18 percent) are discharged to SNFs and acute care hospitals, and 21 percent of patients are discharged to HHAs.

Some variations in discharge destination patterns exist among LTCHs by specialty. Relative to the overall sample, the respiratory specialty LTCHs have higher than average percentages of patients discharged to SNFs (24 percent versus 18 percent), and lower percentages discharged to HHAs (14 percent versus 21 percent). Rehabilitation specialty facilities, however, have a relatively high proportion of cases (34 percent) discharged to HHAs, and a lower than average proportion discharged to the community without additional Medicare services (28 percent versus 38 percent). Finally, mental specialty hospitals have an unusually high percent of

¹⁰ Recall that mortality rates varied among the LTCHs by specialty (Table 5).

Table 7**Median Medicare Costs per Discharge of Long-Term Care Hospitals, by Specialty Group: 1997**

Specialty Group	Facilities ¹	Median Costs per Discharge					
		Total	Accommodation	Total	Ancillary	Rehabilitation	Respiratory
Total	177	\$28,499	\$18,876	\$12,035	\$2,017	\$2,075	\$2,548
Multispecialty	103	26,914	17,837	10,562	1,793	1,894	2,536
Respiratory	43	43,890	26,316	17,692	1,725	6,181	3,441
Rehabilitation	28	24,875	16,239	9,617	3,786	879	1,786
Mental	3	25,294	19,403	3,975	541	188	1,128

¹ Based on a sample of 177 facilities. From the original group of 203 U.S. facilities, this sample excludes 11 facilities with no cost report data, 1 facility with zero Medicare discharges in the cost reports, and 14 facilities with fewer than 25 stays in the claims data.

NOTE: The statistics refer to facility-level averages; hence, they do not reflect differences in the number of patients across facilities.

SOURCE: Health Care Financing Administration: Data from the Medicare long-term care hospital claims; 1997.

cases (71 percent) discharged to the community without additional Medicare services. In sum, these findings suggest that patients served by respiratory specialty LTCHs are more likely to require extended care in institutional settings (for example, SNFs), while patients discharged from rehabilitation specialty facilities also require extended care, but not necessarily in institutional settings.

COSTS OF CARE

This section presents Medicare reported costs of LTCHs. We compare total and service component costs across specialty groups and by certification dates.

Average 1997 Medicare costs per discharge for all LTCHs and the specialty groups are presented in Table 7. Overall, the median total Medicare costs per discharge are about \$28,500. Almost two-thirds of the costs are for accommodations, which includes routine nursing care, as well as room and board. The median cost for total ancillary services is about \$12,000, while median costs for selected ancillary services (rehabilitation, respiratory therapy, and pharmaceuticals) are each about \$2,000.

Although median total Medicare costs per discharge are around \$25,000 for most of the LTCH specialty groups, the respiratory specialty facilities have significantly higher overall costs (\$44,000) than the

median. Relative to the overall group, the respiratory specialty LTCHs have higher accommodation costs and higher total ancillary costs (\$26,000 and \$18,000, respectively). Median ancillary costs for respiratory therapy for this group are three times higher than the median (about \$6,000 versus \$2,000), while rehabilitation therapy costs are lower than the median (about \$1,700 versus \$2,000).

The rehabilitation specialty LTCHs have lower median costs than the overall median cost for accommodations and total ancillaries (about \$16,000 and \$10,000, respectively), but their median costs for ancillary rehabilitation therapy are the highest among the specialty groups (\$3,786) and almost twice that of the overall average for these services. The multispecialty hospitals, by virtue of their dominance in the sample, have specific ancillary costs that are close to the overall averages. Mental specialty hospitals have a different cost structure than other LTCHs. Whereas their median accommodations costs (about \$19,000) are higher than the overall average, their median total ancillary costs (about \$4,000) are only about one-third those of the overall median. Given these hospitals' focus on patients with mental-related diseases, their costs for rehabilitation therapy and respiratory therapy are lower than the median.

Table 8**Median Medicare Costs per Discharge of Long-Term Care Hospitals, by Age Cohort¹: 1997**

Age Cohort	Facilities ²	Total	Accommodation	Median Costs per Discharge			
				Total	Rehabilitation	Ancillary	Respiratory
Total	185	\$28,752	\$19,391	\$11,374	\$1,889	\$1,982	\$2,449
Old	34	20,673	15,771	4,500	958	250	669
Middle	56	36,237	23,618	12,905	1,472	2,347	2,828
New	95	29,646	19,391	13,620	2,684	2,425	2,770

¹ Age cohort refers to the year in which a facility became certified under the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982. Old facilities are defined as those certified before TEFRA was implemented (October 1983), middle facilities are those certified between October 1983 and September 1993, and new facilities are those certified between October 1993 and September 1997.

² Based on a sample of 185 facilities. From the original group of 203 U.S. facilities, this sample excludes 8 facilities with no Online Survey and Certification Reporting System (OSCAR) data, 9 facilities with no cost report data, and 1 facility with zero Medicare discharges in the cost reports.

NOTE: The statistics refer to facility-level averages; hence they do not reflect differences in the number of patients across facilities.

SOURCE: Health Care Financing Administration: Data from the OSCAR and Medicare claims data cost reports, 1997.

Differences in Costs by Certification Age

Under TEFRA payment rules, old (pre-October 1983) facilities' payment limits were determined by historical costs, while facilities certified after TEFRA implementation established their limits prospectively (and thus could influence them). We explore this issue by stratifying the LTCH specialty groups according to the facilities' date of certification.

Table 8 groups the LTCHs by their certification age and presents the median costs for accommodations and ancillary services. It also gives the costs for selected ancillary services. Total costs clearly differ by certification age; old LTCHs have the lowest median cost (\$20,673), about 60 percent that of middle LTCHs (about \$36,000) and two-thirds that of new ones (about \$30,000). Although the costs of accommodations for the old facilities are only 60 percent to 75 percent of the other two groups, the relative costs of ancillary services are most significant. The old LTCHs have a median ancillary cost of \$4,500, only one-third the cost for the other two age groups (about \$13,000).

For the specific ancillary services we examined—rehabilitation services, respiratory care, and pharmaceuticals—the greatest difference between the old

LTCHs and the middle and new facilities is the cost of respiratory care (\$250 versus \$2,400). In addition, pharmaceutical costs for the middle and new facilities are three to four times higher than these costs for old facilities. The smallest difference between old LTCHs and the other age groups is the cost for rehabilitation services, which increase more gradually with facility age (about \$1,000 for old, \$1,500 for middle, and \$2,700 for new LTCHs).

We further examined differences associated with certification age, by comparing costs within a specialty group by age cohort. Table 9 presents the median costs per discharge for these specialty groups. Although the median cost differences between age groups are about the same for each of the specialty groups, there are a few notable points. First, there is only one old LTCH in the respiratory specialty category. In contrast, there are 18 middle and 23 new LTCHs in this specialty group. Second, the respiratory specialty hospitals are generally costlier than the other specialty categories. The median total cost for the middle certification group (\$53,315) is the highest among respiratory specialty hospitals (as well as among the rehabilitation specialty and multispecialty categories). Third, the smallest differences in median costs by age are found among the rehabilitation specialty hospitals. Although

Table 9

Median Medicare Costs per Discharge of Long-Term Care Hospitals, by Specialty Group and Age Cohort¹: 1997

Specialty Group and Age Cohort	Facilities ²	Median Costs per Discharge		
		Total	Accommodation	Ancillary
Multispecialty	101	\$27,055	\$18,148	\$10,494
Old	18	20,460	15,623	4,500
Middle	30	33,822	21,698	11,398
New	53	28,567	18,894	12,148
Respiratory	42	43,949	26,725	17,713
Old	1	22,050	15,823	6,227
Middle	18	53,315	32,213	18,903
New	23	34,663	20,057	17,733
Rehabilitation	26	25,380	16,558	9,617
Old	5	23,178	15,924	6,397
Middle	5	30,506	20,016	10,490
New	16	29,121	18,376	10,054

¹ Age cohort refers to the year in which a facility became certified under the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982. Old facilities are defined as those certified before TEFRA was implemented (October 1983), middle facilities are those certified between October 1983 and September 1993, and new facilities are those certified between October 1993 and September 1997.

² Based on a sample of 169 facilities. From the original group of 203 U.S. facilities, this sample excludes 8 facilities with no Online Survey and Certification Reporting System (OSCAR) data, 9 facilities with no cost report data, 1 facility with zero Medicare discharges in the cost reports, and 13 facilities with fewer than 25 stays in the claims data. In addition, data for the 3 mental specialty facilities are not included in this table.

NOTE: The statistics refer to facility-level averages; hence, they do not reflect differences in the number of patients across facilities.

SOURCE: Health Care Financing Administration: Data from the OSCAR and Medicare claims data cost reports, and long-term care hospital claims, 1997.

the old rehabilitation specialty facilities do have lower accommodations and ancillary service costs than the middle and newer facilities, the difference is much less than that observed overall or in other specialty groups. For example, the difference in ancillary costs between old and new rehabilitation specialty facilities is only \$4,000, as compared with about \$9,000 when the LTCHs are not stratified by specialty (Table 8).

We expected to find differences in cost per discharge by age because TEFRA payment methodology limited old LTCHs to their historical costs while allowing middle and new facilities to establish prospectively base year targets. Partly for this reason, the newer facilities are able to focus on caseloads with respiratory system conditions, which are costlier than other medical problems. The old facilities are grouped primarily as rehabilitation specialty or multispecialty hospitals which, while providing care for respiratory system problems, do not have as high concentrations of such patients. The limited focus on respiratory

problems by old LTCHs is further demonstrated by their relatively low respiratory therapy costs.

DISCUSSION

LTCHs constitute a relatively small provider group in the Medicare program and have not been widely studied. Only limited information has been published about their characteristics in terms of types of patients served and resources used. Largely because of the loose criterion employed by Medicare to define qualifying hospitals, the LTCH classification can apply to a very heterogeneous population of facilities. This study was conducted to begin to elucidate the population of LTCHs and to help inform the development of prospective payment for these facilities under Medicare.

The major aim of this analysis was to identify and characterize LTCH specialty groups, to the extent that such groups existed. Prior anecdotal information suggests that some LTCHs evolved from

chronic disease facilities that served individuals whose care is only partially financed by Medicare (and more often financed by Medicaid for many years). Other information indicates that a large number of LTCHs were created to meet the needs of ventilator-dependent patients, who would otherwise remain in the intensive care units of acute care hospitals. Still other information suggests that some LTCHs serve many patients who have needs similar to those in Medicare-certified rehabilitation hospitals.

Based on the methodology that we employed, groups of LTCHs emerged that focus on individuals with respiratory system problems or on patients with rehabilitation needs. We also identified several LTCHs that have a concentration of patients with mental diseases and disorders. The majority of LTCHs in our sample could be classified only as multispecialty hospitals because their caseloads do not contain a dominant proportion of cases from the same MDC. Even among these multispecialty hospitals, however, most have a concentration of patients in the respiratory disease and rehabilitation groups.

The presence of distinct provider specialty groups compounds the challenge to develop Medicare prospective payment methodologies for these hospitals. In the short term, recognizing the types of patients that define particular specialty groups can help inform the development of case-mix classification systems. For example, our findings about the relatively high prevalence of patients with respiratory system problems and rehabilitation needs (consistent with other published and anecdotal information) in LTCHs indicate areas of particular importance for research on case-mix classification of LTCH patients.

In the longer term, information about the caseload concentration of the different groups of LTCHs can suggest other

avenues for addressing payment for LTCHs. For example, the few LTCHs with a concentration of patients with mental diseases and disorders might be considered in connection with Medicare-certified psychiatric hospitals, while the rehabilitation specialty LTCHs similarly might be viewed relative to Medicare certified rehabilitation hospitals. Our preliminary analysis of LTCH specialty groups is not sufficient, however, to determine whether particular LTCHs could be appropriately reclassified. Future research involving indepth comparisons of patient characteristics and care in LTCHs relative to other types of Medicare-financed providers is required before such policy options can be considered.

Understanding the role of LTCHs in post-acute care is particularly important because the LTCH PPS is being developed in a changing landscape of payment systems for all post-acute providers. For example, the SNF PPS was implemented in July 1998 and the BBA mandated that PPSs for rehabilitation hospitals and psychiatric hospitals be implemented in October 2001 and October 2002, respectively. In this dynamic environment, incentives created by each type of post-acute facilities' new payment system will affect the behavior of the targeted provider type, and likely also of other types of providers. Because there is some degree of patient overlap between LTCHs and other types of post-acute facilities, LTCHs will be affected not only by the LTCH PPS that is being developed but also by the PPS for other post-acute care providers.

In conclusion, this article presents initial statistics on LTCHs. Our aim was to begin describing the characteristics of this relatively small provider group and to identify features of these hospitals that could help inform the development of new Medicare payment policies. More research is needed on LTCHs and their patients, both to

meet the immediate congressional requirements that a PPS be established in the next few years and to consider how LTCHs should be viewed in the broader context of post-acute care services financed by Medicare.

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