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Long-Term Care Hospital (LTCH) Payment System Monitoring and Evaluation

Phase II Report

FINAL

Prepared for

Judy Richter, JD
Centers for Medicare & Medicaid Services
7500 Security Boulevard
Mail Stop C4-08-06
Baltimore, MD 21244

Prepared by

Barbara Gage, Ph.D.
Natasha Pilkauskas, M.P.P.
Kathleen Dalton, Ph.D.
Roberta Constantine, Ph.D.
Musetta Leung, Ph.D.
Sonja Hoover, M.P.P.
Jeremy Green, B.A.
RTI International
Health, Social, and Economics Research
Waltham, MA 02452

Scientific Reviewers:

Jerry Cromwell, Ph.D.
Doug Kamerow, M.D.

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Authors: Barbara Gage, Ph.D.
Natasha Pilkauskas, M.P.P.
Kathleen Dalton, Ph.D.
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Sonja Hoover, M.P.P.
Jeremy Green, B.A.

Project Director: Barbara Gage, Ph.D.

Scientific Reviewer: Jerry Cromwell, Ph.D.
Doug Kamerow, M.D.

Federal Project Officer: Judy Richter, JD

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EXECUTIVE SUMMARY

ES.1 Overview of the Project Purpose

This project, "Long-Term Care Hospital (LTCH) Payment System Refinement/ Evaluation," will assist the Centers for Medicare & Medicaid Services (CMS) in developing criteria for assuring appropriate and cost-effective use of LTCHs in the Medicare program. The Medicare Payment Advisory Commission (MedPAC) recommended that CMS examine patient and facility-level criteria to identify and distinguish the role of these hospitals as a Medicare provider. This project evaluated these criteria and scanned the environment to identify feasible options for implementing these types of measures. CMS has been particularly interested in the factors that distinguish LTCHs from other acute care hospitals.

ES.2 The Project Approach

RTI completed this project in two phases. In Phase I, RTI prepared a background report for CMS summarizing existing information regarding LTCHs' current role in the Medicare system: their history as Medicare participating providers, the types of patients they treat, the criteria Quality Improvement Organizations (QIO) currently use to review appropriateness of care in these settings, and the types of regulations they face as Medicare participating providers. This work reviewed prior analyses of these issues and included discussions with MedPAC, other researchers, CMS, the QIOs, and the hospital associations.

In Phase II, RTI collected additional information, including:

- An examination of tools currently used by the QIOs and the industry to assess patient appropriateness for admission;
- Analysis of claims to understand variations in the LTCH populations and differences between the LTCH populations and those treated in other acute hospitals, particularly those that received outlier payments for the longer stays;
- Administration of site visits at eight LTCHs and 1 acute hospital to interview providers regarding the differences between LTCH patients and those admitted to other hospitals or treated in parts of the country lacking LTCHs.

In recognition of the heterogeneity of LTCHs, RTI worked with each of the different associations, including the National Association of Long Term Hospitals (NALTH), the Acute Long Term Hospital Association (ALTHA), the American Hospital Association (AHA), and the American Medical Rehabilitation Providers Association (AMPRA) as well as several of the larger LTCH chains.

This report summarizes these efforts and makes recommendations to CMS regarding the types of criteria needed to distinguish LTCHs from other types of hospitals. These criteria will help define LTCH patients on the basis of patient care needs or different levels of care. They include both patient and facility-level measures. The report is organized in six sections:

- Section 1 summarizes the importance of, and the issues in, defining criteria for LTCH payments.

- Section 2 provides an overview of the industry growth in recent years and an analysis of whether these changes are occurring throughout all segments of the LTCH industry. Included with these analyses are findings from past work on these issues.

- Section 3 presents analyses of Medicare claims directed at understanding the differences in resources, costs, and outcomes for LTCH patients and similar cases treated in general acute hospitals.

- Section 4 focuses on existing level of care definitions and summarizes the tools currently used to make level of care determinations by QIOs, hospitals, and healthcare systems, including those criteria applied in areas with and without local LTCHs. Included are interviews with some of the Medicare QIOs as well as analysis of existing tools, such as the InterQual™ level of care determination tools.

- Section 5 presents RTI's analysis of hospital margins, both LTCH margins and general acute margins for certain types of cases. DRG-specific analysis examine the relationship between Medicare payments and hospital costs for certain types of cases.

- Section 6 presents RTI's recommendations for identifying cases that should qualify for LTCH payments. Fifteen recommendations are included which focus on patient-level characteristics, facility-level characteristics, issues related to creating consistent standards across acute hospitals for these medically complex patients, and additional administrative changes that would improve CMS' ability to implement their payment policies.

ES.3 Section Summaries

Section 1 Introduction

This section presents the importance of defining LTCH criteria to distinguish cases that qualify for the higher LTCH PPS payments. Information is presented that compares the LTCH and IPPS rates, case mix weights, and expected length of stay for each DRG. The two hospitals are very similar in that LTCHs must meet acute hospital certification requirements. However, LTCHs must have average Medicare LOS of more than 25 days to qualify for the higher PPS payment rate. The base LTCH payment rate is substantially higher than the IPPS rate ($38,086 compared to $5,308 in 2007). While both types of hospitals have payment factors to adjust for higher and lower cost cases, such as short stay and high cost outliers, the average cost episode is substantially higher when LTCHs are used as part of the episode.

This section also compares the certification requirements of LTCHs to other IPPS-excluded hospitals. The Medicare conditions of participation set staffing and patient management requirements for hospitals to ensure that appropriate care is provided. For the IPPS-excluded hospitals, these standards ensure that the provider can meet the specialized needs of the populations they are treating, such as those required by the acute physical rehabilitation or psychiatric populations.

Differences in expected patient severity, staff expertise, and case mix measurement methods used for LTCHs, IPPS, IRFs, Psychiatric hospitals, and SNFs are also presented. In general, the IPPS covers the most severely ill cases in their ICU, the LTCHs admit cases that are medically complex and equal to an ICU step-down unit in terms of intensity and higher staffing needs, IRFs admit cases that are less medically complex but highly acute in terms of their functional impairments. Psychiatric hospitals and skilled nursing facilities have the least medically complex admissions. The lines between each group are poorly defined.

Section 2 LTCH Availability

This section presents information on the changing supply of LTCHs. The number of LTCHs has grown markedly since the IPPS was established in 1983. Much of the growth has occurred since 1993 when the number of LTCHs exploded from 105 hospitals to the current number of 383 hospitals as of December 2005. The states with the highest number of facilities are also those with the highest number of Medicare beneficiaries, including Texas, Louisiana, Ohio, Pennsylvania, and Michigan to name a few. The number of states with LTCHs has continued growing as well. Many of the new hospitals are for-profit organizations which accounted for 58 percent of all hospitals in December 2005, up from 45 percent in 1996. The greatest growth was in the smaller hospitals with the opening of many hospital in hospitals, although this may be changing in response to Medicare co-location policies.

LTCH hospitals generally specialize in three types of populations. The majority of cases are medically complex, many of whom have respiratory conditions. A second, but smaller group are those admitted for rehabilitation services. And a smaller group are admitted for longer stay psychiatric services. Specialization in different cases is notable by looking at the distributions of cases admitted to each hospital. Respiratory-related, psychoses, and ventilator cases accounted for the highest proportion of admissions at most hospitals (averaging around 15 percent of all admissions/facility). However, the medians were much lower except in the case of ventilator admissions which accounted for 9.3 percent of admissions at half the LTCHs in the US. Also notable are the small proportion of hospitals that have a very high proportion of their cases in certain DRGs. For example, DRG 430: Psychoses accounts for 62 percent of admissions in a few of the LTCHs.

Section 3 LTCH Populations, Potential Substitutes, and Patient Differences Among Hospitals

This work has been useful for answering the questions identified in Section 1, specifically whether there are differences between LTCH cases and other inpatient cases in terms of the average program payments, beneficiary use levels, and individual outcomes. The first half of this section profiled the typical LTCH admission to examine the types of cases treated in LTCHs, their associated program costs, and this population's use of other services. The results showed that many of the types of patients treated in LTCHs are also treated in other acute care settings. While the most common LTCH admission is DRG 475, the majority of these cases, nationally are treated in IPPS settings, both as inlier and outlier populations. Similarly the second most frequent LTCH admission, DRG 249 is admitted as a non-outlier IRF patient or SNF patient almost as often as an LTCH patient.

LTCH patients also use many services during an episode of care. These cases are frequently readmitted to the general acute hospital (about 40 percent of the time) and may have intervening stays at IRFs or SNFs prior to readmission. Also included were comparisons of the

costs and use for patients in the same DRG groups who were treated at other types of inpatient settings. Average costs per case differed by type of setting.

The second part of this section examined the acute care admissions to identify differences between the types of cases likely to be admitted to an LTCH and other acute discharges in the same diagnostic and severity group. The multivariate analysis of this issue suggested that severity is an important predictor of LTCH use. This supports past work suggesting that LTCH cases have a higher severity level, although a large proportion are in APR-DRG group 3 as well as group 4. Being located in a state with a large number of LTCHs was the most important predictor of LTCH use, all else equal.

Examining the acute length of stay differences was also useful for understanding the relative role of general acute and LTCHs in treating these severely ill populations. The multivariate work showed that LTCH users have a shorter acute inpatient length stay. Understanding whether LTCH hospitals are substituting for services already paid to IPPS hospitals or whether LTCHs are providing specialized services is not well understood.

Better measures of acuity are needed to gauge the differences in medical or functional impairments between patients using LTCHs and those using other settings. Additional work in Phase 3 of this project will examine the discharge transitions for acute hospital discharges in areas that lack LTCHs. Using propensity score methods to match patients on diagnosis, severity, and additional factors as well as control for differences in the availability of services will be important for understanding the potential overlap between acute and LTCH admissions.

Section 4 Determining Levels of Care

This section examines current standards in the Medicare program and private sector for determining appropriate levels of care. We explored three areas: 1) Current Medicare certification rules governing acute, LTCH, IRF, and Psychiatric hospital conditions of participation; 2) QIO and private sector definitions of populations qualifying for different hospital and PAC sites of care; and 3) QIO's current roles in reviewing appropriateness of hospital admissions. This included interviewing 11 QIOs in states with both LTCHs and other PAC providers.

The Medicare certification rules are important because they set standards of practice to ensure appropriate quality of care is provided to Medicare beneficiaries. While LTCHs must meet the acute inpatient certification requirements, IRF and psychiatric hospitals have additional requirements governing the management of their patients and the types of staff they must employ. Both types of IPPS-excluded hospitals are required to have a physician in charge of an interdisciplinary team that includes professionals of varied backgrounds, specific to the respective types of patients. Nursing and therapy staff are expected to have relevant backgrounds in psychiatric or rehabilitation services, respectively. They are to be lead by a physician with "appropriate training" in the psychiatric hospital or "at least 2 years of rehabilitation training or experience" in the IRF.

They are also limited to admitting certain populations. All psychiatric admissions must be admitted for psychiatric conditions and must be actively treated or discharged. IRFs, on the other hand, can admit a wide range of rehabilitation populations but 50-75 percent must be treated for one of 13 groups of conditions or the IRF can lose its certification.

Patient level criteria were also examined. The Medicare program, in general, does not specify patient level criteria for LTCHs. IRF patients must be well enough to participate in 3

hours therapy/day, in general. Psychiatric patients must be actively treated and not just admitted for monitoring of a chronic condition. Both IRF and psychiatric patients must be improving from treatment or be discharged.

Primary responsibility for monitoring whether Medicare cases are admitted to appropriate facilities rests with the Quality Improvement Organizations (QIO). QIOs were interviewed regarding the tools they use to assess appropriate admissions. Their formal charge is to assess whether the services needed could be provided on a more economical basis in an alternative setting. However, they do not distinguish between types of acute settings.

The QIOS use several tools, although most use one developed by the private sector and used by several other insurers, the InterQual™ tool. This tool is a set of clinical algorithms intended to create mutually exclusive groups of cases for admission to different types of hospitals (acute, LTCH, IRF, psychiatric) as well as SNFs and ambulatory services, such as home health and less intensive psychiatric services. These tools are guidelines for these decisions with final decisions made by physicians or nurses, depending on how complicated a case may be. In general, the InterQual™ tool is a complex set of conditions and treatment needs that identify ICU cases, less intensive hospital cases, and other types of admissions. While this tool is widely used by QIOs, they have not been using it to distinguish between LTCH and general acute admissions nor do the criteria currently distinguish between those two groups.

Some members of the LTCH industry have proposed criteria for identifying their patients. However, these criteria lacked specificity in several areas and like the InterQual™ tool, failed to distinguish between general acute and LTCH admissions. However, they suggested that all LTCH cases should be medically complex, including any types of rehabilitation or psychiatric cases.

Other parts of the industry suggested that LTCH admissions be restricted to 8 types of cases commonly admitted to LTCHs. However, these proposals failed to distinguish severity within these conditions again, making no distinction between general acute and LTCH severity.

Site visits at eight LTCHs and one acute hospital with a respiratory ventilator unit were conducted to understand the providers' perceptions of appropriate admissions to these settings. Physicians at each site were interviewed regarding the differences between the patients they treated and those treated in an acute hospital ICU, medical/surgical floor, IRF, or SNF. The LTCH physicians perceived themselves as specialists in treating these very complicated patients. Many of the patients are having acute exacerbations of chronic respiratory conditions, multi-system organ failures, and other complications, including wounds and infections. The hospitals provide interdisciplinary treatment teams with nurse staffing levels that were lower than ICU but higher than general units in acute hospitals. Many had ICUs, particularly the free-standing facilities as patients often had emergent care needs, particularly if they were being weaned from a ventilator. The LTCHs consistently distinguished their admissions from ICU cases in that they only admitted medically stable patients. They perceived the acute hospitals' roles to be one of diagnosis and stabilization.

The acute hospital with a ventilator unit was very similar in practice to an LTCH but was paid under the IPPS system. This unit was a special unit where respiratory cases were admitted for higher levels of monitoring than was available on the general floor and interdisciplinary treatment teams cared for the patients. However, anecdotal concerns were also raised about the cost of caring for these difficult patients under the IPPS payment system.

Section 5 Medicare Margins Analysis

This section examined LTCH facility financial performance before and after the introduction of PPS. We found that aggregate facility total margins rose from 4.9% in FY 2002 to 8.9% in FY 2003, and Medicare inpatient PPS margins rose from 1.9% to 8.3% in the same period. In the first year of implementation, the inter-quartile range on LTCH PPS margins was -0.2% to +17.1%. Facilities paid under the phased-in rates and public LTCHs were disproportionately represented at the lower end of the distribution. Many facilities were able to improve their profitability by opting for 100% federal rates in year 2, indicating that the base rate was set at a generous level relative to average standardized cost per case.

Median facility PPS margins were highest among for-profits and highest for those certified in recent years. Margins were lower for those with a higher proportion of high-cost outliers. and — somewhat surprisingly — lower for those with a higher proportion of very short-stay outliers (stays less than one half the geometric mean LOS).

Case-level margin analyses were conducted for claims in FY 2003 and 2004 that were paid under the 100% federal rate. Margins varied substantially across DRGs, even after stratifying to remove the effects of high-cost or short-stay outlier prevalence. Across the 10 most common reasons for admission, average margins were lowest for those in Rehabilitation (-0.1%) and highest for those in Ventilator Support (21.3%). Across all cases the aggregate margin was 12.4%, but it was 17.4% for inlier cases, 13.8% for short-stay outlier cases and -14.3% for high-cost outlier cases. The variation in profitability across DRGs was even greater in multivariate models that were able to control for fixed hospital-specific effects as well as outlier status.

In fiscal 2004, the median margin for LTCH Ventilator Support cases was 23.1%. We found that in IPPS settings, the median for cases in that same DRG 475 was 13.1%. The mean 1.4%, indicating some cases had very large losses. There is an unusually large amount of within-DRG variation in the IPPS setting; among the roughly half of cases staying 10 days or less, the median margin was 42.6%, compared to negative 27.1% for those staying 10 days or more. IPPS margins were slightly lower for the Ventilator Support cases that transferred to LTCHs than for those with other discharge dispositions. Setting-specific profit differentials require further study using a complete episode-of-care file, to adjust for changes in DRGs across inpatient settings and to control adequately for possible patient selection effects.

We conclude that *underlying* high LTCH profitability stems from a generous base rate during the first two PPS years. However, substantial *variation* in profitability across DRGs – including the unusually high margins that we found for Ventilator cases and other respiratory-related DRGs – stems from bias in the DRG weights that causes systematic understatement of costs for cases using relatively more ancillary services. This is a design problem within LTCH-PPS that can only be addressed with improved cost-based weights.

Section 6 Recommendations for Identifying Appropriate LTCH Cases

Based on the findings in this report, this Section provides recommendations and discussions for developing patient level criteria, facility level criteria, creating more consistency between general acute and LTCH payment and certification rules, and several administrative issues related to LTCH identification methods. Complete discussions accompany each recommendation in Section 6.

A. Patient-Level Recommendations

***Recommendation 1*:** Restrict LTCH admissions to cases that meet certain medical conditions, including having a primary diagnosis that is medical in nature, not function or psychiatric, and meeting a certain level of medical complexity that reflects severely ill populations.

Recommendation 2: Require LTCH Admissions to be discharged if not having diagnostic procedures or improving with treatment, such as those receiving long term ventilator management.

Recommendation 3: Develop a list of criteria to measure medical severity for hospital admissions.

Recommendation 4: Establish a Technical Advisory Group.

Recommendation 5: Establish a data collection mechanism to collect this information.

Recommendation 6: Require LTCHs to collect functional measures as well as physiologic measures on all patients receiving physical, occupational, or speech and language pathology services.

B. Facility Level Recommendations

Recommendation 7: Standardize conditions of participation and set staffing requirements to ensure appropriate staff for treating medically complex cases.

Recommendation 8: Keep the 25 day average length stay requirement in place to limit LTCH's incentives to unbundle and clearly delineate between general and long term acute patients.

C. Recommendations to improve consistency between general acute and long term acute hospital payment and certification policies.

Recommendation 9: Allow LTCHs, like general acute hospitals, to open certified, distinct-part rehabilitation and psychiatric units if CMS finds that restricting LTCH admissions to the medically complex cases results in access problems for IRF or psychiatric patient populations.

Recommendation 10: Require LTCHs to meet the same regulatory restrictions as general acute hospitals by limiting their allowance to only one of each type of distinct-part unit.

Recommendation 11: Establish payment rules that provide a disincentive for LTCHs to transfer cases early to other post acute settings.

Recommendation 12: Conduct additional research to examine costs associated with different segments of an acute episode for medically complex patients. This should also include an examination of the IPPS margins for common types of LTCH cases.

D. Administrative recommendations.

Recommendation 13: Establish a provider identification code for satellite facilities and hospitals in hospitals (HIH).

Recommendation 14: Strengthen the requirement for parent facilities to report satellite locations by requiring them to be identified on the cost report.

Recommendation 15: Clarify QIO roles in overseeing appropriateness of admissions of LTCHS

SECTION 1
INTRODUCTION

1.1 Overview of the Issues

Long-Term Care Hospitals (LTCHs) are acute care hospitals that treat patients who, on average, are hospitalized more than 25 days. They are the only Medicare providers whose patient population definition is based on a length of stay (LOS) criterion rather than a diagnosis or measure of care intensity, such as inpatient nursing needs or homebound ambulatory status. LTCHs are certified as acute care hospitals but, unlike other acute care hospitals that specialize in certain populations, such as inpatient rehabilitation facilities (IRFs) or psychiatric hospitals, LTCHs' only certification requirement to distinguish them from other acute hospitals is that their average length of stay (LOS) is greater than 25 days. As a result, these hospitals treat a very heterogeneous group of patients. They may be specializing in patients with longer term medical, rehabilitation, or psychiatric needs, as long as the total Medicare inpatient population's LOS is, on average, longer than 25 days.

LTCHs have been expanding rapidly over the last 10 years although their availability varies widely across the nation. Because these are the highest paid hospitals in the Medicare program, questions have been raised about whether this increase is due to growing patient demand or industry response to generous payment policies (MedPAC, 2004). Second, in parts of the country that lack LTCHs, these same patients may be treated in more sophisticated acute hospitals, inpatient rehabilitation facilities, or psychiatric hospitals depending on the medical condition. This raises questions about the role of LTCHs and the factors or criteria that distinguish the need for LTCH-specific services. In areas that lack LTCHs, are patient outcomes adversely affected by the alternative mix of services? In areas that have LTCHs, are general acute hospitals inappropriately shifting patients to an alternative site of care?

These questions are particularly important for two reasons. First, payments for LTCH-type patients may differ dramatically depending on the site of care. The base payment rates for alternative provider types differ substantially and may lead to different payments per case even after outlier adjustments have been applied, depending on the type of provider the patient used. Understanding the extent to which payments vary by case will help CMS consider whether payment inequities are occurring, and if so, in relation to which populations. Second, if outcomes differ substantially for certain types of patients, access to appropriate care may be limited in areas of the country that lack LTCHs. While this question is more difficult to answer, it is key to understanding the impact of alternative service mixes on beneficiary care. Post-acute provider availability varies widely across the US. If patient outcomes are equal in parts of the country that use an alternative mix of services, and if Medicare costs per case are equivalent, then these variations are simply reflections of regional practice pattern differences. On the other hand, if outcomes or costs differ, it raises the question of whether adequate LTCH services are available where needed, or alternatively, if costs differ but outcomes are equivalent, it raises the question of whether higher cost LTCH services are needed for all types of cases currently treated, or more specifically, which types of patients benefit from the higher cost LTCH services. MedPAC's earlier work suggested these hospitals achieved better outcomes and program savings for selected patients such as those on ventilators. However, for other populations, outcomes were similar but program costs were higher for LTCH admissions (MedPAC, 2004).

This study builds on MedPAC's earlier work to examine differences in costs and outcomes for patients treated in these various settings. First, Medicare claims are analyzed to study admission rates, LOSs, and Medicare payments across settings for conditions common to LTCH admissions. This will identify the "typical" LTCH patient population and for the subset who may receive care in substitute settings, the difference in episode costs and outcomes controlling for the mix of settings used. Patients with conditions commonly treated in LTCHs are compared to similar patients treated in other acute inpatient settings for whom outlier adjustments are made.[1] Episode patterns of care are examined to study variations in the episode costs, mix of services used, and the outcomes achieved in different parts of the country.

Second, industry standards for defining levels of care among acute, inpatient providers are examined to understand how the acute ICU, LTCH, rehabilitation, and psychiatric providers perceive differences in their populations. Input from the providers themselves and the groups that review the appropriateness of their use (i.e., the Medicare quality improvement and the private sector utilization review organizations) is used to understand expected differences in level of care determinations (***Appendix A***). Admission criteria from the various institutions are used to compare the medical and functional acuity of patients admitted to different settings.

Third, various types of hospitals are interviewed or visited to understand differences in treatment practices across LTCHs and between LTCHs, IRFs, and acute hospitals with special programs, such as ventilator weaning units. LTCHs are selected to represent the range of hospital types, including hospital within hospitals, freestanding hospitals, and those that specialize in certain populations. The final set includes patients with some of the more common respiratory and infectious conditions, the medically complex, as well as those needing physical rehabilitation services. Referring hospitals, such as the host hospitals for some LTCHs, are also included to understand the perceived use of LTCHs in the healthcare continuum. This work builds on MedPAC's earlier study to identify the features that distinguish the more costly, higher level intensity of LTCH patients.

Fourth, Medicare cost reports are examined to assess the adequacy of Medicare payments for these higher cost populations. Payment to cost ratios are examined for different types of hospitals and patient populations. This analysis provides CMS information on the relative costliness of LTCH patients in each case mix group and in different acute care hospitals, including both general and long term care hospitals.

1.2 Defining Long-Term Care Hospitals

LTCHs are acute care hospitals and must meet the same certification requirements as other acute hospitals, particularly those formerly paid under the TEFRA provisions. In addition, to be certified as an LTCH the average LOS must be longer than 25 days. If the hospital meets the LOS criterion, it is paid under a different system than general short term acute hospitals. This has been true since 1983 when Medicare established the Inpatient Prospective Payment System (IPPS) and excluded certain facilities because their populations and costs differed from the "typical" IPPS admission (ProPAC, 1992). LTCH patients differed because the cases they treated had systematically longer LOSs, and therefore, higher average costs than others typically treated in the short term acute inpatient setting. However, no analyses were ever conducted to identify

[1] This work is similar to MedPAC's but the comparison group has been limited to the more intensive acute population receiving outlier payments, per discussions with MedPAC and CMS.

clinically homogeneous populations treated in these hospitals or to examine the relative costliness of these patients.

In contrast, other excluded hospitals, such as inpatient rehabilitation facilities, psychiatric, cancer, and children's hospitals were excluded because they treated certain types of patients whose costs and treatment patterns differed from the typical general acute hospital admission. The Medicare program used these population characteristics to develop coverage rules, hospital certification, and payment systems that reflected the cost variations among these types of cases and adjusted for severity within these respective conditions.

1.2.1 Medicare Excluded-Hospital Program Requirements

IRF Requirements. Medicare's coverage rules for an inpatient rehabilitation facility (IRF) admission restrict admissions to patients who are able to tolerate 3 hours of therapy up to 5 days a week (***Table 1-1***). This intensive level of physical medicine distinguishes this patient from one admitted to an LTCH or skilled nursing facility where they may also receive therapy; but both would provide more intensive nursing than physical therapy until the patient's strength grew to a level where they can tolerate 3 hours of therapy per day (Medicare Benefit Policy Manual, Chapter 1, Section 110). The IRF certification rules further require that 50 to 75 percent of all admissions in a facility or unit must be within 13 rehabilitation-related diagnoses (section 412.23 (b)(2)). Although this rule is criticized as not recognizing IRF case mix changes that occur as medical technology and other practice patterns evolve, the rule identifies a clear set of patients for whom IRFs are considered specialized providers. The rule is also broad enough to allow IRFs to treat a smaller number of other patients with potentially less intensive acute inpatient rehabilitation needs.

Medicare's payment rules for IRF admissions also recognize the differences between these patients and other hospital admissions. IRF payment rates adjust for the severity of medical *and* rehabilitation impairments treated in these hospitals. They are based on rehabilitation impairment categories that group patients by type of illness or injury. These rates are adjusted for the costliness of having certain comorbid complications and for differences in functional impairment levels. IRF staff generally have greater training in physical medicine and rehabilitation than those in acute hospitals, including the physiatrists, rehabilitation nurses, higher ratios of physical, occupational, and speech therapists to nursing staff, and the higher proportion of therapy aides who are not typically employed in acute hospitals.

Table 1-1
PAC provider comparison

	Acute Short Term	LTCH	IRF	Psychiatric
FACILITY CHARACTERISTIC				
Populations Treated	Acutely ill or injured Intensive Care Inpatient Surgical	Medically Complex Rehabilitation Psychiatric	Medically stable, primarily rehabilitation	Medically stable Psychiatric
Medicare Coverage	Acute	Acute	Acute Rehab Therapy: 3 hours/ day/5 days/week	Acute Psychiatric Harmful to self or others
HOSPITAL CERTIFICATION REQUIREMENTS				
TEFRA Hospital Provisions		**X**	**X**	**X**
Length of Stay (LOS) Criterion	None	25 days or longer	None	None
Type of Conditions	None	None	50-75 percent in 13 diagnostic groups	100 percent with MH primary diagnosis
Payment Systems				
PPS went into effect	1983	2002	2002	2005
Base Rate/Discharge/2007	$5,308	$38,086	$12,952	N.A. (Per Diem)
Case Mix Groups	DRG	DRG-LTCH	RIC-based CMG	DRG
Individual Adjusters	Surgery Complicating Comorbidities	Surgery Complicating Comorbidities	Functional Impairment Levels Complicating Comorbidities	Surgery Complicating Comorbidities
STAFFING				
Distinguishing Physician Specialties	Emergency Medicine Surgeons Internists	Pulmonologists Infectious Disease Internists	Physiatrists Internists	Psychiatrists Internists
OTHER KEY STAFF				
Nursing specialty	Medical Nurses	Medical Nurses Wound Care RN	Rehab Nurses Wound Care RN	Psychiatric Nurses
Secondary	Physical Therapists Occupational Therapists Speech Pathologists	Respiratory Therapists Physical/OT Therapists Speech Pathologists	Physical Therapists Occupational Therapists Speech Pathologists	

SOURCE: Based on RTI compilation of regulations and input from the provider industries.

Psychiatric Facility Requirements. Similarly, psychiatric hospitals are required to treat patients whose principal diagnosis is for a psychiatric condition (42 CFR 482.60). While they have no certification requirements specifying exact conditions to be treated, their patient population is defined by the need for certain types of treatments and personnel. These hospitals are required to have medical staff who are specially trained in psychological or psychiatric services, occupational therapy and recreational therapy (42 CFR 412.27). Many of their nurses also have special training in psychiatric nursing, although this is not required.

Acute Hospitals: LTCHs and Acute General Requirements. LTCHs have no coverage or certification requirements that distinguish their patient populations from general acute hospitals. They have a facility requirement that, on average, their Medicare inpatient stays must be longer than 25 days. Many LTCHs specialize in treating the medically complex patient who needs acute inpatient medical care for a longer period than the short term community hospital may have the capacity to provide. They also specialize in treating patients on ventilators, although acute hospitals also treat these patients in their intensive care units for limited periods. LTCHs, like some rehabilitation hospitals, specialize in weaning acute patients from ventilators. Unlike either ICUs or IRFs, LTCHs will treat the longer term ventilator patients who are too frail or physically compromised to be admitted to an IRF or whose on-going care requirements would limit the number of ICU beds available for trauma patients. In some parts of the country, after these longer term ventilator patients are medically stable, they may be transferred to nursing facilities for on-going monitoring and care.

While LOS clearly delineates differences between most short term acute hospital and LTCH admissions, the lines are less clear for short stay IPPS patients whose cases receive outlier adjustments. The distinguishing feature between these two types of admissions may be related to provider bed capacity rather than patient acuity. Similarly, the differences between LTCHs and other settings are less clear. Some argue that LTCH patients are more medically complex than those treated in IRFs or psychiatric hospitals. However, in the past, the LTCH industry also argued that these hospitals were authorized to treat the same patients using the same resources as IRFs. While these arguments arose prior to the change in Medicare payment policies, court rulings remain in place and raises questions regarding distinctions between rehabilitation patients in IRFs versus LTCHs, particularly given the difference in coverage rules, certification requirements, and per case payment levels. This argument is usually referring to less intensive LTCH admissions who could be treated in IRFs (if available). However, it may also apply to the less medically stable patient that some IRFs treat.[2] Similar arguments may exist for many of the Medicare psychiatric patients given the chronic nature of their illnesses. Since the only criterion for an LTCH certification is the average LOS, and psychiatric patients typically have longer episodes of acute illness, some LTCHs may look very similar to psychiatric hospitals. Yet, the base payment rates for these four types of hospitals are dramatically different. ***Table 1-2*** presents a draft of the potential differences in populations treated at each PAC provider.[3]

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2 The LTCH industry has argued that the medically unstable patient is an LTCH patient. However, some IRFs also accept these patients.

3 Long term care nursing facilities populations are presented in the last column to show where their cases may potentially be overlapping with hospital cases, although presumably not at the inpatient acute level of need.

Table 1-2
Possible distinctions between settings for select conditions

Type of Patient Care Needs	Acute Short-Term/ Outlier	LTCH	IRF	Psychiatric	SNF	LTC NF
Medical						
Medically unstable	X	Not usually	Not usually	No	No	No
Medically complex	X	X	Some	No	If stable	If stable
Ventilator weaning	X	X	Some	No	No	No
Ventilator management (failed weaning)		X		No	X	X
Physical Rehabilitation						
Orthopedic	Surgery	With medical complications	Acute	No	Subacute therapy continued	No
Neurological	Surgery	Acute all	Acute all	Acute Parkinson Alzheimer Dementia	Subacute medical monitoring Continued therapy	Nonacute Parkinson Alzheimer Dementia
Psychiatric						
Psychiatrically:						
Unstable	X Short stay	X Long stay	No	X Long stay		No
Stable	X	X	No	Maybe		X

SOURCE: Based on RTI compilation of regulations and input from the provider industries.

1.3 Medicare Case Mix and Payment System Variations Across PAC

LTCHs, short-term acute hospitals, IRFs, and psychiatric hospitals are all paid under prospective payment systems in the Medicare program. Most of these PPS went into effect during the last few years. Base payments for each PPS are tied to respective average historical payments (***Table 1-3***).4 Averaging historical payments by type of provider minimizes the inequities of moving to nationally standard payment rates and allows the budget neutrality factor to reflect payments to each specific type of hospital. For example, the LTCH base rate of $38,086 in 2007 reflects the historically higher payments to LTCHs relative to general acute hospitals with their base rate of $5,309.

Table 1-3
Base payment rates for IPPS, IRF, and LTCH PPS, fiscal year 2007

Short Stay[a]	$5,308.59
Inpatient Rehabilitation Facility	$12,952.00
Long-Term Care Hospital	$38,086.04

NOTE [a] Indicates rate for large urban hospitals. The rate includes operating and capital standardized payments.

SOURCES: Federal Register, 42 CRF Part 405, 412, and 413.

Adjustments to the base rates also differ across these PPS to reflect variation in cost factors among different types of patients. Some facilities receive adjustments for shorter stay patients, transfers, or interrupted stays, although the impact and definition of these adjustments also differs across each PPS.

Each PPS uses a different case mix system to adjust for patient severity and costliness. These systems capture cost differences through two components. The more general category is the nature of the illness or diagnostic condition being treated. This can be modified by a measure of intensity or severity of illness within conditions. In the Medicare program, the PPSs for LTCH, general acute, and psychiatric hospital admissions use the same diagnosis-related groups (DRGs) to identify condition-specific case mix groups. However, the payment systems weight each DRG differently to adjust for condition-specific differences in intensity in each provider population (***Table 1-4***).[5] In most cases, the higher LTCH base rate is offset by lower LTCH weights than are assigned to the IPPS case.

Table 1-4 also shows the difference in average LOS between short term and long-term acute hospital admissions for each DRG. In general, these LOS differences are substantial and demonstrate the different use of the average short term general hospital and LTCHs. However, by design, 43 percent of the LTCH admissions are much shorter than the geometric mean LOS.

4 Psychiatric hospitals are paid on a prospective per diem system.

5 Psychiatric DRG weights are omitted from this table since only a few are relevant.

While LTCHs may treat some patients who are similar to IRF admissions, IRFs are paid under a completely different PPS that uses both a different base rate and a different case mix adjustment system than acute or LTCH systems. The IRF case mix groups are based on rehabilitation impairment categories (RIC) that reflect both medical and physical rehabilitation needs. Like the DRGs in the other three payment systems, RICs are based on groups of ICD-9 codes. These rates are adjusted by certain comorbidities, functional impairment scores, and age in some cases, as well as other case and facility-level factors. The base rate for IRF payments is tied to the average of historical, facility-specific IRF payments in 2002 when the PPS went into effect. Despite the potential similarity in patients, no comparisons were ever made between average payments for similar patients treated in IRFs versus those treated in LTCHs. While these two types of admissions may differ in those parts of the country that have both types of hospitals, they may be serving as substitute providers in other parts of the country that lack LTCHs. Like the general acute PPS, the IRF PPS includes an outlier policy for higher cost cases, often based on longer stays.

Table 1-4
DRG relative weights for the top 50 LTCH DRGs in acute and LTCH hospitals, FY2007

DRG[a]	Diagnostic Related Group (DRG) Name	FY2007 Relative Weight		FY2007 Geometric Mean LOS	
		Acute	LTCH	Acute	LTCH
475	Respiratory System Diagnosis With Ventilator Support	3.83	# N/A	7.9	# N/A
249	Aftercare, Musculoskeletal System & Connective Tissue	0.82	0.64	2.8	24.0
271	Skin Ulcers	1.24	0.83	5.6	26.9
12	Degenerative Nervous System Disorders	1.01	0.68	4.4	25.1
87	Pulmonary Edema & Respiratory Failure	1.53	1.03	4.9	24.8
462	Rehabilitation	1.58	0.58	8.4	22.1
88	Chronic Obstructive Pulmonary Disease	0.96	0.64	4.0	19.3
89	Simple Pneumonia & Pleurisy Age >17 W Cc	1.13	0.68	4.6	20.6
79	Respiratory Infections & Inflammations Age >17 W Cc	1.73	0.82	6.7	22.8
466	Aftercare W/O History Of Malignancy As Secondary Diagnosis	0.78	0.67	2.7	21.7
416	Septicemia Age >17	1.83	# N/A	5.7	# N/A
263	Skin Graft &/Or Debrid For Skn Ulcer Or Cellulitis W Cc	2.27	1.27	8.3	38.0
127	Heart Failure & Shock	1.06	0.68	4.1	21.2
316	Renal Failure	1.35	0.83	4.8	22.9
430	Psychoses	1.23	0.40	5.9	23.1
418	Postoperative & Post-Traumatic Infections	1.19	0.80	4.7	24.1
277	Cellulitis Age >17 W Cc	1.00	0.61	4.5	20.9
238	Osteomyelitis	1.55	0.86	6.5	28.4
76	Other Resp System O.R. Procedures W Cc	2.74	2.40	8.2	42.5
144	Other Circulatory System Diagnoses W Cc	1.38	0.77	4.2	22.1
452	Complications Of Treatment W Cc	1.14	0.93	3.5	25.7
130	Peripheral Vascular Disorders W Cc	1.06	0.65	4.3	22.8
320	Kidney & Urinary Tract Infections Age >17 W Cc	0.95	0.62	4.1	21.7
188	Other Digestive System Diagnoses Age >17 W Cc	1.18	0.96	4.1	24.4
296	Nutritional & Misc Metabolic Disorders Age >17 W Cc	0.90	0.71	3.6	22.3
415	O.R. Procedure For Infectious & Parasitic Diseases	4.14	# N/A	11.0	# N/A

(continued)

Table 1-4(continued)
DRG relative weights for the top 50 LTCH DRGs in acute and LTCH hospitals, FY2007

DRG[a]	Diagnostic Related Group (DRG) Name	FY2007 Relative Weight		FY2007 Geometric Mean LOS	
		Acute	LTCH	Acute	LTCH
468	Extensive O.R. Procedure Unrelated To Principal Diagnosis	3.81	2.15	9.6	40.5
182	Esophagitis, Gastroent & Misc Digest Disorders Age >17 W Cc	0.90	0.79	3.4	21.8
217	Wnd Debrid & Skn Grft Except Hand, For Muscskelet & Conn Tiss Dis	3.14	1.24	9.0	36.5
465	Aftercare W History Of Malignancy As Secondary Diagnosis	0.62	0.69	2.5	21.2
294	Diabetes Age >35	0.86	0.70	3.3	23.9
463	Signs & Symptoms W Cc	0.77	0.61	3.1	22.9
461	O.R. Proc W Diagnoses Of Other Contact W Health Services	1.54	1.15	3.3	32.7
483	No Longer Valid	0.00	# N/A	0.0	# N/A
82	Respiratory Neoplasms	1.43	0.82	5.1	21.4
126	Acute & Subacute Endocarditis	2.55	0.89	9.0	26.3
34	Other Disorders Of Nervous System W Cc	1.03	0.70	3.6	23.4
243	Medical Back Problems	0.87	0.60	3.6	22.3
120	Other Circulatory System O.R. Procedures	2.31	1.09	6.0	31.4
256	Other Musculoskeletal System & Connective Tissue Diagnoses	0.96	0.71	3.9	23.6
269	Other Skin, Subcut Tiss & Breast Proc W Cc	1.88	1.21	6.0	34.7
172	Digestive Malignancy W Cc	1.46	0.85	5.1	21.8
287	Skin Grafts & Wound Debrid For Endoc, Nutrit & Metab Disorders	2.04	1.04	7.6	33.0
20	Nervous System Infection Except Viral Meningitis	2.76	# N/A	8.0	# N/A
331	Other Kidney & Urinary Tract Diagnoses Age >17 W Cc	1.16	0.78	4.2	22.5
101	Other Respiratory System Diagnoses W Cc	0.91	0.81	3.2	22.2
429	Organic Disturbances & Mental Retardation	0.96	0.53	4.4	24.0
440	Wound Debridements For Injuries	2.01	1.22	5.6	34.4
14	Intracranial Hemorrhage Or Cerebral Infarction	1.25	0.68	4.3	24.9
204	Disorders Of Pancreas Except Malignancy	1.17	0.89	4.1	22.1

NOTES: [a]DRGs sorted in descending order by frequency in LTCH claims.

SOURCE: Centers for Medicare and Medicaid Website

http://www.cms.hhs.gov/AcuteInpatientPPS/FFD/itemdetail.asp?filterType=none&filterByDID=-99&sortByDID=2&sortOrder=ascending&itemID=CMS061850 (2007 acute weights)

http://www.cms.hhs.gov/LongTermCareHospitalPPS/06_ltcdrg.asp (2007 LTCH weights)

Similarly, LTCHs may treat psychiatric patients with longer LOSs. In 2005 Medicare converted psychiatric hospitals to a PPS that was largely based on the existing acute DRG system. However, the base rate for this payment system is tied to the average of historical, facility-specific, *psychiatric* hospital payments. Again, the difference between payments for patients under this system versus the LTCH PPS was never examined.

To the extent that these providers form a continuum of patient acuity (and associated resource intensity), their payments should differ. While the argument has been made by the industry that LTCHs are providing an intensive specialized service, these providers are not available in all regions of the country and less expensive alternative services may be provided in areas that lack LTCHs. The total episode costs for treating certain subsets of LTCH-like patients may not be less expensive, however, and the outcomes may be poorer as a result of not being admitted to an LTCH, but this is as yet, unknown. Past work began to examine these issues but did not go far enough to distinguish severity differences among settings. This work addresses the basic issue of level of care differences between LTCHs and:

- Acute hospitals that keep certain patients longer and receive an outlier payment for them,
- Inpatient Rehabilitation Facilities that treat acute level rehabilitation patients,
- Psychiatric hospitals where the primary diagnosis is psychiatric, and
- Skilled nursing facilities where certain SNFs may provide subacute medical services as follow-up to acute hospital discharges in areas that lack LTCHs.

Underlying these issues is a need to define levels of intensity and medical complexity that can distinguish between the patients' different levels of care. These issues are complicated by differences within conditions that may lead to distinctions between medical and functional intensity. These and other issues will be discussed in addressing the need for better criteria to distinguish LTCHs from other types of acute-level Medicare participating providers.

1.4 Level of Care Definitions

In its 2004 Report to Congress, MedPAC recommended developing a set of patient-level and facility-level characteristics for distinguishing LTCH cases from other types of hospital admissions. The patient-level criteria they suggested include the following:

- National admission and discharge criteria
- Clinical complexity measured as a need for minimum level of nursing care
- Patient mix and severity that could ensure that LTCHS are treating patients who are severely ill at admission as evidenced by diagnostic categories and appropriate severity measures.

They also recommended facility-level criteria, such as national, standardized:

- Patient review processes

- Patient assessment tools
- Mandated levels of daily physician availability
- Multidisciplinary treatment teams
- Average Medicare LOS greater than 25 days.

These types of criteria are useful for considering mutually-exclusive groups of patients that vary by intensity or medical complexity. To the extent that LTCH patients are more medically complex with multiple system failures and other complicating conditions underlying the primary diagnosis, they are distinguishable from IRF and psychiatric hospital admissions. While they may closely resemble acute ICU step-down patients, their expected LOSs distinguish them from the typical short-term hospital admission. However, clinically there may be few differences.

Much of the information on patient acuity is available through existing information systems or can be developed through discussions with the industries and through review of their current regulations. For example, most providers agree that nursing hours vary by hospital programs and program standards developed by the Joint Council on Accreditation of Healthcare Organizations (JCAHO), the Commission on Accreditation of Rehabilitation Facilities (CARF) and other hospital accrediting bodies. The exact levels may not be distinctive but they provide a starting point for clinical standards to be developed. Many of these criteria are already used by utilization review managers in hospitals and the insurance industry. Other factors may be available through existing patient management sources, such as assessment forms used by the different providers. For example, hospitals use a battery of measures to monitor vital signs, respiratory conditions, heart arrhythmias, and other factors that can trigger the need for more intensive medical care. While the tools used by hospitals to collect this information may vary, many of the items on the tools are fairly standard. For example, acute hospitals participating in Medicare's quality initiative are collecting information on blood cultures and the use of antibiotics for patients with pneumonia or surgical infection that could document patient acuity. In addition, many acute hospitals use patient acuity measurement systems, such as the APACHE system to document more intensive acuity measures, such as blood gasses and respiratory rates. Similarly, these patients are likely to have multidisciplinary teams monitoring their care. However, the extent to which one physician is monitoring the treatments of other team members will vary by hospital, and likely by the degree of specialization within a hospital, although these types of requirements are included in some of the conditions of participation for other former TEFRA hospitals, such as the IRFs and psychiatric facilities.

MedPAC recommended using the Medicare program's Quality Improvement Organizations (QIOs) to determine appropriateness of LTCH admissions. These organizations are mandated to determine whether a patient needs to be admitted to an acute hospital, and whether the services could be provided on a more economical basis in an alternative setting, including a different type of inpatient health care facility (42 CFR 476, "Utilization and Quality Control Review"). However, their current manual restricts their role to reviewing whether a patient requires any acute inpatient care rather than the specific type of acute inpatient care (CMS QIO memo, 2004). Their role could be expanded by directing them to determine the type of inpatient care and requiring them to review higher numbers of LTCH admissions. However, this would

also require greater resources. Understanding the role QIOs currently play in monitoring LTCHs and any potential additional roles will be important for understanding the cost implications of defining appropriate care in LTCHs.

This report builds on MedPAC's earlier work to examine the feasibility of using these types of criteria, the healthcare industry's current practices for measuring severity and level of care needs, and the types of issues that need to be considered in distinguishing LTCH payments from those made to other settings.

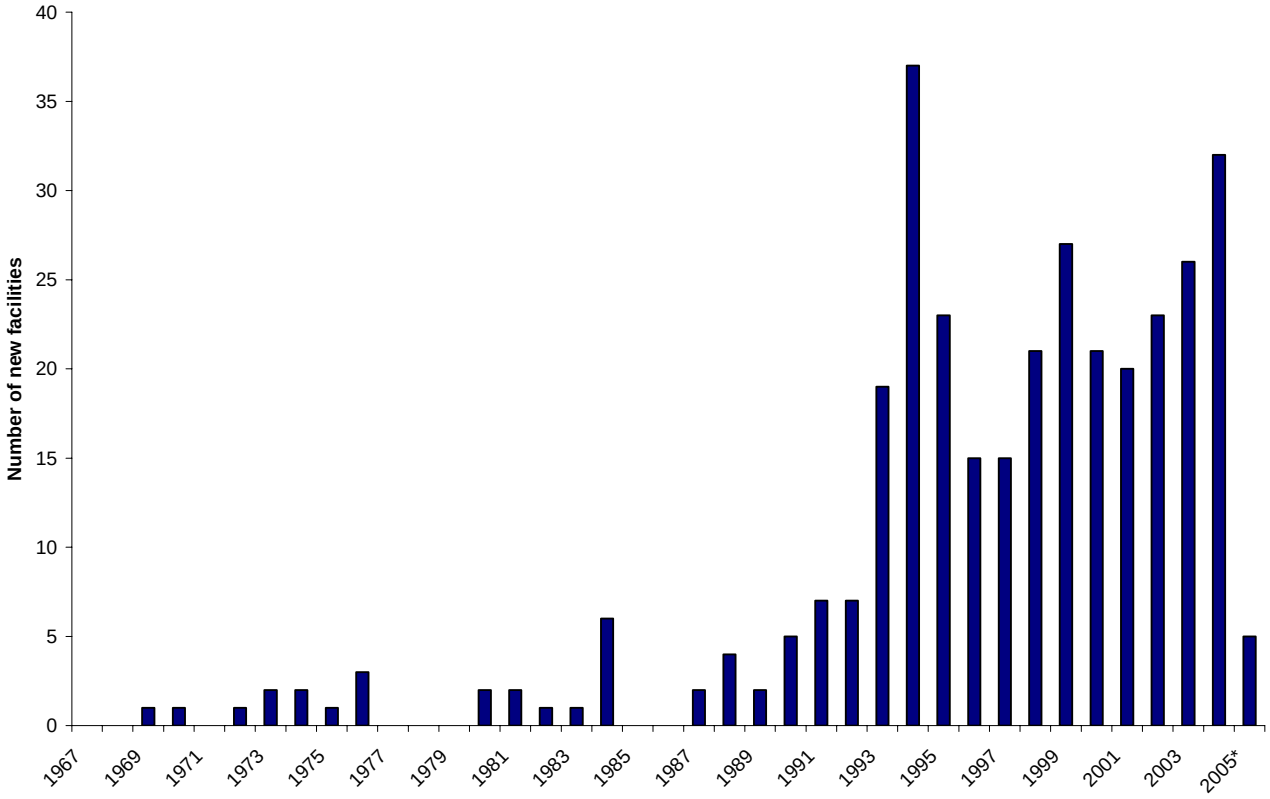
SECTION 2
LONG-TERM-CARE HOSPITAL AVAILABILTY

LTCHs have participated in the Medicare program since its inception providing care to the chronically ill. The types of patients they treat and the services they provide have evolved from tuberculosis and polio specialists to specialists in high technology ventilator care. These changes have occurred as technologies improved and the healthcare system, in general, evolved. Today, this is a very heterogeneous mix of providers and patients. While all LTCHs treat longer-stay patients (most of whom are medically complex), these cases, and the resources required to treat them, range across many diagnoses. This section describes the types of hospitals certified as LTCHs as of March 2005.

2.1 Growth in the Number of LTCHs

The number of LTCHs has increased markedly since the implementation of the IPPS in 1983 although much of this growth has been within the past decade (See ***Figure 2-1***). While the number of all types of post acute-care providers exploded during the 1990s, LTCHs grew the most rapidly (Gage, Bartosch and Green, 2006).

Figure 2-1
New facilities, January 1967–March 2005



NOTE: *2005 count of newly established LTCHs includes only those facilities registered in the POS during the first 3 months of the year.
SOURCES: CMS long-term care hospital list, January 2004 and Provider of Services (POS) file as of March 2005.

In 1993, there were 105 LTCHs; this number climbed to 318 by 2003, amounting to an average growth rate of 12 percent a year. Today, the number of Medicare-certified LTCHs has nearly quadrupled from 1993 to 383 (as of December 2005).

2.1.1 Shifting Geographic Distribution

Long-term care hospitals are not uniformly available across the nation. Rather, there is a high concentration of LTCHs in the northeast and southern parts of the nation (***Figure 2-2***). The two states with the highest number of LTCHs are Texas and Louisiana (***Table 2-1***). Texas accounts for the highest number of facilities in the nation, (17.4 percent or 63 LTCHs) and is followed by Louisiana which has 11.3 percent or 41 hospitals.[6] While both states have been growing rapidly, the number of hospitals in Louisiana grew by 2.5 times since 1996 while Texas only doubled the number of their hospitals from 34 to 63 during this time period.

Many of the other states with large numbers of LTCHs are those that have large Medicare populations, including Pennsylvania (6.4 percent of all LTCHs), Ohio (5.5 percent) and Michigan (4.9 percent). Each of these states are experiencing high growth in the number of LTCHs, with Michigan showing the highest growth from 2 to 18 hospitals opening during the past decade. Other high growth states include Georgia, Indiana, and Oklahoma.

The availability of LTCHs in various states has shifted over time. Massachusetts used to have the third highest number of LTCHs, accounting for over 10.8 percent of all LTCHs in 1996, but has declined to account for only 4.1 percent today. The absolute number of LTCHs in Massachusetts has dropped from 20 to 15 and continues to decline as hospitals continue to terminate their LTCH certification due to LOS constraints. California, on the other hand, also experienced a decline in the share of LTCHs they have, accounting for only 3.5 percent today, having dropped from 5.4 percent in 1996. However, the absolute number of LTCHs has continued increasing in California. Florida also dropped in importance representing only 3.0 percent of today's LTCHs, down from 5.9 percent in 1996. Their absolute number of hospitals, however, has remained fairly constant (11 hospitals). These changing shares largely reflect the expanding availability of LTCHs in other states.

Figure 2-2 highlights the regional variation in the availability of LTCHs and other substitute providers. The map is divided into hospital referral regions (Dartmouth Atlas, 2005) and shows the availability of LTCHs, IRFs, and psychiatric hospitals in each short term hospital referral region.[7] As noted earlier, LTCH hospitals are predominantly in the northeast and southern states. The western part of the nation have them scattered throughout several smaller areas, such as Nevada and Utah but relatively few LTCHs are on the west coast. Instead psychiatric and rehabilitation hospitals are more common in the west, north central parts of the U.S.

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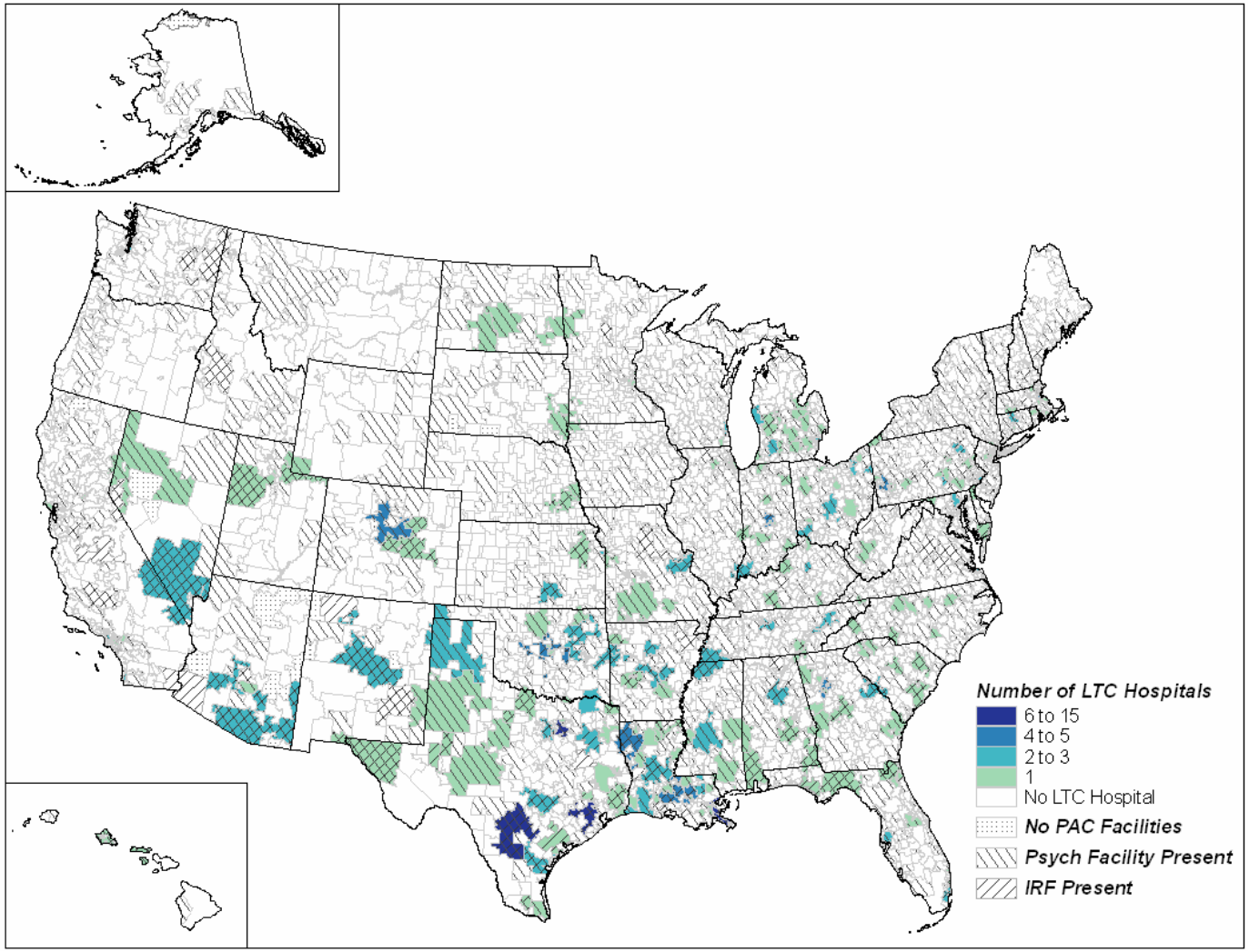
6 The number of LTCHs in Louisiana may have declined by the end of FY 2005 due to Hurricane Katrina.

7 SNFs are found in every market and for simplicity sake, were omitted from the maps.

Figure 2-2
Number of Long-Term Care Hospitals and Presence of a Psych Facility or IRF by Hospital Service Area, 2005



SOURCE: Medicare POS files, March 2005.

Table 2-1
Growth patterns of top 10 LTCH states in 2005

	Percent of LTCHs		Number of Facilities	
High States	1996	2005	1996	2005
Texas	18.5 percent	17.4 percent	34	63
Louisiana	9.2	11.3	17	41
Ohio	2.2	5.5	4	20
Pennsylvania	3.3	6.3	6	23
Michigan	1.1	4.9	2	18
Indiana	4.3	4.4	8	16
Massachusetts	10.8	4.1	20	15
Georgia	2.7	4.1	5	15
Oklahoma	3.3	3.6	6	13
California	5.4	3.5	10	13

SOURCE: RTI analysis of Medicare POS files, March 2005.

2.1.2 Changes in Ownership

LTCHs have also changed in terms of their ownership. While the for-profit hospitals have always accounted for the majority of LTCHs, the number of for-profit hospitals more than doubled between 1996 and 2002 (***Table 2-2***). By 2005, these hospitals accounted for 58 percent of all LTCHs, up from 45 percent in 1996. The number of non-profit hospitals also increased during this period although their share remained around one third of all LTCHs, growing slightly to 34 percent in 2005. In contrast, government-owned hospitals declined dramatically from 46 in 1996 to 30 in 2005. These hospitals dropped from 25 percent to only 8 percent of the LTCHs in 2005.

Table 2-2
Growth in LTCHs, 1996-2005

	Number of Hospitals						
Year	NFP	(percent)	For Profit	(percent)	Government	(percent)	Total
1996	55	30 percent	83	45 percent	46	25 percent	184
2002	85	29	168	59	33	12	286
2005	122	34	211	58	30	8	363

SOURCE: RTI Analysis of March 2005 POS files (BBAR046)

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2.1.3 Changes in the Size of LTCH Facilities

LTCHs have also changed in terms of the size of these facilities. LTCHs of all sizes, except the very largest (200+ beds) grew in absolute numbers.[8] The greatest growth was in the number of smaller hospitals (1-49 beds) that accounted for 21 percent of all LTCHs in 1993 but grew to 80.0 percent of those that entered the program between 2002-2005 ***(Table 2-3).***

Table 2-3
LTCH bed size by Medicare entry date

	Medicare Entry Date			
	Pre-1983	1983-1993	1993-2002	2002-2005
1 - 49 beds	11.8 percent	20.8 percent	70.9 percent	80.0 percent
50 - 99 beds	14.7	54.2	18.0	17.3
100 - 149 beds	20.6	12.5	6.3	2.7
150 - 199 beds	17.7	6.3	2.4	0.0
200 or more beds	35.3	6.3	2.4	0
TOTAL	100.0 percent	100.0 percent	100.0 percent	100.0 percent

SOURCE: RTI analysis of Medicare POS files, March 2005.

2.2 Hospitals within Hospitals (HwHs) and Satellite Hospitals

During the 1990s, LTCHs evolved in terms of their organizational arrangements. Unlike other hospitals in the Medicare program, LTCHs can not be established as subprovider units because they are defined solely by a LOS. During the mid-1990s, however, LTCHs began developing hospitals within hospitals (HwH) . Almost 75 percent of all HwHs were established between 1993 and 2002 (***Table 2-4***). Hospitals within hospitals must meet all the certification requirements of other acute hospitals but they can be co-located with other providers, such as another hospital or in one or more entire buildings on the same campus as buildings used by another hospital (42 CFR 412.).

[8] Many of the larger, older facilities specialize in treating certain populations. For example, Barlow Hospital in California specializes in treatment and research of respiratory patients while Craig Hospital in Colorado specializes in spinal cord injuries and neuromuscular disorders.

Table 2-4
Medicare entry date by hospital within hospital (HwH) status

Entered Medicare	Hospital-within-Hospital	Non-HwH LTCHs
Prior to 1983	0.6 percent	15.9 percent
1983 to 1993	5.1	19.3
1993 to 2002	74.	43.5
2002 to 2005	19.9	21.3
TOTAL	100.0 percent	100.0 percent

NOTE: Fiscal intermediaries identified one additional satellite and six additional HwHs that were certified after March of 2005. These facilities are excluded from this table.

SOURCE: RTI analysis of Medicare POS files, March 2005.

HwHs are typically smaller than freestanding facilities. Over 82 percent of them were less than 50 beds in 2005 (***Table 2-5***). These hospitals typically have more Medicare patients than the older facilities specializing in respiratory care (MedPAC, 2003). They account for 43 percent of all hospitals and almost half of the for-profit LTCHs (***Table 2-6***).[9]

Table 2-5
LTCH bed size by hospital within hospital status

	Hospital-within-Hospital	Non-HwH LTCHs
1 - 49 beds	82.7 percent	44.0 percent
50 - 99 beds	12.2	30.0
100 - 149 beds	2.6	11.6
150 - 199 beds	0.6	6.3
200 or more beds	1.9	8.2
TOTAL	100.0 percent	100.0 percent

NOTE: Fiscal intermediaries identified one additional satellite and six additional HwHs that were certified after March of 2005. These facilities are excluded from this table.

SOURCE: RTI analysis of Medicare POS files, March 2005.

[9] These trends may be changing as LTCHs respond to the 25 percent rate which limits their admissions from their co-located or host hospitals to 25 percent of their total census.

Table 2-6
LTCH ownership by hospital within hospital status

Ownership Control	ALL	Hospital-within-Hospital	Non-HwH LTCHs
Not-for-Profit	33.6 percent	41.8 percent	58.2 percent
For-Profit	58.1	48.8	51.1
Government	8.3	6.7	93.3
TOTAL		43.0 percent	57.0 percent

NOTE: Fiscal intermediaries identified one additional satellite and six additional HwHs that were certified after March of 2005. These facilities are excluded from this table.

SOURCE: RTI analysis of Medicare POS files, March 2005.

Satellite Hospitals. Satellite hospitals function similarly to HwHs, but unlike HwHs, they are "part of a hospital that provides inpatient services in a building also used by another hospital" (42 CFR 412.22(h)). Functionally, satellites are very similar to HwHs except they can meet the LTCH requirements of separateness in a different location. While HwHs have their own Medicare provider number, satellite facilities share a provider number with their parent hospital that may be on a different campus making them difficult to identify. However, hospitals are required to report their satellite facilities to the FI (42 CFR 412.24(e)). Both freestanding LTCHs and HwHs can create a satellite facility by sharing space in a building used by another hospital or in one of more entire buildings located on the same campus as buildings used by another hospital. As shown in ***Table 2-7***, both satellite LTCH and HwHs must also meet certain additional certification criteria.

Table 2-7
Definition of hospital within hospital and satellite LTCHs

Hospitals within Hospitals (HwHs)	Satellite LTCHs
An HwH is a hospital that occupies space in a building also used by another hospital, or in one or more separate buildings located on the same campus as buildings used by another hospital. HwHs must meet the following criteria:	A satellite facility is a part of a hospital that provides inpatient services in a building also used by another hospital, or in one or more entire buildings located on the same campus as buildings used by another hospitals. Satellite LTCHs must meet the following criteria:
1) It must have a separate governing body, chief medical officer, medical staff, and chief executive officer.	1) It cannot be under control of the governing body or chief executive officer of the hospital in which is it located, and it furnishes inpatient care through the use of medical personnel who are not under the control of the medical staff or chief medical officer of the hospital in which it is located. 2) For the most recent costs reporting period beginning October 1, 1997, the hospitals number of State-licensed and Medicare-licensed beds (including beds in satellite facilities) cannot exceed the number of beds on the last day of the hospital's last cost reporting period beginning before October 1, 1997. 3) It must maintain separate admission and discharge records from the hospital in which it is located. 4) Its beds must be physically separate from the beds of the hospital in which it is located. 5) It must be served by the same fiscal intermediary as the hospital of which it is part.

(continued)

Table 2-7 (continued)
Definition of hospital within hospital and satellite LTCHs

Hospitals within Hospitals (HwHs)	Satellite LTCHs
	6) It must be treated as a separate cost center of the hospital of which it is a part.
	7) It must use an accounting system that properly allocates costs and maintains statistical data to support the basis of allocation.
	8) It must report its costs on the cost report of the hospital of which it is a part, covering the same fiscal period and using the same method of apportionment as the hospital of which it is a part.

NOTES: [a]For the same period of at least six months used to determine compliance the LTCHs LOS criteria.

SOURCE: Code of Federal Regulations, 42CFR412.22(e) and (h), Excluded hospitals and hospital units: General Rules, Hospitals-within-Hospitals and Satellite Facilities, October 1, 2004.

HwHs and satellites are limited in the proportion of patients that can be referred to them from their co-located hospital. Beginning on October 1, 2004, no more than 75 percent of a HwH's or satellite LTCH's admitted patients can be admitted from the LTCH's co-located facility. Payments for any HwH/Satellite LTCH patients exceeding the threshold are subject to payment adjustments. Beginning October 1, 2005, the threshold will be based on the lesser of 75 percent or the percentage admitted from the host during the previous year. The allowable percentage will then drop to 50 percent on October 1, 2006 and 25 percent on October 1, 2007 (or the percentage from the previous year, whichever is lower). Outlier patients are not included in determining whether an HwH or satellite LTCH exceeds its threshold, and CMS made special considerations for rural hospitals, single hospitals within an MSA, and MSA dominant hospitals (42 CFR 412.535).

2.3 Variation in Populations Associated with LTCH Types

As LTCHs changed in structure, size, availability, and ownership, their levels and types of specialty services also evolved. Some of the population differences are associated with facility characteristics.

2.3.1 Old TB and Chronic Disease Hospitals

The original LTCHs were established prior to the IPPS that went into effect in October of 1983. The majority of these facilities began as tuberculosis and chronic disease hospitals.

They treated patients with chronic conditions who needed inpatient level acute care but who were not likely to be discharged from the acute hospital within a couple weeks. While these hospitals still treat these more complex cases, many also provide a range of other services specializing in infections, rehabilitation therapy, and other services.

2.3.2 Facilities Specializing in Respiratory Care

A large, homogeneous group of LTCHs entered the market between October of 1983 and the mid-1990s. These hospitals specialized in respiratory care and many were part of a single

large chain (Liu et al., 2001). They were smaller than the old tuberculosis and chronic disease facilities, with most having between 25 and 99 beds each.

The payer mix in these new hospitals differed from the older hospitals. Approximately 70 percent of admissions to LTCHs specializing in respiratory care are Medicare patients. In contrast to the older facilities that serve a large proportion of Medicaid patients, Medicaid only accounted for 8 percent of the patients treated in these newer facilities (MedPAC, 2003).

Respiratory patients, particularly those requiring ventilator-related support or other pulmonary treatments, are also frequently treated in the older long-term care hospitals established between 1983 and 1993 (Liu, et al., 2001). These patients fall largely into two diagnostic related groups – respiratory diagnosis with ventilator support and tracheotomy with mechanical ventilation. In fact, a diagnosis of tracheotomy is the strongest predictor of LTCH use (MedPAC 2003) although these cases represent a small proportion of LTCH admissions.

Other common diagnoses of pulmonary patients treated in LTCHs include chronic obstructive pulmonary disease, pneumonia, respiratory failure, amyotrophic lateral sclerosis (Lou Gherig disease), and Guillain-Barre syndrome (Select Medical Corporation, 2004).

2.3.3 Rehabilitation

Many LTCHs also specialize in providing comprehensive medical care with rehabilitation services such as those provided by physical and occupational therapists and speech language pathologists. Diagnoses that fall into this group include cerebrovascular accidents, spinal cord injury, cerebral hemorrhage, neurological disorders, head injury, anoxic brain injury, joint replacement and trauma (Select Medical Corporation, 2004). LTCHs maintain that these patients often cannot undergo the three hours of intensive rehabilitation therapy a day needed to be admitted to inpatient rehabilitation facilities (IRF) or they require a degree of nursing and respiratory care that is not available in most acute rehabilitation programs. Others argue that many of these cases are similar to those treated in IRFs in areas of the country that have IRFs.

2.3.4 Other Complex Cases

While most LTCHs serve a high percentage of respiratory or rehabilitation patients, or both, some LTCHs provide services to other complex cases including those requiring cancer treatment, pain management and psychiatric care (Liu, et al., 2001). Other complex cases include those diagnosed with acute and sub-acute endocarditis, amputation, skin graft and wound debridement, and osteomyelitis; all of which are strong predictors of LTCH use (MedPAC 2003).

Medically complex patients tend to require more specialized care including intensive therapies and nursing care (Select Medical Corporation, 2004). These complex cases may include multisystem failure, neuromuscular damage, contagious infections and complex wounds needing extended care (MedPAC 2004). Congestive heart failure, uncontrolled diabetes, HIV/AIDS, renal failure and methicillin resistant staphylococcus aureus are also treated in some LTCHs (Select Medical Corporation, 2004). In general, LTCH patients tend to have several diagnoses on their Medicare claims and approximately 50 percent have five or more diagnoses (House of Representatives, 2004).

2.4 Specialization in Certain DRGs.

Table 2-8 is useful for examining the degree to which LTCHs are specializing in any particular condition or sets of conditions. For example, on average psychiatric conditions (DRGs 426, 427, 428, 429, and 430), represent 8.7 percent of all cases in an LTCH. However, the median percent is less than one (0.4 percent) suggesting that half of all the LTCHs have less than one percent of their cases admitted for psychiatric diagnoses. However, these cases represent almost half (44 percent) the admissions in the top 5 percentile of the provider distributions.

DRG 462 (Rehabilitation) accounts for 8.3 percent of all admissions in a provider, on average, but may range from 5.1 percent in half the hospitals to 68.2 percent of all cases in at least one hospital. The respiratory-related DRGs (79, 87, 88, and 89) account for approximately 15 percent of all providers' admissions. These cases may range as high as 100 percent in some hospitals. Similarly, wound-related patients may account for a sizeable proportion within a hospital, ranging from 10 percent to 41.5 percent. However, DRG 217: Wound Debridement appears to be a relatively small proportion of LTCH admissions compared to the other skin conditions.

Ventilator patients (DRG 475) are the third largest group and account for 12.3 percent of admissions, on average and over 9 percent of admissions in half the hospitals. Twenty-five percent of all LTCHs have 16.6 percent of their admissions in this DRG and at least one hospital specialized in only these cases in 2003.

Table 2-8
Degree of LTCH specialization in certain DRGs

		Percent of All Cases in a Provider				
DRGs	Condition	Mean	Median	75th	95 percent	100 percent
415, 416, 418	Infection	5.9	5.2	7.7	19	23.5
416	Septicemia	3.5	2.8	4.4	8.7	23.5
426, 427, 428, 429, 430	Psychiatric	8.7	0.4	4	44.9	73.3
429	Organic/MR	2.4	4.2	1.2	11.9	60
430	Psychoses	14.5	4.8	25.8	61.8	62
209, 210	Rehab	0.6	0.4	0.6	2.8	2.8
249	Aftercare, Musculosketal	4.6	2.5	5.9	14.5	50
462	Rehabilitation	8.3	5.1	10.3	27.5	68.2
79, 87, 88, 89	Respiratory	15.9	14.3	19.9	32.7	100
263, 271, 217, 277	Wound	10.1	8.8	13.2	24	41.5
217	Wound Debridement	1	0.7	1.2	3.1	6.4
263	Skin Graft	3.2	2.2	4.1	8.3	32.4
271	Skin Ulcers	5.3	4.3	6.8	13.3	27.1
483	Tracheostomy	1.5	0.9	1.8	4.7	8.5
475	Ventilator	12.3	9.3	16.6	34.5	100

SOURCE: RTI analyses of 2003 MedPAR claims.

2.5 Niche Facilities

While most LTCHs specialize in respiratory, infection, and rehabilitation services, some niche LTCHs serve unique patient populations or provide uncommon services. These facilities include LTCHs serving prison populations. Others provide psychiatric care, while others provide non-psychiatric services for mentally handicapped persons or focus on developmentally disabled children and younger adults.

While some niche LTCHs are large facilities with over 350 annual discharges, they represent a small number of LTCHs. The vast majority of LTCHs specialize in patients with medically complex conditions, many of whom have respiratory conditions or other complex types of conditions.

SECTION 3
LTCH POPULATIONS, POTENTIAL LTCH SUBSITUTES, AND PATIENT DIFFERENCES AMONG HOSPITALS

A key question in this study is how to differentiate patients requiring the level of care provided in LTCHs from those who could be treated in less expensive settings. This section of the report presents Medicare claims analyses that examine differences between the LTCH populations and those treated in other acute settings, such as general acute hospitals, inpatient rehabilitation facilities, psychiatric hospitals, and subacute settings, such as skilled nursing facilities. First, descriptive statistics are presented on the most common types of LTCH admissions and their relative frequency of admissions to other settings. Data on their relative share within each setting and across the various settings are presented. Average payments and length of stay in each site are also discussed.

Second, a more in-depth analysis of the 50 most common types of LTCH admissions is presented. Data on their demographic characteristics, medical severity, and resource use are presented for all LTCH admissions and stratified by whether they were among the 80 percent admitted from a prior acute hospital or the 20 percent who were admitted from home and other sources. Also included are DRG-level analysis of the proportion of LTCH cases that were previously hospitalized, high cost outliers in the prior acute stay, or short stay outliers in the LTCH stay.

Third, LTCH admissions are compared to general acute hospital cases in the same DRGs with an APR-DRG severity of 2, 3 or 4. This subset of acute patients is used to identify the sicker populations within each DRG. These acute cases are likely to be the most similar to LTCH cases in terms of severity of illness. The acute population is stratified by whether they used an LTCH. Differences in the patient characteristics, service utilization patterns, average payments per user, and expected outcomes, such as readmission rates are presented. The section concludes with a multivariate analyses of the factors predicting LTCH use and readmission rates. Models predicting average length stay in the acute hospital are also presented to examine whether LTCHs act as substitutes for general acute hospital stays.

3.1 Data and Methods

This section is based on analysis of 100 percent MedPAR records for CY2004, including the acute short stay, LTCH, IRF, Psychiatric, and SNF records. The episodes also include payments and use associated with home health services.

Samples were restricted to cases with a discharge DRG among the top 50 LTCH DRGs. These samples were further restricted to those with a severity of index score of 2 or greater. Acute outlier claims were identified by having an outlier payment amount greater than “0”.

Episodes were constructed to include 180 days of potential use beginning with admission to the index hospital. Two sets of index stays were developed – general acute admissions and LTCH admissions. The index, or qualifying admission for each sample, reflected the first day of the episode. Claims that had an admission date within 180 days of the index admission were

included. Service use may have been less than 180 days and episodes may include some unrelated service use. However, any service within 180 days is included for standardizing the analytic sample costs and use.[10]

Descriptive statistics are presented on each of the analytic samples. The first set profiles the LTCH admission, their severity, and their use of other services prior and subsequent to being admitted to the LTCH. The second set profiles the acute hospital patient, particularly the more severely ill case and stratifies them by whether they use LTCH services to identify the factors that predict LTCH use, the marginal cost difference of using LTCH services, and differences in hospital readmission rates for the two subsets of IPPS discharges. OLS regressions are used to predict these differences while controlling for conditions, severity, supply of services and other factors.

3.2 Who Uses LTCHs?

3.2.1 Do LTCH Populations Overlap with Admissions to Other Settings?

Table 3-1 shows the 50 most common DRGs admitted to LTCHs in 2004 and their relative ranking in other settings. The top five types of admissions illustrate the heterogeneity of the population treated in these facilities and their relative importance as admissions to other facilities. The most common LTCH admission, DRG 475: Respiratory System Diagnosis with Ventilator Support is also quite common in the general acute hospital, ranking third among the acute outlier cases and 16th among the non-outlier acute cases. DRG 249:Aftercare, Musculoskeletal System and Connective Tissue is the second most common LTCH admission and among the top 12 most frequent IRF admissions, both outlier and non-outlier cases. The third most frequent LTCH admission, DRG 271: Skin Ulcers, is ranked high among the SNF admissions (18th in volume) and fairly high (among the top 75 admissions) in IRFs (both outlier and non-outlier populations) and among the top 100 acute non-outlier admissions. DRG 012, the fourth most frequent LTCH admission, is also commonly admitted to both IRFs (non-outlier and outlier cases) and psychiatric hospitals, ranking 3rd, 8th, and 3rd, respectively.

While the relative ranking shows the importance of types of cases within a facility type, the absolute number of cases admitted to each type of facility accounts for differences in relative facility use. The number of cases admitted to LTCHs may be dwarfed by the number of the same type of cases admitted to other settings (***Table 3-2)***. For example, DRG 475 accounts for 11 percent of all LTCH admissions and only 1.2 percent of the acute non-outlier admissions but almost 40 percent more cases are admitted to acute hospitals as non-outlier cases than to LTCHs (18,727 v. 13,397). Similarly, among DRG 249: Aftercare, Musculoskeletal System, almost

[10] This is based on discussions with MedPAC who recommended using the 180 day period and restricting the acute analytic sample to only cases with an outlier payment. This subset of high cost cases was used in the bivariate analysis. The multivariate analysis was based on all acute admissions in one of the select DRGs but controlled for severity.

Table 3-1
DRG frequency by provider type-all DRGs, 2004

DRG		Ranking in Descending Order by Count						
		LTCH	Acute Outlier	IRF Outlier	IRF Non-Outlier	Psych	Acute Non-Outlier	SNF
475	: Respiratory System Diagnosis With Ventilator Support	1	3	73	180	79	16	203
249	: Aftercare, Musculoskeletal System & Connective Tissue	2	186	11	9		82	9
271	: Skin Ulcers	3	151	53	62	108	78	18
12	: Degenerative Nervous System Disorders	4	92	3	8	3	31	2
87	: Pulmonary Edema & Respiratory Failure	5	58	16	41	93	38	16
462	: Rehabilitation	6	247	1	1	45	266	1
88	: Chronic Obstructive Pulmonary Disease	7	60	12	11	28	5	7
89	: Simple Pneumonia & Pleurisy Age >17 w CC	8	30	62	21	26	4	9
79	: Respiratory Infections & Inflammations Age >17 w CC	9	21	38	58	60	14	41
466	: Aftercare w/o History of Malignancy As Secondary Diagnosis	10	247	34	20	86	338	17
416	: Septicemia Age >17	11	4	43	59	50	7	22
263	: Skin Graft &/or Debrid for Skn Ulcer or Cellulitis w CC	12	57	73	239	156	68	204
127	: Heart Failure & Shock	13	10	20	16	34	2	5
316	: Renal Failure	14	18	34	47	36	12	11
430	: Psychoses	15	145		160	1	10	8
418	: Postoperative & Post-Traumatic Infections	16	101	68	76	118	65	60
277	: Cellulitis Age >17 w CC	17	97	43	48	68	23	36
238	: Osteomyelitis	18	163	43	57	189	133	54
76	: Other Resp System O.R. Procedures w CC	19	16		210	108	54	224
144	: Other Circulatory System Diagnoses w CC	20	29	27	28	71	21	37
452	: Complications of Treatment w CC	21	90	85	69	93	83	102
130	: Peripheral Vascular Disorders w CC	22	81	13	12	93	26	24
320	: Kidney & Urinary Tract Infections Age >17 w CC	23	73	62	56	19	11	20
188	: Other Digestive System Diagnoses Age >17 w CC	24	45	53	46	71	36	51
296	: Nutritional & Misc Metabolic Disorders Age >17 w CC	25	50	85	55	24	8	33
415	: O.R. Procedure for Infectious & Parasitic Diseases	26	5		221	189	33	213
468	: Extensive O.R. Procedure Unrelated To Principal Diagnosis	27	8	53	143	43	42	223
182	: Esophagitis, Gastroent & Misc Digest Disorders Age >17 w CC	28	41	48	43	43	9	25

(continued)

Table 3-1 (continued)
DRG frequency by provider type-all DRGs, 2004

DRG		Ranking in Descending Order by Count						
		LTCH	Acute Outlier	IRF Outlier	IRF Non-Outlier	Psych	Acute Non-Outlier	SNF
217	: Wnd Debrid & Skn Grft except Hand Muscskelet & Conn Tiss Dis	29	39	48	131	189	77	207
465	: Aftercare w History of Malignancy As Secondary Diagnosis	30	400	85	88		436	125
294	: Diabetes Age >35	31	99	73	60	38	27	12
463	: Signs & Symptoms w CC	32	216	8	10	37	66	14
461	: O.R. Proc w Diagnoses of Other Contact w Health Services	33	205	2	15		293	134
483	: Tracheostomy except for Face, Mouth & Neck Diagnoses	34	2	73	221	132	24	
82	: Respiratory Neoplasms	35	65	68	50	108	85	57
126	: Acute & Subacute Endocarditis	36	124	85	144		175	140
34	: Other Disorders of Nervous System w CC	37	121	6	14	20	60	29
243	: Medical Back Problems	38	113	9	6	55	19	15
120	: Other Circulatory System O.R. Procedures	39	28	85	163	132	58	204
256	: Other Musculoskeletal System & Connective Tissue Diagnoses	40	240	53	31	132	158	32
269	: Other Skin, Subcut Tiss & Breast Proc w CC	41	117		239		149	236
172	: Digestive Malignancy w CC	42	77	85	44	132	120	64
287	: Skin Grafts & Wound Debrid for Endoc, Nutrit & Metab Disorders	43	134	108	215		186	228
20	: Nervous System Infection except Viral Meningitis	44	95	21	53	68	143	92
331	: Other Kidney & Urinary Tract Diagnoses Age >17 w CC	45	64	40	80	93	51	66
101	: Other Respiratory System Diagnoses w CC	46	194	108	83	82	100	82
429	: Organic Disturbances & Mental Retardation	47	215	53	103	2	67	6
440	: Wound Debridements for Injuries	48	120	85	239		172	230
14	: Specific Cerebrovascular Disorders except TIA	49	20	4	4	30	3	27
204	: Disorders of Pancreas except Malignancy	50	44	85	101	79	52	79

SOURCE: RTI analysis of MedPAR files, 2004 (Gage166).

Table 3-2
Top 50 LTCH DRGS, discharges by provider type, 2004

		LTCH		Acute Outlier		IRF Outlier		IRF Non-Outlier		PSYCH		Acute Non-Outlier		SNF	
DRG		Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
475	: Respiratory System Diagnosis With Ventilator Support	13,397	10.79%	7,072	4.63%	3	0.02%	12	0.00%	9	0.00%	18,727	1.25%	48	0.01%
249	: Aftercare, Musculoskeletal System & Connective Tissue	6,084	4.90%	70	0.05%	56	0.35%	5,152	1.06%	.		3,725	0.25%	9,014	
271	: Skin Ulcers	5,834	4.70%	126	0.08%	6	0.04%	315	0.07%	5	0.00%	4,005	0.27%	5,482	1.41%
12	: Degenerative Nervous System Disorders	5,637	4.54%	332	0.22%	244	1.54%	6,183	1.28%	30,326	6.26%	10,915	0.73%	20,521	5.28%
87	: Pulmonary Edema & Respiratory Failure	5,083	4.09%	630	0.41%	37	0.23%	626	0.13%	6	0.00%	10,070	0.67%	6,445	1.66%
462	: Rehabilitation	5,026	4.05%	25	0.02%	12,714	80.47%	326,514	67.40%	29	0.01%	414	0.03%	35,354	9.09%
88	: Chronic Obstructive Pulmonary Disease	4,894	3.94%	619	0.41%	48	0.30%	3,936	0.81%	61	0.01%	36,904	2.47%	10,336	2.66%
89	: Simple Pneumonia & Pleurisy Age >17 w CC	4,807	3.87%	1,295	0.85%	5	0.03%	1,543	0.32%	67	0.01%	46,085	3.08%	9,014	2.32%
79	: Respiratory Infections & Inflammations Age >17 w CC	4,574	3.68%	1,780	1.17%	11	0.07%	351	0.07%	15	0.00%	20,474	1.37%	2,604	0.67%
466	: Aftercare w/o History of Malignancy As Secondary Diagnosis	4,542	3.66%	25	0.02%	12	0.08%	1,897	0.39%	7	0.00%	159	0.01%	6,358	1.63%
416	: Septicemia Age >17	4,309	3.47%	6,028	3.95%	9	0.06%	330	0.07%	21	0.00%	33,524	2.24%	4,810	1.24%
263	: Skin Graft &/or Debrid for Skn Ulcer or Cellulitis w CC	3,867	3.11%	671	0.44%	3	0.02%	1	0.00%	2	0.00%	4,710	0.32%	47	0.01%
127	: Heart Failure & Shock	3,765	3.03%	3,346	2.19%	28	0.18%	2,701	0.56%	49	0.01%	76,314	5.10%	15,121	3.89%
316	: Renal Failure	2,406	1.94%	2,032	1.33%	12	0.08%	489	0.10%	45	0.01%	23,458	1.57%	8,258	2.12%
430	: Psychoses	2,336	1.88%	138	0.09%	.		21	0.00%	351,746	72.64%	29,366	1.96%	9,594	2.47%
418	: Postoperative & Post-Traumatic Infections	2,033	1.64%	305	0.20%	4	0.03%	219	0.05%	4	0.00%	5,161	0.35%	1,333	0.34%
277	: Cellulitis Age >17 w CC	1,936	1.56%	318	0.21%	9	0.06%	488	0.10%	12	0.00%	13,145	0.88%	2,956	0.76%
238	: Osteomyelitis	1,844	1.48%	108	0.07%	9	0.06%	378	0.08%	1	0.00%	2,041	0.14%	1,858	0.48%
76	: Other Resp System O.R. Procedures w CC	1,793	1.44%	2,137	1.40%	.		4	0.00%	5	0.00%	5,976	0.40%	15	0.00%
144	: Other Circulatory System Diagnoses w CC	1,619	1.30%	1,326	0.87%	16	0.10%	1,219	0.25%	11	0.00%	15,113	1.01%	2,814	0.72%
452	: Complications of Treatment w CC	1,606	1.29%	340	0.22%	2	0.01%	259	0.05%	6	0.00%	3,660	0.24%	537	0.14%
130	: Peripheral Vascular Disorders w CC	1,435	1.16%	383	0.25%	47	0.30%	3,363	0.69%	6	0.00%	11,971	0.80%	4,509	1.16%
320	: Kidney & Urinary Tract Infections Age >17 w CC	1,409	1.13%	457	0.30%	5	0.03%	392	0.08%	133	0.03%	25,663	1.72%	4,852	1.25%
188	: Other Digestive System Diagnoses Age >17 w CC	1,307	1.05%	893	0.58%	6	0.04%	506	0.10%	11	0.00%	10,129	0.68%	2,055	0.53%
296	: Nutritional & Misc Metabolic Disorders Age >17 w CC	1,233	0.99%	847	0.55%	2	0.01%	402	0.08%	77	0.02%	31,491	2.11%	3,082	0.79%
415	: O.R. Procedure for Infectious & Parasitic Diseases	1,076	0.87%	4,754	3.11%	.		2	0.00%	1	0.00%	10,712	0.72%	34	0.01%
468	: Extensive O.R. Procedure Unrelated To Principal Diagnosis	1,050	0.85%	3,659	2.40%	6	0.04%	32	0.01%	30	0.01%	8,404	0.56%	18	0.00%

(continued)

Table 3-2 (continued)
Frequency of top 50 LTCH DRGs in other settings, 2004

DRG		LTCH		Acute Outlier		IRF Outlier		IRF Non-Outlier		PSYCH		Acute Non-Outlier		SNF	
		Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
468	: Extensive O.R. Procedure Unrelated To Principal Diagnosis	1,050	0.85%	3,659	2.40%	6	0.04%	32	0.01%	30	0.01%	8,404	0.56%	18	0.00%
182	: Esophagitis, Gastroent & Misc Digest Disorders Age >17 w CC	998	0.80%	1,017	0.67%	7	0.04%	585	0.12%	30	0.01%	30,556	2.04%	4,161	1.07%
217	: Wnd Debrid & Skn Grft except Hand, for Muscskelet & Conn Tiss Dis	956	0.77%	1,053	0.69%	7	0.04%	43	0.01%	1	0.00%	4,016	0.27%	42	0.01%
465	: Aftercare w History of Malignancy As Secondary Diagnosis	889	0.72%	1	0.00%	2	0.01%	143	0.03%	.		23	0.00%	346	0.09%
294	: Diabetes Age >35	879	0.71%	309	0.20%	3	0.02%	328	0.07%	38	0.01%	11,869	0.79%	7,662	1.97%
463	: Signs & Symptoms w CC	747	0.60%	38	0.02%	80	0.51%	4,140	0.85%	43	0.01%	5,095	0.34%	6,802	1.75%
461	: O.R. Proc w Diagnoses of Other Contact w Health Services	718	0.58%	50	0.03%	1,137	7.20%	2,987	0.62%	.		306	0.02%	299	0.08%
483	: Tracheostomy except for Face,Mouth & Neck Diagnoses	710	0.57%	7,979	5.22%	3	0.02%	2	0.00%	3	0.00%	12,632	0.84%	.	
82	: Respiratory Neoplasms	631	0.51%	533	0.35%	4	0.03%	444	0.09%	5	0.00%	3,592	0.24%	1,530	0.39%
126	: Acute & Subacute Endocarditis	615	0.50%	203	0.13%	2	0.01%	31	0.01%	.		1,225	0.08%	264	0.07%
34	: Other Disorders of Nervous System w CC	611	0.49%	205	0.13%	93	0.59%	3,034	0.63%	117	0.02%	5,465	0.37%	3,537	0.91%
243	: Medical Back Problems	603	0.49%	252	0.16%	76	0.48%	10,460	2.16%	19	0.00%	16,587	1.11%	6,609	1.70%
120	: Other Circulatory System O.R. Procedures	598	0.48%	1,377	0.90%	2	0.01%	20	0.00%	3	0.00%	5,503	0.37%	47	0.01%
256	: Other Musculoskeletal System & Connective Tissue Diagnoses	513	0.41%	27	0.02%	6	0.04%	871	0.18%	3	0.00%	1,558	0.10%	3,107	0.80%
269	: Other Skin, Subcut Tiss & Breast Proc w CC	502	0.40%	246	0.16%	.		1	0.00%	.		1,739	0.12%	8	0.00%
172	: Digestive Malignancy w CC	466	0.38%	440	0.29%	2	0.01%	543	0.11%	3	0.00%	2,379	0.16%	1,240	0.32%
287	: Skin Grafts & Wound Debrid for Endoc, Nutrit & Metab Disorders	428	0.34%	165	0.11%	1	0.01%	3	0.00%	.		1,072	0.07%	14	0.00%
20	: Nervous System Infection except Viral Meningitis	422	0.34%	322	0.21%	24	0.15%	424	0.09%	12	0.00%	1,830	0.12%	655	0.17%
331	: Other Kidney & Urinary Tract Diagnoses Age >17 w CC	404	0.33%	542	0.35%	10	0.06%	179	0.04%	6	0.00%	6,761	0.45%	1,180	0.30%
101	: Other Respiratory System Diagnoses w CC	397	0.32%	60	0.04%	1	0.01%	171	0.04%	8	0.00%	2,992	0.20%	808	0.21%
429	: Organic Disturbances & Mental Retardation	394	0.32%	39	0.03%	6	0.04%	105	0.02%	39,877	8.23%	4,910	0.33%	12,381	3.18%
440	: Wound Debridements for Injuries	386	0.31%	208	0.14%	2	0.01%	1	0.00%	.		1,242	0.08%	13	0.00%
14	: Specific Cerebrovascular Disorders except TIA	384	0.31%	1,821	1.19%	139	0.88%	11,573	2.39%	59	0.01%	63,535	4.25%	3,894	1.00%
204	: Disorders of Pancreas except Malignancy	378	0.30%	897	0.59%	2	0.01%	111	0.02%	9	0.00%	6,699	0.45%	825	0.21%
			87.37%		37.64%		94.32%		81.24%		87.34%		43.73%		57.20%

SOURCE: RTI analysis of MedPAR files, 2004 (Gage166).

50 percent more cases are admitted to SNFs than to LTCHs (9,014 v.6,084). And among skin ulcer patients, almost as many cases are admitted to SNFs as to LTCHs (5,482 v. 5,834). While the severity levels may differ across settings, these differences will not explain the sizeable overlap in site of care choices. For example, DRG 012: Nervous System Disorders accounts for 4.5 percent of all LTCH admissions (5,637 cases) but almost 5.5 times as many cases are admitted to psychiatric hospitals (30,326 admissions) and almost twice as many were treated in acute hospitals without outlier payments (10,915 cases).

Table 3-3 is useful for seeing the variation in these admission rates to different sites of care. While LTCHs treat a wide range of cases, the majority of their types of cases are treated in alternative settings. For example, LTCHs only treat 34 percent of all DRG 475 cases while the acute hospitals treat 18 percent as outliers and 48 percent as non-outlier cases. It is interesting to note, in general, how few of all cases are admitted to LTCHs relative to other settings. The only types of cases where LTCHs treat over 35 percent of all cases are DRG 271: Skin Ulcers (37 percent), DRG 263: Skin Grafts (41.6 percent), and DRG 465: Aftercare with a History of Malignancy (63.3 percent).

Differences in average length of stay may explain the reasons for many sites treating the same types of conditions. Since LTCHs are distinguished from general acute hospitals only by having an average length stay greater than 25 days for their Medicare admissions, one could expect acute hospital length stays to be less than that and LTCH lengths of stay to exceed it. This is true among all cases in the top 50 LTCH admissions except DRG 483: Tracheostomy where the average length stay for the non-outlier acute case is 27.9 days while the outlier case averages 65 days, slightly more than the 62 day length stay in the LTCH (***Table 3-4***). In this DRG, which accounts for 5.2 percent of all acute outlier cases but less than 1 percent of the non-outlier acute cases, the majority of all admissions are to the acute hospital for a non-outlier stay (59 percent of all DRG 483). These cases are often admitted to LTCHs as DRG 475: Ventilator Support.

Average length stay also varies dramatically within the LTCH. While DRG 475 has an average length stay of 38.4 days, two of the top 10 LTCH admissions (DRG 88:COPD) and (DRG 89: Pneumonia) have much shorter average length stays of 20.2 and 21.4, respectively.

Average payments also vary by DRG but not always by LOS. The most expensive LTCH admission, on average, is the DRG 076: Other Respiratory System OR Procedures with CC ($67,380 per admission) which has an ALOS of 52 days, averaging $1295/day. DRG 012: Degenerative Nervous System Disorders has an average payment per stay of $22,288 and an ALOS of 27.5 resulting in average payments per day of $810. Similarly, DRG 217:Wound Debridements/Skin Grafts average $943 per day in LTCH payments. The most common LTCH admission (DRG 475) averages $1404/day.

3.2.2 Profiles of LTCH Episodes

One of the key questions in this study is who uses LTCHs and whether these cases are different from other acute admissions. ***Figure 3-1*** illustrates the severity of the typical LTCH episode of care. Almost 80 percent of all LTCH admissions are admitted from an acute hospital.

Table 3-3
Site of care distributions by DRG for top 50 LTCH DRGs, 2004

	Percent of DRG cases in Each Setting						
	LTCH	Acute outlier	IRF outlier	IRF non-outlier	Psychiatric	Acute non-outlier	SNF
475: Respiratory System Diagnosis With Ventilator Support	34.1%	18.0%	0.0%	0.0%	0.0%	47.7%	0.1%
249: Aftercare, Musculoskeletal System & Connective Tissue	25.2	0.3	0.2	21.4		15.5	37.4
271: Skin Ulcers	37.0	0.8	0.0	2.0	0.0	25.4	34.8
012: Degenerative Nervous System Disorders	7.6	0.4	0.3	8.3	40.9	14.7	27.7
087: Pulmonary Edema & Respiratory Failure	22.2	2.8	0.2	2.7	0.0	44.0	28.1
462: Rehabilitation	1.3	0.0	3.3	85.9	0.0	0.1	9.3
088: Chronic Obstructive Pulmonary Disease	8.6	1.1	0.1	6.9	0.1	65.0	18.2
089: Simple Pneumonia & Pleurisy Age >17 w CC	7.7	2.1	0.0	2.5	0.1	73.4	14.3
079: Respiratory Infections & Inflammations Age >17 w CC	15.3	6.0	0.0	1.2	0.1	68.7	8.7
466: Aftercare w/o History of Malignancy As Secondary Diagnosis	34.9	0.2	0.1	14.6	0.1	1.2	48.9
416: Septicemia Age >17	8.8	12.3	0.0	0.7	0.0	68.4	9.8
263: Skin Graft &/or Debrid for Skn Ulcer or Cellulitis w CC	41.6	7.2	0.0	0.0	0.0	50.6	0.5
127: Heart Failure & Shock	3.7	3.3	0.0	2.7	0.0	75.3	14.9
316: Renal Failure	6.6	5.5	0.0	1.3	0.1	63.9	22.5
430: Psychoses	0.6	0.0		0.0	89.5	7.5	2.4
418: Postoperative & Post-Traumatic Infections	22.4	3.4	0.0	2.4	0.0	57.0	14.7
277: Cellulitis Age >17 w CC	10.3	1.7	0.0	2.6	0.1	69.7	15.7
238: Osteomyelitis	29.6	1.7	0.1	6.1	0.0	32.7	29.8
076: Other Resp System O.R. Procedures w CC	18.1	21.5		0.0	0.1	60.2	0.2
144: Other Circulatory System Diagnoses w CC	7.3	6.0	0.1	5.5	0.0	68.3	12.7
452: Complications of Treatment w CC	25.1	5.3	0.0	4.0	0.1	57.1	8.4
130: Peripheral Vascular Disorders w CC	6.6	1.8	0.2	15.5	0.0	55.1	20.8
320: Kidney & Urinary Tract Infections Age >17 w CC	4.3	1.4	0.0	1.2	0.4	78.0	14.7
188: Other Digestive System Diagnoses Age >17 w CC	8.8	6.0	0.0	3.4	0.1	67.9	13.8
296: Nutritional & Misc Metabolic Disorders Age >17 w CC	3.3	2.3	0.0	1.1	0.2	84.8	8.3
415: O.R. Procedure for Infectious & Parasitic Diseases	6.5	28.7		0.0	0.0	64.6	0.2
468: Extensive O.R. Procedure Unrelated To Principal Diagnosis	8.0	27.7	0.0	0.2	0.2	63.7	0.1
182: Esophagitis, Gastroent & Misc Digest Disorders Age >17 w CC	2.7	2.7	0.0	1.6	0.1	81.8	11.1
217: Wnd Debrid & Skn Grft except Hand, for Muscskelet & Conn Tiss Dis	15.6	17.2	0.1	0.7	0.0	65.6	0.7

(continued)

Table 3-3 (continued)
Site of care distributions by DRG for top 50 LTCH DRGs, 2004

	Percent of DRG cases in Each Setting						
	LTCH	Acute outlier	IRF outlier	IRF non-outlier	Psychiatric	Acute non-outlier	SNF
465: Aftercare w History of Malignancy As Secondary Diagnosis	63.3%	0.1%	0.1%	10.2%		1.6%	24.6%
294: Diabetes Age >35	4.2	1.5	0.0	1.6	0.2%	56.3	36.3
463: Signs & Symptoms w CC	4.4	0.2	0.5	24.4	0.3	30.1	40.1
461: O.R. Proc w Diagnoses of Other Contact w Health Services	13.1	0.9	20.7	54.3		5.6	5.4
483: Tracheostomy except for Face,Mouth & Neck Diagnoses	3.3	37.4	0.0	0.0	0.0	59.2	
082: Respiratory Neoplasms	9.4	7.9	0.1	6.6	0.1	53.3	22.7
126: Acute & Subacute Endocarditis	26.3	8.7	0.1	1.3		52.4	11.3
034: Other Disorders of Nervous System w CC	4.7	1.6	0.7	23.2	0.9	41.8	27.1
243: Medical Back Problems	1.7	0.7	0.2	30.2	0.1	47.9	19.1
120: Other Circulatory System O.R. Procedures	7.9	18.2	0.0	0.3	0.0	72.9	0.6
256: Other Musculoskeletal System & Connective Tissue Diagnoses	8.4	0.4	0.1	14.3	0.0	25.6	51.1
269: Other Skin, Subcut Tiss & Breast Proc w CC	20.1	9.9		0.0		69.7	0.3
172: Digestive Malignancy w CC	9.2	8.7	0.0	10.7	0.1	46.9	24.4
287: Skin Grafts & Wound Debrid for Endoc, Nutrit & Metab Disorders	25.4	9.8	0.1	0.2		63.7	0.8
020: Nervous System Infection except Viral Meningitis	11.4	8.7	0.7	11.5	0.3	49.6	17.8
331: Other Kidney & Urinary Tract Diagnoses Age >17 w CC	4.4	6.0	0.1	2.0	0.1	74.4	13.0
101: Other Respiratory System Diagnoses w CC	8.9	1.4	0.0	3.9	0.2	67.4	18.2
429: Organic Disturbances & Mental Retardation	0.7	0.1	0.0	0.2	69.1	8.5	21.5
440: Wound Debridements for Injuries	20.8	11.2	0.1	0.1		67.1	0.7
014: Specific Cerebrovascular Disorders except TIA	0.5	2.2	0.2	14.2	0.1	78.0	4.8
204: Disorders of Pancreas except Malignancy	4.2	10.1	0.0	1.2	0.1	75.1	9.2
403: Lymphoma & Non-Acute Leukemia w CC	6.8	18.1	0.2	3.5	0.1	58.5	12.8

SOURCE: RTI analysis of MedPAR files, 2004 (Gage 166).

Table 3-4
Average LOS and Medicare payment by provider type for select DRGs, 2004

	LTCH		Acute Outlier		IRF Outlier		IRF Non-outlier		Psych		SNF/Swing Bed		Acute Non-outlier	
DRG Code	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)
012: Degenerative Nervous System Disorders	22,288	27.5	18,234	27.3	30,621	36.0	17,188	16.4	8,452	12.6	9,698	36.3	4,381	5.2
014: Specific Cerebrovascular Disorders except TIA	24,410	31.3	18,102	27.0	29,136	37.0	18,876	18.8	4,582	7.2	9,933	33.7	6,117	5.8
020: Nervous System Infection except Viral Meningitis	28,451	29.9	30,182	28.2	34,713	50.7	18,586	18.7	8,182	10.7	9,664	34.5	14,866	9.4
034: Other Disorders of Nervous System w CC	22,866	27.4	19,827	28.5	27,640	34.9	14,827	15.0	7,932	12.1	8,454	30.7	5,245	5.3
076: Other Resp System O.R. Procedures w CC	67,380	52.0	35,138	34.7	.	.	12,313	13.0	3,493	5.4	7,383	23.4	15,517	10.8
079: Respiratory Infections & Inflammations Age >17 w CC	24,685	23.9	19,156	33.6	21,959	29.2	14,793	15.6	6,978	12.3	6,280	23.6	8,351	8.6
082: Respiratory Neoplasms	19,723	20.8	18,135	29.8	25,850	30.0	12,602	11.9	2,724	4.4	5,707	21.5	7,620	7.5
087: Pulmonary Edema & Respiratory Failure	35,705	27.5	19,108	29.7	29,947	39.3	14,962	15.5	2,888	4.8	7,625	28.2	6,955	7.2
088: Chronic Obstructive Pulmonary Disease	19,905	20.2	13,329	30.2	18,851	26.6	13,704	13.3	5,449	8.4	6,501	25.9	4,415	5.5
089: Simple Pneumonia & Pleurisy Age >17 w CC	21,535	21.4	14,600	28.3	28,256	28.8	13,751	14.1	3,469	6.0	6,298	23.5	5,120	6.3
101: Other Respiratory System Diagnoses w CC	23,851	22.0	13,263	26.2	50,759	67.0	13,297	13.8	4,406	8.8	7,040	27.1	4,527	4.9
120: Other Circulatory System O.R. Procedures	34,924	34.5	31,709	36.2	20,231	17.5	15,264	18.1	6,354	8.3	5,990	23.2	12,818	9.4
126: Acute & Subacute Endocarditis	24,351	25.7	30,276	34.6	11,429	13.5	12,415	13.9	.	.	7,018	24.6	13,743	10.8
127: Heart Failure & Shock	20,493	21.5	16,837	26.5	21,133	25.7	13,093	13.6	5,915	6.6	6,523	25.3	5,170	5.8
130: Peripheral Vascular Disorders w CC	20,546	23.9	15,893	25.8	22,845	30.2	14,949	15.4	5,392	8.0	7,233	27.9	4,822	5.9
132: Atherosclerosis w CC	20,128	22.1	20,800	36.5	18,379	27.0	12,827	12.7	4,273	6.9	6,903	26.0	3,238	3.5
144: Other Circulatory System Diagnoses w CC	21,511	22.6	20,068	28.1	20,978	30.6	13,373	14.0	6,504	7.5	6,594	24.4	6,674	6.5
172: Digestive Malignancy w CC	21,958	22.3	21,484	31.3	17,486	37.0	13,995	13.8	6,832	9.7	7,188	26.1	7,978	7.6
182: Esophagitis, Gastroent & Misc Digest Disorders Age >17 w CC	22,856	23.4	16,425	29.2	31,873	53.6	14,137	14.5	4,017	5.9	7,148	27.9	4,141	5.3

(continued)

Table 3-4 (continued)
Average LOS and Medicare payment by provider type for select DRGs, 2004

	LTCH		Acute Outlier		IRF Outlier		IRF Non-outlier		Psych		SNF/Swing Bed		Acute Non-outlier	
	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)
188: Other Digestive System Diagnoses Age >17 w CC	27,418	25.8	19,470	30.1	16,017	41.0	13,971	14.1	3,744	4.7	6,922	26.5	5,984	6.4
204: Disorders of Pancreas except Malignancy	25,426	23.4	20,451	27.8	26,110	24.5	12,610	13.9	5,832	10.1	6,633	25.0	6,082	6.1
217: Wnd Debrid & Skn Grft except Hand, for Muscskelet & Conn Tiss Dis	39,547	41.9	40,235	43.5	33,984	40.6	14,250	15.8	1,764	3.0	8,081	29.3	16,735	11.5
238: Osteomyelitis	24,687	31.0	21,446	43.2	15,975	24.8	14,923	16.3	6,876	9.0	7,954	30.9	7,295	8.1
242: Septic Arthritis	23,801	27.8	21,275	39.7	21,456	29.0	13,933	16.5	.	.	7,502	27.8	5,926	7.1
243: Medical Back Problems	18,617	23.4	16,974	28.2	23,225	32.0	13,320	13.3	4,451	7.2	8,082	29.2	3,661	5.1
248: Tendonitis, Myositis & Bursitis	18,235	21.8	18,141	28.8	19,816	34.8	12,741	12.9	4,384	6.5	8,422	31.6	4,324	5.3
249: Aftercare, Musculoskeletal System & Connective Tissue	21,558	25.8	16,292	31.8	20,397	27.1	11,110	11.1	.	.	8,424	30.2	3,553	4.1
256: Other Musculoskeletal System & Connective Tissue Diagnoses	21,809	26.3	15,810	28.3	27,158	38.8	13,729	13.7	2,381	3.7	8,157	29.3	4,284	5.4
263: Skin Graft &/or Debrid for Skn Ulcer or Cellulitis w CC	39,627	43.5	28,676	47.7	43,442	61.3	21,526	34.0	1,467	3.0	6,507	24.4	10,978	10.3
269: Other Skin, Subcut Tiss & Breast Procw CC	37,340	40.1	26,387	34.3	.	.	782	11.0	.	.	10,256	23.6	9,514	9.2
271: Skin Ulcers	24,798	29.0	16,401	44.3	23,785	43.8	15,727	17.0	11,520	16.4	7,893	33.7	5,285	6.6
277: Cellulitis Age >17 w CC	19,105	21.8	17,240	29.8	20,506	25.6	14,518	15.3	5,873	9.5	6,884	26.2	4,381	5.9
287: Skin Grafts & Wound Debrid for Endoc, Nutrit & Metab Disorders	36,000	35.8	23,249	42.0	10,780	30.0	12,445	18.3	.	.	6,364	28.3	10,242	9.5
294: Diabetes Age >35	22,380	26.7	17,160	29.4	22,311	27.0	14,863	15.4	7,760	17.7	7,269	30.1	3,955	4.7
296: Nutritional & Misc Metabolic Disorders Age >17 w CC	21,831	24.0	16,053	31.3	9,851	18.0	14,044	14.5	5,457	9.5	6,588	26.5	4,246	5.1
316: Renal Failure	24,408	23.1	20,277	28.3	26,426	28.7	14,113	14.5	5,456	7.9	6,505	25.6	6,932	6.9
320: Kidney & Urinary Tract Infections Age >17 w CC	20,310	23.5	15,857	31.6	18,963	30.4	14,540	15.4	6,400	9.1	6,762	26.3	4,319	5.6
331: Other Kidney & Urinary Tract Diagnoses Age >17 w CC	22,149	23.0	19,096	26.2	21,745	27.0	14,327	14.5	5,407	7.3	7,098	28.4	5,705	6.1
403: Lymphoma & Non-Acute Leukemia w CC	22,613	22.7	28,604	30.3	21,321	27.6	13,578	13.9	2,844	8.2	5,753	20.5	10,348	8.0

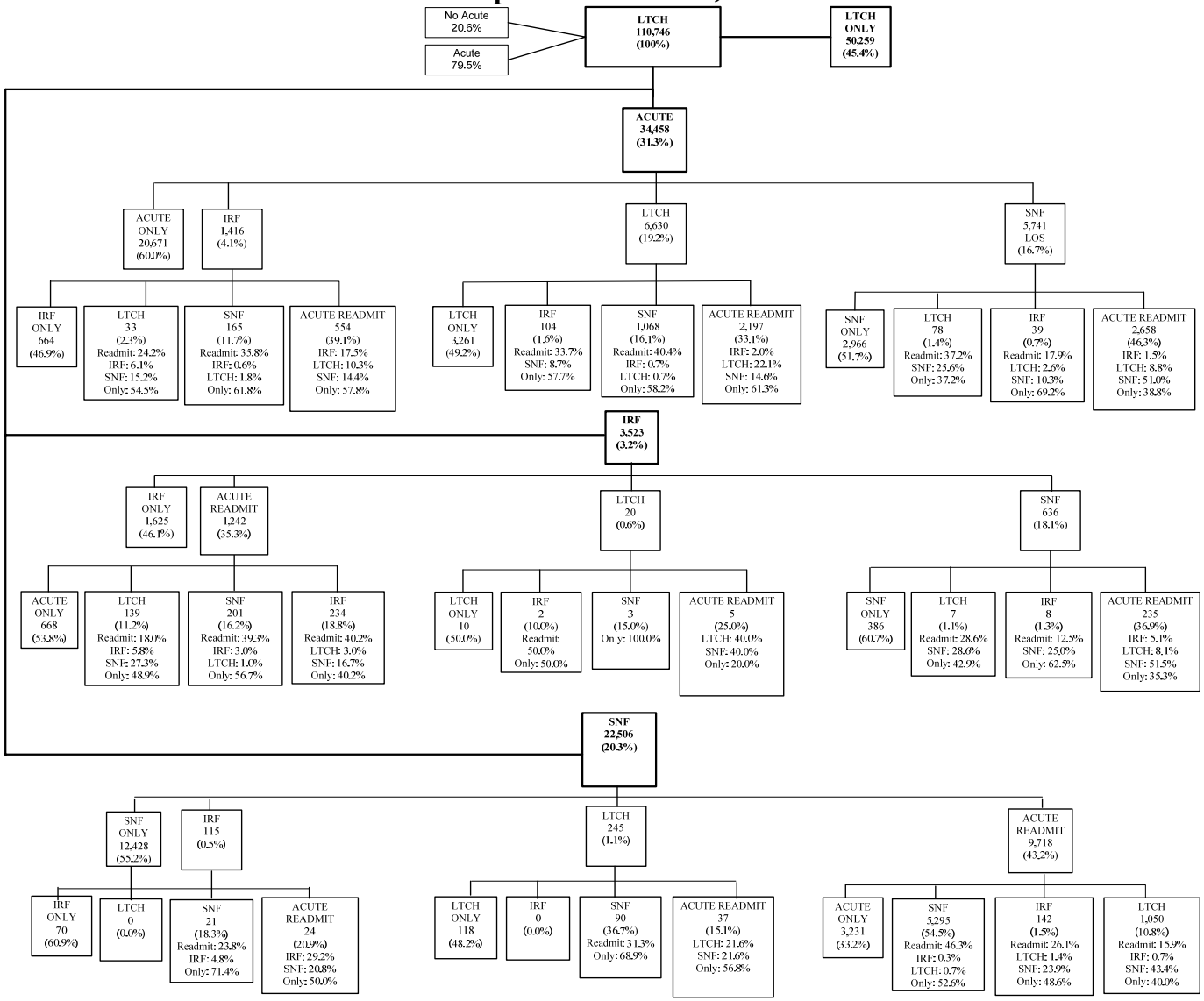
(continued)

Table 3-4 (continued)
Average LOS and Medicare payment by provider type for select DRGs, 2004

	LTCH		Acute Outlier		IRF Outlier		IRF Non-outlier		Psych		SNF/Swing Bed		Acute Non-outlier	
	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)	Payment ($)	Average LOS (days)
415: O.R. Procedure for Infectious & Parasitic Diseases	43,641	39.8	43,632	37.9	.	.	12,600	14.0	20,782	17.0	5,985	22.7	20,192	12.7
416: Septicemia Age >17	23,988	24.1	23,842	26.8	24,266	39.1	14,712	15.0	3,856	7.1	6,548	24.3	8,391	7.9
418: Postoperative & Post-Traumatic Infections	23,237	25.9	19,598	31.8	20,781	28.8	13,498	15.0	6,479	6.5	7,074	26.3	5,893	6.8
429: Organic Disturbances & Mental Retardation	19,564	34.9	10,685	45.1	35,402	50.8	13,787	16.2	8,180	13.2	6,549	31.4	3,744	5.1
430: Psychoses	14,361	26.4	11,206	59.6	.	.	11,863	11.4	6,838	13.2	5,965	29.9	3,923	7.4
440: Wound Debridements for Injuries	40,378	39.6	35,278	46.5	92,066	40.0	22,627	19.0	.	.	7,884	26.5	10,383	8.3
452: Complications of Treatment w CC	27,097	27.0	23,017	29.0	26,366	46.0	14,086	15.6	10,806	12.5	7,125	26.1	5,812	6.0
461: O.R. Proc w Diagnoses of Other Contact w Health Services	35,456	36.7	28,236	32.9	25,658	25.9	15,327	15.7	.	.	7,007	25.0	6,720	7.2
462: Rehabilitation	18,250	22.8	13,178	38.8	23,074	24.3	12,304	11.4	8,198	11.2	6,246	21.2	8,336	10.9
463: Signs & Symptoms w CC	19,599	24.6	15,200	29.6	20,056	26.8	13,438	13.8	4,019	6.7	7,189	26.8	3,468	4.1
465: Aftercare w History of Malignancy As Secondary Diagnosis	19,153	22.3	17,825	34.0	27,614	31.0	13,005	11.4	.	.	4,215	14.6	4,678	5.4
466: Aftercare w/o History of Malignancy As Secondary Diagnosis	20,184	22.6	19,238	37.9	21,482	27.3	13,141	11.0	3,671	13.3	6,062	20.8	4,128	5.0
468: Extensive O.R. Procedure Unrelated To Principal Diagnosis	57,159	48.1	41,436	34.3	25,626	25.5	19,798	18.3	9,544	13.5	5,519	19.8	20,102	13.0
475: Respiratory System Diagnosis With Ventilator Support	53,897	38.4	36,459	30.6	26,831	33.7	15,118	15.7	9,146	13.3	11,657	64.3	19,636	10.6
477: Non-Extensive O.R. Procedure Unrelated To Principal Diagnosis	46,003	38.3	27,903	34.5	31,052	25.0	18,026	20.4	10,382	13.2	8,551	24.1	10,477	10.1
483: Tracheostomy except for Face,Mouth & Neck Diagnoses	89,984	62.4	139,271	64.5	168,578	72.3	15,528	15.0	9,717	15.0	.	.	76,372	27.9

SOURCE: RTI analysis of 2004 MedPAR files (Gage 166).

Figure 3-1
LTCH Episode Transitions, 2004



SOURCE: RTI analysis of 2004 MedPAR and SAF files (\\rtimas04\hser\Project\07964\020 LTCH\00 I\common\jpotelle\data\gage165\2004).

About half (45.4 percent) of the LTCH admissions will use no other inpatient or SNF services.[11] Of those who go on to use other services, 31.3 percent are discharged to an acute hospital for a scheduled or emergent admission.[12] Of those discharged to the acute hospital, 19.2 percent will leave the acute hospital to be admitted to an LTCH. Of them, almost half (49.2 percent) will use no more services but the remaining 51 percent will use a mix of IRF (1.6 percent), SNF (16.1 percent) or be readmitted to the acute hospital (33 percent) and then go on to other services. Almost one quarter (22.1 percent) of the hospital readmissions (LTCH→ Acute→LTCH→Acute) will go on to another LTCH admission, possibly the same LTCH in which they were originally treated.

Only 3.2 percent of all LTCH discharges are discharged to an inpatient rehabilitation facility (IRF). Of them, 35.3 percent are discharged from the IRF into an acute hospital and 11.2 percent of those cases are discharged to an LTCH with subsequent discharges to SNF (27.3 percent of that group of LTCH admissions) and 18 percent are readmitted to the acute hospital. A plurality of the LTCH to IRF discharges go home from the IRFs (46.1 percent)

SNF admissions account for 20.3 percent of the LTCH discharges. Of them, 1.1 percent are readmitted to an LTCH; 43.2 percent are readmitted to a general acute hospital and 55.2 percent will not use any additional inpatient services following SNF discharge.

These cases are medically complex, for the most part. Over half the LTCH admissions will use multiple PAC services and four-fifths have been admitted from an acute hospital.

Table 3-5 profiles the LTCH admission and distinguishes between those who were admitted from an acute hospital and other LTCH admissions to see if the two groups differ. In general, both groups are about 55 percent female and three-quarters white or non-minority. Those admitted from a prior acute hospitalization are slightly more likely to die in the LTCH (43.2 percent compared to 39.4 percent).

Average payments per user are not significantly different except those without a prior hospitalization are more likely to have a psychiatric admission, have higher psychiatric payments, and higher home health payments. Average use levels in most services are much lower for cases that have a prior hospitalization. For example, the LTCH LOS is 25 percent shorter for those who are admitted from an acute hospital (30.3 days v. 41 days), on average. Similarly, SNF stays are substantially shorter for LTCH cases who were not previously in the acute hospital.

Table 3-6 presents episode level payments and use for the top 50 LTCH DRGs. Total episode payments are greatest for DRG 76: Other Respiratory System which has both an expensive stay in the hospital prior to LTCH admission ($63,465) and an expensive LTCH stay ($71,823). While the acute hospital cost is slightly lower than for all acute admissions in this

[11] About 40 percent of all LTCH admissions die in the LTCH although some may be discharged home with home health care. The home health cases are not identified in this figure.

[12] Certain LTCH cases are expected to return to the acute for subsequent care following patient's improved health from the LTCH stay.

Table 3-5
LTCH utilization and expenditures by prior hospitalization, 2004

Episode characteristics	No prior acute hospitalization		Prior acute hospitalization	
	Mean	Percent of LTCH	Mean	Percent of LTCH
Number of episodes	22,759	20.6	87,987	79.5
Age (In years)	71.5	--	72.9	--
Female (In Percent)	--	55.1	--	55.2
White	--	71.8	--	75.8
Died	--	39.4	--	43.2
High LTCH state	--	58.3	--	55.4
Payments per user				
LTCH payments	$33,226	100	$31,692	100
Acute hospital readmission payments	$14,409	37.3	$15,588	42.4
IRF payments	$16,472	4.2	$16,205	5.2
Psychiatric payments	$10,317	3.2	$8,860	0.8
SNF payments	$12,004	29.1	$12,464	27.7
Home health payments	$4,658	33.4	$4,157	33.7
Total episode LOS (days) per user				
LTCH	40.98	100	30.29	100
Acute	14.12	37.3	14.74	42.4
IRF	20.28	4.2	19.36	5.2
Psych	21.43	3.2	15.72	0.8
SNF	118.92	29.1	81.95	27.7
Home Health	77.02	33.4	65.26	33.7

NOTE: High LTCH states include Indiana, Louisiana, Massachusetts, Michigan, Pennsylvania, Ohio, and Texas.

SOURCE: RTI analysis of 100% LTCH claims, 2004 (Gage176).

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Table 3-6
Average episode payments and length of stay for top 50 LTCH admissions by type of hospitalization, 2004

DRG	DRG label	Episode payment	Prior acute payment	LTCH payment	Prior acute LOS in days	LTCH LOS in days
475	Respiratory System Diagnosis With Ventilator Support	$131,502	$69,726	$58,754	27.0	43.3
249	Aftercare, Musculoskeletal System & Connective Tissue	44,059	10,765	23,493	7.8	28.9
12	Degenerative Nervous System Disorders	46,549	10,948	24,266	9.6	30.8
271	Skin Ulcers	49,624	12,024	28,983	12.2	34.8
462	Rehabilitation	42,161	13,331	20,110	11.3	25.9
87	Pulmonary Edema & Respiratory Failure	89,983	44,056	38,329	21.6	30.9
88	Chronic Obstructive Pulmonary Disease	41,344	9,370	23,088	10.0	24.2
89	Simple Pneumonia & Pleurisy Age >17 w CC	43,705	10,089	24,269	10.4	25.0
466	Aftercare w/o History of Malignancy As Secondary Diagnosis	57,165	24,641	22,360	15.1	25.7
79	Respiratory Infections & Inflammations Age >17 w CC	51,760	14,561	27,826	13.4	27.7
416	Septicemia Age >17	52,339	14,953	27,139	13.8	28.4
263	Skin Graft &/or Debrid for Skn Ulcer or Cellulitis w CC	62,631	12,245	43,975	11.8	49.2
127	Heart Failure & Shock	44,359	11,601	23,054	11.7	25.2
316	Renal Failure	56,892	17,776	27,255	16.0	26.8
430	Psychoses	24,725	5,337	17,606	6.9	33.6
418	Postoperative & Post-Traumatic Infections	54,687	20,012	25,735	15.7	29.8
277	Cellulitis Age >17 w CC	40,061	7,890	22,353	8.9	26.5
238	Osteomyelitis	51,018	11,920	27,738	11.8	35.5
76	Other Resp System O.R. Procedures w CC	134,919	63,465	71,823	26.2	56.5
144	Other Circulatory System Diagnoses w CC	51,576	16,195	24,083	13.9	26.3
452	Complications of Treatment w CC	63,162	23,468	29,999	19.2	30.9
130	Peripheral Vascular Disorders w CC	45,010	11,005	24,069	11.4	29.0
188	Other Digestive System Diagnoses Age >17 w CC	60,898	18,632	30,893	17.3	30.0
320	Kidney & Urinary Tract Infections Age >17 w CC	40,978	7,630	23,405	8.5	27.9
296	Nutritional & Misc Metabolic Disorders Age >17 w CC	42,707	10,695	23,930	12.6	27.3
415	O.R. Procedure for Infectious & Parasitic Diseases	76,386	21,190	46,249	16.4	43.5

(continued)

Table 3-6 (continued)
Average episode payments and length of stay for top 50 LTCH admissions by type of hospitalization, 2004

DRG	DRG label	Episode payment	Prior acute payment	LTCH payment	Prior acute LOS in days	LTCH LOS in days
468	Extensive O.R. Procedure Unrelated To Principal Diagnosis	106,984	41,628	60,634	21.2	52.7
217	Wnd Debrid & Skn Grft except Hand,for Muscskelet & Conn Tiss Dis	65,170	13,038	42,451	12.8	46.1
182	Esophagitis, Gastroent & Misc Digest Disorders Age >17 w CC	45,846	10,344	25,278	13.1	26.6
465	Aftercare w History of Malignancy As Secondary Diagnosis	56,567	23,782	21,611	16.5	25.7
294	Diabetes Age >35	45,945	9,998	25,610	10.1	31.4
483	Tracheostomy except for Face,Mouth & Neck Diagnoses	120,549	23,447	94,282	15.8	67.4
463	Signs & Symptoms w CC	42,759	11,800	22,472	12.0	29.0
461	O.R. Proc w Diagnoses of Other Contact w Health Services	70,167	22,519	37,823	16.6	40.7
82	Respiratory Neoplasms	33,482	12,324	20,484	12.8	22.8
126	Acute & Subacute Endocarditis	56,911	17,553	26,626	14.8	29.2
243	Medical Back Problems	37,473	7,540	20,863	8.6	27.1
34	Other Disorders of Nervous System w CC	55,856	23,030	24,860	15.4	31.2
120	Other Circulatory System O.R. Procedures	63,635	14,597	39,616	13.0	40.4
172	Digestive Malignancy w CC	39,082	14,825	23,144	15.5	24.4
269	Other Skin, Subcut Tiss & Breast Proc w CC	60,077	11,402	40,792	11.5	44.6
256	Other Musculoskeletal System & Connective Tissue Diagnoses	52,742	15,057	25,446	14.6	31.2
20	Nervous System Infection except Viral Meningitis	67,663	22,340	31,168	16.0	33.6
287	Skin Grafts & Wound Debrid for Endoc, Nutrit & Metab Disorders	58,575	10,781	38,767	10.8	39.8
14	Specific Cerebrovascular Disorders except TIA	55,094	15,715	26,655	11.8	35.2
101	Other Respiratory System Diagnoses w CC	71,145	34,332	26,445	18.3	25.7
331	Other Kidney & Urinary Tract Diagnoses Age >17 w CC	53,326	17,479	24,505	15.4	26.1
403	Lymphoma & Non-Acute Leukemia w CC	44,799	16,070	24,324	14.9	25.4
440	Wound Debridements for Injuries	74,794	24,355	43,096	19.2	43.3
204	Disorders of Pancreas except Malignancy	59,991	19,850	27,810	19.6	26.5
429	Organic Disturbances & Mental Retardation	34,407	10,714	22,178	8.7	40.4

NOTE: Other PAC Payments include average Medicare payments for SNF, HH, IRF, and general acute readmissions.

SOURCE: RTI analyses of Medicare Administrative files, 2004 (Gage168)

DRG, the relatively high LTCH payment coupled with it results in a very expensive episode. DRG 475 is the second most expensive episode ($131,502) among the top 50 LTCH cases with both high acute and LTCH average Medicare payments. DRG 87: Pulmonary Edema is the fifth most common LTCH admission and the fourth most expensive case averaging almost $90,000 per episode with prior acute payments averaging $44,056 and LTCH payments averaging $38,329.

Table 3-7 presents episode details that are useful for understanding the variations in payments and use within each DRG. While 80 percent of all LTCH admissions have a prior hospitalization, on average, this varies by DRG. Among the top 50 types of LTCH admissions, only the psychiatric diagnoses (DRG 430: Psychoses and DRG 429: Organic Disturbances and Mental Retardation) had less than one half of their cases admitted from the acute hospital (13.6 percent and 32.0 percent, respectively). This suggests these cases are substantially different medically from other types of LTCH admissions. Skin-related conditions were the next least likely group to have a prior hospitalization but they still had between 70 and 75 percent of their cases admitted from an acute hospital stay.

While most LTCH admissions were previously hospitalized, only a small proportion of those in the acute hospital incurred an outlier payment (less than 20 percent) except for the DRG 452: Complications of Treatment with CC (21.3 percent) and DRG 204:Disorders of the Pancreas Except Malignancy (26.2 percent). About one-fourth of the top 50 LTCH conditions had 15-20 percent of their admissions qualifying for an acute outlier payment before being admitted to the LTCH. These included many of the medically complex conditions such as DRG 475: Ventilator Support 16.9 percent), DRG 316: Renal Failure (19.3 percent), DRG 076: Other Respiratory System OR Procedures with CC (19.2 percent), DRG 188:Other Digestive System (19.5 percent), DRG 483:Tracheostomy (17.8 percent), DRG 461: OR Procedures (17.8 percent), DRG 331: Other Kidney and Urinary Tract Diagnoses with CC (17.1 percent) and DRG 440: Wound Debridements for Injuries (19.4 percent). Still, the majority of LTCH admissions were admitted before reaching outlier status in the acute hospital.

About 43 percent of all LTCH admissions receive payment adjustments for having shorter than average stays in the LTCH.[13] The LTCH short stay outlier is useful for identifying whether certain types of cases tend to stay longer in the LTCH, or conversely, are discharged in less than expected average length stays. The two psychiatric diagnoses again rise with approximately 90 percent of the DRG 430:Psychoses and DRG 429: Organic Disorders receiving short stay outlier adjustments. Cases that are less likely to receive these adjustments include DRG 012: Degenerative Nervous System Disorders (30.3 percent of cases), DRG 238: Osteomyelitis (30.8 percent), DRG 217: Wound Debridement (30.6 percent) and DRG 243: Medical Back Problems (31.4 percent) suggesting they have at least, average expected length stays in the LTCH.

[13] This proportion is based on the definition of the short stay outlier.

Table 3-7
Distribution of LTCH admissions by type of payment adjustment, 2004

DRG		Number of LTCH admissions	Prior hospitalization (Percent)	Prior acute outlier (Percent)	LTCH short stay outlier (Percent)
475	Respiratory System Diagnosis With Ventilator Support	12,078	84.8	16.9	40.3
249	Aftercare, Musculoskeletal System & Connective Tissue	5,637	83.1	2.8	37.6
12	Degenerative Nervous System Disorders	5,286	74.4	3.4	30.3
271	Skin Ulcers	4,808	69.3	5.2	41.4
462	Rehabilitation	4,641	77.7	6.7	35.8
87	Pulmonary Edema & Respiratory Failure	4,598	86.8	16.5	53.5
88	Chronic Obstructive Pulmonary Disease	4,341	81.8	3.5	44.0
89	Simple Pneumonia & Pleurisy Age >17 w CC	4,335	86.2	4.7	44.6
466	Aftercare w/o History of Malignancy As Secondary Diagnosis	4,124	90.5	16.2	37.1
79	Respiratory Infections & Inflammations Age >17 w CC	3,984	87.0	9.4	35.8
416	Septicemia Age >17	3,688	87.3	11.7	41.0
263	Skin Graft &/or Debrid for Skn Ulcer or Cellulitis w CC	3,338	58.4	4.1	34.7
127	Heart Failure & Shock	3,327	86.5	7.0	40.4
316	Renal Failure	2,174	87.7	19.3	81.0
430	Psychoses	1,850	13.6	0.1	89.8
418	Postoperative & Post-Traumatic Infections	1,801	85.5	15.1	40.3
277	Cellulitis Age >17 w CC	1,721	82.2	2.3	44.7
238	Osteomyelitis	1,606	83.6	5.0	30.8
76	Other Resp System O.R. Procedures w CC	1,587	78.0	19.2	35.2
144	Other Circulatory System Diagnoses w CC	1,417	90.7	12.2	39.1
452	Complications of Treatment w CC	1,406	83.5	21.3	33.2
130	Peripheral Vascular Disorders w CC	1,261	69.0	4.9	38.6
188	Other Digestive System Diagnoses Age >17 w CC	1,166	86.3	19.5	43.3
320	Kidney & Urinary Tract Infections Age >17 w CC	1,150	80.6	2.4	36.4
296	Nutritional & Misc Metabolic Disorders Age >17 w CC	1,102	77.2	7.9	41.2
415	O.R. Procedure for Infectious & Parasitic Diseases	927	80.7	14.4	41.3

(continued)

Table 3-7 (continued)
Distribution of LTCH admissions by type of payment adjustment, 2004

DRG		Number of LTCH admissions	Prior hospitalization (Percent)	Prior acute outlier (Percent)	LTCH short stay outlier (Percent)
468	Extensive O.R. Procedure Unrelated To Principal Diagnosis	927	78.9	14.8	37.9
217	Wnd Debrid & Skn Grft except Hand, for Muscskelet & Conn Tiss Dis	857	75.2	5.5	30.6
182	Esophagitis, Gastroent & Misc Digest Disorders Age >17 w CC	847	85.7	9.3	37.0
465	Aftercare w History of Malignancy As Secondary Diagnosis	817	92.8	16.4	42.0
294	Diabetes Age >35	782	79.0	2.9	35.9
483	Tracheostomy except for Face, Mouth & Neck Diagnoses	667	68.4	17.8	34.9
463	Signs & Symptoms w CC	651	63.1	4.8	38.9
461	O.R. Proc w Diagnoses of Other Contact w Health Services	640	80.9	17.8	38.3
82	Respiratory Neoplasms	610	76.6	4.6	50.5
126	Acute & Subacute Endocarditis	574	91.5	11.9	35.2
243	Medical Back Problems	555	56.1	1.4	31.4
34	Other Disorders of Nervous System w CC	544	74.5	13.4	48.7
120	Other Circulatory System O.R. Procedures	522	73.0	8.1	37.4
172	Digestive Malignancy w CC	439	78.6	6.4	53.5
269	Other Skin, Subcut Tiss & Breast Proc w CC	427	60.7	2.8	42.6
256	Other Musculoskeletal System & Connective Tissue Diagnoses	417	80.8	7.2	36.0
287	Skin Grafts & Wound Debrid for Endoc, Nutrit & Metab Disorders	369	70.7	3.0	45.3
14	Specific Cerebrovascular Disorders except TIA	366	82.8	6.6	35.3
101	Other Respiratory System Diagnoses w CC	363	90.1	10.7	37.2
331	Other Kidney & Urinary Tract Diagnoses Age >17 w CC	362	85.4	17.1	40.6
440	Wound Debridements for Injuries	350	71.7	19.4	41.4
204	Disorders of Pancreas except Malignancy	347	90.8	26.2	43.8
429	Organic Disturbances & Mental Retardation	347	32.0	1.7	90.5
20	Nervous System Infection except Viral Meningitis	44	88.8	11.2	33.6

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3.3 How Do LTCH Admissions Compare to Acute Discharges with Similar Severity Levels?

One of the key questions is how LTCH admissions differ from general acute admissions given their only regulatory difference is in expected length stay. This section compares the acute hospital discharge who is admitted to the LTCH to those who are not discharged to the LTCH. The acute hospital sample is restricted to cases with a DRG among the top 50 LTCH DRGs and a severity level of APR-DRG severity index of 2,3, or 4. This restriction limits the acute cases to the more medically complex admissions most likely to use LTCH services.

Table 3-8 profiles the two groups of acute hospital discharges. In general, the LTCH admission is more likely to be in a high LTCH state, such as Indiana, Louisiana, Massachusetts, Michigan, Pennsylvania, Ohio or Texas. Over half the LTCH admissions were in one of these states (54.1 percent) compared to only 31 percent of the non-LTCH users.

The LTCH admission is also more likely to have a higher APR-DRG severity of illness index score. Seventy-one percent of all LTCH admissions had a severity score of 4 (most severe) or 3 compared to only 54 percent of the sicker acute admissions. LTCH cases also had about 65 percent more cases in severity group 4 (28 percent compared to only 17.2 percent of the non-LTCH users.)

LTCH admissions were less likely to have had an outlier payment during their acute stay (8 percent compared to 12 percent of the non-LTCH admissions). The average length stay in the acute hospital tended to be longer for the LTCH admissions, averaging 13.5 half days compared to only 11 days for the other acute admissions.

Few differences appeared to be evident between the two groups in their use of subsequent post acute care except in their admission to IRFs. About one third of both groups used SNF services during the 180 days post discharge from the acute hospital and slightly more used home health. However, LTCH admissions were much less likely to use IRFs (7.1 percent compared to 27 percent) of the non-LTCH users. However, among those who did use IRFs, they had similar length stays and average payments per user.

Table 3-8
Acute discharge characteristics by LTCH use, 2004

	No LTCH	LTCH admission
Characteristics		
Age	72.0	72.6
Female	55.1%	54.3%
White	81.7%	74.7%
High LTCH state	30.9%	54.1%
APR-DRG severity		
2	45.4%	29.0%
3	37.4%	43.1%
4	17.2%	28.0%
Acute outlier	12.4%	8.0%
Index LOS	11.03	13.55
Utilization		
SNF use		
Percent	32.4%	33.7%
LOS	83.5	82.2
Average payment/user	$10,530	$11,593
HH Use		
Percent	35.5%	37.6%
LOS	60.3	67.9
Average payment/user	$3,737	$4,013
IRF use		
Percent	27.0%	7.1%
LOS	16.0	18.1
Average payment/user	$15,792	$15,440
Readmission Rate	52.6%	62.0%
Sample Size	245,372	53,850

SOURCE: RTI analysis and MedPAR files, 2004.

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Table 3-9 examines these issues in a multivariate manner. The first pair of models predict the likelihood of an acute hospital case being discharged to an LTCH. The second model in the pair adds factors controlling for other PAC use in predicting LTCH admission. This model allows examination of the substitution effects between LTCHs and other PAC providers. The second pair of models (Model 3 and 4) examine factors predicting the probability of an acute case being readmitted later in the episode and the effects of having had an LTCH admission on that probability. The last model predicts average length stay in the acute hospital to examine whether having an LTCH admission is associated with a shorter general acute length stay. These models are preliminary and will be followed in the coming months (in Phase III of this project) with models using better matching methods, such as propensity score matches. Those models will match similar cases and ask whether the costs or outcomes differ by whether an LTCH was available in the local market area. In the short term, the models in Table 3-9 are useful for understanding the types of factors associated with LTCH use, differing outcomes, and determining whether LTCHs act as a substitute for general acute hospital days.

The first four models are logistic regressions. The odds ratios and significance level of each factor are presented. The odds ratio measures the relative odds of an acute hospital discharge being admitted to an LTCH, all else equal. Odds ratios greater than one indicate an increased probability of cases with that characteristic being admitted to an LTCH (models 1 and 2) or being readmitted to the acute hospital (models 3 and 4) later in the episode. The fifth model is an ordinary least squares regression model predicting average length stay in the acute hospital. Coefficients, standard errors, and significance levels are reported for each characteristic.

The two most important factors in predicting LTCH admission are severity of illness and whether the beneficiary lives in a state where many LTCHs are available. The results show that more severely ill cases (those with a higher APR-DRG score) are more likely to be admitted to an LTCH relative to those in lower groups. Those with an APR-DRG severity index score of 3 are 72 percent more likely to be admitted to an LTCH than cases with a score of 2 (those with fewer medical complications were omitted from this sample.) Having a severity score of 4 (the most severely ill group) more than doubles the probability of an LTCH admission relative to those in severity group 2. The probability of an LTCH admission also increases by 4 percent as the number of comorbid conditions grows and by 3 percent for every additional day in the ICU or CCU. Those in the high LTCH states, such as Indiana, Louisiana, Massachusetts, Michigan, Pennsylvania, Ohio or Texas are almost three times more likely to be discharged to an LTCH.

These odds are reduced slightly in Model 2 which adds measures of other PAC service use in the episode Use of an IRF is associated with an 85 percent lower probability of an LTCH admission suggesting these two services may be acting as substitutes, all else equal. Similar reductions are shown for patients with a psychiatric admission. However, home health (HH) and skilled nursing facility (SNF) use appear to be complements, increasing the probability of LTCH use by 48 percent and 16 percent, respectively.

Table 3-9
Factors predicting acute discharge outcomes, 2004

	1	2	3	4	5
	LTCH Admission	LTCH Admission	Acute Readmission	Acute Readmission	Acute LOS
	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio	Coefficient (SE)
Intercept					6.50***
					(0.138)
Age	1.00***	1.00	0.99***	0.98	-0.03***
					(0.001)
Female	0.996	0.99	0.96***	0.90***	0.23***
					(0.038)
White	-0.63***	-0.68***	0.85***	0.81***	-1.02***
					(0.048)
APR DRG 3	1.72***	1.58***	1.03***	1.03***	2.19***
					(0.046)
APR DRG 4	2.19***	1.83***	0.64***	0.72***	4.81***
					(0.062)
No. of comorbids	1.04***	1.02***	1.04***	1.01**	0.28***
					(0.014)
Severe days	1.03***	1.03***	0.99***	0.99***	0.97***
					(0.002)
Acute LOS	0.982***	0.98***	0.99***	0.98***	
High LTCH state	2.75***	2.84***	0.95**	0.93**	-1.14***
					(0.041)
Any HH use		1.48***		2.59***	6.50***
					(0.138)
Any IRF use		0.15***		1.97***	-0.03***
					(0.001)
Any Psych use		0.08***		1.02	0.23***
					(0.038)
Any SNF use		1.16***		2.89***	-1.02***
					(0.048)
Any LTCH use			1.64***	1.90	-1.42***
					(0.051)

NOTES: *** indicates $p < 0.0001$, ** $p < 0.001$.

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Models 3 and 4 present the factors associated with the probability of an acute hospital readmission later in the episode. Being in APR-DRG group 3 is associated with a 3 percent greater likelihood of being readmitted to the acute hospital although beneficiaries in the most severely ill group (group 4) are about 35 percent less likely to be readmitted. This may be due to people in group 4 dying later in the episode and therefore, decreasing their chance of using LTCHs. Having an LTCH admission is associated with a 64 percent greater likelihood of an acute readmission. Adding the PAC use indicators in Model 4 reduces the importance of APR-DRG group 3 but the difference is offset by the use of specific service groups. Beneficiaries with any home health use are 2.59 times more likely to be readmitted and those with any SNF use are almost three times more likely. LTCH use increases the probability to almost twice as likely as being readmitted, even after controlling for other service use.

The last model examines the factors predicting average length stay in the acute hospital. As expected, having a higher severity level is associated with a longer length stay. Beneficiaries in APR-DRG group 3 have a 2.19 day longer stay than beneficiaries in group 2 and nearly 5 day longer stay if they are in the most severely ill group (APR-DRG group 4). Having an LTCH admission is associated with a 1.4 days shorter length stay in the general acute hospital, all else equal. This suggests the LTCH may be substituting for some of the later days of care typically provided in the general acute hospital.

3.4 Conclusion

This work has been useful for answering the questions identified in Section 1, specifically whether there are differences between LTCH cases and other inpatient cases in terms of the average program payments, beneficiary use levels, and individual outcomes. The first half of this section profiled the typical LTCH admission to examine the types of cases treated in LTCHs, their associated program costs, and this population's use of other services. Also included were comparisons of the costs and use for patients in the same DRG groups who were treated at other types of inpatient settings. Average costs per case differed by type of setting.

The second part of this section examined the acute care admissions to identify differences between the types of cases likely to be admitted to an LTCH and other acute discharges in the same diagnostic and severity group. The multivariate analysis of this issue suggested that severity is an important predictor of LTCH use. This supports past work suggesting that LTCH cases have a higher severity level, although a large proportion are in APR-DRG group 3 as well as group 4. Being located in a state with a large number of LTCHs was the most important predictor of LTCH use, all else equal.

Examining the acute length of stay differences was also useful for understanding the relative role of general acute and LTCHs in treating these severely ill populations. The multivariate work showed that LTCH users have a shorter acute inpatient length stay. Understanding whether acute hospitals are already paid for these services or whether LTCHs are providing specialized services not available in the acute hospital is poorly understood.

Better measures of acuity are needed to gauge the differences in medical or functional impairments between patients using LTCHs and those using other settings. Additional work in Phase 3 of this project will examine the discharge transitions for acute hospital discharges in areas that lack LTCHs. Using propensity score methods to match patients on diagnosis, severity, and

additional factors as well as control for differences in the availability of services will be important for understanding the potential overlap between acute and LTCH admissions.

SECTION 4
DETERMINING LEVELS OF CARE

4.1 Introduction

This section provides information on level of care definitions currently used in the Medicare program, other insurers, and the healthcare industry, in general, to identify the most appropriate type of inpatient setting based on medical criteria or case mix differences.

4.1.1 Overview of the Methods

One of the most difficult issues in identifying appropriate LTCH cases is the need to distinguish among different levels of care. MedPAC, in its 2004 recommendation, suggested using patient- and facility-level criteria to differentiate LTCH cases from those treated in other settings. This section examines the regulatory rules and insurance-based definitions that are currently applied to LTCHs and other facilities treating these types of populations, including other acute short-term hospitals, inpatient rehabilitation facilities, psychiatric hospitals, and even skilled and long-term care nursing facilities. These requirements set standards of practice that each type of facility must meet to serve patients in an appropriate manner. The differences in these standards are useful for understanding differences in patient conditions, acuity levels, or other factors that may distinguish patient populations.

In addition to the regulatory requirements governing each type of provider, we have reviewed insurance and industry based definitions of the level of care distinctions that are commonly applied to these settings. These standards are used by the Medicare Quality Improvement Organizations (QIOs) and private insurance utilization review entities to make coverage decisions. Included are reviews of the Medicare conditions of participation governing each of these providers, the QIOs and insurance industry's guidelines for determining appropriate levels of care, and the post acute industry's definitions of their own and others' levels of care as developed for Congressional testimony or internal discussions. In addition, RTI has conducted site visits to speak with the physicians and discharge planning staff at LTCHs regarding the types of cases they typically do or do not admit.

These standards are useful for examining the differences in expectations for admissions to each type of facility but they do not tell us about the extent to which this type of information is commonly collected in LTCHs and other settings. To understand the potential burden in measuring patient differences, we also collected patient assessment information from LTCHs to identify the types of data items that are commonly collected in these hospitals. This information will be useful for understanding the degree to which any recommended criteria may be burdensome to LTCHs, or alternatively, may be readily available for distinguishing the LTCH patient populations from those treated in other settings.

4.1.2 The Issue: Determining Level of Care

Level of care determinations are a clinical issue that can be defined based on a patient's severity of illness and their related service intensity needs. Because each of the non-LTCH acute hospitals specialize in different populations or intensity levels, they can be sorted on the following general basis:

- ***IPPS Acute.*** General short-term acute hospitals treat patients who have acute illnesses or injuries. The patients may require surgery or medical treatments that involve intensive nursing, daily physician care, and possibly special equipment. These hospitals have emergency rooms, intensive care units for short-term use and stabilization, and limited rehabilitation therapy available.

- ***Inpatient Rehabilitation Facilities.*** Inpatient rehabilitation hospitals specialize in treating acute illnesses or injuries related to physical medicine and rehabilitation. Their staff specialize in rehabilitation medical care, such as physiatrist, rehabilitation nursing, and intensive physical, occupational, and speech therapy (at least three hours a day for five days per week). Aides in these hospitals may be in both the nursing department to assist patients with physical, and sometimes, cognitive impairments in completing their ADLs or in the physical or occupational therapy departments assisting in the low-level, repetitive exercise completion. The primary diagnoses treated in these hospitals are for rehabilitation medicine, both chronic and acute illnesses.

- ***Inpatient Psychiatric Hospitals.*** Psychiatric hospitals specialize in treating patients with mental health conditions, both acute illnesses and acute exacerbations of chronic illnesses. Their physicians and nursing staff are typically trained in psychiatric or psychological treatments. Their aides assist with activities of daily living and in monitoring patients who need higher level supervision or one-on-one monitoring. These hospitals provide more intensive services than skilled nursing facilities that provide subacute level medical and rehabilitation services.

- ***Skilled Nursing Facilities.*** Patients are often transferred to skilled nursing facilities (SNFs) for less intensive, continued care as their bodies heal, strengthen, and regain functional or medical health before being discharged to a lower or higher level of care. SNF patients are medically stable. They have lower needs for physician oversight than those in an acute hospital environment because these patients are less severely ill than hospital inpatient populations. SNFs vary in the acuity of the patients they accept. As a result, their case mix indices and relative staffing mix between nursing and physical rehabilitation staff vary; however, the CMI and staff to patient ratios are both lower in a SNF than in a hospital. SNFs may have higher aide to nurse ratios than hospitals although, this varies by the differences within SNFs across the country. Some provide more intensive, subacute treatments, such as ventilator monitoring or more intensive rehabilitation therapy than other SNFs where a patient is primarily healing under medical direction. By definition, staffing and case mix in a SNF is a lower level intensity than in an acute hospital.

- ***Long-Term Care Hospitals.*** LTCHs are acute level hospitals whose Medicare population has an average length stay greater than 25 days. In contrast to SNFs, they provide acute inpatient services. These patients may be medically complex like the longer stay acute IPPS patient; need rehabilitation therapy like the IRF patient with longer stay needs; or have psychiatric issues that require expected treatments of at least 25 days. The extent to which LTCH populations can be differentiated from other acute inpatient providers may vary by location. In areas that lack one of the potential

substitute providers, LTCHs may provide more of those services; conversely, in areas with substitute providers, their populations' primary conditions may be more distinctively respiratory or medically complex in nature.

Because of the rising interest in better defining post acute care in all settings, several groups developed definitions of intensity for the post acute continuum. ***Appendix A*** contains a complete comparison based on consolidating several industry offerings of differences in resources used in each of the post acute provider settings.) These were developed either for Congressional testimony or as internal working documents by provider associations. Information was collected from both the long-term care hospital industry and the inpatient rehabilitation facility industry. Both industries are clearly distinguishable from the SNF industry based on physician and nursing levels of care. While the SNF industry may suggest slightly different definitions, all would concur that the level of physician and nursing intensity in the SNF is lower than in a certified hospital. These comparisons can be summarized in terms of the frequency of physician visits and nursing hours, as shown in ***Table 4-1***. The LTCHs and IRFs also tend to differ in the types of patients admitted with the LTCHs focusing more on medically complex patient and IRFs focusing on patients with physical rehabilitation needs.

The groups appear to have consensus regarding physicians and nursing hours comparisons across settings. In general, these services can be summarized as:

Table 4-1
Physician and nursing hours in LTCHs, IRFs, and SNFs

	LTCH	IRF	
SNF	Daily	2-3 per week	General Supervision
	2-3 per week	Close medical Supervision	At least every 14-30 days
Consulting Physician	2-3 per week	Frequent	As needed
Nursing hours	l6-12 hrs. per day	6.5 rehab RN	2.5-4 hrs. per day

SOURCE: RTI compilation based on provider input.

In addition, the hospitals will have more on-site services for pharmacy, respiratory therapy, physical therapy, and select diagnostic services than SNFs, although they will vary widely within hospital types as well as across hospital types in their provision of diagnostic, lab, and monitoring services, such as telemetry.

4.2 Defining Levels of Care Through Medicare Rules

4.2.1 Current COP/Facility Level Criteria for Medicare-participating PAC Providers

Many of the differences in services provided at different hospitals are specified in the Medicare regulations governing facility certification and the conditions of participation (***Appendix B***). These regulations define what constitutes a type of provider, their certification requirements, and the coverage criteria associated with each. Many of the requirements are

common across the IPPS, IRF, psychiatric, and long-term care hospitals. Each are providing inpatient acute care defined by the level of physician intervention and certain patient conditions. In addition, the IRFs and Psychiatric hospitals have staffing requirements that include team-related management of their patients, professional specializations that reflect the respective services, and special provisions governing their units and satellite facilities. Other than the satellite facilities, long-term care hospitals lack most of these requirements. Instead, they must meet the same requirements as IPPS acute hospitals and then demonstrate that they meet the LOS requirement; that is, they treat Medicare patients for an average of greater than 25 days on an annual basis. They have additional requirements governing their ability to open hospital within hospitals. However, they lack many of the staffing and treatment requirements that Medicare requires for IRFs and IPFs to qualify as specialized inpatient hospitals.

Conditions of Participation. IRFs, psychiatric hospitals, LTCHs, and IPPS all have to meet the conditions of participation specified in 42 CFR Part 482 that requires hospitals to meet certain conditions to be certified as a hospital. In addition, psychiatric hospitals have to meet the requirements of Subpart E.

IPPS Exclusion Criteria. Both IRFs and psychiatric hospitals have additional requirements to meet under 42 CFR 412.23 governing their units which requires them to have the following characteristics:

- Certain medical records and utilization review policies
- Separate beds
- Same fiscal intermediaries as their hospital in which they are based
- Be treated as a separate cost center
- Meet requirements regarding beds, square footage, changes in certification status, and swing bed provisions.

In addition, IRFs must meet the additional requirements:

- At least 50-75 percent of patients in 13 conditions

Psychiatric hospitals must be "primarily engaged in the diagnosis and treatment of mentally ill persons." Services must be provided under the supervision of a MD or DO, psychiatric team.

Both IRFs and psychiatric hospitals must limit their patients to the following:

- Only accept patients who are expected to improve with treatment.
- Screen patients on a pre-admission basis.

- Recertify patients throughout the stay. Psychiatric hospitals must recertify patients as of the 18th day and every 30 days. IRF patients are constantly reevaluated for improvement with Functional Impairment Scores (FIM) scores taken every shift to document improvements.

Staffing requirements for both specify that a physician is in charge of an interdisciplinary team which includes professionals of varied backgrounds, specific to the respective types of patients (CMS Manual 100-04, 6/25/04, Transmittal 221, Change Request 3334 and Benefit Policy Manual Section 2). IRFs must have licensed PT, OT, SLP and be supervised by a director of services (CMS Manual 6/25/04). The hospital must be lead by a MD or DO with at least 2 years of rehabilitation training or experience and a director of rehabilitation who provides services on the unit at least 20 hours/week (CMS Manual 6/25/04). IRFs are required to have coordinated, multidisciplinary team conferences at least every two weeks (CMS Manual 6/25/04). Similarly, psychiatric services must be prescribed and directed by a physician with appropriate training who must direct and guide all members of the therapeutic team (Benefit Policy Manual Section 2).

Medical Necessity Criteria. Both IRFs and psychiatric hospitals have provisions in the medical benefits policy manuals that specify the conditions that patients must meet to qualify as appropriate admissions. IRF admissions must be justified by the need for medical or surgical grounds, or for an intensive rehabilitation program (CMS Manual 6/25/04). It must be reasonable and necessary to furnish the care on an inpatient basis rather than in a less intensive facility such as a SNF or outpatient service (Benefit Policy Manual, Section 1, Section 110). Psychiatric admissions must be receiving active treatment under an individualized treatment or diagnosis plan (Benefit Policy Manual Section 2). Active is defined as the patient's condition is expected to improve and services are supervised and evaluated by a physician.

4.2.2 Current and Proposed Coverage Rules/Patient Level Criteria.

Insurers, including the Medicare program, have standards they use to determine whether an admission is appropriate. In Medicare, the Quality Improvement Organizations (QIOs) are responsible for determining appropriateness of admissions. QIOs have statutory authority under section 1154(a) of the Act to: review the necessity and reasonability of services delivered under Medicare; whether these services meet professionally recognized standards of health care; and whether these services, consistent with the provision of appropriate medical care, could be "effectively provided more economically. . . in an inpatient health care facility of a different type."

The QIOs determine appropriateness of admission using a set of criteria developed by the private sector. Although QIOs are not required to utilize uniform criteria nationwide for these determinations, most of them rely on InterQual™ as a baseline screening tool with physician-level decision-making for cases that appear to fall outside the acceptable level of care guidelines. These criteria were developed to create mutually exclusive, clearly defined levels of care for private sector insurers to determine appropriateness of admissions to hospitals. InterQual™ contains a suite of standards each applying to a different provider, including short term acute hospitals, long-term acute hospitals, rehabilitation, subacute and skilled nursing facility admissions, and psychiatric admissions of four different levels, ranging from inpatient to community-based. They also have criteria for home health coverage determinations. These

criteria have been developed based on literature reviews, nurse and physician panels, and select provider feedback.

In addition, some members of the LTCH industry are proposing guidelines for admission, continued stays, and discharge for 4 to 6 types of patients. These guidelines identify varying levels of severity and resource intensity needs with much less specificity. ***Appendix C*** compares the two sets of guidelines. The most prominent difference is the level of complexity in applying them. Both sets have been reviewed to determine whether they are targeting similar patients. While it appears that for the most part, both may identify extremely ill populations, the insurance-based criteria provide complex combinations of conditions that exemplify the level of intensity expected in the LTCH. On the other hand, the industry proposal is much less specific in defining the types of populations they treat, leaving them open for a broad range of qualifying conditions but also allowing the qualifying populations to vary extensively in intensity. Their proposed criteria are targeting difficult populations such as the medically complex, respiratory complex and other cases. Neither set distinguish between general acute and LTCH complexity.

The two sets also differ in regards to the rehabilitation population. InterQual™ is constructed to create mutually exclusive groups so the rehabilitation patient they define under LTCHs has complicating medical conditions but also requires rehabilitation services. However, unlike the industry proposal they do not authorize the admission of cases for primary diagnoses of rehabilitation services. This stricter definition is consistent with many definitions of LTCH services, except in areas of the country, where fewer IRFs exist. As noted earlier, LTCHs in these areas may be providing care not available in alternative settings. The industry proposal does suggest limiting rehabilitation services to medically complex cases.

A third proposal by the industry recommends selecting eight specific conditions and requiring that 75 percent of their admissions be within those groups. However, again, the severity of these patients may vary widely.

4.3 The Role of Quality Improvement Organizations (QIOs)

This section provides information on the QIOs' current responsibilities for defining level of care in the Medicare program and their methods for doing so. RTI worked with CMS' Office of Clinical Standards and Quality to identify QIOs in states with high numbers of LTCHs, develop interview protocols to collect information on their current responsibilities for LTCH reviews, and collect information on the feasibility of their having a greater role in the future.

4.3.1 Description of Quality Improvement Organizations (QIOs)

QIOs are private sector organizations that contract with CMS to determine whether a Medicare beneficiary needs to be admitted to a hospital, and whether the services could be provided on a more economical basis in an alternative setting, including a different type of inpatient health care facility.

> "Under the direction of CMS, the QIO program consists of a national network of fifty-three QIOs responsible for each U.S. state, territory, and the District of Columbia. QIOs work with consumers, physicians, hospitals, and other caregivers to refine care delivery systems to make sure patients get the right care at the right time, particularly among underserved populations. The program also safeguards the integrity of the Medicare trust fund by ensuring payment is made only for medically necessary services, and investigates

beneficiary complaints about quality of care." (http://www.cms.hhs.gov/qio/; accessed 6 August 2005).

QIOs have three requirements in their statement of work:

1. "Improve quality of care for beneficiaries by ensuring that beneficiary care meets professionally recognized standards of health care.
2. Protect the integrity of the Medicare Trust Fund by ensuring that Medicare only pays for services and items that are reasonable and medically necessary and that are provided in the most appropriate (e.g., economical) setting.
3. Protect beneficiaries by expeditiously addressing individual cases such as beneficiary complaints, provider-issued notices of noncoverage (HINNs), EMTALA violations (dumping), and other statutory responsibilities."

(http://www.cms.hhs.gov/qio/2.asp; accessed 6 August 2005)

4.3.2 Methodology

For this study, RTI conducted phone interviews with QIOs in Connecticut, Louisiana Maryland/DC, Massachusetts, Michigan, Nevada/Utah, New York, Pennsylvania and Texas (nine QIOs that represent 11 states/districts). In general, we selected states that had a high number or growing number of LTCHs and also have possible substitute providers, such as IRFs, psychiatric hospitals or SNFs. We also tried to select states that had high numbers of LTCHs and at least one other type of provider so we could examine how the QIOs view similar cases and make determinations regarding appropriate use of LTCHs compared to potential substitutions.

To gain QIOs' participation, we first forwarded a letter to either the Review Managers or the Chief Executive Officers introducing ourselves, explaining the study, and asking for their cooperation. We followed up with a phone call to further explain the study and answer any questions that they might have as well as to schedule an interview. Interviews were conducted June-August 2005.

RTI drafted a protocol that was shared with each participating QIO before the interview. The protocol was designed to be about one hour in length and contained questions about how QIOs conduct reviews, the providers they review and instruments they use for a review, as well as questions about how they determine appropriateness of care and distinguish types of patients and the inpatient settings in which they belong. QIOs were also interviewed regarding the specific strengths and weaknesses of the screening criteria they presently use and their applicability for CMS purposes. The protocol was reviewed by CMS and pretested with one of the QIOs.

4.3.3 Overview of QIO Review Process

QIO responsibilities for LTCH reviews are relatively recent. They were established with the move to a Prospective Payment System in October, 2002. As a result, LTCHs were brought into the hospital review process and QIOs began receiving a sample of LTCH claims for review in addition to short term acute hospital claims, effective October 2003.

CMS requires that all LTCHs have an agreement with a QIO to have a number of different hospital reviews performed (42 CFR 412.508). QIOs conduct reviews of a random sample of cases selected by CMS that have higher weighted DRGs or that involve Hospital Issues Notices of Non-coverage (HINN) on a monthly basis. In addition, QIOs review on a non-regular basis beneficiary complaints, notices of discharge, Medicare appeals by patients who feel they still need medical services that they have been denied, and high cost outlier cases.

The random sample is selected by CMS and consists of 1,400 cases nationwide (states do not have a certain quota of cases). The QIO reviews must determine whether services rendered at an LTCH were appropriate for the diagnosis and whether the services meet recognized standards. They must also evaluate whether the services provided could be provided at a lower level of care or on an outpatient basis. In addition, they are charged with evaluating the quality of the services provided including evaluating whether they were complete and adequate. QIOs examine premature discharges, interrupted stays, medical necessity for admissions, stays and procedures, and diagnosis. In looking at the diagnosis codes, they must determine if cases are correctly diagnosed, and whether the hospital has provided adequate information to support the diagnosis, as well as whether the admission and discharge from the LTCH hospital were appropriate.

To determine whether admissions, discharge, and continued stay in an LTCH are appropriate, QIOs use a set of screening criteria. CMS does not mandate which screening criteria QIOs use, but they are expected to establish written criteria or use national criteria. QIOs may also develop local criteria. The criteria must be regularly reviewed and updated to keep pace with new medical procedures and standards. CMS, through the Iowa QIO, has contracted with McKesson Health Solutions to give QIOs access to their InterQual™ level of care assessment tools.

QIOs can use the InterQual™ criteria to evaluate whether a patient was appropriately admitted to an LTCH. All but one QIO use the InterQual™ criteria as guidelines for determining whether a case is appropriate or should be referred to a physician for further review. In addition, the Massachusetts QIO, MassPRO, offers another set of screening criteria that they developed and which were approved in 1995 by CMS. This set of criteria is also available to all QIOs who wish to use it to evaluate the appropriateness of admission and level of care in LTCHs.

The number of LTCHs that QIOs review each year is dependent upon the number of LTCHs in the state. For example, in a state with only two LTCHs, there were about six to eight reviews a year; while in a state with more than 50 LTCHs, several hundred reviews per year were conducted. The time it took to conduct a review varied across QIOs, from a low of 20 minutes to a high of 150 minutes; most indicated that the reviews averaged about 60 minutes. Nurses and/or coding specialists generally conducted the reviews. If the case did not pass the initial review, it was referred to a physician reviewer. Most QIOs indicated that staff usually did the entire review, although two QIOs stated that staff specialized in different types of reviews (e.g., beneficiary complaints, appeals).

The review process was generally the same across QIOs. Nurses received cases to review. They then examined the admission charts to find the necessary criteria in order to compare it against their screening tools, either MassPRO, InterQual™, or some other standard criteria. They examined whether the admission or the DRG code qualified as medically necessary as defined by the severity of illness and intensity of service being provided. If the cases met the stated criteria, and the nurses and coding specialists had no further questions, the case was approved. However,

if there were any questions on a case, it was referred to a physician consultant. We noted that QIOs that used InterQual™ criteria were more likely to refer cases to physicians than QIOs who used other criteria. It was expressed that InterQual™ criteria are stricter and more detailed than other criteria, and sometimes it was difficult to find all the required information. Physicians used their medical judgment – and not criteria – to determine whether admissions were appropriate. If questions remained, the QIO sent letters to providers to request additional information. Once the information was provided, physicians reviewed the case again, a final determination was made and the provider was notified about the payment coverage decision.

4.3.4 Appropriate Care Criteria

QIOs use either the MassPRO or InterQual™ criteria in order to determine the appropriateness of the care provided in an LTCH. While QIOs may develop their own set of local criteria, with the exception of Massachusetts, none of the QIOs we interviewed had developed their own tool. One QIO reported that they started to develop their own local tool but it was too much work to keep it up to date so they stopped using it. Of the nine QIOs we spoke with only three used the MassPRO criteria. According to McKesson, 52 out of the 53 QIOs use at least one InterQual™ product, but not necessarily the LTCH product.[14]

The InterQual™ and MassPRO tools both require that LTCH patients meet similar general criteria but the InterQual™ tool is much more detailed. The reviewer must enter many different pieces of medical information into the InterQual™ tool, and, in comparison to MassPRO, it requires that more criteria be met in order to qualify as an appropriate admission to an LTCH. Both the InterQual™ and the MassPRO criteria include measures of intensity in their determinations of appropriateness of care. Intensity is a measure of the amount of services and frequency of services needed from doctors or nurses. Both MassPRO and InterQual™ require that patients need regular daily intervention or monitoring from health professionals to qualify for LTCH coverage. While MassPRO requires that physician supervision be needed every 2-3 days, the InterQual™ criteria require a physicians' intervention on a daily basis and requires some hours of nurse intervention. InterQual™ and MassPRO both also require that LTCH patients have a certain measure of complexity or severity to their cases. In the case of MassPRO they require that a patient either have multiple co-morbid conditions or that cases need a complex intervention from a specialized staff. Other differences are noted on ***Appendix C.***

In general, both criteria aim to have the reviewers determine if the patient could have had the medical services delivered at a lower level of care, such as a skilled nursing facility or in home care. In the MassPRO tool, patients that require wound care, I.V. antibiotics, respiratory care, medication adjustments, chemotherapy or parenteral/enteral services, would be eligible for care in an LTCH. In InterQual™, they require more specific combinations of conditions and services.

4.3.5 High Referral Rates

In determining differences among tools, one question is whether impact varied by the type of tool used to review admission criteria. As we mentioned earlier, the QIOs that use the InterQual™ tool reported referring many more cases to physician reviewers than those who used

[14] The InterQual™ product is a set of decision support tools for different types of hospitals and health services.

the MassPRO criteria. Of the QIOs that used the InterQual™ tool, with the exception of one who did not give us a percentage, all said that they referred more than 50 percent of their LTCH cases to physician reviewers. One QIO even said they thought it might be as high as 75 percent and another said that one month they had referred 82 percent of their cases to the physician. In comparison, one QIO mentioned that they only refer about 20 percent of their short-term acute cases onto physicians. The QIOs that used the MassPRO tool had much lower referral rates; one said that it ranged from about 16-30 percent while the other said the referral rate was about 20 percent.

These large referral rates led us to ask the QIOs that were using the InterQual™ tool if they had any thoughts on why so many cases were being referred to physicians for additional review. Several respondents mentioned the lack of complete documentation in the cases relative to the detail required by the InterQual™ tool. If the LTCH fails to include all the relevant information, for example, if a patient was transferred, they need to incorporate some of the data from the previous hospitalization on the record. If they fail to do so then the nurse reviewer may not have the information necessary to evaluate the case. In addition, some of the information that is required in the InterQual™ criteria is more detailed than the information hospitals are used to including in the medical charts. Most QIOs reported that hospitals were not documenting their patients with enough detail.

Several QIOs also mentioned the specificity of the InterQual™ criteria and how it made it difficult for cases to pass. For example, one respondent mentioned that potassium levels must be at 5.0 in order to be considered elevated, but if a patient has a level of 4.9 then they would not pass the criteria. It should be noted however, that according to CMS regulations the criteria that QIOs use to evaluate appropriateness of care should be used as guidelines. One QIO specifically mentioned that the criteria are merely guidelines for evaluation, and that the InterQual™ criteria were more stringent than CMS' expectations. A few QIOs said that they are willing to override the InterQual™ criteria in cases like the one described above, but it appears that most of the QIOs strictly adhere to the criteria.

Most respondents said that while the LTCH criteria were "lengthy," "tough," and "kind of picky," they did not think the InterQual™ criteria were bad. One QIO said that they thought the criteria should be as tough as it is, but that she did not like having to pass so many cases on to physicians for review. Another QIO felt that if the InterQual™ criteria were slightly less specific the review process might be better. In general, despite the perception that InterQual™ was a strict tool, the QIOs seemed to agree that the requirements for LTCH admissions should be strict. However, one criteria for admission is simply meeting acute level authorization making if inadequate for distinguishing appropriate LTCH admissions from other inpatient admissions.

The strictness of the InterQual™ tool was not the only reason for the high number of physician-referred cases. One respondent mentioned that in her state there were few alternative services available, so while a patient may be eligible for a lower level of care, there are not enough SNF beds available to allow patients to use those facilities. Thus her cases often fail to meet the InterQual™ criteria and are referred to a physician, even though the cases are ultimately approved. Another QIO mentioned that the reason the LTCHs fail the InterQual™ criteria, is because they admit cases that do not require an acute level of care. Patients who require rehabilitation and psychiatric services are being admitted to the LTCHs when alternative sources for that care (IRFs and Psychiatric hospitals) are available.

We asked if there were specific criteria on the InterQual™ tool that QIOs found hard to meet. Most QIOs could not provide any specific criteria but one QIO mentioned the criteria for medically complex and wound care patients as being difficult to apply. In addition, the respondent said, it is difficult to meet the criteria for continued medical care especially because of the behavioral symptoms requirements. Another QIO reported that meeting the requirements for the number of conditions is challenging. A patient must have at least three conditions; two must be unstable. Often, the LTCH patients do not have two unstable conditions.

Despite high referral rates, the denial rates were not as high. The rates of denials varied a great deal by QIOs, ranging from 5 percent to 33 percent. This suggests that despite high referral rates, many cases are still being approved and that the criteria perhaps could be less particular and still be a successful screening instrument.

4.3.6 Other Issues with QIOs' LTCH Reviews

All except one QIO we spoke with felt that there were enough different levels of hospital care available in their areas. Patients who needed rehabilitation services could go to an IRF, or patients that needed SNF care could generally find a bed. One QIO did discuss the lack of SNF beds available in her state and the fact that many LTCH patients could in fact be treated in a SNF. As a result, cases she reviews often do not meet the criteria for an LTCH patient. At the same time, she said that physicians take this into account when reviewing the cases and will usually approve a case as long as they felt that no SNF beds were available. However, this assumes that LTCHs and SNFs provide similar services and receive similar payments A more appropriate setting may be continued stay in the acute setting.

Another issue discussed with the QIOs was how to determine when an LTCH patient should be transferred to a SNF. While patients may initially need an LTCH level of care, they may then stabilize to a point where they could be transferred to a SNF. The challenge is that because LTCHs need to maintain a 25 day average LOS, they have an incentive to hold on to a patient who could be transferred to a SNF. These patients may legitimately need the care they received in the LTCH but may not need to stay for 25 days. This issue is addressed in IRFs and psychiatric hospitals by requiring that a patients' condition is improving. Once they stop improving, they are required to discharge the patient to a lower level of care or home, if appropriate. LTCHs have no such provision.

As part of their special study provisions, the Texas, Massachusetts and Louisiana QIOs conducted a study to specifically examine the 25 day LOS issue. They were looking at cases that were discharged the day after they met the LOS threshold in order to determine whether or not the hospitals were keeping patients longer than necessary to get the full DRG payment. The results of this study have not yet been published but a few QIOs mentioned that that have occasionally seen cases where it appears that the patient was held at the LTCH longer than necessary.

4.3.7 LTCH Definitions Used By QIOs

CMS has defined an LTCH as an acute hospital with an ALOS greater than 25 days. In order to refine this definition and to understand how practitioners view the role of LTCHs in the health care field, we asked the QIOs to tell us how they "determine the medical necessity for an acute inpatient admission." The majority of respondents said that they simply use the InterQual™ or MassPRO criteria, or they mentioned the intensity of the services needed and the severity of

the illness. Many also mentioned that the cases that belonged in an LTCH were cases where the expected LOS was long.

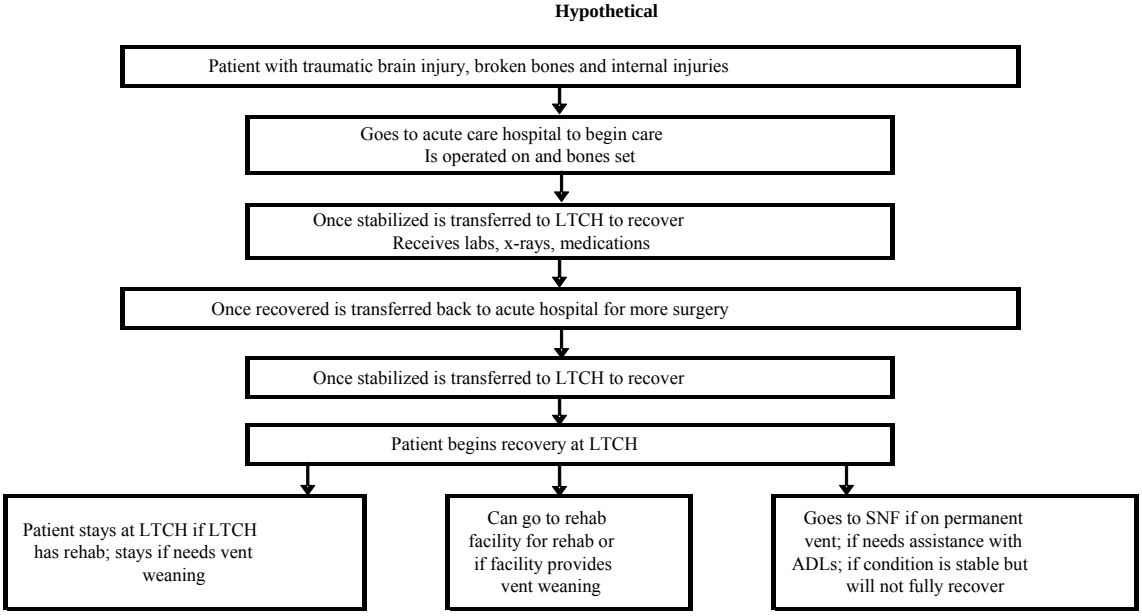
We also asked the QIOs about how an LTCH patient differs from other patients and how the LTCH hospital differs from other hospitals. Again, many of the responses we received were very similar to the InterQual™ and MassPRO criteria. Most QIOs said that cases that go to LTCHs need an intense level of care with frequent physician and nurse visits. The cases that go into an LTCH are more complex; patients have a number of co-morbidities. The expected LOS for an LTCH patient is around 25 days as patients are not expected to recover quickly from the treatment of the acute condition. *But as one QIO put it: an LTCH is a place where a patient goes for treatment of their condition; LTCHs are not for patients who are going to a hospital simply for maintenance.*

We specifically asked several QIOs how they felt an LTCH differed from an inpatient rehabilitation facility (IRF). Almost all of the QIOs said that the LTCH patient cannot merely need rehabilitation services; they must have other complex or acute conditions to be in the LTCH. If a patient receives rehabilitation services in tandem with another acute medical attention, then it is appropriate for the patient to be in an LTCH, otherwise they felt that the patient should be in an IRF. Yet two QIOs said that while they felt the services performed in an LTCH should not merely be rehabilitation services, they felt that many LTCHs admitted patients who did not require acute inpatient services along with the rehabilitation services. One said that while both IRF and LTCH facilities can provide rehab services, the LTCH health care workers have more specialized training. LTCH health care workers often provide rehabilitation services to patients but they are skilled in providing rehab to patients who have multiple complications. LTCHs are distinct in that they coordinate the care from a number of different sources, including rehabilitation. One QIO said that ventilator patients who need rehabilitation services typically go to an LTCH instead of an IRF.

We also asked some QIOs to tell us what they thought was different about LTCHs versus short-term acute hospitals. One respondent said that they didn't see any difference other than the LOS, and that it was not smart to tie up an ICU bed in a short-term acute hospital so there was a need for LTCHs. Another QIO said that the LTCH was a step between the short-term acute and the SNF. The services provided are more complex than can be provided in a SNF but may not be as acute as the short-term facilities.

Finally, respondents were asked to compare SNFs to LTCHs. Respondents felt that SNFs could not provide the intensity of services necessary for the patients that are in LTCHs. The patients may need daily medication adjustments or I.V. antibiotics and daily doctor's visits that they would not be able to get in a SNF. One respondent offered the example of a patient who is on a ventilator, and if the doctors expect to wean the patient then the patient would go to an LTCH, if the patient was not expected to wean, then they would be sent to a SNF. Another respondent said that the SNF patient will usually have fewer co-morbidities, but they may in fact have longer LOSs than the LTCH patients. ***Figure 4-1*** applies these definitions to a brain trauma injury patient and shows possible treatment trajectories for them and the reasons for each choice as based on QIO interviews.

Figure 4-1
Differences in patient care pathways for a traumatic brain injury patient



NOTES:
?An LTCH was described as a place to heal and finish the treatment protocol, not a place for maintenance. Patients have multiple, complex conditions that are not stable and require long-term on-going intervention.
?A rehabilitation facility was described as a place to receive intensive services, not a place to remain for life.
?Staff have different trainings depending on the facility where they work; e.g., acute facilities have staff who deal with immediate needs of patients, not with long-term care issues. Patients at acute facilities also tend to make rapid improvement over a short period of time.
?The facility where a patient ends up can be dependent on expected recovery levels, likelihood of improvement, and availability of providers.

4.4 Current Screening/Assessment Tools Used by LTCH

To understand the extent to which LTCHs already collect assessment type information, RTI asked both LTCH hospital associations (ALTHA and NALTH) to collect and send us screening criteria and assessment tools currently used by their member hospitals. RTI reviewed these materials to assess the level of detail currently collected by hospitals, the types of information being collected consistently across hospitals, and identify any other information hospitals were using to screen patients. ***Table 4-2*** provides an overview of the types of information collected in these tools.

LTCHs use assessment tools to determine appropriateness of admissions, intensity of patients served, and outcomes expected from the treatment. The tools provide information on items commonly used by LTCHs to track patient conditions, treatment needs, and determine staffing levels. In addition to information on patient demographics, insurance, and medical history, the forms contain items on patient acuity, including measures of their blood gas, glucose levels, oxygen saturation levels, respiratory rates, and functional levels, as well as, treatment needs, such as tube feeding, central lines, and IV medications, GI suctioning, dialysis (hemodialysis or peritoneal), ventilator weaning, pain management, wound measures, or

Table 4-2
Commonly collected assessment items in LTCH

Type of Measure[15]	Number of Assessment Forms
• Conditions (Medical History)	**26**
• Vital signs (includes heart rate, blood pressure, temperature, etc.)(current Stats)	**14**
• Blood and plasma levels	**17**
• Arterial blood gas (SaO2, pCO2, etc.)	**14**
• Glucose levels	**10**
• IV (intravenous) including medications, antibiotics, diuretics, electrolyte replacements and/or fluids	**18**
• Total or partial parenteral nutrition (TPN or PPN), enteral, or central feedings, PEG	**21**
• Chemotherapy	**4**
• GI (gastrointestinal) suctioning frequency	**3**
• Isolation	**12**
• Hemodialysis/Peritoneal dialysis	**16**
• Pulse oximetry	**2**
• Progression towards goals	**8**
• Availability of laboratory services	**18**
• Psychosocial problems	20
• Respiratory/Respiratory Therapy	**16**
• Chest physiotherapy (PT)	**2**
• Tracheo-bronchial suctioning frequency/tracheostomy	**15**
• CPAP/Bi-PAP/VTM/IMV (types of ventilator support)	**18**
• Nebulized therapies	**4**
• Oxygen monitoring	**13**
• Pleural catheter management	**11**
• Trach weaning	**14**
• Pulmonary assessment	**4**
• Respiratory rate	**3**
• O2 (oxygen) saturation	**15**
• Respiratory acidosis pH level	**5**
• Fi02 titration	**8**
• Chest tubes	**9**
• Breath sounds	**4**
• Heart (Cardiac)	**10**
• Left ventricular (LV) ejection fraction	**5**
• Edema	**2**
• Cardiac monitoring	**3**
• Neurologic	**6**
• Neurological assessments	**6**
• Mental status/AO/Cognition	**20**
• Electrocardiogram (ECG) monitoring	**1**
• Pain	**2**
• Pain management	**10**
• Analgesia/relaxant therapy	**1**
• Wounds/Ulcer/Stage1-4/intensity of ulcer	**10**
• Wound dressing changes	**9**
• Wound management	**20**
• Rehabilitation	**9**
• Functional limitations/range of motion/strength/endurance/mobility/activities of daily living	**25**

[15] Items varied in their specificity from general identification of a type of condition to specific measures noted above.

telemetry monitoring. These measures cover the range of special services provided by LTCHs and can be useful for measuring patient acuity differences.

While these items provide objective measures of patient intensity, much work remains to be done in determining the levels at which a patient belongs in an LTCH or an alternative site of care. For example, while respiratory rates may be a good measure to identify medically complex patients, consensus is needed to identify the rates at which a patient should be in an ICU, general med/surgery bed, LTCH bed, IRF bed or other. Medical guidelines can dictate this in areas where they exist. However, similar definitions are needed for other types of patients where clinical guidelines may not yet be standardized nationally. Proposed levels of intensity were developed by InterQual ™ and other private sector entities, as well as, parts of the industry. More discussion is needed to set specific level of care determinations that include the range of specialists treating these patients. RTI is reviewing these proposed criteria along with existing criteria and patient assessment models used by QIOs, LTCHs, and incorporating input from clinicians with the objective of developing recommendations to CMS regarding a patient assessment items for LTCHs.

4.5 LTCH Site Visits

In order to more fully understand the nature of the long term care hospitals and the variation within these hospitals we conducted site visits to nine hospitals. The goal of these LTCH site visits was to identify patient or facility characteristics that distinguish services provided in these facilities from those available in other settings, including general acute care hospitals, inpatient rehabilitation facilities, SNFs, and for a subset of patients, inpatient acute psychiatric hospitals.

Site visits were conducted at 9 hospitals; 8 long term care hospitals and one short term acute care hospital with a respiratory ventilator weaning unit. These visits were conducted over a period of 3 months (October – December 2005). Site visit teams included RTI staff, both those with clinical and payment expertise. CMS staff including a former LTCH intensivist accompanied us on many of these site visits. Input and feedback was supplemented by an RTI staff physician.

4.5.1 Methodology

Hospitals were sent a letter inviting them to participate in our study and contacted by phone to set up the visits. The site visits generally lasted 4-6 hours and included a hospital tour and a meeting with various hospital staff including: physicians, nurses, quality assurance staff, admissions and discharge staff, other specialists (e.g. pulmonary, rehabilitation, occupational therapy), financial staff, the medical director and the CEO or president of the hospital. Many sites took us to their host or main facility as well as a satellite facility.

Interview materials were developed to ensure that the same questions were asked regarding the difference in intensity or level of care for patients treated in an LTCH versus other inpatient hospital-level settings or SNFs. Hospitals were provided with the discussion topics in advance of the visits. Participants generally included: discharge

planners, medical directors, admissions directors, nursing/quality assurance directors, therapy directors, and in some cases, the finance directors.

Participants were asked general information about the hospital (market competition, referral networks, type of facility) as well as the hospital's specialty areas, equipment, and facilities. Discussion focused on gaining a better understanding of the different kind of patients admitted and treated in the LTCHs, the admissions procedures, treatment received, and services needed. Discussants were asked to distinguish the LTCH's role from inpatient rehabilitation facilities, skilled nursing facilities, and short term acute hospitals. In addition to discussing the types of services provided and patients treated, we asked about measurement tools or criteria used for admissions, discharge, quality assurance and acuity.

The hospitals were selected to represent a range in ownership, size, location and populations treated. A number of factors were considered when selecting hospitals:

1. **Chain Versus not Chain**. Approximately one-third of all LTCH admissions are to chain hospitals. We selected a mix of chain and "non-chain" hospitals.

2. **Older Facilities.** Many LTCHs grew out of the chronic care hospitals that developed in the early 20th century to treat tuberculosis and other chronic populations. We selected a few of these older hospitals.

3. **Specialized Populations.** LTCHs often specialize in one particular population, such as pulmonary care, medically complex patients or psychiatric populations. We selected a mix of hospitals specializing in different populations.

4. **Hospital Affiliations.** Approximately half of all LTCHs are hospital within hospitals (HwHs) located within a larger hospital. LTCHs can also set up satellite facilities as free-standing units or HwHs. We selected sites that included a mix of HwHs, free standing and satellite facilities.

5. **Geographical Location.** LTCHs are not located in all states and are more prevalent in Texas, the North East and Louisiana[16]. We selected sites to ensure geographic variation.

6. **Industry Input.** ALTHA, NALTH, AHA and AMPRA suggested hospitals to visit. We selected a mix of hospitals represented by different associations.

In addition to the eight LTCH site visits we conducted a visit to Temple University Hospital in Philadelphia, Pennsylvania. Temple Hospital is a short term acute care hospital with a ventilator rehabilitation unit (VRU) and previously participated in CMS' (then HCFA's) Federal weaning demonstration. The VRU treats patients who are very similar to the ventilator weaning patients and respiratory rehabilitation patients typically treated in an LTCH. Visiting this hospital provided us with a point of comparison with the LTCHs.

[16] Due to hurricane Katrina, Louisiana's hospitals were excluded from our site visits.

4.5.2 Overview of the Facilities

Barlow Respiratory Hospital

Barlow Respiratory Hospital (BRH) is a not-for-profit LTCH located in Los Angeles, California. BRH is a 43 bed hospital with a 6 bed ICU and is located in a 26-acre urban park. The hospital was originally opened in 1927 as a tuberculosis sanatorium. The hospital evolved into a LTCH that specializes in respiratory therapies including ventilator weaning and inpatient pulmonary rehabilitation. BRH also offers a wound care program, care for the medically complex and outpatient pulmonary rehabilitation services.

In 1997 BRH opened a 26 bed satellite facility at Presbyterian Intercommunity Hospital in Whittier, CA. Presbyterian Hospital serves more than 800,000 residents in 11 cities within southeastern Los Angeles County and portions of two other counties. In 1990 BRH established a respiratory research center. Their research focuses on the populations treated in BRH and has been used by to develop standards for ventilator weaning. They are currently working on establishing palliative care protocols for LTCHs to address anxiety, dyspnea and pain management in their populations.

Baylor Specialty Hospital

Baylor Specialty Hospital (BSH) is part of the Baylor Health Care system at the Baylor University Medical campus. BSH is a not-for-profit hospital located in Dallas, TX. It is a 60 bed LTCH that was opened in the 1980's. In 2000, BSH opened a satellite facility in Garland, TX. BSH Garland is a 16 bed hospital within hospital unit within an acute hospital. BSH has a respiratory weaning program, pulmonary rehabilitation program, a medically complex patient program and a highly respected wound care program. The wound care program has a large outpatient program.

Gaylord Hospital

Gaylord Hospital is an independent, non-profit long-term care hospital located in central Connecticut. Gaylord has 109 beds and employs 500 staff. This hospital originally opened 102 years ago as a tuberculosis hospital. Gaylord Hospital has two distinct divisions -- medical and rehabilitation, and the patient population is divided evenly between these two lines of care. The medical division consists of the medically complex program, ventilator care program, and a pulmonary program. The rehabilitation division consists of five core programs – brain injury, neurological rehabilitation, orthopedics, spinal cord injury, and a program for stroke patients. Gaylord Hospital also operates four outpatient therapy centers and five Sleep Medicine centers in Connecticut."

Hospital for Special Care

The Hospital for Special Care is located in New Britain, Connecticut and is licensed by the state as a chronic disease hospital. HSC began its operations in 1941 as a nursing home. Subsequently, the facility evolved into a tuberculosis hospital, then shifted its focus towards disabled children and the treatment of birth defects, and further shifted its focus to polio care, all before developing into the long-term care hospital it is today. During the late 1980s and into the early 1990s, HSC focused its care primarily on two types of patients – respiratory, and rehabilitation. Recently, HSC has expanded its programs in wound care and in the treatment of medically complex patients.

In 2004, HSC opened a satellite facility at St. Francis Hospital. This 28-bed unit has grown during its first year of operation and is still expanding. The satellite facility provides ventilator weaning and management, treatment of medically complex patients, and wound care services.

Kindred Hospital Philadelphia

Kindred Hospital Philadelphia (KHP) was opened in 1995 and was the first LTCH to be opened in the area. The hospital was a former community hospital that was purchased by Vencor and later became a Kindred hospital. KHP is a 52 bed private hospital that specializes in ventilator weaning. KHP also treats traumatic brain injury patients, those with neurological disorders, the medically complex patients and wound care patients. Kindred is part of a large for-profit hospital chain that runs LTCHs in many parts of the country.

Levindale Specialty Hospital

Levindale Specialty Hospital is located in Baltimore, Maryland and is licensed by the state as a chronic care hospital. Levindale is part of the Lifebridge system which includes Sinai Hospital, Northwest Hospital and Jewish Convalescent and Nursing Home. Levindale Specialty Hospital is located in the Levindale Hebrew Geriatric Center which was started in the 1890s as The Hebrew Friendly Inn, and today is a 292 bed hospital of which 120 beds belong to the Levindale Specialty Hospital and 172 beds are comprehensive nursing home beds. Levindale Chronic Care consists of 20 geropsychiatric beds, 80 complex medical beds and 20 acute rehabilitation beds. The hospital has ventilator capacity and the rehabilitation beds are CARF certified.

Levindale Specialty Hospital provides ventilator and pulmonary rehabilitation care, wound care management, medically complex care, terminal care, inpatient rehabilitation services, gero-psychiatric services and coma emergent care.

Select Medical Corporation Hospital

Select Medical Corporation is the second largest LTCH chain nationally. The team visited three Select hospitals – a preliminary visit to an LTCH in Pittsburgh, Pennsylvania and full site visits to two locations in Texas. One of the hospitals in Texas, Select Hospital-Dallas North, is a hospital-within-hospital unit located at Trinity Medical Center. The Select Specialty Hospital located within Trinity is a privately owned hospital with 25 beds. The other Select Specialty Hospital visited in Texas is a free standing facility located in DeSoto. This hospital is a 100 bed LTCH with an 8 bed ICU. This facility was built in a former psychiatric hospital. Select Specialty Hospitals are a part of a national network of acute care LTCH facilities within Select Medical Corporation. Select Specialty Hospitals specialize in pulmonary/respiratory weaning, wound care, and treating the medically complex patients.

University Specialty Hospital

University Specialty Hospital is part of the University of Maryland Hospital system and is located in Baltimore, Maryland. USH is a state licensed chronic care hospital. The hospital has 180 beds; 72 ventilator beds, 20 traumatic brain injury beds and 88 medically complex beds. USH specializes in treatment of the medically complex patients, pulmonary/ventilator care, traumatic brain injuries, and coma emergence. USH

provides wound care and rehabilitation services to all its patients. In addition, USH has a sleep disorders center.

Temple University Hospital – Ventilator Rehabilitation Unit

Temple University Hospital is a teaching hospital located in Philadelphia, Pennsylvania. The Ventilator Rehabilitation Unit (VRU) is a 36 bed unit in an acute care facility. It was originally set up as a 4 bed unit and grew when it received a HCFA grant. This unit specializes in ventilator weaning and rehabilitation, patients that are typically treated in an LTCH. Temple Hospital has a lung transplant program so many patients in the VRU are post-operation transplant patients. The hospital also specializes in research on pulmonary critical care medicine. They have a separate respiratory ICU, a ventilator rehab unit in addition to the general ICU and rehabilitation units in the hospital.

4.5.3 Hospital Specialties and Characteristics

Table 4-3 compares the LTCH hospitals visited. The LTCHs varied in geography including hospitals on the east coast (PA, CT, MD), in the south (TX) and in the west (CA). Four of the eight LTCHs had satellite facilities. Most of the satellite facilities were units within other acute hospitals, but one satellite was a freestanding hospital. The hospitals ranged in size; the units located in other hospitals tended to be smaller. The largest LTCH we visited was University Specialty Hospital, a freestanding hospital with 180 beds. The smallest LTCH was Baylor Specialty Hospital's Garland satellite facility which has 16 beds.

It is important to note that the two Maryland LTCHs operate subject to State certification rules under a waiver from the Federal Medicare program. The State regulations define LTCHs as medical chronic disease hospitals. These regulations mandate that patients admitted to LTCHs require services that are too complex to be provided at a skilled nursing facility and they "need constant medical and nursing care by reason of chronic illness or infirmity.[17]" The regulations define the patient appropriate for an LTCH admission as someone requiring physician intervention more than two times a week, continual skilled nursing services, and need for extended time in a hospital to stabilize, be observed and assessed, receive respiratory therapies, receive hyper-alimentation, treatment for multiple extensive wounds, medication adjustment, isolation, or treatment of multiple medical problems. While the regulations do not explicitly state that patients who require more intensive care are precluded from admission, the MD LTCHs we visited admit patients who appeared to be less intensive than many of their counterparts in other states. The MD LTCHs transferred patients out to get lines or tubes inserted, whereas many of the other LTCHs performed those procedures in house. They described their LTCHS as a step-down from general acute care.

The LTCHs were relatively similar in terms of the types of programs offered at the hospitals but they varied the variation came in the relative emphasis of the different programs. All of the LTCHs offered programs that treat the "medically complex" patient, or a patient with multiple co-morbid conditions. While some facilities stressed the

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17 State of Maryland Medical Assistance Compliance Administration Department of Health and Mental Hygiene, Criteria for Chronic Level of Care

importance of this group in particular, most of the patients in other specialty areas such as ventilator weaning or pulmonary rehabilitation could also be considered medically complex (they had multiple co-morbid conditions).

Every LTCH (as well as Temple Hospital) we visited had a ventilator weaning program and most also had pulmonary rehabilitation programs. Some LTCHs were more specialized in pulmonary diseases like the Barlow Respiratory Hospital; whereas the Hospital for Special Care, which also had a ventilator weaning program, focuses also on a more diverse mix of medically complex populations.

The LTCHs all offer wound care, as patients who are very ill and bed ridden are likely to develop wounds, yet the emphasis placed on wound care varied. Most LTCHs commented on the high prevalence of wounds in their patients and that many patients have multiple wounds. Baylor Specialty Hospital had a particularly strong wound care program with many staff specializing in this field. Admissions to LTCHs for wound care alone were not common, but all of the LTCHs said that they might admit a patient for wound care alone as long as they meet the criteria for admission (such as that outlined in InterQual TM). In practice, most LTCHs described their wound care cases as having multiple co-morbid conditions.

Table 4-3
LTCH Site Visit Comparison

Hospital	Structure & Equipment	Specialty Areas	General Services	Staffing	Assessment Tools
A	Freestanding • 43 beds • 6 bed ICU • Telemetry • Lab services X-rays, most on site some contracted services • Special procedures room Satellite HwH unit 26 bed unit • Lab services contracted • X-rays contracted	Ventilator Weaning Pulmonary Rehabilitation Medically Complex/Chronically Critically Ill Wound care ALOS: 34 days	**Accept** patients with: • **PEGs**: Accept patients on PEGs. Insert about 3 PEGs a month. • **Chest tubes**: Accept patients on chest tubes. Insert about once a month. • **PIC lines**: Accept patients with PIC lines. Do not insert. • **Central lines:** Accept patients with central lines. Insert about 8-12 a month. • Perform **blood transfusions**. • Perform **tracheostomies**. About 2 a month. • Perform **bronchoscopies**. About 6 a month. Do **not accept** patients with: • Arterial lines. • Swan ganz catheters but do insert about one a year. • Balloon pumps. • Paralytic drips. • TBI/Spinal chord patients. Do **not perform/give**: • Chemotherapy. • Wound flaps.	• 1:2 RN in ICU. • 1:4 combination of RN and LVN, plus certified nurse assistants. • 25% of nurses are ACLS certified. • Wound care certified nurses. • Infection control certified nurse. • Palliative care nurse. • Full time contracted pharmacist.	Admissions continued stay and discharge criteria: • NALTH Medical Acuity: • Apache 3 on admission for ventilator patients. Functional Limitations: • Functional impairment measures (FIMs) scores for Pulmonary Rehab patients (initially, and 3 months post discharge if able). • ADLs • Zubrod Score Cognitive Impairment: • Glascow Coma scale Skin conditions: • Braden Scale

(continued)

Table 4-3 (continued)
LTCH Site Visit Comparison

Hospital	Structure & Equipment	Specialty Areas	General Services	Staffing	Assessment Tools
B	Freestanding • 60 beds • 8 bed High Observation Pod • Telemetry • Labs contracted • X-rays, most on site some contracted • Procedures room Satellite HwH unit • 16 beds • 5 bed high observation unit • Telemetry contracted • Labs contracted • X-rays contracted • Procedures room	Rehabilitation Pulmonary Care Ventilator Care Cardiac Medical Management Stroke Care Wound care Medically Complex ALOS: 26-27 days	**Accept** patients with: • **PEGs**: Accept patients on PEGs. Do not insert. • **Chest tubes**: Accept patients on chest tubes infrequently. Only insert in an emergency. • **PIC lines**: Accept patients with PIC lines. Insert several a month. • **Central lines:** Accept patients with central lines. Do not insert. • Perform **blood transfusions**. • Perform **tracheostomies** only in an extreme emergency. • Perform **bronchoscopies** very rarely. • Provide **chemotherapy.** Radiation services are contracted to other hospitals. Do **not accept** patients with: • Arterial lines. • Swan ganz catheters. • Balloon pumps. • Paralytic drips. Do **not perform/give**: • Wound flaps	• 1:3 RN High observation. • 1:4-5 RN general floor during the day and 1:5-6 at night. • Vent patients have a max of 1:4 RN. • 1:5-6 patient care tech aide all units. • All nursing supervisors, and nurses in the high observation pod are ACLS certified. All RNs at the satellite are also ACLS certified. • Enterostomal therapist nurses. • Wound care nurse. • Infectious disease nurse. • Neurodevelopmental trained (NDT) nurses. • Full time pharmacist , contracted at satellite.	Admissions continued stay and discharge criteria: • Combination of NALTH and InterQual™. Functional Impairment: • ADLs Cognitive Impairment: • Rappaport Disability Scale Skin conditions: • Bates Jensen wound scale • Braden Scale

(continued)

Table 4-3 (continued)
LTCH Site Visit Comparison

Hospital	Structure & Equipment	Specialty Areas	General Services	Staffing	Assessment Tools
C	Freestanding • 109 total beds (101 staffed) • Telemetry • Labs contracted • X-rays on site	Medical Division • Medically complex • Ventilator care • Pulmonary Rehabilitation Division • Brain injury • Neurological rehabilitation • Orthopedics • Spinal cord injury • Stroke ALOS: 26 days	**Accept** patients with: • **PEGs:** Accept patients on PEGs. Do not insert. • **Chest tubes:** Accept patients with chest tubes, insert occasionally. • **PIC lines**: Accept patients with PIC lines. Do not insert. Plan to make contracted service. • **Central lines**: Accept patients with central lines. Insert occasionally. • Perform **blood transfusions**. Contract services. **Do not accept** patients on: • Arterial lines. • Swan Ganz catheters. • Balloon pumps. • Vasopressors, paralytic agents or cardiac drips. Do **not perform/give**: • Tracheostomies. • Bronchoscopies (are planning to start performing this service). • Chemotherapy. • Wound flaps.	• 1:3-4 RN . • 1:6 LVN/tech aids. • Staffing levels determined by patient needs not type or floor. • 15% nurses ACLS certified, in process or certifying more. • Wound care nurse on staff. • Certified rehabilitation nurses (CRRN). • Pharmacist on staff.	Admissions, continued stay, and discharge criteria: • NALTH Functional Impairment: • Activities of Daily Living (ADLs) • FIMs Cognitive Impairment: • Behavioral Assessment of Dysexecutive syndrome • Gaylord Cognitive Battery Skin Conditions: • PUSH tool

(continued)

Table 4-3 (continued)
LTCH Site Visit Comparison

Hospital	Structure & Equipment	Specialty Areas	General Services	Staffing	Assessment Tools
D	Freestanding • 228 • Close Observation Unit • Telemetry • Labs on site • X-rays on site • Special procedures room Satellite HwH • 28 beds	Medically complex rehabilitation General rehabilitation Acquired-brain injury (ABI) Pulmonary complex Spinal cord injury rehabilitation Respiratory • Close Observation Unit • Respiratory Care Unit • Respiratory Step-Down Unit ALOS: 28-33 days	**Accept** patients with: • **PEGs**: Accept patients on PEGs. Insert about 30 a year. • **PIC lines:** Accept patients with PIC lines. Insertion contracted off site. • **Central lines:** Accept patient with central lines. Insert about 22 a year. • Perform **blood transfusions**. Contracted service. • Perform **bronchoscopies**. Approximately 100 a year. • Provide **chemotherapy**. Do not mix drugs on site. Radiation is done off site. • Take patients on **critical drips** except paralytics. Do **not accept** patients on: • **Chest tubes** (do not respond well to weaning) Insert in an emergency. • Arterial lines • Swan Ganz catheters • Balloon pumps Do **not perform/give**: • **Tracheostomies.** • Wound flaps.	• Mix of LPN and RNs. Staff 2.3 RN to 1 LPN. Average patient to LVN/RN ratio: 1:4.3 day, l:.6.5 evening, 1:8.9 night.. During the day: • Close observation unit has 1:2 staffing. • Ventilator patients 1:5.6. • General floor 1:4.7. • Other 1:5.6. • Wound care nurse. • Infection control nurse. • Rehabilitation nurse. • Medical-surgical nurse. • Full time pharmacist.	Admissions continued stay and discharge criteria: • NALTH Functional Impairment: • FIMS scores for appropriate patients • ADLs • Zubrod Score Cognitive Impairment: • Glasgow coma scale • Rancho Los Amigos Scale • Skin conditions: • Adapted Braden scale

(continued)

Table 4-3 (continued)
LTCH Site Visit Comparison

Hospital	Structure & Equipment	Specialty Areas	General Services	Staffing	Assessment Tools
E	Freestanding • 52 beds • 6 bed ICU • Cardiac monitoring (no telemetry) • Labs on site • X-rays on site, some contracted off site • Procedure room	Ventilator weaning Rehabilitation Wound care	**Accept** patients with: • **PEGs**: Accept patients on PEGs. Insert PEGS. • **Chest tubes**: Accept patients with PIC lines. Insert PIC lines. • **PIC lines:** Accept patients with PIC lines. Insert PIC lines. • **Central lines:** Accept patient with central lines. Insert frequently. • **Arterial lines:** Accept patients with arterial lines. This is rare as they are too unstable generally. Would go direct to ICU. • Perform **blood transfusions**. • Perform **tracheostomies** very rarely. • Perform **bronchoscopies**. frequently. • Take patients on **critical drips.** Use of paralytics is rare. Do **not accept** patients on: • Swan Ganz catheters. • Balloon pumps. Do **not perform/give:** • Chemotherapy or radiation. • Wound flaps.	• ICU 1:2 RN • Nursing based on patient acuity. 8.65 nursing hours per patient day, staff mix is 47% RN, 20% LPN, 32% Certified Nursing Assistant. • ACLS certified staff always onsite. • Wound care nurses • Trauma care nurses • Critical care nurses • Infection disease nurses • Licensed nursing home administrator nurses. • Full time pharmacist	**Admissions continued stay** and discharge criteria: • InterQual™ Medical Acuity: • APACHE 3 • Kindred Hospital Acuity Tool developed for determining staffing levels. Functional Impairment: • FIMS scores if rehabilitation patient • ADLs Cognitive Impairment: • Glasgow Coma Scale Skin Conditions: • PUSH tool

(continued)

Table 4-3 (continued)
LTCH Site Visit Comparison

Hospital	Structure & Equipment	Specialty Areas	General Services	Staffing	Assessment Tools
F	HwH • 120 beds • 20 geropsychiatric • 80 complex medical • 20 acute rehabilitation • Labs from health system • X-rays contracted in house • Procedures room	Respiratory Rehabilitation Wound care Medically Complex Geriatric Psychology Comprehensive Rehabilitation	**Accept** patients with: • **PEGs**: Accept patients with PEG. Do not insert new PEGs, can reinsert. • **Chest tubes**: Accept patients with chest tubes, insert only in emergency. • **Central lines**: Accept patients with central lines. • Insert rarely. • **PIC lines:** Accept patients with PIC lines. Insert PIC lines every 3-4 weeks. • Perform **blood transfusions** • Perform **bronchoscopies** (Anticipate 1-2/week). Do **not accept** patients on: • Arterial lines. • Swan Ganz catheters • Balloon pumps. • IV medication drips. Do **not perform/give**: • **Tracheostomies.** • Chemotherapy drugs • Wound flaps	• 1:8 RN/LPN combined. 1:8 technical aids. Staffing same for all floors and patients. • Supervising nurses ACLS certified. • Wound care nurse on staff; APIC (Association for Professionals in Infection Control and Epidemiology) nurse on staff. • Pharmacist on staff.	Admissions continued stay and discharge criteria: • Hospital developed Functional Impairment: • FIMS (rehabilitation patients) Cognitive Impairment: • JFK Coma Recovery scale • Rancho Los Amigos Scale • Glasgow Coma Scale • MMSE • GDS/Cornell Scale Skin Conditions: • PUSH tool • Braden scale

(continued)

Table 4-3 (continued)
LTCH Site Visit Comparison

Hospital	Structure & Equipment	Specialty Areas	General Services	Staffing	Assessment Tools
G	HwH • 25 beds • 3 bed high observation unit. • Telemetry • Labs contracted • X-rays contracted from host. • Special procedures room. Freestanding satellite • 30 beds • 8 bed ICU • Isolation rooms • Telemetry • Most labs in house, some contracted. • X-rays contracted • Special procedures room.	Medically Complex Ventilator weaning Wound care ALOS: 30 days	**Accept** patients with: • **PEGs**: Accept patients on PEGs. Do not insert on site. • **Chest tubes**: Accept patients on chest tubes. Insert about once every 2-3 months. • **PIC lines**: Accept patients with PIC lines. Insert 2-3 times a week. Contracted at HwH. • **Central lines:** Accept patients with central lines. Insert about 2-3 a week at freestanding, 1-2 month at HwH. • **Arterial lines:** Accept patients with arterial lines at free standing only. Do not insert. • Perform blood **transfusions**. • Perform **tracheostomies** off site if needed will start on-site soon, only 2-3 a month at freestanding. HwH only in emergency. • Perform **bronchoscopies**. About 2-3 a month. • Take patients on all **critical drips**. • **Wound flaps** contracted services. Do **not accept** patients with: • Arterial lines at HwH. • Swan ganz catheters. • Balloon pumps. • Paralytic drips. • Do not admit TBI or spinal chord patients. Do **not perform/give**: • Chemotherapy or radiation.	• 1:2 RN and 1:2 LVN and 1:8 aid for ICU patients. • 1:4 RN and LVN and 1:10 aids for ventilator patients. • 1:5 RN and LVN and 1:10 aids for general floor patients. Staffing is slightly lower at night. • Almost all nurses are ACLS certified. • Wound care nurses . • Infection control nurses. • Nurse practitioners. • Full time pharmacists at both hospitals.	Admissions continued stay and discharge criteria: • InterQual™ • MassPRO is used in KY, NE, and WI • Milliman and Roberts is used in CO and KN Functional Impairment: • ADLs Cognitive Impairment: • Glasgow coma scale. • Rancho Los Amigos Scale Skin conditions: • Pressure Ulcer Scale for Healing (PUSH) tool • Braden Scale

(continued)

Table 4-3 (continued)
LTCH Site Visit Comparison

Hospital	Structure & Equipment	Specialty Areas	General Services	Staffing	Assessment Tools
H	Freestanding • 180 beds • 72 ventilator • 20 traumatic brain injury • 88 medically complex • Labs contracted • X-rays contracted • Procedures room	Medically Complex Pulmonary/Ventilator Care Program Traumatic Brain Injury Program Coma Emergence Program Rehabilitation Wound care Sleep disorders Center ALOS: 46.7 days; TBI 96.2, Respiratory 46.3, chronic care 43.8.	**Accept** patients with: • **PEGs**: Accept patients with PEGs. Do not insert. • **Chest tubes**: Accept patients with chest tubes. Do not insert. • **PIC lines:** Accept patients with PIC lines. Do not insert. • **Central lines**: Accept patients with central lines. Insert occasionally. • Perform **blood transfusions.** Contracted service. • Perform **bronchoscopies** weekly. • Accept patients on some **IV drips** including: antibiotics, anticoagulants, dubutamine and milrinone. Do **not accept** patients on: • Arterial lines. • Swan ganz catheters. • alloon pumps. Do **not perform/give**: • **Tracheostomies.** • Chemotherapy drugs. • Wound flaps.	• Ventilator patient - 1:7 nursing ratio, 1:7 LVN. • Medically complex patient – 1:8 nursing ratio, 1:9 LVN ratio. • Approximately 10% of nurses are ACLS certified • Staff is trained in wound care (not necessarily certified). • Contract pharmacist.	Admissions continued stay and discharge criteria: • Hospital developed Functional Impairment: • FIMS (TBI patients) • ADLs Cognitive Impairment: • JFK Coma Recovery scale • Rancho Los Amigos Scale Skin conditions: • Homegrown tool that is a combination of a number of tools.

The emphasis on rehabilitation varied by hospital yet all LTCHS offered physical and occupational therapy to their patients. While each of the LTCHs admitting patients for rehabilitation services identified their cases as also being medically complex, the rehab units in some LTCHs were fully CARF accredited. These LTCHs reported having the capability to provide the same number of hours of rehabilitation to the LTCH patients as what is available in an IRF, although they pointed out that their admissions were not required to meet the 3 hour/day rule and often received less therapy per day than an IRF patient.

A few of the LTCHs had traumatic brain injury and coma emergent programs while others specifically did not admit these patients. University Specialty Hospital had a locked floor for patients who had cognitive or behavioral issues due to head trauma that needed a locked unit to ensure their safety. Gaylord hospital also had a brain and neurological rehabilitation division and they treat a large number of spinal chord injuries. The Hospital for Special care has an acquired brain injury program. Levindale Specialty Hospital was the only LTCH we visited with a geri-psych program.

The equipment and diagnostic services available at the LTCHs were similar. While many diagnostic services were not provided by the LTCH directly, contracting for services to be provided on site as well as off site was very common. Most hospitals contracted for lab services, although many ran certain tests themselves. X-ray services were also contracted by most of the LTCHs, although many could perform limited x-ray services themselves. Almost all of the hospitals have telemetry and dialysis capabilities, although dialysis services were under contract arrangements in some locals. They ranged from having telemetry available for all patients to having only a handful of telemetry monitors. Many LTCHs reported having special procedures rooms for certain procedures but none had an acute care operating room.

4.5.4 ICUs and High Observation Units

One key distinction between the LTCHs was whether or not they had an intensive care unit (ICU) or a high observation unit. Barlow Respiratory Hospital, Kindred Hospital – Philadelphia, and Select DeSoto Hospital all had ICU's. All the ICU patients were on telemetry monitors and were carefully monitored by registered nurses (staffing varied and is detailed more below but was usually about 1:2 in the ICU's). At some hospitals ICU patients were on multiple drips and attached to several machines, while at others the ICU patients were more alert, and receiving fewer interventions. It is important to note, that while the patients looked more acute at certain hospitals, we could not review the charts of the patients to ascertain what kind of treatment they were receiving.

Baylor Specialty Hospital did not have an ICU but rather a "high observation pod". The beds in this area were all on telemetry and all the patients could be seen by the nursing staff. The nursing ratio for the high observation pod was 1:3. Baylor's high observation pod is generally used by patients who are weaning but any patient can be admitted to the pod. These patients require frequent respiratory interventions, but must have controlled arrhythmias, and be hemodynamically stable. The Hospital for Special Care also had a "close observation unit". This unit is primarily used by patients who are weaning from the ventilator but medically complex patients that need cardiac or respiratory monitoring may also be placed in the unit. The HSC admits all of the patients who are ventilator weaning patients directly to the close observation unit.

Use of the high observation/ICU differed slightly among the LTCHs. For example, at Barlow where all the beds in the hospital have telemetry capabilities, the ICU beds are reserved for very complex patients requiring intensive services like drug titration every 15 minutes or where vital signs need to be monitored frequently. Baylor on the other hand, puts all patients who require telemetry monitoring in their high observation pod. HSC's close observation unit is mainly used for ventilator weaning patients although other medically complex patients are also occasionally placed in the unit.

With only one exception, all of the ICU/high observation units were located in free standing LTCHs. Select was the only LTCH we visited that had a high observation area in an LTCH that was located within another acute hospital. The lack of ICU's in the HwH is likely due to the fact that transferring a patient into the host hospital ICU is easier than if the patient is located in a free standing LTCH. The distance and challenge involved in transporting a patient to an ICU in a short stay acute hospital makes the ICU more necessary in a free standing LTCH.

4.5.5 Staffing

In addition to the pulmonologists, internists, infectious disease specialists, traumatic brain injury specialists and other specialized physicians for different programs, all of the LTCHs employ or contract with pulmonologists, respiratory therapists, speech therapists, physical therapists and occupational therapists. These clinicians work together in what LTCHs describe as an "inter-disciplinary" approach. The team of physicians, nurses, therapists and specialists meet on a regular basis to update and review patients' treatment plans. These teams also include social work and discharge planners who arrange for patients to be moved to lower level of care or to go home.

Nursing in the LTCHs is a key component of the care patients receive. LTCHs employ registered nurses (RNs), licensed vocational nurses (LVNs)/licensed practical nurses (LPNs), and technical aids or certified nursing assistants. Many of the LTCHs had nurses that were ACLS (advanced cardiac life support) certified. Some LTCHs require that their supervising nurses and ICU/High observation nursing staff be ACLS certified, others require that someone on staff at all times be ACLS certified. Many LTCHs have nursing staff that are specialized in other areas as well. Some LTCHs have nursing staff with wound care certification, infectious control certification, neurodevelopment training, trauma, critical care as well as palliative care nurses. Many mentioned that they hire former ICU nurses.

The details of the staffing levels are in the table included in Table 4-3. Staffing for the ICU's and high observation units was 1 RN to 2 patients. Only one hospital staffed the unit slightly lower with a ratio of 1RN to 3 patients. The higher staffing ratio demonstrates the higher intensity of the patients in these units relative to a general acute medical/surgical unit.

In general, staffing levels were approximately 1 RN to 4 or 5 patients outside of the ICU/high observation units. Both of the Maryland hospitals reported lower staffing ratios of 1 RN to 8 patients. LVN and nursing aid staffing varied by hospital and some staffed LVNs similarly to RNs while others staffed technical aids and LVNs at much lower levels than RNs.

The LTCHs staffed their hospital in two ways; by calculating staffing needs based on the acuity of the patient, or by staffing based on the type of patient (ventilator, medically complex etc.) The staffing tools gauge a patient's acuity levels in order to determine the number of nurses needed to monitor the patients accurately. A number of LTCHs mentioned that they conducted

time studies in order to determine appropriate staffing levels for the different levels of acuity. In general, the tools included information about the overall stability of the patient, need for assistance with ADL's, pain, treatments and interventions as well as frequency, assessment frequency, and other special needs such as family, psychological, isolation or bariatric.

One LTCH described using a hybrid of set staffing levels and an acuity tool to adjust staffing levels depending on patient acuity. The hospital has set staff to patient ratios which vary depending on the type of patient; the staffing ratio is higher for ventilator patients than general floor beds. These ratios are then adjusted by the patient acuity level.

4.5.6 Admissions Processes

The admissions process varied little from hospital to hospital but LTCHs did differ in terms of the types of patients that they would admit. Some of this variation was due to the kinds of facilities and equipment available in the LTCH, (whether they have an ICU or not), specialty programs and state licensing rules. The details of the admissions process and patient types are summarized in this section.

NALTH and InterQual™ screening criteria are used in admissions decisions for all but the Maryland LTCHs.

LTCHs used InterQual™ and NALTH criteria to screen for admissions to the LTCH. With the exception of the Maryland LTCHs, all of the other LTCHs reported using either the McKesson screening tool, InterQual™, or the National Association of Long Term Hospitals (NALTH) assessment forms to determine eligibility for admissions.[18]. Baylor Specialty Hospital and Barlow Respiratory Hospital assisted NALTH in developing the criteria and were testing the new measures during our visit. The NALTH criteria contain admission, continued stay, and discharge criteria for the following categories of patients: medically complex, ventilator weaning and management, rehabilitation, complex respiratory and wound management. The individual assessment items used in these criteria vary by type of patient, although several items are collected across categories of patients. The InterQual™ tool contains similar criteria to evaluate admission, continued stay and discharge of patients for ventilator weaning, cardiovascular/peripheral vascular, infectious disease, other medically complex, respiratory complex and skin/wound care.

In addition to the InterQual™ and NALTH criteria, many LTCHs developed their own assessment forms or pre-admission assessment forms. Those tools are described in more detail in the next section but they are used in conjunction with the InterQual™ /NALTH screening guidelines.

The two Maryland LTCHs were using different criteria to determine patient eligibility for care. The Maryland regulations explicitly say that a patient appropriate for an LTCH admission is one who needs physician intervention more than two times a week.

The University Specialty Hospital assesses the resource intensity and mental status of the patient to determine if they are ready to leave the short term acute care facility. In addition, the

[18] The InterQual™ screening criteria (or a modified version of it) was used to avoid payment denials since it is the tool the QIOs use to review LTCH admissions. The NALTH screening criteria are being developed by NALTH member hospitals to help them identify appropriate admissions.

case manager assesses whether a patient needs cardiac monitoring, drips, or one on one monitoring as USH does not provide these services. Lines and other tubing must be inserted before transfer to the LTCH. If a patient looks like a candidate for transfer to the LTCH, USH requires that patients have stable vital signs for a minimum of 24 hours prior to admission. The patient must require physician intervention more than 3 times a week to monitor the ventilator or other clinical problems and require a higher level of nursing care than offered at a SNF.

Levindale similarly assesses patients for appropriateness of admission, and must not be able to receive these services at a lower level of care. All of the patients admitted must require physician intervention at least 3 times a week. Levindale, which has a geriatric psychology program, had a clear set of criteria for admission to this program. In order to be admitted to the program patients must be medically stable for 72 hours prior to admission, admitted voluntarily, and over the age of 55. Psychiatric patients must exhibit symptoms of sufficient severity that they are not capable of functioning at home or in a SNF (like severe depression with a complicating disease), and not extremely dangerous or combative. Patients may have new onset of visual or auditory hallucinations, dementia, mania, or depression. They must also have failed outpatient or less intensive therapy, be newly diagnosed with suspected dementia, require therapies twice a day, need electroconvulsive therapy or have had a rapid sudden decline. Patients who require restraints or seclusion are not admitted.

Case managers review patients being referred.

The LTCHs had similar procedures for determining a case for admission. A potential patient is initially screened by a case manager. Unless the LTCH has a close relationship with the referring hospital, the case manager goes to the referring hospital to determine if the potential patient is an appropriate case to admit to the LTCH. The case manager screens the patient using the NALTH, InterQual ™ or hospital-developed criteria. In some cases LTCHs said they will refer the potential admission to a physician for review before admitting a patient if they are unsure whether the patient should be admitted. The NALTH and InterQual ™ criteria are both considered to be guidelines for admission, so if a patient fails to pass the initial screening the patient could still be admitted if deemed appropriate by a physician.

Admissions are almost universally made from the short term acute care hospital.

All the LTCHs reported that the majority of their patients were admitted from short term acute care hospitals. LTCHs said they received few admissions from other locations but some said patients were occasionally admitted directly from a SNF or IRF or even straight from home.

Admissions are made directly to ICUs and high observation units.

All of the LTCHs with ICUs or high observation units admitted patients directly to those units. While there is some variation in the types of patients placed in these units, direct admissions were relatively common. One LTCH said about 12 percent of their admissions were direct to the ICU while another reported 5-10 percent. Another LTCH said that any patient who was transferred from a short term acute hospital ICU bed would go straight into the ICU at the LTCH. Another hospital admits all ventilator weaning patients directly to the close observation unit. In addition to the direct admission to ICUs, patients who become more unstable while at the LTCH may be admitted to the ICU/high observation unit.

LTCHs are hospitals for treatment not diagnosis.

LTCHs described general acute hospitals as places to diagnose, stabilize, and treat patients while LTCHs provided more extensive, intensive or specialized treatment for these cases. The LTCHs we visited all reported that patients are not admitted to an LTCH expressly for diagnosis and assessment.

LTCHs reported a need to educate other care settings of their role in the care system.

Almost universally LTCHs reported the need to educate other hospitals about their role in the continuum of care. They reported getting a much higher number of referrals than they were able to admit. Barlow Respiratory reported only being able to admit about 1/3 of the cases that are referred to them, Kindred-Philadelphia only admits about 40 percent of its referrals, Baylor Specialty Hospital admits about 50 percent and Gaylord 55 percent of referrals. A few LTCHs mentioned that they have wait lists for patients they are unable to admit because of a lack of space.

Despite many appropriate referrals, many of the patients are refused because they are not appropriate cases for LTCHs, they are patients who could go to lower levels of care. All the LTCHs discussed the need to educate referring hospitals about the definition of an appropriate LTCH case.

4.5.7 Types of Patients Admitted

Most LTCHs said they would not take strict rehabilitation cases.

All of the LTCHs provided rehabilitation services of some kind to their patients but the capabilities and equipment available varied somewhat. While some LTCHs could provide rehabilitation services similar to an IRF, almost all of the LTCHs reported not taking patients for strict rehabilitation. Patients had to be admitted with other serious complicating factors with rehabilitation as a part of their total treatment program. A few LTCHs (and Temple Hospital) said that their patients could not generally tolerate the number of hours of rehabilitation needed to qualify for an IRF admission (3 hours per day, on average).

Almost all the LTCHs said they only admitted patients that had a potential to improve.

Almost every LTCH said that key to the admissions evaluation was the expectation of the outcomes of the patient. In general, patients were only admitted if they appeared to have a chance of improving. Barlow Respiratory Hospital mentioned that they would take patients who were on a ventilator and were terminally ill only if they were good candidates to wean. They felt if they could improve the quality of life for the patient, it was considered a measurable improvement and therefore the patient could be admitted. The University Specialty Hospital, reported similar expectations. If a coma emergent patient does not show any signs of improvement after 4 weeks they would be transferred out of the facility.

The LTCH is not an end of life facility.

While many patients die in LTCHs, the hospitals we visited reported that they did not admit patients for palliative end of life care (Maryland Chronic Care hospitals were the exception). As was mentioned above, a terminal patient might be accepted into an LTCH if they

have the potential to wean off a ventilator, but they are not admitted for palliative care without additional medical treatment.

LTCH patients were only admitted if they were stable.

LTCHs unanimously described the role of the acute care hospital as one to stabilize and diagnose and that patients are not admitted to the LTCH if they are medically unstable. All of the LTCHs reported that transferring an unstable patient to an LTCH was unwise, even if they could treat that patient. One physician described their work as "taking care of stable patients with acute care problems" these are "patients that need specialty services over an extended period of time".

Stability was universally described as "hemodynamically" stable. Pulmonary stability and cardiac stability were also mentioned as important factors in determining whether a patient was stable. Cardiac stability measures that were mentioned were whether a patient had an arrhythmia or a cardiac drip. Pulmonary stability was described in terms of the patient's respiratory rate.

Before LTCH patients were admitted, their blood pressure must be stabilized and their respiratory rates are expected to remain at a particular level for a certain length of time (24 hours, in general). LTCHs described general acute hospitals as places to diagnose, stabilize, and treat patients while LTCHs provided more intensive or specialized treatment for these cases. This was particularly true for cases with complex respiratory conditions, such as ventilator cases where these hospitals specialized in weaning patients but discharged them to lower levels of care, such as nursing facilities for on-going ventilator management services.

The types of patient admitted varied by services and facilities available at the particular LTCH.

In looking at the kinds of patients accepted by the LTCHs and the treatments or procedures available it is easier to see the differences in the care available at the different LTCHs. Most of the LTCHs could provide a level of care that might be considered equivalent to a step down unit in a short term acute care hospital. In general patients with chest tubes, PEGs, PIC lines, IV medication and dialysis could be taken care of in an LTCH. The details and frequency of those procedures and treatments are described below and summarized in Table 4-3.

As was described earlier, some LTCHs had ICUs or high observation areas where they could carefully monitor patients and have higher nursing staff to patient ratios. As would be expected, LTCHs with ICUs could accept patients who were less stable than LTCHs without ICUs. The two chain hospitals reported having the capacity to take sicker patients than the other hospitals we visited. They accepted patients with arterial lines, did not require that patients come to the hospital with a tracheostomy, and would take patients on paralytics. Interestingly, one hospital only took patients with arterial lines and on paralytics in their free standing hospital that has an ICU, whereas in the HwH those patients would stay in the host hospital ICU before being transferred to the LTCH.

- All of the LTCHs accepted patients with percutaneous endoscopic gastrostomy tubes but many did not insert the tubes in-house, and those that did, only did so rarely (a few a month).

- All except one LTCH accepted patients with chest tubes. The hospital that did not accept those patients said it was because they did not respond well to weaning. Insertion of chest tubes was done at many of the LTCHs but a few said they only did

so in an emergency. Most LTCHs reported performing this procedure only occasionally (one every few months).

- All of the LTCHs accepted patients with PIC/PICC – peripherally inserted central catheters but insertion of the lines was not consistent. Two hospitals said they did not insert PIC lines at all, while a few hospitals said they insert PIC lines themselves but that the procedure was only done a few times a month. A couple of hospitals said they would transfer a patient out to get a PIC line or that the service was contracted.

- All of the LTCHs accepted patients with central lines but not all inserted the lines. LTCHs varied a great deal in their reported frequency of inserting the lines, a few said they did the procedure several times a week while others reported inserting them rarely.

- Tracheostomies were not performed with much frequency in the LTCHs. About half of the LTCHs did not perform tracheostomies in their hospitals. The other half of LTCHs reported that they could perform the procedure but almost all said it was only done in an emergency, or that it was very rare. Several LTCHs reported they required a patient to have a tracheostomy before admission.

- The frequency of performing bronchoscopies varied a great deal in the LTCHs. The majority of the LTCHs performed bronchoscopies, some said they were very rare while others reported doing this about twice a week. Two of the LTCHs who do not currently perform bronchoscopies at their hospital reported that they were going to start providing this service in the near future.

- None of the LTCHs accepted patients with swan ganz catheters or with balloon pumps. Most of the LTCHs did not accept patients with arterial lines either. Patients requiring these medical interventions are generally considered to be too unstable to come to an LTCH. The two chain hospitals reported having the capability to accept a patient with an arterial line, but that this was rare because these patients were generally too unstable to be transferred to the LTCH for care. One hospital only accepts patients with arterial lines in their free standing LTCH not in their HwH.

- Chemotherapy treatment was only offered at two of the LTCHs. Neither LTCH provided radiation services on-site but contracted for radiation off-site.

- The LTCHs reported that they could take most patients on critical drips but most did not accept patients on paralytic drips. The two chain hospitals reported that they could take patients on paralytic drips but this was rare. The two Maryland hospitals did not accept patients on any IV medication drips.

- All LTCHs admit patients on dialysis but many mentioned that they had to be selective in the number of patients they admitted on both ventilators and dialysis. If these patients fail to wean it is very hard to find a location to where they can be discharged.

- All LTCHs offered blood transfusions and they all contracted the blood services with a blood bank.

- All reported that they had wound debridement capabilities. All of the LTCHs had special procedures rooms where surgical procedures could take place, but most did bedside debridement. None of the LTCHs reported being able to perform flaps.

4.5.8 Admissions and Pre-Admissions Tools

All of the LTCHs have some sort of initial patient assessment form and RTI collected these forms to review the types of information LTCHs commonly use to plan for care. These assessments allow the hospital to determine staffing levels, patient acuity, services needed and types of equipment the patient will require. Many of the LTCHS use pre-admission assessment forms before the patient is even admitted to the LTCH. Not all, but some LTCHs, also included information on cardiovascular care, pain management needs, PT/OT/SLP needs, and diagnostics/radiology. The table below shows the types of information gathered by the six LTCHs that provided us with their admissions assessment tools (***Table 4-4***).

4.7.9 Additional Patient Assessment Tools

LTCHs use a variety of tools to assess severity of patients and measure outcomes. These are particularly important in distinguishing the types of cases LTCHs admit relative to other hospitals and in examining the impact of their care.

Medical acuity measurement tools are not used by all LTCHs but they all make acuity assessments to determine staffing needs.

The APACHE 2 or 3 tool is an assessment tool that is used in short term acute care hospitals to predict mortality in ICU patients. This tool evaluates a patient's acuity level and can be useful in determining staffing and treatment needs. While all of the LTCHs perform some type of initial patient assessment, thus assessing the patient's needs and acuity levels, only some of the LTCHs used the APACHE 2 or 3 to score the acuity of the patient. This tool was used to measure the acuity of the patient at the time of admission by Barlow Respiratory Hospital and Kindred Hospital, both hospitals had high intensity ICUs. Another LTCH said they did not use the APACHE tool because it was an ICU tool and not really relevant to their patients.

Table 4-4
Assessment tool items

Hospital	A	B	C	D	E	F
Primary diagnosis/admitting diagnosis	x	x	x	x	x	
Demographics	x	x		x	x	
Family situation/social history information	x	x	x	x	x	
Medical history/clinical data	x	x			x	
Vital signs (blood pressure and temperature)		x		x		x
Medications (dosage and frequency)	x	x		x	x	x
IV access/type/location	x	x		x	x	x
Labs	x	x		x	x	x
Cultures		x		x		
Infections/infection control	x	x	x		x	x
Pain management						x
Cardiovascular/vascular care		x		x		x
Respiratory care (trach and 02)/vent settings	x	x	x	x	x	x
Bowel and bladder/elimination	x	x		x	x	
Dialysis	x	x	x	x		x
Diet/nutrition/gi	x	x	x	x	x	x
Wound care (site, type and treatment)	x	x		x	x	x
Special needs/mobility/fall/ADLs	x	x	Special needs	x	x	x
PT/OT/SLP needs	x				x	
Cognitive behavior/neurological status	x	x		x	x	x
Diagnostics/radiology		x			x	
Discharge planning	x	x		x	x	

Other hospitals are measuring acuity in a different way. As was discussed in the staffing section of the Section, most hospitals gather information on their patients to assess their acuity in order to calculate staffing levels.

Functional limitations, specifically activities of daily living, are assessed by all the LTCHs.

Most LTCHs monitor patient performance of activities of daily living (ADLs) like dressing, feeding, grooming, walking, toileting and transferring oneself from beds to chairs and other locations. These are important measures of both progression and ability to take care of oneself and all of the LTCHs assess their patients on the ability to do these activities.

A number of LTCHs reported using FIMs scores (Functional Independence Measures) to assess specific patient populations. FIMs scores measure a patient's ability to function independently. The FIMS tool assesses ADLs on a scale of 1-7. These scores also measure cognitive understanding, social interaction, memory and other psychological areas. Many of the LTCHs said they use FIMs scores only for certain populations (rehabilitation patients, pulmonary rehabilitation patients or TBI patients) rather than all patients.

Zubrod scores are used to measure a patient's pain level and their general wellbeing/quality of life. This score is used to determine the need for palliative/pain care. Two

LTCHs said they use this score and they administer this test on admission and on discharge from the hospital.

Cognitive impairment is assessed on the admissions tools but only some LTCHs reported using specific tools to look at cognitive impairment.

The Glasgow coma scale is a tool used with traumatic brain injury patients to quantify the level of consciousness that patients exhibit. Several LTCHs said they use this score to assess their patients. In addition, this scale is part of the APACHE ICU scoring system, so the hospitals that use the APACHE tool are also assessing patients with the Glasgow coma scale.

Half of the LTCHS said they used the Rancho Los Amigos Scale to assess patients. The Rancho scale is used on head injury patients to determine the level of consciousness. One LTCH reported using this scale on their traumatic brain injury/coma emergent patients to assess, reassess, and make plans for treatment and discharge. This tool was also included in one LTCH's admission assessment tool.

Both of the Maryland hospitals reported using the JFK Coma Recovery Scale emergent scale on its brain injury patients. This scale is also used to assess the ability and progress of a patient to emerge from a coma and includes measures of auditory, visual, motor, verbal, arousal and communication skills.

Other scales that were used include the Rappaport Disability scale that was used by one LTCH. This is a scale that assesses individuals with moderate to severe traumatic brain injury. Another scale used by one LTCH was the behavioral assessment of dysexecutive syndrome which assesses patient's ability to plan and solve problems, how well a patient might be able to meet the demands of everyday activities. Gaylord Hospital also used their own set of cognitive battery tests. The Cornell scale for depression and dementia was used by one LTCH as well as the mini mental state examination.

Skin Conditions are monitored and assessed by all LTCHs. This is done through documentation of the types, size, treatment and location of wounds, but only some LTCHs use specific tools to measure the progression of wounds.

The Braden Scale for Predicting Pressure Sore Risk is used to prevent the occurrence of pressure ulcers. Five of the LTCHs reported using this scale to assess their wound care patients.

The Pressure Ulcer Scale for Healing or PUSH tool is used to monitor the change in pressure ulcers over time. Three LTCHs reported using this tool to monitor changes in wounds in their patient populations[19].

The Bates Jensen wound scale is a tool to measure pressure sore status. One hospital said they use the Bates Jensen scale to monitor the progression and assess wound care.

4.5.10 Outcomes Measures and Quality Assurance

All LTCHs were collecting quality and outcome information on their patients, staff and facilities. As required by the Joint Council on Accreditation of Healthcare Organizations

[19] This tool is also used by Medicare participation inpatient rehabilitation facilities (IRFs) and home health agencies (HHAs).

(JCAHO) hospitals report on some measures in order to receive accreditation. The measures the hospitals were tracking reflected the types of patients these hospitals treat. The details of the tracking are slightly different but the hospitals were generally tracking similar types of outcomes/quality measures. The tools and scores that were measured by the hospitals were described above. While all of the LTCHs did not collect FIMs scores on their patients, those that did were tracking the progress of those scores. Information on those outcomes is detailed in the table below (***Table 4-5)***.

Table 4-5
Types of outcomes monitored by LTCHs

Outcome areas	Outcome measures
Safety	Falls/falls with injury Restraints (# of days)
Discharge/transfer	Mortality Discharge disposition Readmission to LTCH Readmission to acute hospital Transfer rates
Infection rates	Noscomial infection rates Blood stream infections Urinary tract infections
Wound care	Wound development rate Wound healing rates Debridement
Respiratory Care	Weaning rates Time to wean Ventilator associated pneumonia
Dietary	Nutritional status Tube feeding prevalence/progression Food tray accuracy and quality
Medication related outcomes	Medication variances/errors Adverse drug events Drug resistant organisms
Other treatment/medical event outcomes	Length of stay Code events Tube feeding prevalence/progression Heart Failure Blood Transfusion outcomes Invasive procedures Dialysis rates
Staffing	Physician satisfaction Clinical turnover rate Vacancy rate Clinical hours per patient Case mix index

A few hospitals reported that they followed up with their patients three months after discharge in order to track their outcomes. They were looking at mortality rates, functional status and readmission rates among those patients. Many hospitals were also tracking the use of services and equipment more carefully among their staff as well as record keeping in terms of accuracy and completeness.

4.6 Summary

This section approached the issue of defining appropriate LTCH populations by examining current insurance and provider practices. Conditions of participation are important means of standardizing practice and ensuring high quality care. The Medicare program has charged the Quality Improvement Organizations (QIOs) with responsibility for ensuring that beneficiaries are treated in the most appropriate and economical setting but leaves it to the QIO to determine the best means of determining this. As noted in our QIO interviews, most use the InterQual ^{TM} tool for determining whether a patient has an acute level of care need. However, the QIOs do not try to determine the appropriate type of acute level care. In fact, their administrative guidelines specifically prohibit them from doing so.

This site visits revealed consistent use of certain types of items to assess patient activity and monitor outcomes. These items are consistent with those used by the QIOs in their reviews of appropriate admissions.

SECTION 5
LTCH MARGINS ANALYSIS

5.1 Study Objectives

This section presents findings from RTI's study of LTCH profits and losses between 2001 and 2004. First, we examine Medicare inpatient margins, facility operating margins and facility total financial margins, over periods spanning the two federal years before and two federal years after the introduction of LTCH prospective payment. Post-PPS margins are then analyzed in greater detail using multivariate methods to identify hospital correlates of high PPS margins. We follow this with a case-level analysis of margins by LTCH DRG and comparisons with margins for two IPPS DRGs that are common to both settings.

Study objectives are four-fold:

- To document the impact of prospective payment on LTCH financial performance by examining margins before and after the introduction of PPS;
- To analyze the variation in Medicare PPS margins across LTCH facilities, focusing on differences by type of ownership, size, location or specialty;
- To analyze the variation in PPS margins across LTCH claims, focusing on differences by outlier status (short-stay as well as high-cost), by diagnosis groups, and by admit/discharge status;
- To compare PPS costs and margins across long-term and short-term acute case settings for two common but very clinically distinct LTCH diagnosis groups.

In reviewing performance under the new LTCH PPS, we examine both average margins—as indicators of the adequacy (or generosity) of the underlying rates—and variation in margins, as indicators of the appropriateness of the payment structure that is created by the various components to the PPS payment formula. Some random variation in PPS margins is expected across facilities and over time. Some additional variation is also expected, and intentional, because fixed payment systems are designed to reward efficient providers and penalize inefficient ones. Other additional (but still intentional) variation may arise from subsidies created by deliberate policy-related payment adjustments.[20] But other variation in Medicare margins can arise from problems in the design of the PPS – such as measurement error in the relative value weights or problems with the price indexes. This type of variation is unintentional. Margins should not be systematically higher or lower, for example, for facilities with higher or lower

[20] Payments under the IPPS include additional policy-driven adjustments that are not necessarily made to offset expected cost differences, but are explicitly designed to subsidize certain activities by directing payments toward certain types of providers. Disproportionate share (DSH) adjustments, for example, deliberately exceed empirical estimates of any added Medicare costs from serving a disproportionate share of indigent patients. Similarly, the formula for indirect medical education (IME) payments is based on empirically observed cost differences in teaching hospitals, but deliberately set higher than the estimated differentials. Policy-driven adjustments improve Medicare margins of the qualifying hospitals, presumably to accomplish policy-driven objectives such as underwriting costs of indigent care, teaching or other mission-related activities.

average case-mix, or for those located in higher or lower wage areas. For this reason it is important not just to document differences, but also to identify the hospital correlates of variation in Medicare margins. [21]

The following sections describe our data sources and analytic methods. We examine differences in financial performance across LTCHs, and consider sources of intentional or unintentional variation along the lines described above. Margins are examined at both the hospital level and the case level. This allows us to assess specific LTCH PPS payment formula components including the DRG weights, wage index adjustments and outlier payment policies.

5.2 Methods

5.2.1 Data Sources

The two principal data sources for this study are the Medicare cost report (MCR) file that was released January 20, 2006, and MedPAR claims files containing discharges between October 1, 2002 and December 31, 2004. Additional information was merged from CMS' certification (POS) files and PPS Impact files. Based on participation data from the POS files, we estimate that the January 2006 MCR file is virtually complete for federal year (FY) 2003, and includes approximately 70 percent of the expected LTCH cost reports for FY 2004.

Cost reports provide information on hospital utilization, overall program costs and payments, and facility income statements, but little case-mix related data. To obtain summary case-mix measures by hospital, we aggregated selected variables from MedPAR claims by provider, using only discharges occurring between the beginning and ending dates of the filed cost reports.

To compute claims-level margins, each claim was converted to cost by multiplying its charges for specific services by the discharging hospital's cost-to-charge ratio (CCR) for each service. Service-level CCRs were computed by aggregating department-level costs and charges from each cost report up to groups of charges that matched, as closely as possible, the grouped charges appearing in the MedPAR files. This method differs from the approach taken by CMS in the development of LTCH PPS where claims were converted to cost using a single average CCR based on the facility's over-all ratio of Medicare program costs to covered charges.

5.2.2 Study Samples & Background Facility Operating Statistics

Our final study sample includes 1,079 cost reports from 347 unduplicated LTCH provider numbers over four years (***Table 5-1***). To place post-PPS changes in financial performance in perspective, key operating characteristics during the pre-PPS and post-PPS periods are summarized for all facilities in the study sample, in total and by type of ownership (***Table 5-2***).

[21] This approach to evaluating PPS formulas using variance analysis is described in more detail in Section 3 of Report to the Congress: Variation and Innovation in Medicare, (Medicare Payment Advisory Commission. Washington, D.C. June 2003.)

Table 5-1
LTCH facility study sample

	Unique provider numbers		Federal year				*Total Records*
			2001	2002	2003	2004	
Number of LTCH reports in Medicare Cost Report file	367		279	301	337	261	1,178
Number remaining in final study sample[(note 1)]	347	100%	254	273	309	243	1,079
By type of ownership:							
Non-profit	80	23%	58	65	71	60	254
Profit	247	71%	180	1,947	225	1,470	769
Public	20	6%	16	14	13	13	56
By hospital affiliation:							
Hospital-within-Hospital (HwH)	155	45%	128	141	161	124	554
Freestanding	179	52%	115	128	144	118	505
Not identified	13	4%	11	4	4	1	20
By start date							
Before 1990	46	13%	44	40	42	28	154
1991 to 1996	114	33%	117	115	115	59	406
1997 to 2000	82	23%	78	80	81	69	308
2001 to 2002	46	13%	15	38	43	35	131
2003 or later	62	18%	--	--	28	52	80

NOTE: See Table A-1 for details on exclusion criteria.

SOURCE: RTI analysis of CMS HCRIS files released January 20, 2006. FY 2004 files estimated to be 70 percent complete.

Table 5-2
Facility descriptive statistics, for full sample and by type of ownership

	Pre-PPS	Post-PPS	Change	
			Amount	Percent
Number of unique hospitals in sample	277	336	59	21%
Number of hospital reports	527	552	25	5%
Nonprofit	123	131	8	7%
Profit	374	395	21	6%
Public	30	26	-4	-13%
Operating characteristics (median values unless otherwise noted)				
Acute Beds:	43	41	-2	-5%
Nonprofit	38	36	-2	-5%
Profit	41	40	-1	-2%
Public	106	97	-9	-8%
Annual discharges:	365	365	0	0%
Nonprofit	384	351	-33	-9%
Profit	354	361	7	2%
Public	596	571	-25	-4%
All-patient ALOS:	28.9	27.2	-1.7	-6%
Nonprofit	27.8	27.7	-0.1	0%
Profit	29.1	27	-2.1	-7%
Public	41.2	31.5	-9.7	-24%
Medicare ALOS:	27.2	26.6	-0.6	-2%
Nonprofit	26.5	27.2	0.7	3%
Profit	27.7	26.4	-1.3	-5%
Public	28.7	28.7	0	0%
Proportion Medicare discharges	0.83	0.84	0.01	1%
Nonprofit	0.83	0.81	-0.02	-2%
Profit	0.84	0.85	0.01	1%
Public	0.57	0.60	0.03	6%
Proportion Medicaid discharges, among those reporting ANY Medicaid cases	0.07	0.08	0.01	15%
Nonprofit	0.07	0.07	0.00	0%
Profit	0.05	0.07	0.02	42%
Public	0.17	0.24	0.07	44%
Proportion hospitals reporting NO Medicaid cases:	0.53	0.59	0.06	11%
Nonprofit	0.45	0.53	0.08	18%
Profit	0.60	0.64	0.04	7%
Public	0.07	0.15	0.08	114%

SOURCE: RTI analysis of CMS HCRIS files released January 20, 2006. Sample does not include any facilities closing prior to PPS implementation. FY 2004 files are estimated to be 70 percent complete.

The number of publicly owned LTCHs in the study sample is relatively small, in part because many public facilities did not meet the minimum Medicare volume criteria for inclusion. A few of the larger, heavily Medicaid-dominated public facilities are excluded from the post-PPS sample for either volume or data quality reasons, and this may influence comparative statistics for the pre-post PPS periods.

Cost report files as of January 2006 show a post-PPS increase of 5 percent in total number of LTCH providers. This understates the actual growth in LTCHs because many new facilities have not yet filed their first LTCH cost report. Among hospitals with cost report data, median bed capacity declined slightly, especially among public hospitals. Median annualized LTCH discharges also declined in public and for non-profit facilities, but increased by 2 percent among for-profits. Median facility average length of stay (ALOS) declined from 28.9 to 27.2 days (about -6 percent) following PPS implementation. Within the study sample the decline was much more dramatic in the group of public facilities (from 41.2 to 31.5, or -24%). However, in reviewing individual hospital statistics we found that the year-to-year differences for the public facility group were due as much to changes in the facility sample as to changes in length of stay that occurred within individual public hospitals.

Median Medicare percent of total discharges increased slightly overall. Trends in Medicaid utilization are more complicated. Among facilities that reported accepting ANY Medicaid cases, the share of Medicaid to total discharges increased by 15 percent. However, the proportion of facilities reporting NO Medicaid cases increased from 53 percent before PPS to 59 percent after, and this change is evident among for-profit, non-profit and public facilities. This is a potentially troublesome finding that needs to be monitored over time.

The claims sample is limited to post-PPS discharges that can be matched by discharge date to filed LTCH cost reports, and is therefore not a complete set of claims for any calendar or fiscal year period. The final analytic sample includes 140,909 LTCH cases that matched to 305 facilities electing payment under 100 percent federal rates ***(Table 5-3)***

Table 5-3
LTCH post-PPS claims study sample

	CY 2002	CY 2003	CY 2004	All claims	
Total claims	2,238	58,516	80,155	140,909	100%
By federal fiscal year of related Medicare Cost Report:					
FY 2003	2,238	55,807	29,633	87,678	62%
FY 2004		2,709	50,522	53,231	38%
				140,909	100%
By outlier status:					
HCO	48	2,923	5,514	8,485	6%
SSO	1,246	24,634	31,147	57,027	40%
Neither	944	30,959	43,494	75,397	54%
				140,909	100%

NOTE: See Table A-2 for details on exclusion criteria.

SOURCE: RTI analysis of CMS MedPAR files, FY 2004 through FY 2004.

5.2.3 Margin Definitions

Whether at the facility level or the individual claims level, *Medicare inpatient margins* are defined in this study as the difference between expected payments and allowable program costs for inpatient Medicare services, expressed as a percentage of total expected payments. Expected payments for Medicare beneficiaries include amounts owed by the Medicare program plus amounts owed by beneficiaries or secondary insurers (deductibles and coinsurance), plus any primary payer liabilities. Program costs include Medicare allowable operating and capital costs.

Facility operating margins are defined as the difference between total operating revenues and expenses, expressed as a percent of operating revenues. Operating revenues include expected collections for patient services plus other operating revenues such as income from rents or cafeteria sales. Finally, *total margins* are similar in computation to operating margins, except that they include income from investments, grants, donations or government appropriations, and also incorporate any other reported expense adjustments.

The formulas for margin computations and tables identifying the specific variables used from the source files are included in ***Appendix D.***

5.2.4 Analytic Approach

This chapter examines profitability at both the hospital level and the individual Medicare claims level.

Hospital Margins

Facility-level analyses concentrate first on pre-post PPS changes in Medicare and overall facility margins over the four-year study period. We start by summarizing aggregate average margins by year[22], and examining changes in aggregate and median costs and payments per discharge. The remainder of hospital-level analysis addresses only post-PPS variation in financial performance, looking at average differences by type of ownership, operating characteristics and location.

Hospital-level regressions are run to:

- Estimate standardized margins as a basis on which to assess the LTCH base rate;
- Assess the effects of short-stay and high-cost outliers on average LTCH margins;
- Test for any independent association of case mix and area wage adjusters with average margins, after controlling for the effect of short-stay and high-cost outliers;
- test for significant differences in margins by hospital attributes such as location, ownership or affiliation.

[22] The aggregate average margin is the sum of the excess of payments over cost for the group, expressed as a percent of the sum of the payments. It is also equivalent to a weighted mean of all hospital margins where the margin denominator (payments) is used as the weight.

Several summary case-mix measures had to be constructed and merged from the matched MedPAR claims files. These include a "raw" case-mix index (CMI) that is the average DRG weight for claims occurring within the cost report period, measures of short-stay and high-cost outlier cases as a percent of total.

The estimating equation for the regressions resembles a non-logged version of the traditional Medicare average cost function where the cost per case outcome variable is replaced by PPS margin. It can be written as:

$$Y_{margin} = \alpha + \beta_1 CMI + \beta_2 WI + \beta_3 SSO + \beta_4 HCO + \Sigma\, \gamma OTHER$$

where CMI is the average DRG weight; WI is the full PPS area wage index; SSO and HCO are the percent of cases qualifying as short-stay and high-cost outliers, respectively; and γ represents an array of parameter estimates for hospital characteristics such as location, ownership and size. Regressions were estimated both with and without the additional (non-payment related) hospital variables. For all of our estimations, the CMI, WI and SSO variables have been "mean differenced" to allow the intercept term to represent the expected margin for a hospital with average values for each of these measures.[23]

If a prospective payment system is functioning as intended we would expect coefficients on case-mix index and wage index to be zero, because these factors are intended to adjust for average cost differences. If the payment adjustment matches the expected cost differences, there should be no average impact on margins. With respect to the wage index, however, there is an added complication under the LTCH PPS because the wage adjustment is being phased in over several years. If facility costs do in fact vary with local area wages, phasing in the wage index creates a temporary advantage for facilities located in lower-wage areas; we would therefore expect this to be reflected in a positive coefficient. Likewise, phasing in the index would create a disadvantage for those located in higher-wage areas that should be reflected in a negative coefficient. To test for this we interacted the wage index measure on indicators for location in areas with index values above or below 1.00.

The analysis file includes records from a non-duplicated set of 333 LTCH providers using their most recent filed cost report, of which 238 are from FY 2004 and 95 are from FY 2003. To minimize undue influence from extreme values in this relatively small sample, we use a technique of robust regression which identifies observations with extreme values that have a large effect on the slope coefficients, and computes weights to reduce their influence in the model.[24]

Claims-Level Margins

The claims-level margin analyses are computed to identify differences in financial performance by DRG and outlier status. This information is needed in order to investigate

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[23] "Mean differencing" is simply subtracting the variable's mean from each value so that for each measure, an observation at the sample average will have a "differenced" value of zero. It is a technique used to simplify interpretation of the intercept term in non-logged models, and does not alter the estimate of the slope coefficients.

[24] See "Stata Statistical Software: Release 9. Reference Manual Volume 9", pp 159. College Station, TX: StataCorp LP.

potential bias in the DRG weights caused by over or under-estimation of the relative cost by DRG.

Costs were computed for each claim using hospital-specific, service-specific CCRs. For reference, we also computed costs using a single aggregate average CCR for Medicare covered inpatient services, which is closer to the cost conversion method used by CMS for computing LTCH DRG weights.[25] At an aggregate hospital level the two methods will produce similar total claims cost estimates. However, CCRs differ systematically by type of service, with the highest ratios typically found in routine nursing units and the lowest in "higher-tech" ancillary services. DRGs differ systematically in the mix of high and low mark-up services used per discharge. At the DRG level, therefore, the two methods will almost always produce different cost estimates and different margins.

All cases qualifying as short-stay outliers were further divided into "very short stay"—those with covered lengths of stay at or below 50 percent of the published geometric mean stay (GLOS) for that DRG, and all other short-stay outliers —those with lengths of stay greater than 50 percent but still at or below than the 5/6^{ths} GLOS cut-point that is used to qualify a case for payment under the short-stay outlier rules.

Section 5.3 presents descriptive results on margins and total profitability for the most common DRGs found in LTCH settings, and for claims grouped by short-stay and high-cost outlier status. Descriptive findings are supplemented with results from a facility fixed effects regression. This is a technique that is equivalent to estimating a regression that includes a dummy variable for each individual facility. It is designed to control for *all* facility-level influences including location, ownership, and hard-to-measure attributes such as efficiency, management strategy and local practice patterns. This allows us to examine differences in profitability that are specifically related to case-level characteristics, independent of their distribution across types of facilities.

The claims-level regressions predict payment-to-cost ratios rather than margin percents, and they are estimated in natural log form.[26] There are no facility-level attributes in this type of regression because all facility characteristics are subsumed into the fixed facility effect. . We take two approaches to measuring case-mix as a predictor of the payment-to-cost ratio. The first uses the computed raw case-mix index (CMI) interacted on outlier status; the second uses dummy variables for the 25 most common DRGs, and stratifies the estimation samples by short-stay outlier, inlier and high-cost outlier cases. Under the null hypothesis that the DRG weights are accurate measures of relative cost, coefficients on the main and interacted CMI as well as the DRG dummy variables should all be zero, signifying no systematic payments above cost.

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[25] The CMS-published CCR used for identifying high-cost outliers and computing outlier payments is also based on the single aggregate average CCR. Published CCRs are lagged by a few years because they must be derived from the most recent filed cost report.

[26] The specification for the outcome variable was changed because the distribution of margins across claims is highly skewed to the right. For technical reasons it is better to do a log transformation on variables with this type of distribution before using least squares estimation techniques. We used payment-to-cost ratios because margins can be negative and therefore cannot be logged, while payment ratios cannot be less than zero.

5.3 Findings: Facility-Level Margins

5.3.1 LTCH Overall Financial Performance, 2001 Through 2004

Financial performance of LTCHs improved dramatically after the introduction of Medicare's prospective payment system (***Table 5-4***). In the aggregate, Medicare payments were below documented program costs during FY 2001, leading to negative Medicare and overall facility operating margins. In the last year of TEFRA-based payments (2002) the aggregate margin for facilities in the study sample was 1.9 percent of payments. They rose to 8.3 percent in the first year of PPS, and possibly for the first time, margins earned on Medicare business were similar to the facility overall margins. For the subset of facilities for which we have FY 2004 reports (about 7 in 10), the aggregate Medicare margin was 12.8 percent. Overall facility margins did not rise as quickly, but until we have a complete sample to examine, it is not possible to say whether this indicates a reduction in other payer payment levels or is a distortion from the incomplete sample.

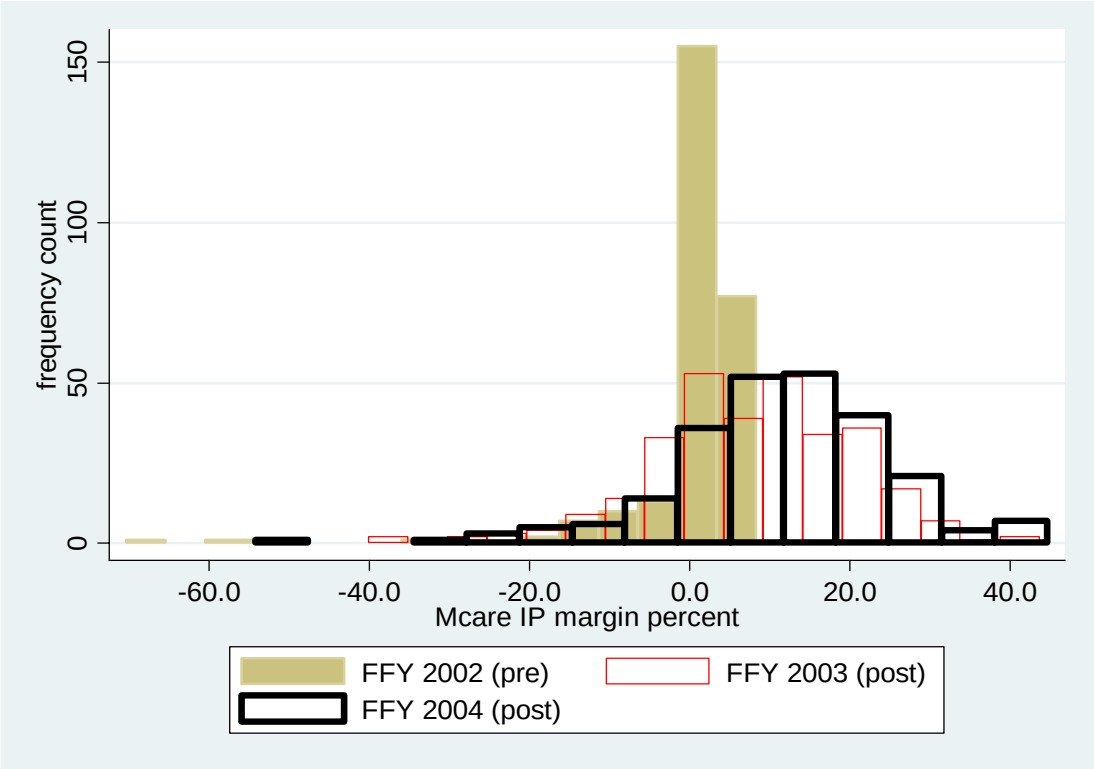
Table 5-4
Aggregate average margins for LTCH facilities by federal year

	Pre-PPS		Post-PPS		Increase,
Federal year	2001	2002	2003	2004	2001 to 2004
Inpatient Medicare Margin	-0.3%	1.9%	8.3%	12.8%	+13.1 points
Facility cost reports	252	269	308	243	
Cost report Medicare discharges	97,226	110,454	116,743	85,654	
Facility Operating Margin	-0.5%	3.6%	8.4%	4.8%	+5.3 points
Facility Total Margin	1.4%	4.9%	8.9%	7.5%	+6.1 points
Cost report total discharges	131,444	143,379	155,378	115,171	

SOURCE: RTI analysis of MCR files released January 2006. See ***Appendix D*** for margin definitions.

Under the pre-PPS TEFRA-based payment system payments and margins were lower, and there was much less variation in performance across facilities ***(Figure 5-1)***. Thirty-four percent of LTCHs showed negative Medicare margins in 2001, but that figure dropped to 26 percent in 2002 and in 2003, and to 14 percent by 2004.

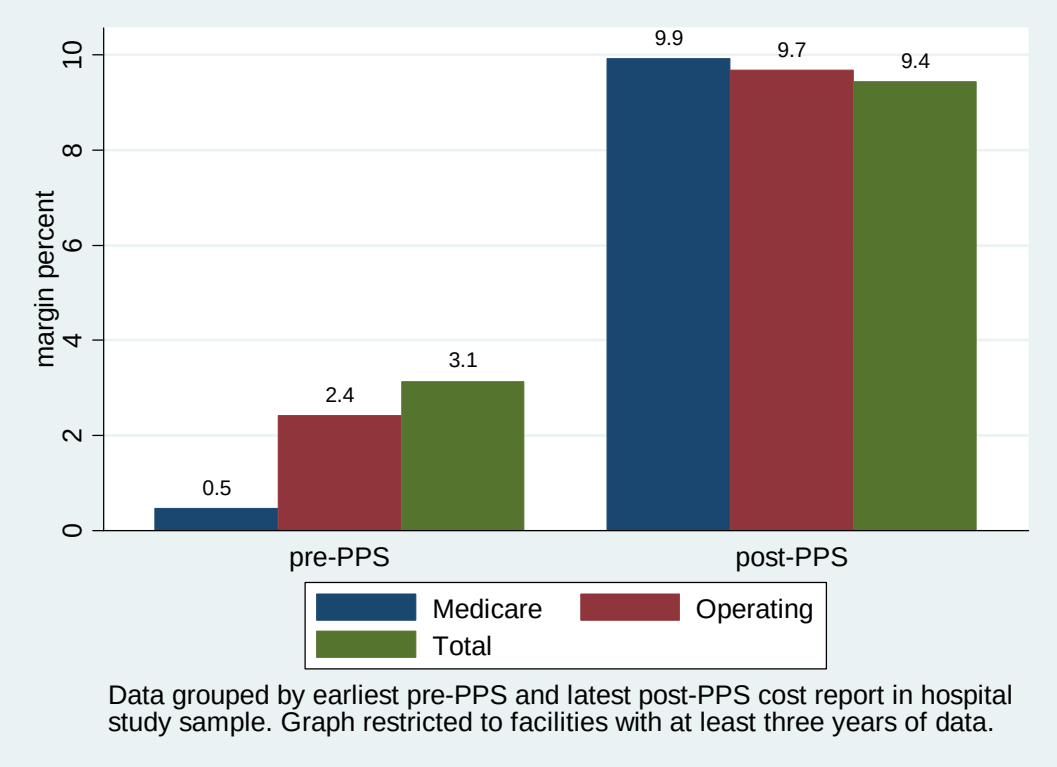
Figure 5-1
Changes in the distribution of Medicare LTCH margins, before and after implementation of prospective payment



SOURCE: RTI analysis of CMS HCRIS files, FY 2001 through FY 2004.

Prior to LTCH PPS, the majority of LTCHs were able to earn a limited surplus on their Medicare business, but Medicare profitability still lagged behind average profitability from other payers. In ***Figure 5-2*** we show the median values for all three margin measures during the earliest and latest cost reports in our sample, for those facilities that have data both before and after PPS implementation. Medicare accounted for 71 percent of all cases and 65 percent of all days of care reported on these cost reports, and the influence of rising post-PPS margins is clearly seen in the improvement to LTCH overall profitability. The data are not shown by type of control, but among for-profit facilities, median post-PPS values for all three margins are around 12 percent, indicating that private payer rates may now be on a par with Medicare. Among non-profits and especially among public LTCHs, where the majority of Medicaid-covered stays occur, Medicare margins are now substantially higher than facility operating margins. This suggests that reimbursement from Medicaid cases remains well below the LTCH PPS rates.

Figure 5-2
Shifting role of Medicare in overall financial performance: median LTCH margins before and after PPS implementation



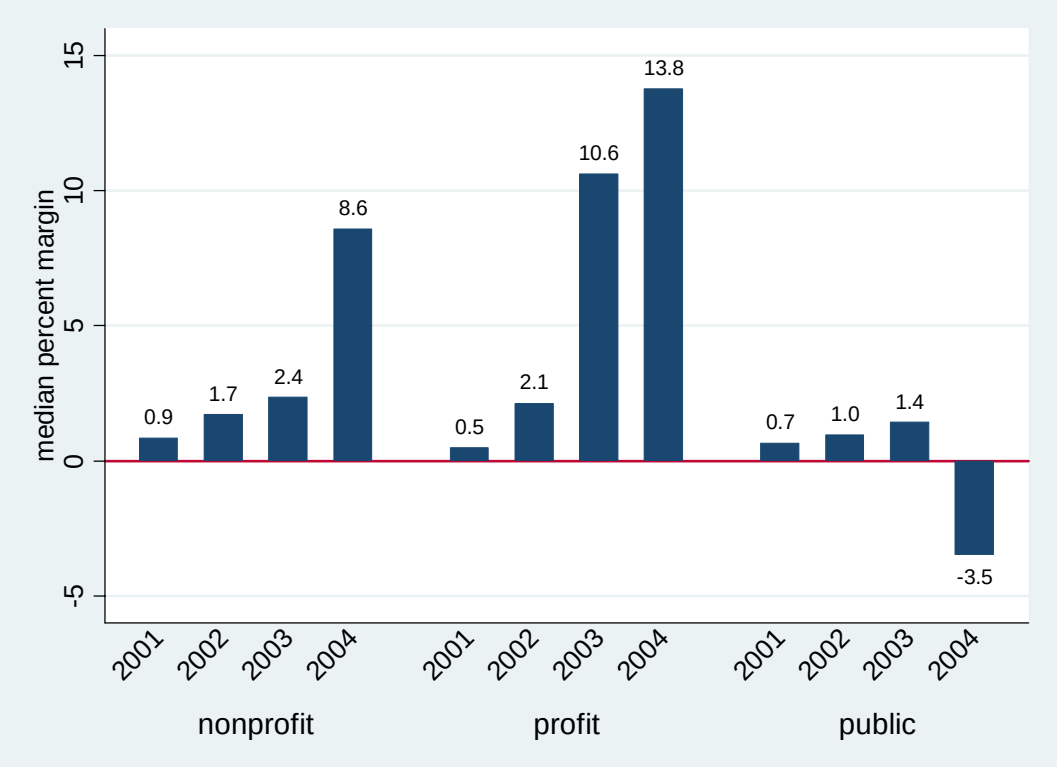
SOURCE: RTI analysis of CMS HCRIS files, FY 2001 through FY 2004.

Although overall facility margins (operating and total) were significantly better for the for-profit facilities, there were no systematic differences in TEFRA-period Medicare margins by type of control. Post-PPS, however, Medicare margins tend to be highest among for-profits and lowest among the public facilities (***Figure 5-3***). Dramatic improvement in Medicare margins among for-profits is evident in the first year following PPS implementation (from 2.1 percent in 2002 to 10.6 percent in 2003), but similar improvements for the private non-profits did not occur until the second year (rising only from 1.7 percent in 2002 to 2.4 percent in 2003, but then to 8.6 percent in 2004). This difference in timing is largely due to the delay among non-profits in electing payment under 100 percent federal rate over the default option of a three-year phase-in of federal and hospital-specific blended amounts.[27]

In Figure 5-3 the drop in the median margin for public LTCHs from 2003 to 2004 is hard to interpret. There are only 13 facilities in this group in either year of the post-PPS cost reports. We reviewed the individual facility data, and with only a few exceptions, public LTCHs do not appear to be doing well under the new payment system.

[27] In the 2003 files 95 percent of for-profit LTCHs chose a fully prospective payment, compared to two-thirds of non-profits and only 6 out of the 13 public facilities. In the FY 2004 file, 92 percent of the non-profits and 9 out of 13 public facilities had elected fully prospective rates.

Figure 5-3
Year-to-year trends in median LTCH margins by type of control



SOURCE: RTI analysis of CMS HCRIS files, FY 2001 through FY 2004.

Most of the post-PPS increase in margins in the non-profit group is due to their move toward full federal rates. For those electing 100 percent federal rates in both 2003 and 2004, there was a modest increase in margins from 10.7 to 12.7 percent. Election for payment under 100 percent federal rates was voluntary, and only relatively high cost providers would be expected to have chosen to remain under the PPS phase-in. Even in this group, however, margins actually increased slightly (from -2.4 to zero percent) in the transition from 25% to 50% federal rate. The fact that it increased at all is evidence that even among facilities that had presumably expected to do worse under PPS (and thus delayed its impact by remaining under the phase-in), the federal rate was still higher than the historical cost per case in at least some cases.

By definition margins are a function of both payments and cost, and increases in the margin may be the result of changes in either or both of these. To investigate, we looked at cost and payment per Medicare case as reported on the MCRs for each of the four years. The initial improvements in LTCH margins are largely the product of higher payments under PPS; we found little or no evidence of short-term gains in efficiency in the form of lower costs per case.

Table 5-5 shows the year-to-year changes in median values for per-case cost and payment and selected case-mix measures. Between federal years 2001 and 2002 median cost per case declined by 5.2 percent from $25,560 to $24,219, while median payment under TEFRA dropped by only 1.8 percent. In the following year, coinciding with the introduction of LTCH PPS, median cost per case rose a startling 8.2 percent while median payment per case rose by 19.6 percent.

Table 5-5
Trends in Medicare costs, payments and case-mix

	Pre-PPS		Post-PPS	
Federal year	2001	2002	2003	2004
Across all facilities in the study sample:				
Number of facilities	254	273	309	243
Median cost / case	$25,560	$24,219	$26,207	$26,904
percent change		-5.2%	8.2%	2.7%
Median payment / case	$24,826	$24,372	$29,139	$30,909
percent change		-1.8%	19.6%	6.1%
Restricted to facilities with cost reports in every year:				
Number of facilities	168	175	176	168
Median cost / case	$24,010	$23,264	$24,902	$26,839
percent change		-3.1%	7.0%	7.8%
Median pmt / case	$23,795	$23,391	$28,590	$30,820
percent change		-1.7%	22.2%	7.8%
Restricted to facilities with at least two post-PPS cost reports				
Number of facilities			214	208
Median case-mix index [1]			1.0632	1.0744
percent change				1.1%
Median proportion of hospital cases that qualify as:				
Short-stay outlier cases, stay≤50% geometric mean			0.208	0.186
percent change				-11.2%***
Short-stay outliers, stay>50% geometric mean			0.214	0.197
percent change				-7.9%***
High-cost outliers (HCO)			0.046	0.058
percent change				24.0%*
Median percent HCO payments to total DRG payments			3.4%	3.4%
percent change				-0-

NOTES:

[1] Unadjusted CMI is computed as the average DRG weight, without adjusting for prevalence or changed payment rates for short-stay or high-cost outliers.

* p< .10 ** p<.05 *** p<.01, from Kruskall-Wallace test of difference in median values. Significance testing in this table was limited to post-PPS comparisons where there were no repeated measures per facility.

SOURCE: RTI analysis of CMS HCRIS and MedPAR files, FY 2001 through FY 2004.

Between the first and second PPS year both payment and cost per case continued to rise, though not as quickly. The same statistics computed on the subset of facilities present in all four years of our study (in order to control for year-to-year changes in the sample of reporting facilities) suggest similar rates of increase in payments and costs during the first PPS year.

The increase in cost between 2003 and 2004 does not appear to be related to changes in case-mix. For those facilities where we have at least two post-PPS cost reports, median unadjusted case-mix index—defined as the average DRG weight without making any adjustments for high-cost or short-stay outliers—was virtually unchanged. The median proportion of hospital cases qualifying as high-cost outliers (HCOs) increased from 0.046 to 0.058, but this is likely the result of a reporting change that lowered the outlier cost threshold in the 2003 rate year. Outlier dollars accounted for 3.4 percent of total DRG payments on the cost report payment settlement worksheets, in both years.

However, during the first two years the proportion of cases qualifying as short stay outliers did drop by nearly 10 percent – from 42.1 to 38.1 per hundred Medicare admissions. The proportion of "very short stay" outliers dropped by 11.2 percent. If we can assume no change in diagnosis mix, a reduction in the proportion of short-stay cases would be consistent with higher cost per case and higher PPS payments. Such increases would reflect a change in patient mix but would not, by themselves, reveal anything about changes in efficiency.

5.4 Correlates of Facility-Level Variation in Post-PPS Medicare Margins

In this section we examine correlates of variation in Medicare margins after the introduction of LTCH PPS. We restricted the analysis to data from the most recent report for each of the 314 LTCHs that elected payment under 100% of the federal rate and for which we had at least one post-PPS cost report. Of these, 73 percent are from federal FY 2004, seventy-five percent are for-profit hospitals and only 3 percent are publicly owned hospitals.

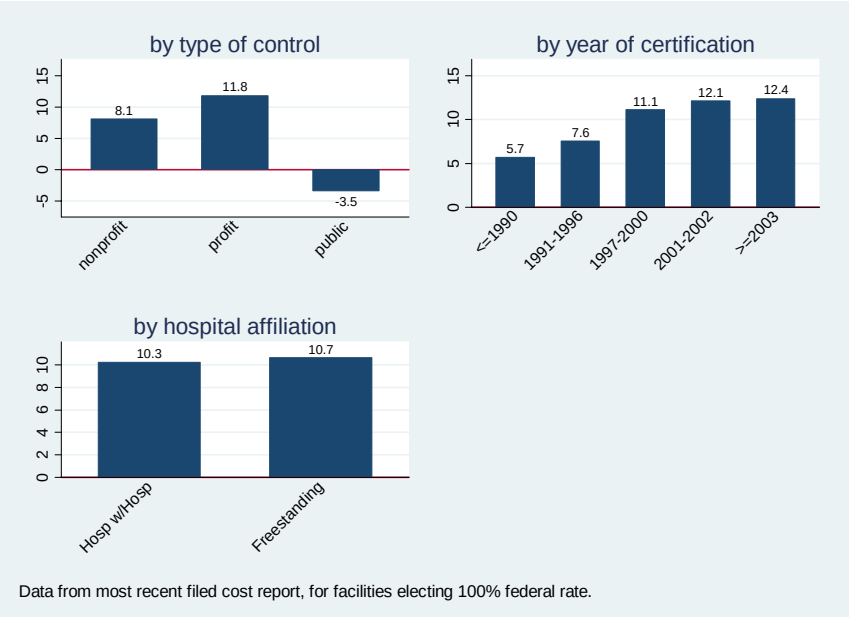
We start with stratified analyses to identify significant differences in PPS margins across hospitals that are grouped by fixed organizational attributes (location, ownership or affiliation). These are followed by results from a multivariate model of Medicare margins, first controlling for the same variables as appear in the LTCH PPS payment formula (including case-mix, wage index and outlier status), and then controlling for additional organizational attributes. For the regression sample we included both phase-in and full federal-rate hospitals, but added a dummy variable to identify these.

5.4.1 Stratified Analyses

Median margins stratified by organizational attributes are shown in ***Figure 5-4***. PPS margins are significantly different by type of control (p=0.001) but not by hospital affiliation (p=0.877). Newer facilities tend to have higher margins (p=0.01). [28]

[28] Statistical significance is based on results from Kruskall-Wallace tests of differences in medians (for control and affiliation) or non-parametric tests of trend (for year of certification).

Figure 5-4
Differences in median LTCH margins by hospital organizational attributes



SOURCE: RTI analysis of CMS HCRIS files, FY 2001 through FY 2004.

5.4.2 Multivariate Analyses

We ran three hospital-level regressions to identify the institutional characteristics associated with Medicare margins under LTCH PPS, after controlling for factors such as DRG case-mix and outlier prevalence. The outcome variable for all three is the Medicare inpatient margin under the LTCH PPS. The first model includes only the variables that are also part of the payment formula; the second adds hospital organizational characteristics and the third adds geographic location. The hospital sample is the same for each model and is relatively small, with only 333 facilities contributing complete data for their most recent post-PPS LTCH cost reports. Because of the small size, the coefficients in our model are estimated with very wide confidence intervals. Results are presented in ***Table 5-6*** and discussed below.

Table 5-6
Facility-level regression output

Outcome: LTCH PPS margin percent	Model 1: Payment variables only	Model 2: Adding organization characteristics	Model 3: Adding location
Case Mix Index	4.205	3.92	2.336
	(3.085)	(3.153)	(3.496)
Wage Index (if <=1.000)	10.659	3.38	-4.012
	(9.096)	(9.299)	(11.745)
Wage Index (if > 1.000)	-19.327	-20.841	-12.534
	(9.082)**	(9.777)**	(12.468)
Short-stay outliers, with stays > 50% geometric mean	-0.358	-0.306	-0.285
	(0.114)***	(0.116)***	(0.119)**
"Very" short-stay outliers, with stays ≤ 50% geometric mean	0.04	-0.013	-0.065
	(0.096)	(0.096)	(0.099)
Under PPS phase-in	-8.961	-6.867	-6.559
	(2.615)***	(2.623)***	(2.708)**
Percent cases qualifying as high-cost outlier (HCO)	-0.39	-0.367	-0.343
	(0.070)***	(0.069)***	(0.070)***
Federal FY= 2003	-6.217	-6.193	-5.693
	(1.352)***	(1.343)***	(1.382)***
Average daily census		0.042	0.04
		(0.017)**	(0.019)**
Not-for-profit control		-1.741	-2.23
		(1.445)	(1.467)
Public control		-12.86	-14.862
		(3.033)***	(3.163)***
Hospital-within-Hospital		0.696	0.14
		(1.303)	(1.398)
Large urban location			-0.042
			(1.453)

(continued)

Table 5-6 (continued)
Facility-level regression output

Outcome: LTCH PPS margin percent	Model 1: Payment variables only	Model 2: Adding organization characteristics	Model 3: Adding location
Regional location			
(omitted group is West South Central):			
New England			1.414
			(3.626)
Mid Atlantic			3.163
			(2.499)
South Atlantic			2.539
			(2.117)
East North Central			4.964
			(1.972)**
East South Central			-0.184
			(2.567)
West North Central			0.896
			(2.865)
Mountain			1.683
			(2.724)
Pacific			-4.521
			(4.194)
Constant	16.63	17.76	15.668
	(1.290)***	(1.465)***	(2.273)***
Observations	333	333	333
R-squared	0.25	0.29	0.31
Standard errors in parentheses.			
* significant at 10%; ** significant at 5%; *** significant at 1%			

NOTES:

From robust regression on sample of latest filed PPS cost report for LTCHs paid under 100 percent federal rates.

SOURCE: RTI analysis of CMS HCRIS files FY 2001 through FY 2004, and MedPAR claims files 2003-2004

Profitability Built into the Base Rate

The intercept terms identify what can be thought of as a standardized margin for a "reference-case" hospital. In model 1 this is a facility in FY 2004, paid using 100% federal-rates, located where the wage index is 1.00, having an average DRG weight of 1.00, short-stay outlier prevalence equal to the sample average, and with no high-cost outliers. The model 1 intercept is therefore a close approximation of the profitability that has been built into the PPS base rate. In the second and third models the intercept terms are not as generalizable, because the "reference" hospitals have a more limited definition (for profit; free-standing; average size; located in "other rural" areas of the west-south-central region).

Model 1 estimates the standardized margin to be just under 17 percent (95% C.I. 14.1-19.2). For facilities paid under the phase-in the margins were nearly nine percent points lower (95% C.I. 14.1 to 3.8 points lower). Among those facilities for which the latest cost report was filed during federal fiscal year 2003 the margins were also lower, by 6.2 percent (95% C.I. 8.9 to 3.6 points lower). This is a substantial difference that is likely to reflect both differences in rates and differences in the hospital sample.

Payment-Related Explanatory Variables

Confidence intervals on the estimates for payment-related variables are quite wide. The coefficient on the case mix index is a positive 4.2, but the 95% C.I. spans from negative 1.9 to positive 10.3, indicating no statistically significant association between case-mix weights and profitability. This is true for all three models.

For facilities located in higher wage areas, the wage index is significantly and negatively associated with profitability in both the first and second models. The effect is still negative but no longer significant in the third model that includes other location-related control variables. For hospitals located in areas where the wage index is below one, the estimated coefficient is positive though not significant. These findings suggest that hospital wage index values are positively associated with average facility costs, and as a consequence, the phase-in of the wage index adjustment may be penalizing facilities located in larger high-wage cities.

The percent of cases identified as "very" short-stay outliers has little impact on margins in any of the hospital-level models. Other things being equal, this suggests that the payment reduction associated with this type of short-stay case is commensurate with lower costs from reduced stays. In contrast, the percent of short-stay cases with stays greater than 50 percent of the geometric mean stay is significantly and negatively associated with margins, and the estimated effect is similar in all three models. An increase of ten percent points in this number (which would be substantial, as the sample average is about 20 percent) would be associated with reduction in margins of between three and four percent.

Organizational Characteristics and Location

Public control is the only non-payment related hospital characteristic that is significantly associated with PPS margins in the second and third models. Margins for public facilities average 13 percent points lower than those in for-profit facilities (95% C.I. -18.8 to -6.9), even after controlling for the lower margins associated with hospitals remaining under the PPS phase in (which are also predominantly public). Although there were differences between non-profit and for-profit facilities in our earlier stratified analyses, the differences are no longer significant once

case-mix and outlier status are controlled for. Although there are differences in profitability across regions, these are estimated with a great deal of imprecision, and statistical tests indicate that location variables are individually and jointly non-significant as predictors of PPS margins.

As expected, margins are significantly and inversely associated with the proportion of high-cost outlier (HCO) cases. HCO prevalence averaged 8.7 percent in the estimation sample but ranged from zero to 86 percent. The HCO coefficients are similar across all three models, and show that an increase of ten percent points in HCO case prevalence is associated with a reduction in margin of between 3 and 4 percent points.

Other Explanatory Variables

With the exception of public control and average daily census, none of the non-payment related variables that were added to our LTCH PPS margin models were statistically significant predictors of LTCH PPS margins. LTCH hospital-level regressions produce much less precise estimates on the payment-related variables than what we see from similar regressions on IPPS data. This is likely due to the smaller sample size, but it may also be a reflection of greater heterogeneity among these facilities. Further, although higher shares of "other" short stay outliers are associated with lower margins, there may be explanations for this relating to hospital case management that have little to do with the PPS payment levels. Individual claims-level analyses can provide better evidence on differences in profitability that relate to inlier/outlier status and to diagnosis.

5.5 Claims-Level Margin

Hospital-level regressions are limited not only by the small sample size for LTCHs, but also because cost report data can only provide measures of average cost and payment per case or day. To the extent that the study questions concern payment factors or adjustments for specific types of patients, analyses based on cost report data may suffer from aggregation bias no matter what the size of the hospital sample. For these reasons, claims-level analyses were added to this study to provide better estimates of differences in profitability related to case mix, including both diagnosis and outlier distributions.

The methods used in this section for identifying the claims sample and computing claims-level profitability are described earlier (***Section 1.2.4***) and also in ***Appendix D***. Regardless of the federal fiscal year assigned to the cost reports to which these claims were matched, the 140,909 claims used in this analysis cover discharges occurring from FY 2003 (28 percent), FY 2004 (64 percent) and FY 2005 (12 percent).

5.5.1 Findings: Profitability by DRG and PPS payment status

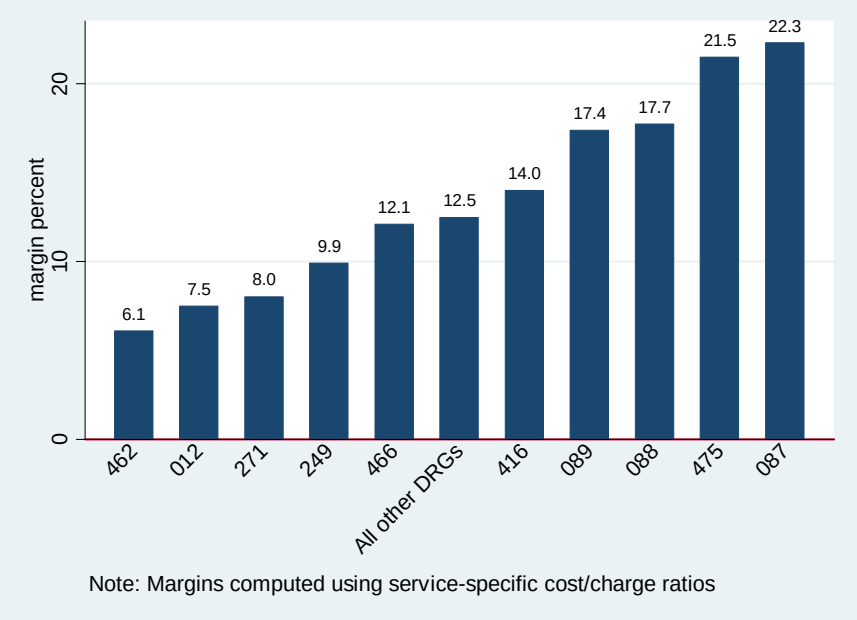
Across the most common LTCH DRGs, aggregate margins ranged from a low of -0.1 percent for Rehab cases to a high of 27.7 percent for Pulmonary edema & respiratory failure (***Table 5-7***). The aggregate margin earned across all of the 140,909 LTCH claims in the matched MedPAR sample was 12.4 percent, generating an estimated $507 million in profit. ***Figure 5-5*** presents median margins by DRG in order of profitability, and highlights the extent to which DRG profitability is concentrated in the respiratory-related cases, including not just DRG 475 for ventilator support, but also cases for pulmonary edema, chronic obstructive pulmonary disease (COPD) and pneumonia,

Table 5-7
LTCH PPS margins by DRG

Diagnosis Group	Percent of cases	Aggregate average margin	Aggregate total income or (-)loss	
			$ millions	% total income
475: Respiratory Dx w/Ventilator support	10%	21.3%	$172.3	34%
249: Aftercare, musculoskeletal disorders	5%	7.2%	$11.1	2%
271: Skin ulcers	5%	4.5%	$7.7	2%
12: Degenerative nervous system disorders	5%	4.0%	$5.6	1%
88: COPD	4%	13.7%	$16.3	3%
466:Aftercare, no history malignancy	4%	7.0%	$8.4	2%
89: Pneumonia & Pleurisy w/ CC	4%	13.8%	$17.1	3%
87: Pulmonary edema & respiratory failure	4%	27.7%	$52.5	10%
462: Rehabilitation	4%	-0.1%	-$0.1	0%
416 Septicemia	3%	10.4%	$12.1	2%
All other DRGs	52%	9.9%	$203.9	40%
Total	100%	12.4%	$506.7	100%

SOURCES: RTI analysis of CMS HCRIS and MedPAR claims files, federal years 2003 and 2004. Restricted to claims from facilities electing payment under 100 percent federal rates.

Figure 5-5
Most common LTCH DRGs, rank-ordered by median profitability



SOURCES: RTI analysis of CMS HCRIS and MedPAR claims files, federal years 2003 and 2004. Restricted to claims from facilities electing payment under 100 percent federal rates.

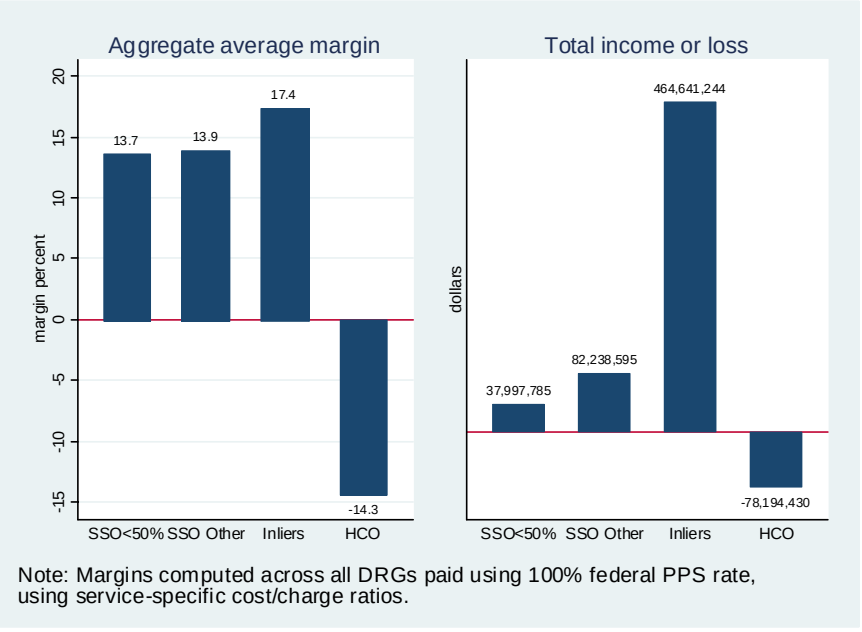
Overall, LTCH-PPS margins are highest for "inlier" cases, somewhat lower for short-stay outlier cases, and lowest – in fact, generally negative, for high-cost outlier cases (***Table 5-8***). In contrast to the findings from the hospital regressions, we did not find any difference in the aggregate margins earned between the group of "very" short-stay outliers and the other short-stay outliers. However, there is a difference in the distribution, as the median margin was 12.9 for the "very" short-stays and 12.1 for the others. Although the margins on HCOs are quite low, total losses on these cases are not substantial relative to the total income earned on others (***Figure 5-6***).

Table 5-8
LTCH PPS margins by outlier payment status

Payment status	Percent cases	Aggregate average margin	Estimated total income or (-) loss (in millions)
"Very short-stay" outliers (stay <=50% of geometric mean by DRG)	20%	13.7%	$38.0
All other short-stay outliers	20%	13.9%	$82.2
Inliers	54%	17.4%	$464.6
High cost outliers	6%	-14.3%	- $78.2
Total	100%	12.4%	$506.7

SOURCES: RTI analysis of CMS HCRIS and MedPAR claims files, federal years 2003 and 2004. Restricted to claims from facilities electing payment under 100 percent federal rates.

Figure 5-6
Profitability by payment status for all DRGs in sample



Note: Margins computed across all DRGs paid using 100% federal PPS rate, using service-specific cost/charge ratios.

SOURCES: RTI analysis of CMS HCRIS and MedPAR claims files, federal years 2003 and 2004. Restricted to claims from facilities electing payment under 100 percent federal rates.

For some high-cost outlier cases, total payments exceeded our computation of estimated costs. This occurred when there was a large gap between claims cost as computed using the published hospital average CCR (which is CMS' usual method, and which we would always expect to exceed the sum of (DRG + outlier payments)) as compared to claims cost computed using our service-specific CCRs. The ratio of these two cost estimates may be thought of as a measure of potential bias in the weights, where a value above 1.0 implies that the DRG weight is overstated and below 1.0 implies it is understated. We found that the bias varies by DRG, but for all DRGs, it also tends to be more severe (meaning that the differences between the two methods are greater), for high-cost outlier cases than for others, and that the cost estimates for HCO cases are more likely to be overstated than are the cost estimates for other cases..

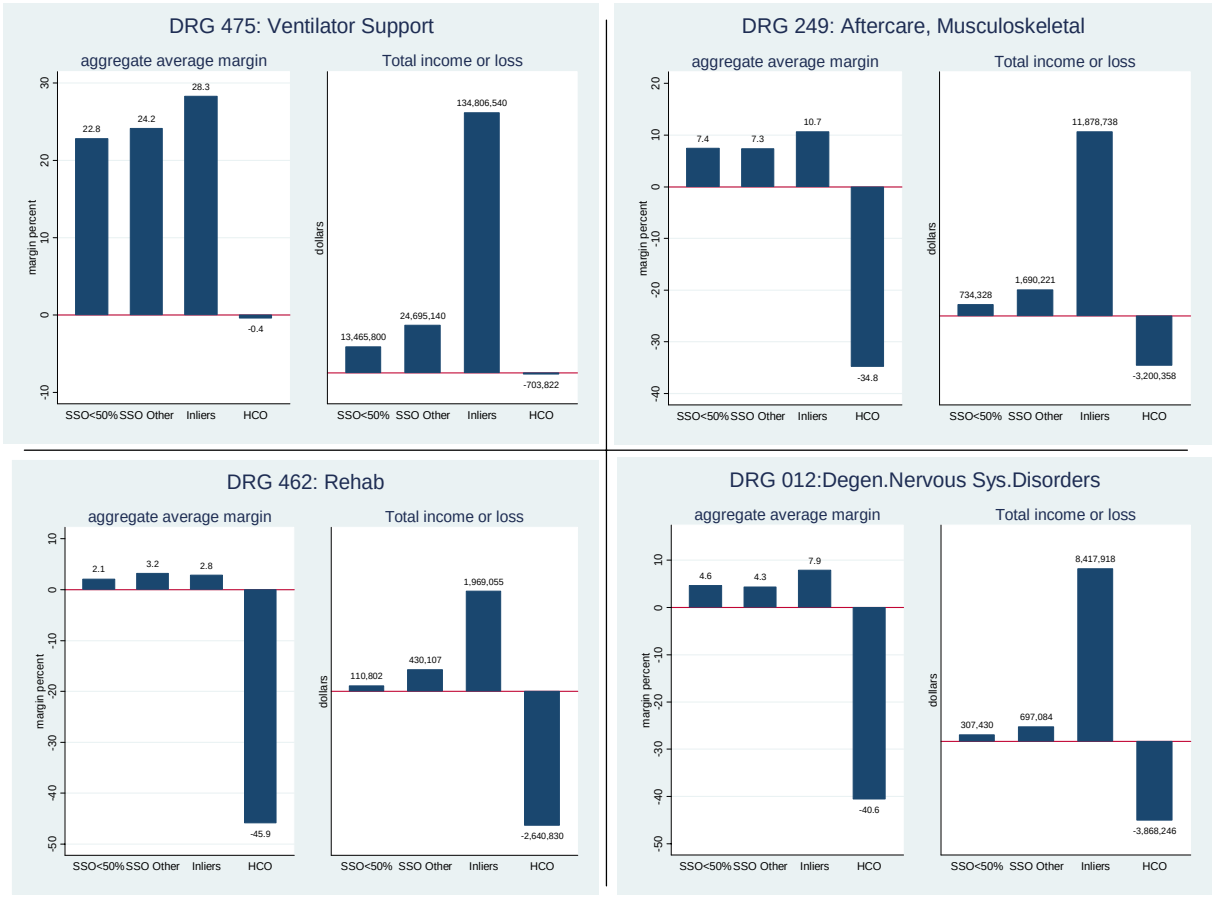
Losses on high-cost outlier cases can be extreme, yet by design they occur in only a minority of cases.. When costs were estimated using the service-specific CCRs only 77 percent of the high-cost outliers in 2003, and 74 percent in 2004, had negative margins. ***Figure 5-7*** provides some insight into outlier profitability by stratifying first by DRG and then case outlier status. The graphs are shown only for DRGs 475, 249, 012 and 462. Within each DRG plot, the bars in the left panel show aggregate average percent margins by outlier case status, but those in the right panels show total income or loss earned by outlier case status. Of the four DRGs shown, only in DRG 462 (Rehab) were losses in the high-cost outlier group large enough to offset the income earned on the other three groups.

5.5.2 Findings: Length of Stay and Short-Stay Outlier Status

One of the more interesting questions about margins in the LTCH setting has to do with the definition and prevalence of short-stay outlier cases. Short-stay outlier payment policy may be designed both to adjust payments for lower costs incurred for unexpectedly short stays, and to use the expectation of reduced payments to discourage reimbursement gaming (making it less profitable for LTCHs to shorten the stays unnecessarily or accept patients with a prognosis of earlier stabilization or recovery). Given the latter objective, the lower margins that we see in short-stay outliers would be intentional.

From our claims sample the most common reason for discharge in "very" short-stay outlier cases was death, accounting for 29%. The second most common is re-hospitalization (transfers out), at 24%. In DRG 475 the same figures are 52% and 34%, respectively. In contrast, among other short-stay outliers, the most common discharge destinations are "Home to home health agency care" at 31%, and "Home to self care" at 22%. While an argument might be made to assume that shorter stays due to death or to re-hospitalizations are unexpected, discharges to home or to further post-acute care are clearly managed. There is evidence from the distribution of length of stay for some key LTCH DRGs that stays approaching the short-stay outlier cut-off may be held over for a short while in order to qualify for full payment. This is evident, for example, in ***Figure 5-8***, which shows the distribution of stays for all cases in DRG 475 that were discharged alive. There is a clear see a jump in case discharged immediately after the cut-point that defines a short-stay outlier in this DRG. A similar pattern can be seen in the stays for several other DRGs.

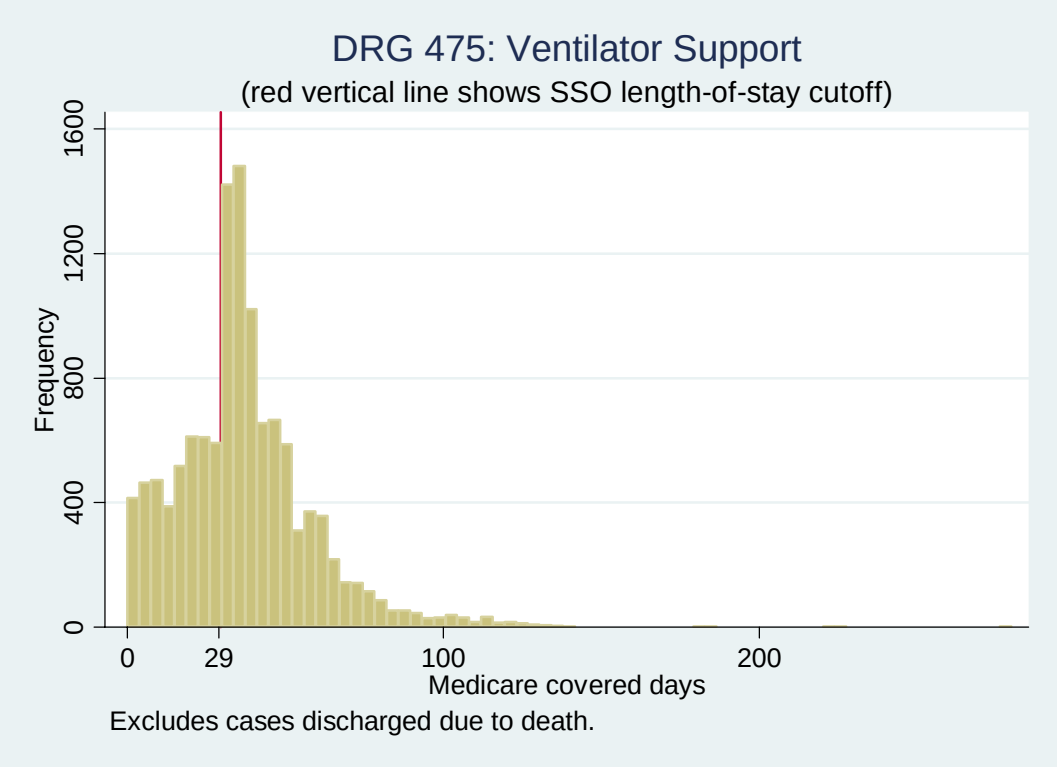
Figure 5-7
Profitability by payment status for selected LTCH DRGs



Margins computed across all DRGs paid using 100% federal PPS rate, using service-specific cost/charge ratios.

SOURCES: RTI analysis of CMS HCRIS and MedPAR claims files, federal years 2003 and 2004. Restricted to claims from facilities electing payment under 100 percent federal rates.

Figure 5-8
LTCH length of stay and the short-stay outlier cut-point



SOURCES: RTI analysis of MedPAR claims files, federal years 2003 and 2004.

Evidence that facilities may be extending stays to avoid the short-stay rules poses an interesting problem for interpreting margin differences between short-stay and other cases. If the "true' distribution of stays (that is, the distribution that would have been present without the interference from reimbursement incentives) did not have that cliff just after the cut-point, average costs in *both* the inlier and "other short-stay" outlier groups might be higher and margins might be lower – though the distortion to the "other short stay" group is going to be greater because there are fewer of them.

5.5.3 Findings: IPPS Versus LTCH Acute Margins, Selected DRGs

For two very distinct types of LTCH admissions – DRGs 475 (ventilator support) and 012 (degenerative nervous disorders), we compared the margins for cases in LTCH stays and in IPPS acute stays. Margins were computed in the same manner as was described for the LTCH sample, using the same type of cost-to-charge ratios and similar edit procedures. The IPPS sample was taken from MedPAR files for federal fiscal year 2004, so comparative information for the LTCH cases was taken from the same period. We divided the IPPS cases into those staying ten days or less (roughly half of DRG 475, and 89 percent of DRG 012), and those staying longer, to be able to compare margins on the types of cases that are more likely to be considered for LTCH transfer.

For ventilator support cases the median margin was 13.1 percent in IPPS facilities compared to 23.1 percent in LTCHs (***Table 5-9***). In IPPS settings the median was quite high for

cases staying 10 days or less (42.6), but severely negative for those staying longer (-27.1). Margins for IPPS cases that were transferred to other inpatient facilities were lower than for other cases – although this is largely because transfers were more likely to occur in the long-staying group. Even so, only 4.1 percent of the IPPS ventilator support cases staying more than 10 days were identified as transfers to an LTCH [29]. The median stay for LTCH transfers was 12 days, compared to 10 days for others.

Table 5-9
Median margins by setting and discharge disposition, for two key LTCH DRGs

	Number of cases	Median margin percent			
			By discharge disposition		
		All	Died	Home	Transfers
DRG 475-Respiratory Diagnoses w/ Ventilator Support:					
IPPS stays <= 10 days	48,065	42.6	44.1	45.8	36.3
IPPS stays >10 days	49,285	-27.1	-38.8	-15.0	-27.2
All IPPS stays	97,350	13.1	12.4	25.1	2.2
All LTCH stays	10,210	23.1	20.9	26.3	24.1
DRG 012-Degenerative Nervous System Disorders:					
IPPS stays <= 10 days	41,961	16.0	0.7	19.1	14.3
IPPS stays >10 days	5,237	-107.5	-151.6	-104.0	-106.6
All IPPS stays	47,198	14.5	-16.6	20.5	10.5
All LTCH stays	9,487	7.5	1.1	10.4	7.5

SOURCES: RTI analysis of CMS HCRIS and MedPAR claims files for fiscal year 2004. LTCH claims restricted to those from facilities paid using 100 percent federal rates.

For cases in DRG 012, the situation is somewhat reversed. In both settings margins are lower than those for DRG 475, but the median margin in IPPS settings is nearly twice what it is for LTCHs (14.5 compared to 7.5 percent). Stays in excess of ten days are relatively uncommon in IPPS facilities, but when they do happen they generate extraordinary losses, regardless of where they are discharged.

5.5.4 Findings: Multivariate Results Controlling for Individual Facility Influences

The claims-level regressions confirm all of the differences that we found in average profitability across LTCH DRGs. Because the hospital fixed effects regression estimates average outcome differences *within* hospital, it controls not only for case-mix and outlier prevalence, but also for the other facility-related influences that can be hard to capture, such as efficiency, specialization, reimbursement maximization strategies or regional treatment differences.

We ran three types models, estimating the logged payment ratio as (1) a function of (logged) DRG weights, outlier status and year; (2) a function of the same, plus indicator variables for discharge destination and nursing home admit source; and (3) a function of the same, but using dummy variables for each of the 25 most common DRGs (comprising 75% of all cases)

[29] These were identified from the new destination code "63" in the MedPAR file.

instead of the natural log of the DRG weight. The third specification was run on the sample stratified by inlier or outlier case status. In this way we were able to satisfy ourselves that the differences in profitability were present regardless of the prevalence or cross-hospital distribution of outliers. Results from all three specifications provide powerful confirmation that most of the variation in LTCH PPS margins is due to distortion in the resource weights.

Output tables from the claims-level regressions are presented in full in ***Table 5-10***. Because the output tables show coefficients computed for the logged outcome variable, ***Table 5-11*** provides summary findings in the format of expected percent change in the outcome variable.[30]

In the model that includes DRG weight as an explanatory variable we find a strong positive — yet we believe, wholly unintended — association between DRG weights and profitability. This is not inconsistent with, our findings from the hospital-level regression, where we had a positive but not statistically significant association between case-mix and margin. In models that include dummy variables for the most common DRGs rather than DRG weight, we find substantial and statistically significant excess profits among respiratory-related cases, which tend to have relatively high weights. We find below-average profits for rehab-related cases and other DRGs where routine nursing care constitutes a greater portion of total charges.

From Table 5-11 we see that the predicted FY 2003 payment-to-cost ratio for an inlier case with a weight of 1.00 is 1.232, meaning that inlier payments are expected to average 23.2 percent above cost. That surplus was cut nearly in half for short-stay outliers with the same weight, and payment for a high-cost outlier with a weight of 1.00 averaged 79 percent of cost. Holding the effects of case-mix, outlier prevalence and facility influences, payment-to-cost ratios did not increase significantly for discharges during the second PPS year, but did for discharges in FY 2005.

The coefficient on the logged DRG weight variable is 0.243. The typical interpretation placed on this type of coefficient is that for every 10% increase in case weight, the payment ratio is predicted to increase by 2.4%. Among high-cost outliers (which tend to occur in the higher-weighted cases) the association between weight and payment ratio is even stronger. Yet if the PPS is working as intended, this coefficient should be zero, for all types of cases.

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[30] As is common with estimations on large person-level datasets, the standard errors are quite small (all reported estimates are significant at p<.001) but the total model variance explained is modest ("within-hospital" R^2 was 0.219). This is because there is more random variation across individual measures than across facility averages. Also, the fixed effects model provides complete control for hospital-level influences, but the proportion of the variance that is explained by differences across hosptials is not included in the reported R^2 Variation attributable to facility attributes (rather than case-level attributes) account for about than one-fifth of the total explained variance across the full claims sample, and more than one-half of the total explained variance when the models are run only on outlier claims of either type.

Table 5-10
Regression output from facility fixed-effects models

Outcome variable: ln (payment/cost)	Using DRG weights		Using DRG dummy variables		
	Payment model	Expanded model	Expanded model		
	All cases		Inlier cases only	Inlier+shortstay	HCO cases only
ln(DRG weight)	0.243	0.251			
	[0.002]**	[0.002]**			
ln(DRG weight) X SSO <50%	-0.086	-0.085			
	[0.004]**	[0.004]**			
ln(DRG weight) X SSO >=50%	-0.076	-0.074			
	[0.004]**	[0.004]**			
ln(DRG weight) X HCO	0.081	0.077			
	[0.006]**	[0.006]**			
SSOw/ stay > 50% GLOS	-0.089	-0.091		-0.087	0.119
	[0.002]**	[0.002]**		[0.002]**	[0.013]**
SSOw/ stay<= 50% GLOS	-0.093	-0.089		-0.092	-0.025
	[0.002]**	[0.002]**		[0.002]**	[0.019]
HCO	-0.443	-0.436			
	[0.003]**	[0.003]**			
FY 2004 discharge	0.005	0.006	0.005	0.005	-0.024
	[0.002]**	[0.002]**	[0.003]*	[0.002]**	[0.005]**
FY 2005 discharge	0.041	0.041	0.049	0.039	-0.012
	[0.003]**	[0.003]**	[0.004]**	[0.003]**	[0.007]
Discharge destination (reference case is discharge to home, self-care):					
Acute hospital		-0.053	-0.106	-0.053	0.013
		[0.002]**	[0.004]**	[0.003]**	[0.008]
SNF/NF		-0.043	-0.068	-0.035	0.006
		[0.002]**	[0.003]**	[0.002]**	[0.006]
Home to HHA care		-0.005	-0.015	-0.002	0.006
		[0.002]*	[0.003]**	[0.002]	[0.007]
Died		-0.038	-0.146	-0.05	0.038
		[0.003]**	[0.005]**	[0.003]**	[0.007]**
Other, exlcuding home		-0.009	0.017	-0.001	0.037
		[0.008]	[0.018]	[0.008]	[0.028]
Transfer from nursing home		-0.001	0.04	0.02	-0.004
		[0.006]	[0.008]**	[0.006]**	[0.017]
Diagnosis Group (reference = all other DRGs, not included in morst frequent 25)					
top25==012			-0.093	-0.078	-0.139
			[0.005]**	[0.003]**	[0.011]**
top25==076			0.211	0.185	0.217
			[0.010]**	[0.006]**	[0.010]**
top25==079			0.054	0.064	-0.044
			[0.006]**	[0.004]**	[0.009]**

(continued)

Table 5-10 (continued)
Regression output from facility fixed-effects models

Outcome variable: Log (payment/cost)	Using DRG weights		Using DRG dummy variables		
	Payment model	Expanded model	Expanded model		
	All cases		Inlier cases only	Inlier+shortstay	HCO cases only
top25==087			0.299	0.2	0.141
			[0.006]**	[0.004]**	[0.013]**
top25==088			0.01	0.039	-0.09
			[0.005]	[0.004]**	[0.013]**
top25==089			0.033	0.047	-0.066
			[0.006]**	[0.004]**	[0.012]**
top25==127			-0.003	0.004	-0.116
			[0.006]	[0.004]	[0.011]**
top25==130			-0.05	-0.038	-0.153
			[0.009]**	[0.006]**	[0.022]**
top25==144			-0.036	-0.018	-0.076
			[0.009]**	[0.006]**	[0.016]**
top25==188			0.094	0.077	0.022
			[0.011]**	[0.007]**	[0.014]
top25==238			-0.119	-0.083	-0.111
			[0.008]**	[0.006]**	[0.013]**
top25==249			-0.07	-0.058	-0.124
			[0.005]**	[0.003]**	[0.011]**
top25==263			0.01	0.009	0.024
			[0.006]	[0.004]*	[0.009]**
top25==271			-0.03	-0.026	-0.084
			[0.005]**	[0.003]**	[0.009]**
top25==277			-0.054	-0.044	-0.133
			[0.008]**	[0.005]**	[0.017]**
top25==296			0.011	0.007	-0.083
			[0.010]	[0.007]	[0.017]**
top25==316			0.024	0.03	-0.046
			[0.007]**	[0.005]**	[0.013]**
top25==320			-0.027	-0.024	-0.162
			[0.009]**	[0.007]**	[0.020]**
top25==416			0.054	0.043	-0.051
			[0.006]**	[0.004]**	[0.009]**
top25==418			-0.084	-0.053	-0.091
			[0.008]**	[0.006]**	[0.013]**
top25==430			-0.186	-0.161	-0.52
			[0.009]**	[0.007]**	[0.040]**
top25==452			0.037	0.034	-0.025
			[0.010]**	[0.007]**	[0.014]
top25==462			-0.113	-0.089	-0.201
			[0.006]**	[0.004]**	[0.013]**
top25==466			-0.028	-0.025	-0.166
			[0.005]**	[0.004]**	[0.010]**

(Continued)

Table 5-10 (continued)
Regression output from facility fixed-effects models

Outcome variable: Log (payment/cost)	Using DRG weights		Using DRG dummy variables		
	Payment model	Expanded model		Expanded model	
	All cases		Inlier cases only	Inlier+shortstay	HCO cases only
top25==475			0.239	0.229	0.222
			[0.004]**	[0.003]**	[0.005]**
Outlier pmt as % total DRG					0.001
					[0.000]**
Constant	0.209		0.231	0.203	-0.241
	[0.001]**		[0.003]**	[0.002]**	[0.007]**
Observations	140,794		75,508	132,323	8,471
Number of provider #	294		294	294	275
R-squared – within	0.1953		0.1118	0.1267	0.435
R-squared – between	0.0085		0.0098	0.0018	0.0978
R-squared – overall	0.1550		0.0891	0.0942	0.2867
Fraction of (explained) variance attributable to facility fixed effect	0.2194		0.1924	0.223	0.5174
Standard errors in bracket * significant at 5%; ** significant at 1%					

Table 5-11
Model 1: LTCH payment/cost ratio regressed on DRG weights and outlier status only

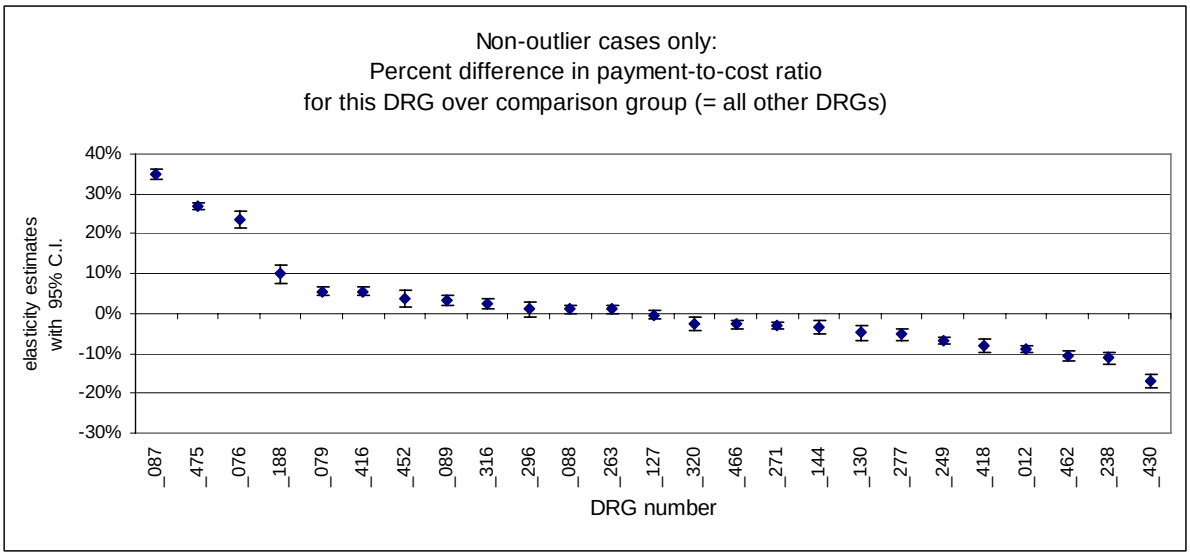
	Estimate, expressed as percent impact
Standardized margins:	
Average payment/cost ratio for discharges occurring in FY 2003, with an LTCH DRG weight of 1.000:	
Inlier cases (intercept term)	1.232
"Very short-stay" outlier cases	1.123
"Other short-stay" outlier cases	1.127
High cost outliers	0.791
Change over time:	
Increase FY 2004 over 2003	0.5%
Increase FY 2005 over 2003	4.2%
Marginal effect of DRG weight:	
Percent increase in payment/cost ratio associated with each 10% increase in the relative resource weight:	
Among inlier cases	2.43%
Among "very short-stay" cases	1.67%
Among "other short-stay" cases	1.57%
Among high-cost outliers	3.24%

NOTES: For all estimates, p<.0001. Results are from facility fixed effects regression of ln(PPS payment/cost ratio) on DRG weights interacted on outlier status and discharge fiscal year.

To investigate other patient-level sources of variation in profitability that are not related to the payment formula, we added indicators for discharge destination and admit source as explanatory variables. The highest payment ratios were for cases discharged home, with or without organized home-care services. Relative to these, payment ratios averaged 5% lower for hospital transfers, 4% lower for SNF transfers and 4% lower for cases that died in-house The differentials were in the same direction, but much stronger, in estimations that excluded high cost and short-stay outlier cases.

Models using dummy variables by DRG rather than weights found similar levels of variation across DRGs, whether they were modeled on the full sample or for inlier cases only. We included the 25 most common LTCH DRGs, which account for three-fourths of the LTCH cases. The (exponentiated) coefficients on individual DRG dummies provide estimates of the percent difference in the payment-to-cost ratio for each DRG relative to the reference category, which is the average for "all others". In ***Figure 5-9*** we plotted these percent differences in descending order, as computed from the regression of non-outlier cases only. For this model's reference group ("all other DRGs" in FY 2003, discharged home and not admitted as a nursing home transfer) payments exceed costs by 26 percent; as shown in the figure, the ratio for DRG 012 is 35 percent higher than this reference group, while the ratio for DRG 430 is 17 percent lower.

Figure 5-9
Results from facility fixed-effects claims regressions Model 2: Relative profitability of non-outlier cases from 25 most common LTCH DRGs (comparison group: all other LTCH DRGs)



NOTES: 25 most frequent LTCH DRGs account for 74% of all cases and 75% of inlier cases. Model also controls for discharge destination and admission source.

Under DRG-based systems, per-case payments are adjusted by discharge weights and the weights are designed to reflect expected national relative resource use. It is therefore important to review why we might expect to see any systematic DRG-level variation in profitability, since One reason is that high-cost outlier cases are distributed unevenly across DRGs. As previously noted, the outlier payments are not intended to cover the full amount of losses documented in an outlier case. In addition,, outliers are "funded' internally in the PPS by reducing the payments for all DRGs by an amount that represents the expected average outlier payments averaged across all cases. Thus, DRGs with relatively low HCO prevalence will have lower margins than DRGs with high HCO prevalence, even if the relative weights are built on perfect cost estimates.

The other reason, however, has to do with the use of charges to measure relative resource use. Our analysis of fully allocated costs and gross charges from LTCH cost reports reveals considerable variation in hospitals' mark-up strategies. Weights for LTCH DRGs are computed from standardized charges on LTCH claims that have first been corrected for differences in hospital average mark-up. This is accomplished by multiplying each claim's total charges by each facility's weighted average cost-to-charge ratio for Medicare services. Yet there is also considerable systematic variation in the pricing strategies applied to *specific services.* For example, in the facilities providing cost report data for this chapter, the median cost-to-charge ratio (CCR) for respiratory therapy services was only 0.21, while the ratio for nursing care was 0.69. CCRs tend to be highest (implying lowest mark-up) for inpatient nursing services and lowest (implying highest mark-up) for ancillary services. Distortions in cost claims estimates that are introduced by this type of variation in hospital mark-up cannot be reduced by adjusting claims by the hospital average CCR. As a result the LTCH approach to constructing DRG weights has a tendency to overstate relative resources in DRGs that use more of the high-markup ancillary

services (such as respiratory-related DRGs) and to understate them in DRGs that use more nursing care (such as neurological disorders).

5.6 Summary and Conclusions

This section examined LTCH facility financial performance before and after the introduction of PPS. We found that aggregate facility total margins rose from 4.9% in FY 2002 to 8.9% in FY 2003, and Medicare inpatient PPS margins rose from 1.9% to 8.3% in the same period. In the first year of implementation, the inter-quartile range on LTCH PPS margins was -0.2% to +17.1%. Facilities paid under the phased-in rates and public LTCHs were disproportionately represented at the lower end of the distribution. Many facilities were able to improve their profitability by opting for 100% federal rates in year 2, indicating that the base rate was set at a generous level relative to average standardized cost per case.

Median facility PPS margins were highest among for-profits and highest for those certified in recent years. Margins were lower for those with a higher proportion of high-cost outliers. and — somewhat surprisingly — lower for those with a higher proportion of very short-stay outliers (stays less than one half the geometric mean LOS).

Case-level margin analyses were conducted for claims in FY 2003 and 2004 that were paid under the 100% federal rate. Margins varied substantially across DRGs, even after stratifying to remove the effects of high-cost or short-stay outlier prevalence. Across the 10 most common reasons for admission, average margins were lowest for those in Rehabilitation (-0.1%) and highest for those in Ventilator Support (21.3%). Across all cases the aggregate margin was 12.4%, but it was 17.4% for inlier cases, 13.8% for short-stay outlier cases and -14.3% for high-cost outlier cases. The variation in profitability across DRGs was even greater in multivariate models that were able to control for fixed hospital-specific effects as well as outlier status.

In fiscal 2004, the median margin for LTCH Ventilator Support cases was 23.1%. We found that in IPPS settings, the median for cases in that same DRG 475 was 13.1%. The mean 1.4%, indicating some cases had very large losses. There is an unusually large amount of within-DRG variation in the IPPS setting; among the roughly half of cases staying 10 days or less, the median margin was 42.6%, compared to negative 27.1% for those staying 10 days or more. IPPS margins were slightly lower for the Ventilator Support cases that transferred to LTCHs than for those with other discharge dispositions. Setting-specific profit differentials require further study using a complete episode-of-care file, to adjust for changes in DRGs across inpatient settings and to control adequately for possible patient selection effects.

We conclude that *underlying* high LTCH profitability stems from a generous base rate during the first two PPS years. However, substantial *variation* in profitability across DRGs – including the unusually high margins that we found for Ventilator cases and other respiratory-related DRGs – stems from bias in the DRG weights that causes systematic understatement of costs for cases using relatively more ancillary services. This is a design problem within LTCH-PPS that can only be addressed with improved cost-based weights.

SECTION 6
RECOMMENDATIONS

This study is intended to provide CMS recommendations regarding the feasibility of developing criteria to distinguish Long Term Care Hospitals (LTCHs) from other acute hospitals. First, we examined the populations these hospitals treat and whether their patients or services differed from those of other acute hospitals, including general, rehabilitation, and psychiatric hospitals. We found that many of the patients overlapped with those treated in other settings but that LTCHs provided a specialized set of services for a small group of patients, particularly those with severe respiratory conditions or multi-system complications. Historically, general acute hospitals also have treated these patients although the success rates at ventilator weaning and other specialized service outcomes may have been lower in hospitals treating fewer of these patients. Current data do not support this analysis although earlier demonstrations suggest similar outcomes are possible in IPPS hospital if similar resources are applied (i.e., interdisciplinary teams and higher nurse staffing ratios). This potential overlap raises questions about the feasibility of distinguishing LTCHs or LTCH-appropriate patients from other types of acute admissions.

Second, we considered the types of patient or facility level criteria that would identify these complicated cases and the required treatments, including the availability of established treatment guidelines and other tools commonly used to record and monitor patient acuity. The recommendations offered here attempt to a) address these issues while minimizing reporting burdens for the providers; b) not interfere, and in fact, standardize care for these complicated patients by suggesting a clear definition of the types of patients who require the specialized services of LTCHs; and c) restrict LTCH services to these more complicated cases.

Third, these recommendations address the payment inequity for these medically complex patients. We recommend that payments for these patients should be fair and equitable regardless of the type of acute hospital in which they are treated. Our margins analysis suggests that LTCH payment levels may be somewhat high, and similarly, payments to general acute hospitals for these patients may be low relative to costs. Further work is needed on these issues.

6.1 Overview

LTCHs are a growing segment of the Medicare program. These hospitals treat a wide range of Medicare patients, who together, have an average length stay of more than 25 days. The majority of these patients are severely ill and considered to be medically complex or have complicated respiratory conditions. However, a small percent of the patients may be admitted with less medically intensive needs but longer expected lengths of stay. These less intensive patients may resemble those otherwise treated in rehabilitation facilities or psychiatric hospitals but with longer expected stays. Under the former payment policies, this distinction was less important because hospitals were paid based on cost, subject to a facility-specific limit. Under the new case-mix adjusted PPS systems, the LTCH has a much higher base payment rate and a different severity adjustment system than the IRF and psychiatric hospitals which may lead to inappropriately high payments for less intensive LTCH admissions.

The majority of LTCH patients are admitted from a general acute hospital (79 percent) and many had an ICU stay during their general acute stay. For these cases, LTCHs could be

acting as ICU step-down units. While the primary diagnoses of these admissions vary extensively, there is consensus that most LTCH admissions are "medically complex." In other words, these cases have some set of complicating medical factors in addition to their primary diagnoses. However, the Medicare program does not currently restrict LTCH admissions to the medically complex or any other type of patient. Further, to be certified for LTCH payment levels, a hospital only needs to meet acute hospital certification standards and have an average Medicare length stay greater than 25 days. As a result, Medicare covers a wide range of populations in these hospitals, regardless of the patients' *individual* acuity levels.

LTCH patients also use a range of services in their typical episode of care. In 2004, 20.3 percent used a SNF and 4.1 percent had at least one IRF admission. Thirty-one percent were readmitted to the general acute hospital for either planned surgeries or emergent care that requires more intensive physician oversight or equipment not available in the LTCH.[31] Among the other 45 percent of LTCH discharges, a substantial portion were being discharged to home health.

Because of the lack of clinical admissions criteria, LTCH patients could be treated at other acute-level facilities for all or part of the care they receive at an LTCH. Differentiating between appropriate LTCH admissions and other, less costly levels of care typically included in the episode is difficult because of overlapping definitions of care. The only factor distinguishing LTCHs from general acute hospitals is the average 25 day length of stay requirement but nothing prohibits general acute hospitals from providing this same care. And in many parts of the country, IPPS hospitals do provide this care and are paid under a different payment system. Similarly, while IRFs must have 75 percent of their population within certain diagnostic groups, LTCHs can treat these same cases without meeting the IRF certification requirements. LTCHs can also treat longer stay psychiatric cases without meeting certification requirements for those hospitals either.

Since each patient care setting has its own payment method, many of which are discharge-based payment units, it is unclear whether appropriate and equitable payments are made to each setting. Are LTCHs providing services for which Medicare already paid under the IPPS system for an acute stay that preceded the LTCH admission? Our analysis of IPPS margins suggests that for certain cases, this does not appear to be the case. For example, among DRG 475 admissions in the IPPS hospitals, the average margin was 3.6 percent. Almost half these cases (44 percent) stayed for over 10 days and for them, average margins in 2003 and 2004 showed losses of 36 percent. Half these longer stay cases had losses of 29 percent although a few hospitals also showed substantial gains in the top 5 percentile.

LTCH rates, on the other hand, may be set too high for the services they are providing as shown in higher average PPS margins for cases in LTCHs. While aggregate LTCH inpatient PPS margins were at 8 percent in 2003, this varied by type of case. For DRG 475, which accounts for almost 10 percent of all LTCH admissions, we estimated an aggregate LTCH PPS margin of 18 percent.

This study has raised some very important issues regarding the role of the LTCH in the healthcare delivery system and the appropriateness of their payment levels. What populations or services are unique to the LTCH that distinguish it from a general acute hospital? If none, should the LTCH be paid at a different rate than the general acute hospitals? Should they be paid at a

[31] Patient readmissions are planned for certain patients who need surgery following additional healing in the LTCH. These are typically patients with wounds.

different rate than an IRF or psychiatric hospital? The majority of LTCH admissions are medically complex and there is general consensus that these cases need the more intensive treatment programs provided by LTCHs. So the primary issues relate to whether LTCH and other hospital payment and staffing policies are appropriate and whether any of the hospitals may be unbundling services for which they are already paid and discharging to the next level of care.

6.2 Recommendations for Identifying Appropriate LTCH Cases and Payment Levels.

Four sets of recommendations are presented here. Each set is followed by a discussion of the issue and the current regulations. The first set of recommendations address patient level issues including 1) defining who the appropriate LTCH admission is and how to address changes in their condition; 2) selecting the final set of admission criteria and 3) related data collection issues. The second section addresses facility level indicators that may affect quality of care and ways to reduce the opportunity to unbundle LTCH services. The third section addresses issues related to having consistent rules across certified acute hospitals. The last section focuses on administrative changes needed for monitoring hospital compliance.

These recommendations are based on claims and cost report analysis, interviews with various providers and their associations, and a review of the regulations affecting LTCHs, IRFs, psychiatric, and general acute hospitals, and nursing facilities to establish consistent policies for the different populations. Ideally, given the different payment systems and patient etiologies, each set of providers should be providing different levels of care to these patients.

6.2.1 Patient-Level Recommendations

A. Defining Appropriate LTCH Admission.

These recommendations recognize that LTCHs currently admit a wide range of patients, from those needing specialized care with interdisciplinary team management and higher nursing levels than provided on general acute floors to lower intensity patients who have acute-level physical rehabilitation or psychiatric needs and longer expected lengths of stay. However, both LTCH associations agree that the populations they specialize in treating are those who are medically complex.

Recommendation 1: Restrict LTCH admissions to cases that meet certain medical conditions:

a. Their *primary diagnosis must be medical*, not physical functioning or psychiatric.

b. They must be *medically complex* as broadly defined broadly to include a wide range of conditions but all with severe medical complications, comorbidities, or system failures, that together represent a complicated, severely ill patient.

After examining Medicare claims to understand variations in the medical conditions and resources used to treat patients with the same DRGs in different types of acute hospitals, RTI elicited comments from the field. Most of the major inpatient PAC provider associations, such as NALTH, ALTHA, AMPRA, AHA, and some large chain LTCHs were asked to discuss their expectations regarding patient acuity in theirs and other hospital settings. Most agreed that LTCH admissions should have compromised physiological systems that require more extensive medical attention than is generally available in an IRF or psychiatric hospital. The IRFs perceived LTCHs as hospitals that treat acute level patients who may have some rehabilitation needs but the primary condition was medical.

Among the LTCHs interviewed, there was general consensus that LTCHs' specialize in treating medically complex cases. Most have multiple complications. Although LTCH patients are typically stable in terms of blood pressure and other physiologic factors before being admitted, these hospitals function in many respects as step-down units from intensive care. They differ from most general acute hospitals' general medical/surgical units by having higher nursing levels and interdisciplinary treatment teams managing each case.

While some LTCHs have been treating cases that appear to be similar to IRF admissions, a proposal by the industry suggests rehabilitation populations should only be admitted if they have primary medical issues. Once admitted, the LTCHs should provide the necessary rehabilitation services in complement to the medical services. But the primary condition being treated should be a medical condition and of a certain complexity level. The LTCHs identified the higher medical needs of these patients as a key distinguishing factor between IRFs and LTCHs although this is not a legal or regulatory requirement.

The less complicated cases currently admitted to LTCHs who meet the 25 day length of stay criteria may be better served in facilities that specialize in their primary diagnosis, such as a psychiatric hospital, rehabilitation hospital, or nursing facility, as in the case of long term ventilator management, particularly since LTCHs are not required to meet the same certification requirements as those other providers. And under the new PPS payment policies, each of these hospital types have different payment systems with different case mix measures and weights. As a result, the LTCH is being paid a different, and likely higher, rate for the less medically complex rehabilitation or psychiatric cases than Medicare would have otherwise paid to the appropriate facility.[32]

Restricting admissions to the medically complex cases with a primary diagnoses of a medical nature would be consistent with the Medicare rules applied to inpatient rehabilitation and psychiatric hospitals. Rehabilitation hospitals must have a majority of their cases within 13 diagnostic groups that are considered acute-level, rehabilitation conditions. Similarly, psychiatric hospitals must be admitting patients with a primary diagnosis of mental illness. Requiring a specific level of medical complexity with a primary medical condition would identify a group of patients appropriate for LTCH treatments.

Recommendation 2: Require LTCH Admissions to be discharged if not having diagnostic procedures or improving with treatment.

Rehabilitation and psychiatric patients are expected to improve as a result of their treatment unless they are admitted for diagnostic procedures (Benefit Policy Manual, Section 2 and CMS Manual 6/25/04). Discharge is identified when patients are no longer improving as a result of the treatments. This is an important standard that distinguishes acute level treatment from lower levels of care. It reflects the difference between the level of medical attention needed by a patient whose regiment is being adjusted compared to one who is being monitored. LTCHs should meet the same acute level standard as other specialized hospitals and have continuing stay criteria that require continued improvement or provision of diagnostic procedures. Cases that traditionally have been maintained in LTCHs without expected improvement (i.e., longer term ventilator management) can be cared for in a lower level setting at a lower cost per day. While nursing

[32] Medicare's base rate for each of these systems is substantially different, with LTCHs having the highest base rate although a longer stay psychiatric case paid on a per diem may be equivalent.

levels may still be high, daily physician oversight would not be needed for a patient whose condition has stabilized to a chronic level, for example, a patient who can not be weaned.

B. Selecting Criteria to Measure Medical Complexity.

A key issue in determining appropriate admissions is being able to measure patient acuity or medical complexity. The private sector has been developing standards to distinguish among providers or levels of care for years. Their logic specifies a range of diseases and complicating conditions or certain physiological measures, such as blood pressure rates, respiratory rates, or certain non-discretionary resource needs, such as the use of PIC lines. These types of standards are used by the Medicare-participating Quality Improvement Organizations (QIOs), managed care organizations, and third party administrators in the private insurance market as *guidelines* for determining appropriateness of admissions to different levels of care, including acute hospitals. Many LTCHs use these standards to set admission criteria and reduce the likelihood of payment denials. However, these criteria do not make distinctions between long term acute and general acute admissions. Simply qualifying for a general acute admission is adequate to meet LTCH admission standards. These standards are useful, however, for identifying extremely ill patients who are appropriate for acute inpatient care.

The LTCH industry has also proposed a set of criteria to identify appropriate admissions. Their proposals are less specific than those currently used by the Quality Improvement Organizations (QIOs). While they are simpler to apply than the other criteria, these also fail to distinguish between long term acute and general acute cases.

Recommendation 3: Develop a list of criteria to measure medical severity for hospital admissions.

Building on the work that the private sector and the industry have already done to identify medically complex patients, develop a brief list of criteria that can be used to differentiate intensity and justify an LTCH admission. The list should be broad enough to capture medical complexity in various types of diagnoses but limited and specific enough to identify the medically complex patient within those conditions.

Table 6-1 summarizes many of the types of measures commonly collected on acuity instruments as part of a hospital assessment process.[33] The measures include basic information on primary conditions, stability of vital signs, blood and oxygen measures, IV use, special equipment and laboratory needs, chest tubes, heart monitoring requirements, pain management, wound care, and functional limitations. The specific measurement items used may vary but this is the type of information hospitals use to monitor patients, plan nurse staffing levels, equipment needs, and make other resource decisions about patient treatments. These same types of items are collected by general acute hospital intensive care units that use the APACHE and related systems to measure patient acuity during their ICU stays.

[33] This list is based on assessment forms collected for RTI by the National Association of Long Term Care Hospitals (NALTH) and the American Long Term Hospital Association (ALTHA) for RTI.

Table 6-1
Commonly collected assessment items in LTCHS

Type of Measure[34]	Number of Assessment Forms
• Conditions (Medical History)	**26**
• Vital signs (includes heart rate, blood pressure, temperature, etc.)(current Stats)	**14**
• Blood and plasma levels	**17**
• Arterial blood gas (SaO2, pCO2, etc.)	**14**
• Glucose levels	**10**
• IV (intravenous) including medications, antibiotics, diuretics, electrolyte replacements and/or fluids	**18**
• Total or partial parenteral nutrition (TPN or PPN), enteral, or central feedings, PEG	**21**
• Chemotherapy	**4**
• GI (gastrointestinal) suctioning frequency	**3**
• Isolation	**12**
• Hemodialysis/Peritoneal dialysis	**16**
• Pulse oximetry	**2**
• Progression towards goals	**8**
• Availability of laboratory services	**18**
• Psychosocial problems	20
• Respiratory/Respiratory Therapy	**16**
• Chest physiotherapy (PT)	**2**
• Tracheo-bronchial suctioning frequency/tracheostomy	**15**
• CPAP/Bi-PAP/VTM/IMV (types of ventilator support)	**18**
• Nebulized therapies	**4**
• Oxygen monitoring	**13**
• Pleural catheter management	**11**
• Trach weaning	**14**
• Pulmonary assessment	**4**
• Respiratory rate	**3**
• O2 (oxygen) saturation	**15**
• Respiratory acidosis pH level	**5**
• Fi02 titration	**8**
• Chest tubes	**9**
• Breath sounds	**4**
• Heart (Cardiac)	**10**
• Left ventricular (LV) ejection fraction	**5**
• Edema	**2**
• Cardiac monitoring	**3**
• Neurologic	**6**
• Neurological assessments	**6**
• Mental status/AO/Cognition	**20**
• Electrocardiogram (ECG) monitoring	**1**
• Pain	**2**
• Pain management	**10**
• Analgesia/relaxant therapy	**1**
• Wounds/Ulcer/Stage1-4/intensity of ulcer	**10**
• Wound dressing changes	**9**
• Wound management	**20**
• Rehabilitation	**9**
• Functional limitations/range of motion/strength/endurance/mobility/activities of daily living	**25**

[34] Items varied in their specificity from general identification of a type of condition to specific measures noted above.

Recommendation 4: Establish a Technical Advisory Group to:

a. Recommend a small set of criteria for defining medically complex patients appropriate for LTCH admissions, and

b. Recommend measurement levels for each item that identify medically complex patients.

The TAG would be composed of physicians who treat medically complex patients in a range of settings, including LTCHs, general acute hospitals, inpatient rehabilitation facilities, and skilled nursing facilities. They should review the types of measures summarized in Table 6.1 as well as tools used by the various groups, including the QIOs, the ICUs, and the evidence-based guidelines used by pulmonologists, physiatrists, oncologists, nephrologists, and other specialists who work with these populations. The TAG will be asked to recommend 1) a small subset of items to identify the most complex cases who need higher levels of nursing care and interdisciplinary treatment teams to achieve successful outcomes, and 2) severity rating levels to identify the point at which a patient qualifies as medically complex and needing interdisciplinary team treatment on each of the different measures.

Having a wider panel of physicians representing the general acute, LTCH, IRF, and psychiatric hospitals as well as the SNF industry will allow some debate about the appropriate level of intensity for LTCH admissions relative to other settings.

C. Data Collection Issues.

While these data would be used to determine appropriateness of admission, the information should be collected by CMS to monitor LTCH admissions and the quality of care provided to Medicare beneficiaries. Collecting this information will allow CMS to examine whether LTCH admissions are limited to the intensity specified and to standardize future analysis of outcomes for LTCH patients across providers. This is important in monitoring the effects of the new PPS in terms of appropriate admissions, access to care and quality of care.

Recommendation 5: Establish a data collection mechanism to collect this information.

CMS should establish a mechanism for collecting this data. One method would be to modify the procedure codes on the Medicare claims to collect information on blood, oxygen, TPN, and other factors that identify acute level medical acuity. Using the procedure code variable would allow these factors to be tracked across all hospitals submitting MedPAR claims.

Alternatively, LTCHs, like IRFs and SNFs, could move to a patient assessment tool that collects information on patient acuity for coverage purpose. There is precedent for collecting this type of assessment in both the IRF and SNF payment systems as well as the home health PPS. However, this method will not allow comparison with standard general acute hospital cases unless all hospitals collect this data. This tool may be needed to collect the functional measures.

Recommendation 6: Require LTCHs to collect and submit functional impairment measures as well as physiologic measures on all patients receiving physical, occupational, or speech and language pathology services.

While medical complexity would be the primary diagnosis for patients admitted to LTCHs, many patients also have rehabilitation needs. In fact, a substantial portion of the leading

DRGs in LTCHs have functional impairment components. These impairments complicate the medical treatment, and in turn, are complicated by the patient's medical conditions. Measuring the extent of these impairments will be important for monitoring complications and patient acuity and understanding the impact of LTCH care under the LTCH PPS.

Many LTCHs already use some functional impairment measurement system to collect data on their inpatient populations' functional levels. This information is critical in understanding patient case complexity within and across the hospitals. LTCHs should use the same functional measurement scale that is used in other parts of the Medicare program to allow standardized comparisons in monitoring beneficiary care for patients receiving physical or rehabilitation medicine. Similarly, data collection standards, such as the frequency and time of assessment should be consistent with those used to record functional items in other settings. This will provide the Medicare program consistent measures for comparing costs and outcomes for rehabilitation patients in LTCHs compared to those treated in IRFs.

6.2.2 Facility Level Recommendations

Medicare ensures that beneficiaries receive appropriate care by requiring participating providers to meet certain standards as defined in the program's conditions of participation (COP). For IRF and psychiatric hospitals, the COP specify minimum staffing requirements to ensure appropriate, high quality care for the populations treated at these hospitals. These two types of hospitals are both required to have multidisciplinary teams developing the treatment plans (412.27, 412.29). Each is to be overseen by a physician in consultation with other professional personnel. The managing physician must specialize in the respective psychiatric or rehabilitation services (Ibid.). Other staff members, such as nurses and therapists, are also required to have specialized training in their respective areas.

No comparable regulations apply to LTCHs although many identified themselves as having interdisciplinary teams; nursing staff with specialized training, such as wound care certification or respiratory therapy certification; and one physician in charge of each case. Some of the LTCHs suggested, in fact, that these practices of physician oversight, multidisciplinary team management, and higher nurse staffing levels were their hallmark for achieving better outcomes than other types of hospitals in treating these difficult populations.

Recommendation 7: Standardize conditions of participation and set staffing requirements to ensure appropriate staff for treating medically complex cases.

Require through regulation that LTCHs meet the same type of staffing requirements for their patients, particularly the medically complex and respiratory or infection patients, as other hospitals must meet under their conditions of participation. These staffing requirements should include interdisciplinary teams to coordinate care among the various disciplines working with each patient. For special programs that target specific populations, teams should be managed by physicians with specialties in those areas (i.e., neurologists for brain injury programs, pulmonologists for respiratory related programs, etc.). Like the psychiatric hospitals, a minimum team meeting requirement of every 2 weeks would be useful to ensure continued team attention to the patient.

Staffing requirements might require LTCHs to have the following types of staff in place to treat these complicated cases:

- Multidisciplinary teams to ensure an appropriate range of expertise is included in the daily treatment;

- At minimum, daily physician on-site review of the team's management of each case with specializations in the areas treated, either as an intensivist or in a particular specialty such as pulmonology;

- Specialized nurse training, such as in emergency care, wound care, or other relevant specializations targeting medically complex cases;

- Standardized staffing levels that ensure higher nursing ratios than in general hospital medical/surgical units.

Recommendation 8: Keep the 25 day average length stay requirement in place to limit LTCH's incentives to unbundle and clearly delineate between general and long term acute patients.

While the 25 day ALOS criteria does not distinguish patients' clinically and potentially creates a "cliff-effect", keeping it in place until acuity is well-measured has two benefits. First, it reduces other providers' ability to convert to the higher paying LTCH status based solely on acuity. Second, having a relatively long length stay discourages LTCHs from discharging patients to facilities that will receive a second payment for services the LTCHs have historically been providing and on which their payment rates are based. However, it does not prohibit these cases from going on to care in other settings. Historically, about three percent of the LTCH cases are discharged to IRFs and 20 percent discharged to SNFs for continued care.

6.2.3 Recommendations to Improve Consistency between General Acute and Long-Term Acute Hospital Payment and Certification Policies

The prior recommendations distinguish LTCH populations from other specialized acute hospitals and define appropriate staff requirements to treat them. However, they fail to address the differences between general and long term acute hospital admissions. This is an important issue since both types of hospitals are accredited as acute hospitals, admit the same types of DRG-related conditions, but have different case mix weights and substantially different payment levels for these cases. And, both types of hospitals can provide the same post-ICU level of care. The following recommendations address ways to minimize these differences between general acute and LTCH acute hospitals.

Recommendation 9: Allow LTCHs, like general acute hospitals, to open certified, distinct-part rehabilitation and psychiatric units if CMS finds that restricting LTCH admissions to the medically complex cases results in access problems for IRF or psychiatric patient populations.

We believe that an argument could be made for allowing LTCHs to establish IRF or psych units in a manner similar to such units in acute hospitals, if it is determined that restricting LTCHs to medical complexity criteria would result in seriously reduced access to inpatient rehabilitation or psychiatric services. Some LTCHs are currently providing IRF or psychiatric type services in their LTCH-licensed beds. The recommendations proposed here will restrict the use of those beds

to populations who have a primary diagnosis that is medical in nature and who are medically complex patients. Doing so, may reduce the number of beds in an area that provide rehabilitation or psychiatric services. To avoid this issue of reduced access, we propose that LTCHs be allowed to operate in a manner that is consistent with other acute hospitals, and be allowed to have one IRF or psychiatric unit if CMS finds potential access problems.

Allowing LTCHs to open units will improve the consistency in the regulation of all acute hospitals while addressing potential access problems that may arise by limiting LTCH admissions to the medically complex. Establishing additional payment incentives similar to those acute hospitals face, such as strict transfer policies, will discourage PAC transfers and diminish the LTCHs' abilities to unbundle services, a concern that could arise by allowing them to open units. Allowing LTCHs to open units will help provide continued access while improving the quality of care, since these units will be held to the same standards and paid under the same method as these other units.

Admissions to the IRF unit would be paid under the IRF PPS. This would provide a continuing local option for patients needing inpatient rehabilitation services without increasing program costs for patients treated at the associated LTCH.[35] This unit would have to meet the conditions of participation for IRFs. However, they would not have to establish a separate governance structure as they would if they opened a co-located IRF.

Similarly, some hospitals may be serving as local inpatient psychiatric hospitals in certain parts of the country. LTCHs should be able to open one psychiatric unit per hospital but this unit must be certified as a distinct-part unit. It would be paid under the Psychiatric PPS and be subject to all the COP that apply to these hospital units. This will continue the same level of access to inpatient psychiatric care after refining the definition of an LTCH admission.

Recommendation 10: Require LTCHs to meet the same regulatory restrictions as general acute hospitals by limiting their allowance to only one of each type of distinct-part unit.

Like general acute hospitals, LTCHs should only be allowed to open one of each type of distinct-part unit (412.25(d)).

Recommendation 11: Establish payment rules that provide a disincentive for LTCHs to transfer cases early to other post acute settings:

a. Apply transfer rules to cases discharged from LTCHs to other post acute settings.

b. For very "short stay" LTCH cases transferred to post acute settings pay the LTCH at the IPPS rate.

Currently, LTCHs face limited disincentives to unbundle care. For cases with shorter length stays (i.e., 5/6 the geometric mean or less) LTCHs receive a reduced payment through a short stay outlier payment adjustment. Recent policy changes have strengthened the effects of this. However, by definition a large number of cases meet this threshold and the LTCH margins remain high. Acute hospitals, on the other hand, have a transfer policy adjustment which provides a disincentive for unbundling care to any post acute provider. This adjustment is particularly useful given the large number of IRF, psychiatric, and SNF units within acute hospitals. If LTCHs

[35] About 4 percent of LTCH cases are currently discharged to IRFs during an episode of care.

are allowed to establish these types of units, a transfer policy (or payment reduction) should apply when cases are discharged from the LTCH to a distinct-part unit, such as an IRF unit to further reduce the potential to unbundle. Establishing a PAC transfer policy for LTCHs will reduce their incentive to discharge their case early to the next level of care.

Currently, the LTCHs receive a payment reduction if their cases meet the short-stay criteria or they are transferred to *co-located* hospitals or units but not for any other type of post acute discharge. A transfer policy should apply to all post acute transfers and should be set at a level to discourage provider segmentation or increased program costs due to higher post acute use.

Second, for LTCH cases whose length of stay is within 1 standard deviations of the IPPS average length stay, LTCHs should be paid the IPPS rate. When this occurs, it suggests the LTCH is providing general acute care for these patients. This will allow LTCHs to treat these acute cases but be paid on an equitable basis with other acute hospitals since the shorter length stay would suggest general acute treatment is being provided.

Recommendation 12: Conduct additional research to examine costs associated with different segments of an acute episode for medically complex patients. This should also include an examination of the IPPS margins for cases commonly discharged to LTCHs.

During our site visits, physicians in LTCHs were asked to describe the differences between their patients and those treated in acute hospitals. The primary difference raised was that general acute hospitals typically diagnose, stabilize and treat patients whereas LTCH patients are typically diagnosed and stabilized before being admitted. They are admitted for longer term treatment of a complex case, thus opening a bed in the acute hospital for the more intensive case. Frequently, LTCH patients are admitted from an ICU in the general hospital.

While some LTCHs have intensive care units and may admit patients directly to these units, their more frequent purpose is to stabilize patients in freestanding LTCHs with emergent needs. Most LTCHs we interviewed did not want to admit a patient who was not medically stabilized.

These interviews suggest that hospital care for these medically complex patients is segmented into at least two parts:

- Stage 1: An intensive care stay;
- Stage 2: Step-down from ICU.
  - General acute step down unit;
  - General acute medical/surgical unit; or
  - LTCH.

The first stage is ICU level care that is typically provided by a general acute hospital. At this level, the patient is not medically stable and they are being intensively monitored by physicians and nurses. Nurses typically are responsible for only 2 patients in an ICU.

The second stage may be provided by a general acute hospital in either a step-down unit or a general medical/surgical unit or by a LTCH. During this stage, the nursing and physician involvement is less intensive than ICU level although the actual intensity may vary by site of care.

The LTCHs we interviewed responded that their staff have about 4-6 patients per 1 nurse. Their patients are hemodynamically stable yet may be on PEGs, chest tubes, have PIC lines, or central lines. Most of the LTCHs we visited did not accept patients with arterial lines, Swan ganz catheters, or balloon pumps. They varied in whether they performed tracheostomies, bronchoscopies, and chemotherapy although most did not perform these procedures. The freestanding hospitals frequently had ICU or high observation units although patients were not typically admitted to the LTCH through the ICU. It was used to stabilize patients already being treated by the hospital.

The academic medical center we visited with a respiratory ventilator unit was very similar to a LTCH. It functioned as an ICU step down unit and had higher nursing ratios, interdisciplinary team management, and one physician in charge of each case on their unit. They operated similarly to an LTCH but were paid under the IPPS.

Patients who are not in one of these two more intensive step-down settings may be discharged to an acute hospital's medical/surgical unit with lower nursing ratios for continuing care. Their general acute length of stay and outcomes may be different than the patient who is transferred from the ICU to a special step-down unit or LTCH. Further analysis is needed to understand the costs and outcomes associated with these two different care components within the acute episode. This information will be important for determining whether acute hospitals that transfer patients to LTCHs provide less acute care per episode than hospitals that do not.

Once the different stages of care are understood, hospital conditions of participation and payment rates should be revisited. If clinical protocol suggest these types of complex patients require higher nursing levels and interdisciplinary team management of their cases, then these rules should apply regardless of site of care or type of hospital. Payments should reflect the costs at the different stages of care, independent of hospital certification. The Medicare program is required to ensure that beneficiaries receive cost-effective, appropriate quality of care. The margins analysis in this report suggest that LTCH rates may be too high and IPPS rates for these cases may be too low. Further investigation is needed.

6.2.4 Administrative Recommendations

Recommendation 13: Establish a provider identification code for satellite facilities and hospitals in hospitals (HIH).

Facility co-location appears to be a growing practice in healthcare and has been quite common among LTCHs. In fact, LTCH payment policies include co-location provisions that reduce payment if too high a proportion of patients are discharged from acute hospitals to co-located LTCHs. This is intended to discourage unbundling or early discharges by the acute hospitals. This issue is a concern for both co-located LTCHs and satellite facilities of any type of post acute providers. However, at this time it is difficult to identify when claims are submitted by co-located or satellite facilities. Until now, CMS has been collecting some of this information under a separate contract by surveying the FIs and updating the information through repeated surveys. CMS has no central repository to identify satellite facilities.

RTI proposes that CMS use an existing variable on the claim ("special unit code") to identify whether the claim is submitted by a HwH or satellite facility. The special unit code currently identifies whether the claim is submitted by a psychiatric or rehabilitation unit or a swing bed. Expanding the categories to also identify co-located units, such as LTCH hospital within hospital and satellite facilities of any type of provider would allow CMS to more effectively monitor the co-location relationships among providers.

Recommendation 14: Strengthen the requirement for parent facilities to report satellite locations by requiring them to be identified on the cost report. This will effectively provide a penalty for those failing to report them.

While hospitals are required to report their satellite facilities to the fiscal intermediaries, many do not. Hospitals should be required to report the provider numbers of all satellites and HwH on their cost reports. While satellite facilities do not have a unique provider identification number, they could be identified on the cost report by adding the special unit code designation at the end of the parent hospital ID number. This would identify the additional facility, its location, and other related information commonly reported on subprovider units and would create consistency in the reporting requirements for all providers affiliated with a hospital through either ownership or co-location.

Recommendation 15: Clarify QIO Roles in Overseeing Appropriateness of Admissions to LTCHs

The regulations specify that QIOs are to determine whether the most appropriate care in the most economical setting has been provided (42 CFR 476). However, this role was contested during the past few years when QIOs began reviewing appropriateness of admissions to LTCHs. In response, a memorandum was issued by CMS directing QIOs to assess whether inpatient acute levels of care are needed but not address whether the care could be provided in a less expensive, appropriate setting (42 CFR 476).

CMS should revisit this issue and determine whether the QIOs should carry out the regulations as stipulated. If not, the regulations should be changed. If so, they should be given the authority to determine whether a patient meets the proposed criteria for admission or continued stay in an LTCH based on the new standards.

Appendix A

Appendix A
Industry perspectives on level of care differences by setting

	LTCH		IRF			SNF		
	Version 1	Version 2	Version 1	Version 2	Version 3	Version 1	Version 2	Version 3
Medical services	• Daily attending physician visits • 2-3 x weekly consulting physician visits • 5-12 estimated new MD orders daily	• Daily or more frequent physician assessments • multiple physician specialists • pulmonologist available 24 hours	• 2-3x per week attending MD visits, • frequent consulting MD visits, • 3-8 estimated new MD orders daily	• 3x per week to daily physician assessments • Physiatrist	• IRFs required to provide close medical supervision by physician with specialized training or experience in rehabilitation	• Attending physician visits every 14-30 days • Consultative physician visits as needed 0-2 estimated new MD orders per patient per day	• Physician assessments monthly by regulations • MD/PA/NP	• SNF patient's care usually only requires general supervision of MD, rather than close supervision that rehabilitation patients need
Nursing services	• 6-10 nursing hours per patient per day, • 70/30 to 60/40 licensed to non-licensed nursing ratio, acute care and specialty nursing expertise (ER, ICU, CCU), • nursing assessments every eight hours shift, • RN available to care for patients at all times on each unit	• Acute care nursing 8.5-12h per patient per day • High licensed to non-licensed ratio	• 5-7 nursing hours per patient, per day, • 65/35 to 50/50 licensed to non-licensed ratio, • rehabilitation and specialty nursing expertise, • nursing assessments every 24 hours, • RN available at all times to care for patients on each unit	• Rehab nursing available 6.2 hours to 6.5 hours per patient per day	• IRFs required to supply 24-hour rehabilitation nursing • This degree of availability represents a higher level of care than is normally found in a SNF	• Nursing hours average 2.5-4.0 per patient per day • Professional mix of 30/70 to 40/60 licensed to non-licensed nurses • Generalized nursing training • Nursing assessments every MDS cycle • RN in building 8 hours per day	• Skilled nursing services at least daily for 3-4 hours • Low RN to non-licensed ratio	• While a SNF patient may require nursing care, specialized rehabilitation nursing is generally not as readily available in such a facility
Pharmacy services	• Pharmacist available on site 8/16 hours per day, • pharmacist on site 7 days per week, • 10-12 estimated average number of medications	• On-site pharmacy services available	• Pharmacist available on site for 8-12 hrs per day, • pharmacist available on site 7 days per week, • estimated average of 7-15 medications per	• On-site pharmacy services available		• Pharmacist available PRN • Pharmacist is on site bi-weekly • Estimated average number of 5-10 medications per patient	• Pharmacy services delivered from off-site	

	LTCH		IRF			SNF		
	Version 1	Version 2	Version 1	Version 2	Version 3	Version 1	Version 2	Version 3
	per patient		patient					
Respiratory services	• Respiratory therapist available 24 hours per day, 7 days/week • Respiratory therapist on site for patient visits	• Active weaning management 24 hours a day, 7 days per week	• Respiratory therapist available on site 8-16 hours per day • Respiratory therapist on site 7 days per week	• Respiratory services available as needed		• Respiratory services are available PRN • Respiratory therapist on call		
Diagnostic services	• Radiology equipment available on site	• Diagnostic services available on site	• Radiology equipment available on site	• Availability of diagnostic services varies across facilities		• Radiology equipment not available on site	• Diagnostic services delivered from off-site	
Therapy services (PT, OT, SLP)	• One or more disciplines available on site 8 hours per day, • 50/50 licensed to non-licensed professional mix, • average intensity of service 1-2 hours per patient per day • services available 5 days per week	• Rehabilitation therapies available varies by patient need, • averages one hour per patient per day	• One or more disciplines available on site 8 hours per day • 60/40 licensed to non-licensed professional mix • Average intensity of service 3 hours per patient per day • Services available 6-7 days per week	• Therapy services available 3 hours per day		• One or more therapy disciplines available on site PRN • Professional mix of 30/70 licensed to non-licensed therapy practitioners • Approximately 1.2 hours per patient per day average intensive of therapy service • Approximately 3-5 days per week therapy services available	• One hour of therapy per patient per day	

Appendix B
Certification Requirements

Appendix B
Certification requirements

	Short Stay Acute Inpatient Hospital	IRF/Psych Units: Common Requirements	Inpatient Rehabilitation Facility (IRF)	Long-Term Care Hospital (LTCH)	Psychiatric Facilities	Skilled Nursing Facility(SNF)	LTC Nursing Facility
Certification Requirements	[17]An institution that is primarily engaged in providing to inpatients, by or under the supervision of physicians: • Diagnostic and therapeutic services for medical diagnosis, treatment, and care of injured, disabled, or sick persons, or • Rehabilitation services for the rehabilitation of injured disabled, or sick persons • Has in effect a hospital utilization review plan • Meets other health and safety requirements found necessary by	[13]Psychiatric or rehabilitation unit must be part of an institution that: • Meets basis for exclusion from PPS • Has agreement to participate as a hospital • Is not excluded in its entirety from PPS • Has enough beds not excluded from PPS to allow provision of adequate cost information • Have uniform admission criteria for Medicare and non-Medicare patients • Have admission and discharge records separately identified from hospital in which unit is located	[2]Cost reporting periods after 7/1/04 and before 7/1/05, must have 50 percent of inpatients in DRGs below: • 7/1/05-7/5/06, 60 percent rule • 7/1/06-7/1/07, 65 percent rule • 7/1/07 – must have at least 75 percent required intensive rehabilitation services • Conditions-stroke, spinal cord injury, congenital deformity, amputation, major multiple trauma, hip fracture, brain injury, neurological disorders, burns, arthritis, joint inflammation, knee or hip	• Average Medicare Inpatient LOS greater than 25 days • If excluded from 1986 PPS, must have LOS for Medicare and non-Medicare greater than 20 days • Additional requirements for hospitals-within-hospitals and satellite LTCHs are listed below. [3]An HwH is a hospital that occupies space in a building also used by another hospital, or in one or more separate buildings located on the same campus as buildings used by another hospital.	[17]A psychiatric hospital is an institution that is primarily engaged in providing by or under the supervision of a physician, psychiatric services for the diagnosis and treatment of mentally ill persons • To be eligible as a psychiatric hospital, the facility must: • Have in effect a utilization review plan • Meet additional staffing and medical record requirements necessary to carry out active program of treatment and intensive care A distinct part of a psychiatric institution may	[1]SNF is an institution or distinct part of institution (such as SNH or Rehab center) with a transfer agreement in effect with one or more participating hospitals • Primarily engaged in providing skilled nursing care and related services for residents requiring medical or nursing care, and rehabilitation services for injured, disabled or sick persons [4]Residents must be free from any significant medication errors, and medication error	

Certification Requirements (continued)	the Secretary of Health, Education and Welfare (These additional requirements may not be higher than comparable ones prescribed for accreditation by the Joint Commission on Accreditation of Hospitals with certain exceptions specified in the law.) • Hospital for emergency purposes: an emergency services hospital is a nonparticipating hospital that meets the requirements of the law's definition of a "hospital" relating to full-time nursing services and licensure under State or local law. In addition, the hospital must	• Have policies for transfer of clinical information to unit when patient is transferred to unit • Meet applicable state licensure laws • Have utilization review for type of care offered in unit • Have beds not commingled with hospital's beds • Use same fiscal intermediary as hospital • Be treated as a separate cost center • Use an accounting system to properly allocate costs • Maintain statistics to support basis of allocation • Report costs to hospital cost report using same fiscal period and method of apportionment	replacement • To be classified as an IRF unit, the unit must be part of an institution that participates in Medicare as a hospital and is not excluded in its entirety from the acute inpatient PPS • To be classified as an IRF unit, the hospital must have a utilization review plan including separate standards for the IRF unit	HwHs must meet the following criteria: • It must have a separate governing body, chief medical officer, medical staff, and chief executive officer. • In addition, the hospitals must meet at least one of the following criteria. • It must perform the following basic functions through the use of employees or contracts/agreement with entities other than the hospital occupying space in the same building or on the same campus: • Quality assessment and performance improvement, • Medical staff, • Nursing services,	qualify as a psychiatric hospital independently of the institution of which it is a part, if the part meets certain specified requirements • [14]Psychiatric hospitals must be primarily engaged in providing, under supervision of MD or DO, psychiatric services for diagnosis and treatment of mentally ill persons • Facilities must maintain clinical records on all patients sufficient to permit CMS to determine degree of intensity of treatment provided to Medicare beneficiaries	rates as a whole must be less than 5 percent • SNFs may substitute utilization review of extended stay cases for the second and subsequent recertification • SNF must have written documentation of time schedule for certification and recertification and whether utilization reviews will be submitted in place of second and subsequent recertification	

Certification Requirements (continued)	be primarily engaged in providing, under supervision of doctors of medicine or osteopathy, services described in the definition of hospital, and must not be primarily engaged in providing skilled nursing care and related services for patients who require medical or nursing care	• Be capable of providing hospital inpatient psychiatric or rehabilitation care regardless of whether patients are on the unit at any given time • Meets requirements for changes in size of excluded units: • Number of beds and square footage may only be increased at start of cost reporting period • Number of beds and square footage may be decreased at any time if notified FI of changes and cost impacts • Any decrease in beds and square footage must be maintained for duration of cost reporting period • Number of beds may be decreased at any time if required due to		• Medical records services, • Pharmaceutical services, • Laboratory services, • Utilization review, • Infection control, • Discharge planning, and • Organ, tissue, and eye procurement. b. Services obtained under contracts or other agreements with the hospital occupying space in the same building or on the same campus (or with a third party that controls both hospitals) can comprise no more than 15 percent of the hospital's total inpatient operating costs c. At least 75 percent of the			

Certification Requirements (continued)		relocation of unit • Square footage may be increased or decreased at any time if required due to relocation of the unit • Permits constructions and renovations to comply with federal, state, and local laws, and to respond to catastrophic events and natural disasters • Meet requirements for changes in the status of hospital units: • Unit may change status from not excluded to excluded from PPS only at beginning of cost reporting period • Unit may change status from excluded to not excluded at any time during the cost reporting period • Change in		inpatient population must be referred to the hospital from a source other than another hospital occupying the same building or on the same campus.[a] • A satellite facility is a part of a hospital that provides inpatient services in a building also used by another hospital, or in one or more entire buildings located on the same campus as buildings used by another hospitals. Satellite LTCHs must meet the following criteria. • For the most recent costs reporting			

Certification Requirements (continued)		status from excluded to not excluded must remain in effect for the duration of the cost reporting period • Each hospital may only have one unit of each type, rehabilitation and psychiatric, excluded from the PPS at any given time • A hospital unit that has a satellite facility must meet the following criteria to be excluded from the PPS: • For units excluded from PPS for cost reporting periods prior to 10/1/97, the unit's number of Medicare-certified and state-licensed beds, including those at satellite facility, does not exceed the number of these beds on the last day of last cost reporting period		period beginning October 1, 1997, the hospitals number of State-licensed and Medicare-licensed beds (including beds in satellite facilities) cannot exceed the number of beds on the last day of the hospital's last cost reporting period beginning before October 1, 1997. • It cannot be under control of the governing body or chief executive officer of the hospital in which is it located, and it furnishes inpatient care through the use of medical personnel who are not under the control of the medical staff or chief			

Certification Requirements (continued)		beginning prior to 10/1/97 • Satellite facilities of rehabilitation unit must independently comply with requirements for rehabilitation units • Satellite facilities of psychiatric units must independently comply with requirements for psychiatric units • Satellite facilities must meet the following requirements: • For cost reporting periods beginning on or after 10/1/02, satellite facility is not under control of governing body or CEO of the hospital in which it is located • For cost reporting periods		medical officer of the hospital in which it is located. • It must maintain separate admission and discharge records from the hospital in which it is located. • Its beds must be physically separate from the beds hospital in which it is located. • It must be served by the same fiscal intermediary as the hospital of which it is part. • It must be treated as separate cost center of the hospital of which it is a part. • It must use an accounting system that properly allocates costs and maintains statistical data to support the basis of			

Certification Requirements (continued)		beginning on or after 10/1/02, satellite furnishes inpatient care through medical personnel not under control of medical staff or chief medical officer of hospital in which it is located • Maintains admission and discharge records separately from the hospital in which it is located • Has beds not commingled with the beds of the hospital in which it is located • Serviced by same fiscal intermediary as hospital unit of which it is a part • Is treated as a separate cost center from hospital unit of which it is a part • Uses an		allocation. • It must report its costs on the cost report of the hospital of which it is a part, covering the same fiscal period and using the same method of apportionment as the hospital of which it is a part. • [17]A tuberculosis hospital is an institution that is primarily engaged in providing by or under the supervision of a physician, medical services for the diagnosis and treatment of tuberculosis • To be eligible as a tuberculosis hospital, the facility must: • Have in effect a utilization review plan • Meet additional staffing and medical record requirements			

Certification Requirements (continued)		accounting system to properly allocate costs and maintains statistics to support allocations • Reports costs on the cost reports of hospital for which it is a part • Any unit structure as a satellite facility as of 9/30/1999 may decrease or increase square footage of satellite facility is required my relocation of the satellite • Satellite permits construction and renovations necessary to comply with local, state, and federal laws, and to respond to catastrophic events and natural disasters • Rehabilitation and psychiatric units must meet requirements for changes in classification:		necessary to carry out active program of treatment and intensive care • A distinct part of a tuberculosis institution may qualify as a tuberculosis hospital independently of the institution of which it is a part, if the part meets certain specified requirements			

Certification Requirements (continued)		• Classification of hospital unit effective for the unit's entire cost reporting period • Changes in hospital unit classification must be made at beginning of cost reporting period • If psychiatric or rehabilitation unit of a critical access hospital (CAH) does not meet requirements for a cost reporting period, no payment will be made to the CAH for services furnished in the rehabilitation or psychiatric unit during that reporting period • [16]Hospitals with Medicare provider agreements that request approval from CMS to provide post-hospital extended care services and					

Certification Requirements (continued)		reimbursed as a swing-bed hospital must have fewer than 100 beds excluding those for newborns and beds in intensive care type inpatient units • Swing-bed certified hospitals must be located in rural areas as defined by the Census Bureau • Swing-bed hospital must not have in effect a 24-hour nursing waiver • Swing-bed hospitals must not have had a swing-bed approval terminated within the two years previous to the application					

Certification Requirements (continued)							
Patient Review Process			• [2]The IRF has in effect a preadmission screening procedure under which patient's condition and medical history are reviewed to determine whether patient is likely to benefit		[11]Requirements for psychiatric facilities differ from those for other hospitals because the care offered in these facilities is often purely custodial and therefore may occasionally not be covered by Medicare.	[1]At the time each resident is admitted, the facility must have physician orders for the resident's immediate care • After January 1, 1989, SNFs must not admit any resident with mental illness of	

Patient Review Process (continued)			significantly from an intensive inpatient rehabilitation program or assessment • IRF unit must have preadmission criteria that is uniform across Medicare and non-Medicare patients • IRF unit must have admission and discharge records that are separately identified from those of the hospital in which it is located		Psychiatric facilities must meet additional requirements: • For certification, inpatient psychiatric services were required for treatment that could reasonably be expected to improve the patient's condition or for diagnostic study • For recertification, inpatient psychiatric services were furnished for same reasons as for certification, and the hospital records must show that the services furnished were intensive treatment services, admission and related services necessary for diagnostic study, and for other	mental retardation [12]General certification requirements – post-hospital SNF care is required because individual needs on a daily basis skilled nursing care that can only be provided in a SNF or a swing-bed hospital on an inpatient basis • Each patient treated must be correctly assigned to one of the Resource Utilization Groups (RUGs) designated as representing the required level of care • Patient-level certification for SNF care must be obtained at the time of admission or as soon after as is reasonably possible • Recertificati on must	

Patient Review Process (continued)					equivalent services • Certification is required at time of admission or as soon afterwards as is reasonable and practical • Recertification is required as of the 18th day of hospitalization. Subsequent recertification is required as decided by utilization review committee, but no less frequently than every thirty days	include reason for the continued need for posthospital SNF care, estimated time patient plans to remain in the SNF and plans for home care if applicable • First recertification must be no later than the 14th day of post-hospital SNF care and subsequent recertification required at least every 30 days thereafter • All certification and recertification statements must be signed by the physician responsible and an NP or clinical nurse specialist	

Staffing	[1]Has bylaws in effect concerning its staff of physicians • Requires that every patient must be under the care of a physician • Provides 24-hour nursing services rendered by or supervised by a registered professional nurse, and has a licensed practical nurse or registered professional nurse on duty at all times	[15]If hospital provides rehabilitation, PT, OT, audiology, or SLP services, these services must be staffed to ensure health and safety of the patients • Director of services must be able to properly supervise and administer the rehabilitative services • PT, OT, SLP, and audiology, if provided, must be staffed by those meeting qualifications specified by the medical staff and consistent with state law • Services must be furnished in accordance with written plan of treatment ordered by practitioners authorized by medical staff to order the services, and orders must be contained in the	[2]IRF **must** furnish through the use of qualified professionals: rehabilitation nursing, physical therapy, occupational therapy**, and, as needed**, speech therapy, social or psychological services, and orthotic and prosthetic services • IRF must use coordinated, multi-disciplinary team approach to each patient as documented by entries in medical record, to note status in relationship to goal attainment, and team must hold conferences at least once every two weeks determine appropriateness of treatment (Attending physician, rehab nurse, PT/OT and as needed SLP		[19]Physician participation in the services is an essential ingredient of active treatment. The services of qualified individuals other than physicians, e.g., social workers, OTs, group therapists, attendants, etc., must be prescribed and directed by a physician to meet the specific psychiatric needs of the individual. In short, the physician must serve as a source of information and guidance for all members of the therapeutic team who work directly with the patient in various roles. [21]Inpatient psychiatric services must be under the supervision of a clinical director, service chief, or equivalent who is qualified to provide the	[1]The administrator of the SNF is directly accountable to the management of the institution of which the SNF is a distinct part • The SNF must have a designated medical director • SNF must provide designated staff person for assisting and responding to written requests from group meetings • Director of ongoing activities program who must be qualified therapeutic recreation specialist, or meets experience requirements, or is a qualified OT or OT assistant • SNF with over 120 beds must have full-time	[8]Facility must have staffing to provide nursing and related services to attain or maintain highest practicable physical, mental, and psychosocial well-being of each resident. • Provide 24-hour licensed nursing and other nursing personnel to patients in accordance with resident care plans • Must designate licensed nurse to serve as a charge nurse for each tour of duty • Must use services of a registered nurse (RN) for at least 8 consecutive hours a day for seven days of a week • Must designate an RN to serve as director of nursing on a

Staffing (continued)		records of each patient	and/or Psych) • IRF has a director of rehabilitation who provides services to the hospital and its inpatients, is a MD or DO, licensed by a state to practice medicine or surgery and has completed at least 1 year of hospital internship and at least 2 years of rehabilitation training or experience • On the first day to qualify as an IRF unit, the unit must be equipped, staffed and capable of providing rehabilitation care even if there are no patients in the unit at that date • IRF units must have a Director of Rehabilitation who provides services to unit and inpatients		leadership required for an intensive treatment program. The number and qualifications of MDs and Dos must be adequate to provide essential psychiatric services: • The director must monitor and evaluate the quality and appropriateness of treatment provided by medical staff • The unit must have a qualified director of psychiatric nursing services. • In addition to adequate RNs, LPNs, and mental health workers to provide nursing care necessary under each inpatient's active	qualified social worker • Comprehensive care plans must be prepared by interdisciplinary team including attending physician, registered nurse, other appropriate staff depending on resident's needs, participation of resident and their family or legal representatives • Provides 24-hour nursing care to residents • Must employ qualified dietitian either full-time, part-time or as a consultant • Must assist patients in providing routine and 24-hour dental care [9]At option of the physician, required visits in	full-time basis • Director of nursing may serve as a charge nurse only when facility has average daily occupancy of 80 or fewer residents • A facility may have 24-hour nursing requirement waived if has difficulty recruiting personnel, and waiver does not endanger health or safety of patients. In such a case, a physician or RN is required to respond to telephone calls from the facility immediately [9]Physician must personally approve admission of each resident to the LTC nursing facility • A physician

Staffing (continued)			for at least 20 hours a week		treatment program • The director must demonstrate competence to participate in interdisciplinary formulation of individual treatment plans; to give skilled nursing care and therapy; and to direct, monitor, and evaluate the nursing care furnished.	SNFs after initial visit may alternate between personal visits by physician and visits by a PA, NP, or clinical nurse specialist • Physicians may delegate tasks in SNFs to PA, NP, or clinical nurse specialists who meets applicable regulations and, for clinical nurse specialists, is licensed within the state, is within scope of practice as defined by state law, and is under the supervision of a physician • Physician may not delegate a task when regulations specify that physician must perform task personally or when delegation of tasks is prohibit by state or facility	must be responsible for the care of each resident • The physician must review each resident's total program of care • A physician must write, sign, and date progress notes at each visit • A physician must sign and date all orders with the exception of flu and pneumonia vaccines • Physician must visit each resident at least once every 30 days for the first 90 days after admission, and every 60 days thereafter • A physician visit is considered timely if it occurs within 10 days after the visit was required • All physician visits must be

Staffing (continued)						regulations	made personally by the physician • A physician must be available for emergency care 24 hours a day in the case of an emergency • At the option of each state, any required physician task in a nursing facility may also be satisfied when performed by an RN, clinical nurse specialist, or PA who is not an employee of the facility but who is working in collaboration with a physician [10]If specialized rehabilitative services such as PT, SLP, OT, and mental health rehabilitation are required in the resident's comprehensive plan of care,

							then the facility must provide these services or obtain the required services from an outside provider of specialized rehabilitative services • Any specialized rehabilitative services that are provided must be provided under the written order of a physician and by qualified personnel
Conditions	[17]Hospital definition excludes tuberculosis and psychiatric hospitals – these facilities are included in the Medicaid definition of hospitals, but are defined separately under Medicare. (These criteria are listed under certification requirements for long-term care		[6]Cost reporting periods after 7/1/04 and before 7/1/05, must have 50 percent of inpatients in DRGs below • 7/1/05-7/5/06, 60 percent rule • 7/1/06-7/1/07, 65 percent rule • 7/1/07 – must have at least 75 percent required intensive rehabilitation services • Conditions-stroke, spinal	[4]If excluded from 1986 PPS, at least 80 percent of annual Medicare discharges for 12-month cost reporting period ending FY1997 with PDx reflecting neoplastic disease	[1]		[1]

Conditions (continued)	hospitals, and for psychiatric facilities).		cord injury, congenital deformity, amputation, major multiple trauma, hip fracture, brain injury, neurological disorders, burns, arthritis, joint inflammation, knee or hip replacement				
Quality Monitoring	[7]Please see discussion of Quality Improvement Organizations (QIOs) on next page		[7]Please see discussion of Quality Improvement Organizations (QIOs) on next page	[7]Please see discussion of Quality Improvement Organizations (QIOs) on next page			
Medical Necessity Criteria (Coverage criteria)	[17]A private room is medically necessary where isolation of a beneficiary is required to avoid jeopardizing their health or recovery, or that of other patients likely to be infected or otherwise harmed by the beneficiary's infectious disease • A private room is also	•	[18]Physicians agree on circumstances that justify medical or surgical hospitalizations • In some cases, an admission to a rehabilitation hospital or to the rehab service of a short-term hospital can be justified on essentially the same medical or		[19]Services in a psychiatric hospital that are designated as active treatment must be provided under an individualized treatment or diagnosis plan **if:** • Services in a psychiatric hospital that are designated as active treatment must be reasonably expected to		

Medical Necessity Criteria (Coverage criteria) (continued)	considered to be medically necessary if the patient needs immediate hospitalization and the hospital has no semiprivate or ward accommodations available at the time of admission.		surgical grounds • In other cases, medical or surgical needs alone may not warrant inpatient hospital care, but hospitalization may nevertheless be necessary because of the patient's need for rehabilitative services • Patients need hospital rehabilitative care if they need a relatively intensive rehab program that requires multidisciplinary team to improve their function • Services rendered must be reasonable and necessary in terms of efficacy, duration, frequency, and amount of treatment provided		improve the patient's condition for the purpose of diagnosis • Services in a psychiatric hospital that are designated as active treatment must be supervised and evaluated by a physician • Factors such as diagnosis, LOS, and degree of functional limitation, while useful as general indicators of the kind of care most likely being furnished in a given situation, are not controlling in deciding whether the care was active treatment.		

Medical Necessity Criteria (Coverage criteria) (continued)			• It must be reasonable and necessary to furnish the care on inpatient hospital basis rather than in a less intensive facility such as a SNF or on an outpatient basis • Medicare determines reasonable and appropriate rehabilitation services upon the assessment of each patient based on individual care needs. Therefore, denials of services based on numerical utilization screens, diagnostic screens, diagnosis of treatment norms, "the three hour rule" or any other "rules of thumb" are not appropriate.				

QUALITY IMPROVEMENT ORGANIZATIONS (QIOS)

- [7]QIOS ARE REQUIRED TO REVIEW THOSE SERVICES FURNISHED BY PHYSICIANS, OTHER HEALTH CARE PROFESSIONALS, PROVIDERS AND SUPPLIERS
- QIOS MUST DETERMINE WHETHER THE SERVICES ARE OR WERE REASONABLE AND MEDICALLY NECESSARY FOR THE DIAGNOSIS AND TREATMENT OF ILLNESS OR INJURY OR TO IMPROVE FUNCTIONING OF A MALFORMED BODY MEMBER OR FOR PREVENTION OF ILLNESS OR FOR THE PALLIATION AND MANAGEMENT OF TERMINAL ILLNESS
- QIOS MUST ENSURE THAT BENEFICIARY CARE MEETS PROFESSIONALLY RECOGNIZED STANDARDS OF HEALTH CARE
- QIOS DETERMINE WHETHER SERVICES FURNISHED OR PROPOSED TO BE FURNISHED ON AN INPATIENT BASIS COULD, CONSISTENT WITH PROVISIONS OF APPROPRIATE MEDICAL CARE, BE EFFECTIVELY FURNISHED MORE **ECONOMICALLY** ON AN OUTPATIENT BASIS OR IN AN INPATIENT HEALTH CARE FACILITY OF A DIFFERENT TYPE
- *EVERY HOSPITAL SEEKING PAYMENT FOR SERVICES FURNISHED TO MEDICARE BENEFICIARIES MUST MAINTAIN A WRITTEN AGREEMENT WITH A QIO OPERATING IN THE AREA IN WHICH THE HOSPITAL IS LOCATED*
- QIOS ESTABLISH CRITERIA BASED UPON TYPICAL PATTERNS OF PRACTICE IN THE AREA OR NATIONAL CRITERIA AND MAY ESTABLISH SPECIFIC STANDARDS FOR CERTAIN LOCATIONS AND FACILITIES IN THE AREA IF PATTERNS OF PRACTICE ARE SUBSTANTIALLY DIFFERENT FROM THE REMAINDER OF THE QIO AREA AND THERE IS A REASONABLE BASIS FOR THE DIFFERENCE THAT MAKES THE VARIATION APPROPRIATE
- QIO USES CRITERIA TO DETERMINE: NECESSITY FOR FACILITY ADMISSION AND CONTINUED STAY, NECESSITY FOR SURGERY AND OTHER DIAGNOSTIC AND THERAPEUTIC PROCEDURES, APPROPRIATENESS OF PROVIDING SERVICES AT A PARTICULAR FACILITY OR LEVEL OF CARE

[1] Skilled Nursing Facility Medicare Providers Manual, CMS Website, Section 2 – Coverage of Services

[2] CMS Manual System, Pub. 100-04 Medicare Claims Processing, June 25, 2004, Transmittal 221, Change Request 3334.

[3] Code of Federal Regulations, October 1, 2004, 42 CFR 412.22 (e) and (h), "Excluded hospitals within hospital units: General Rules, Hospitals within Hospitals and Satellite Facilities."

[4] Code of Federal Regulations, October 1, 2003, 42CFR412, "Prospective Payment Systems for Inpatient Hospital Services."

[5] Federal Register, Friday, May 7, 2004, 42CFR412, "Medicare Program; Prospective Payment System for LTCH; Annual Payment Rate Updates and Policy Changes; Final Rule"

[6] CMS Manual System, Pub. 100-04 Medicare Claims Processing, October 29, 2004, Transmittal 347, Change Request 3503

[7] Code of Federal Regulations, January 1, 2003, 42CFR476, "Utilization and Quality Control Review"

[8] Code of Federal Regulations, October 1, 2004, 42CFR483.30, "Requirements for States and Long-Term Care Facilities – Nursing Services"

[9] Code of Federal Regulations, October 1, 2004, 42CFR483.40, "Requirements for States and Long-Term Care Facilities – Physician Services"

[10] Code of Federal Regulations, October 1, 2004, 42CFR483.45, "Requirements for States and Long-Term Care Facilities – Specialized rehabilitative services"

[11] Code of Federal Regulations, October 1, 2004, 42CFR424.14, "Requirements specific to inpatient services of psychiatric hospitals."

[12] Code of Federal Regulations, October 1, 2004, 42CFR424.20, "Requirements for Post-Hospital SNF Care."

[13] Code of Federal Regulations, October 1, 2004, 42CFR412.25, "Excluded Hospitals: Common Requirements."

[14] Code of Federal Regulations, October 1, 2004, 42CFR482.60, "Special provisions applying to psychiatric hospitals."

[15] Code of Federal Regulations, October 1, 2004, 42CFR482.56, "Condition of participation: rehabilitation services."

[16] Code of Federal Regulations, October 1, 2004, 42CFR482.66, "Special requirements for hospital providers of long-term care services ("swing-beds")."

[17] Medicare Benefit Policy Manual, Section 1, "Inpatient Hospital Services Covered Under Part A."

[18] Medicare Benefit Policy Manual, Section 1 Section 110, "Inpatient Hospital Stays for Rehabilitation Care."

[19] Medicare Benefit Policy Manual, Section 2, "Inpatient Psychiatric Hospital Services."

[20] Medicare Benefit Policy Manual, Section 8, "Coverage of Extended Care (SNF) Services Under Hospital Insurance."

[21] Code of Federal Regulations, October 1, 2004, 42CFR412.27, "Excluded psychiatric units: additional requirements."

Appendix C
Potential Criteria Proposed by Parts of Industry or Used by Some Private Insurers

Appendix C
Potential Criteria Proposed by Parts of Industry or Used by Some Private Insurers

A. Medically Complex

Medical Complex	LTCH Industry	Some Insurers
Admission	**Clinical Indications:**	**Severity of Condition/Illness, Other:**
	meet 1 clinical condition (i.e., active infectious disease process, HTN labile or uncontrolled, pain management, GI conditions)	**continued medical management of primary condition 1 or >** (i.e., chronic renal insufficiency and BUN > 45 mg/dL creatinine >3.0 mg/dL, necrotizing pancreatitis and NPO)
	meet 1 concurrent medical condition requiring active intervention	**active management/treatment of comorbid conditions 2 or more** (i.e. CHF and NYHA Class III/IV, COPD and respiratory rate 24-30/min).
		Clinical Status: All **5 clinical criteria** (i.e., HR , < or = 120 and arrhythmias managed, neurologically stable)
	Treatment Criteria:	**Treatment Precluded in a Lower Level of Care due to Clinical Complexity: All**
	meet 2 treatment criteria (i.e. chest tube to water-seal drainage or continuous suction, continuous IV fluids, neuro assessment = or > 4x/24 hrs, wound management)	**3 criteria** (i.e. physician/NP/PA assessment /intervention daily)
		Intensity of Service: Rule Both Primary and Concomitant Treatment/Interventions
		primary treatment -medically complex condition 1 or > (i.e. hemodialysis/peritoneal dialysis - initial course, < or = 7 days, neurological assessment > or = 4x/24h, < or = 2d)
Continued Stay	**Treatment Criteria:**	**Intensity of Service: Rule Both Primary and Concomitant Treatment/Interventions**
	meet all 5 treatment criteria (active treatment of comorbidities, documented progress or regression toward goals)	**concomitant treatment - 3 or >** (i.e. antiarrhythmics, complex wound care > or = 2x/24h, GI suction)
	meet 3 treatments (i.e. GI suction, IV fluids, isolation, active treatment of systemic infection process)	
	meet 2 therapies 5 days a week but < 3 hours per day (i.e. Respiratory, PT/OT and/or Speech)	

(continued)

Appendix C (continued)
Potential Criteria Proposed by Parts of Industry or Used by Some Private Insurers

A. Medically Complex

Medical Complex	LTCH Industry	Some Insurers
Discharge	**Discharge Criteria:** **meet all 9 discharge criteria** (i.e. patient requires service provided only at acute care hospital, arrangements for needed professional ongoing services have been secured)	**Discharge Screens (at least last 48 hours): Rule: 1 alternate level of care** **Home/OP, both:** **level of care appropriateness: all 3 criteria** (.i.e. home environment safe and accessible, physician follow-up arranged) **clinical stability: 1 or more** (i.e. renal function stable, labs within acceptable ranges/return to baseline) **Home care, both:** **level of care appropriateness; all, 4 criteria** (i.e. pain controlled/manageable, PO fluids tolerated/nutritional route established) **skilled treatment; 1 or > criteria** (i.e. adjustment in pain medication -PO/SC, IV analgesics) **Skilled Medical, both:** **level of care appropriateness: all, 5 criteria** (i.e. clinical/lab findings improving /unchanged last 24 h, skilled nursing services daily) **skilled treatment; 1 or > criteria** (i.e. adjustment in 1 or > medications, end of life care) **Subacute Medical, both:** **level of care appropriateness; all, 4 criteria** (i.e. hemodynamic and neurologic stability > or = 24 h, skilled nursing services > = 4h/24h) **skilled treatment; 1 or > criteria** (i.e. IV analgesics, adjustment in 2 medication PO/SC)

Appendix C (continued)
Potential Criteria Proposed by Parts of Industry or Used by Some Private Insurers

B. Wound/Skin

Wound/Skin	LTCH Industry	Some Insurers
Admission	**Clinical Indications:** **meet 1 condition** (i.e. active infectious disease process requiring prolonged treatment, complex ostomy, diabetic ulcers)	**Severity of Illness:** **chronic/open wound/skin condition 1 or >** (i.e. large draining wound one or more - extensive undermining/tunneling, pre-op optimization, post-traumatic wound without wound closure 1 or more times a week)
	must have at least one concurrent medical condition requiring active intervention	**active management/treatment of comorbid conditions 1 or >** (i.e. COPD or diabetes and unstable BS, functional limitation 1 or >such as NYHA Class III/IV,).
		Clinical Status: All **5 clinical criteria** (i.e. HR , < or = 120 and arrhythmias managed, neurologically stable)
	Treatment Criteria: **meet 2 treatment criteria** (i.e. assessment/interventions by a wound care specialist, complex wound care directed and managed by a wound care clinician requiring one or more of the following: i.e. compression wraps, diagnostic procedures)	**Treatment Precluded in a Lower Level of Care due to Clinical Complexity: All 4 criteria** (i.e. physician/NP/PA assessment /intervention daily, onsite wound care specialty services)
	meet 2 treatment criteria (i.e. active treatment of comorbidities contributing to prolonged recovery, anabolic steroids)	**Intensity of Service: Rule Both Primary and Concomitant Treatment/Interventions** **complex wound care and dressing changes with comprehensive multidisciplinary assessments required 1** (i.e. progressive healing less than or equal to 2 weeks /recalcitrant wound 1or more - > or = 1h/24h, requiring IM/IV analgesics)
Continued Stay	**Treatment Criteria:**	**Intensity of Service: Rule Both Primary and Concomitant Treatment/Interventions**
	meet all 4 treatment criteria (i.e. active treatment of comorbidities, complex wound care with multi-disciplinary assessment and intervention)	**concomitant medication/treatments - 1 or >** (i.e. antiarrhythmics, anticoagulants, therapeutic, anti-infectives)
	meet 2 treatments (i.e. blood product administration, isolation, IV steroids) **meet all 2 treatments** (i.e. skilled nursing > 6.25 h/24h, therapy of any discipline 5 or > times a week)	

(continued)

Appendix C (continued)
Potential Criteria Proposed by Parts of Industry or Used by Some Private Insurers

B. Wound/Skin

Wound/Skin	LTCH Industry	Some Insurers
Discharge	**Discharge Criteria:** **meet 1 of 6 discharge criteria** (i.e. patient develops a medical condition/complication that requires intense services in an acute care hospital, patient is non-compliant/refusing treatment plan)	**Discharge Screens (at least last 48 hours): Rule: 1 alternate level of care** **Home/OP, both:** **level of care appropriateness: all 3 criteria** (i.e., home environment safe and accessible, physician follow-up arranged) **clinical stability: all, 5** (i.e., hemodynamic and neurologic stability, nutritional status stable/improving) **Home care, both:** **level of care appropriateness; all, 4 criteria** (i.e. pain controlled/manageable, patient/caregiver able to learn care) **skilled treatment; 1 or > criteria** (i.e. clinical assessment, pain management/analgesics) **Skilled Medical, both:** **level of care appropriateness: all, criteria** (i.e. hemodynamic and neurologic stability 24h or more, skilled nursing services daily) **skilled treatment; 1 or > criteria** (i.e. adjustment in 1 or > medications, end of life care) **Subacute Medical, both:** **level of care appropriateness; all, 4 criteria** (i.e. hemodynamic and neurologic stability > or = 24 h, skilled nursing services > = 4h/24h) **skilled treatment; 1 or > criteria** (i.e. IV analgesics, wound debridement) **Therapy level and skilled treatment, both:** Therapy level and skilled treatment, one (i.e. skilled therapy - functional impairment requiring at least supervision, able to tolerate up to 1h/d of skilled therapy and restorative nursing services. Goal directed therapy 1 or more (i.e. ADLs/IADLs, bed mobility/transfers)

Appendix C (continued)
Potential Criteria Proposed by Parts of Industry or Used by Some Private Insurers

C. Complex Respiratory		
Complex Respiratory	**LTCH Industry**	**Some Insurers**
Admission	**Clinical Indications:** **meet 1 clinical condition** (i.e. respiratory insufficiency, post ventilator weaning, pneumonia)	**Respiratory Insufficiency** **continued medical management of primary condition/illness 1 or >** (i.e. hypoxia on room air, failed management at lower level of care, pre-op optimization and mechanical ventilation/NIPPV) **active management/treatment of comorbid conditions 2 or more** (i.e. CHF and NYHA Class III/IV, DVT change in cognition). **Clinical Status: All** **5 clinical criteria** (i.e. HR , < or = 120 and arrhythmias managed, neurologically stable)
	Treatment Criteria: **meet 2 treatment criteria** (i.e. O2 therapy to maintain SaO2 = or > 90%, continuous cardiac monitoring, chest tube to water-seal drainage or continuous suction) **must have 1 concurrent medical condition requiring active intervention**	**Treatment Precluded in a Lower Level of Care due to Clinical Complexity: All** **4 criteria** (i.e. physician/NP/PA assessment /intervention daily) **Intensity of Service: Rule Both Primary and Concomitant Treatment/Interventions** **primary treatment -complex respiratory management 1 or >** (i.e. blood products and hct < 30%, cardiac monitoring - syncope/presyncope < 5 d, oxygen > or = 40%)
Continued Stay	**Treatment Criteria:** **meet all 5 treatment criteria** (i.e. active treatment of comorbidities, coordination and interaction between disciplines every two weeks and verifiably documented with a plan of care revised accordingly) **meet 2 treatments** (i.e. cardiac monitoring, IV therapy, oxygen)	**Intensity of Service: Rule Both Primary and Concomitant Treatment/Interventions** **concomitant medications treatment - 3 or >** (i.e. antiarrhythmics, complex wound care > or = 2x/24h, GI suction)
Discharge	**Discharge Criteria:** **meet all 12 discharge criteria** (i.e. patient has met program goals, patient is transferred to another facility emergently, patient no longer meets any other screening criteria for continued stay)	**Discharge Screens (at least last 48 hours): Rule: 1 alternate level of care Home/OP, both:**

(continued)

Appendix C (continued)
Potential Criteria Proposed by Parts of Industry or Used by Some Private Insurers

C. Complex Respiratory		
Complex Respiratory	**LTCH Industry**	**Some Insurers**
Discharge (continued)		**level of care appropriateness: all 3 criteria** (.i.e. home environment safe and accessible, physician follow-up arranged) **clinical stability: 1 or more** (i.e. hemodynamic and neurologic stability > or = 24h, hypoxia relieved) **Home care, both:** **level of care appropriateness; all, 4 criteria** (i.e. patient/caregiver able to learn care, home environment safe and accessible) **skilled treatment; 1 or > criteria** (i.e. chest physiotherapy/nebulizer, ostomy management) **Skilled Medical, both:** **level of care appropriateness: all, 5 criteria** (i.e. skilled nursing services daily, physician/NP/PA assessment one or more times a week) **skilled treatment; 1 or > criteria** (i.e. at least 1 respiratory intervention 7d/wk, clinical assessment 1-2x/24h) **Subacute Medical, both:** **level of care appropriateness; all, 4 criteria** (i.e. hemodynamic and neurologic stability > or = 24 h, skilled nursing services > = 4h/24h) **skilled treatment; 1 or > criteria** (i.e. 2 or more respiratory interventions 7d/wk, ventilator management) **Therapy level and skilled treatment, both:** Therapy level and skilled treatment, one (i.e. skilled therapy - functional impairment requiring at least supervision, able to tolerate up to 1h/d of skilled therapy and restorative nursing services. Goal directed therapy 1 or more (i.e. ADLs/IADLs, bed mobility/transfers)

Appendix C (continued)
Potential Criteria Proposed by Parts of Industry or Used by Some Private Insurers

D. Ventilator Weaning/Management

Ventilator Weaning/Management	LTCH Industry	Some Insurers
Admission	**Clinical Indications:** **Must be ventilator dependent > or = 6h/day with the goal of ventilator weaning** **meet 1 clinical condition** (i.e. respiratory insufficiency, failure to wean from mechanical ventilation) **Treatment Criteria:** **meet 2 treatment criteria** (i.e. cardiac monitoring/assessment, chest tube to water-seal drainage or continuous suction, continuous IV fluids for co-existing fluid/electrolyte imbalance or dehydration)	**Severity of Illness:** **ventilator dependent > or = 6h/d > or =1** (i.e. ventilator dependent > or = 1 week and failed ventilator weaning at acute level) **weaning potential, all 11 criteria** (i.e. CHF and NYHA Class < IV, stable airway, chest x-ray stable/improving). **Treatment Precluded in a Lower Level of Care due to Clinical Complexity: All** **4 criteria** (i.e. physician/NP/PA assessment /intervention daily, respiratory therapy > or = 3x/24 h) **Intensity of Service: at least daily** **mechanical ventilation/NIPV, 1:** (i.e. active weaning process - both medical stability maintained, weaning progression **post weaning monitoring, 1** (i.e. decannulation trial < or = 4d, unable to decannulate) **medical instability w/inability to participate in weaning process < or = 1 week, 1** (i.e. anti-infectives with T> 100.4F, blood product and hct < 24)
Continued Stay	**Treatment Criteria:** **meet all 2 treatment criteria** (i.e. blood and blood products for Hgb <9, chest tube, dialysis, IV antibiotics)	**Intensity of Service: at least daily** **mechanical ventilation/NIPV, 1:** (i.e. active weaning process - both medical stability maintained, weaning progression **post weaning monitoring, 1** (i.e. decannulation trial < or = 4d, unable to decannulate) **medical instability w/inability to participate in weaning process < or = 1 week, 1** (i.e. anti-infectives with T> 100.4F, blood product and hct < 24)
Discharge	**Discharge Criteria:** **meet1 discharge criteria** (i.e. patient has met goal of successful wean from mechanical or noninvasive ventilation support > 72 hours, patient no longer meets any other screening criteria for continued stay)	**Discharge Screens (at least last 72 hours): Rule: 1 alternate level of care** **Home/OP, both:** **level of care appropriateness: all 3 criteria** (.i.e. home environment safe and accessible, physician follow-up arranged)

(continued)

Appendix C (continued)
Potential Criteria Proposed by Parts of Industry or Used by Some Private Insurers

D. Ventilator Weaning/Management		
Ventilator Weaning/Management	**LTCH Industry**	**Some Insurers**
Discharge (continued)		**clinical stability: all 3** (i.e. hemodynamic and neurologic stability > or = 24h, O2 saturation > or = 9091% and mechanical ventilation /NIPPV D/Cd > 3d) **Home care, both:** **level of care appropriateness; all, 4 criteria** (i.e. patient/caregiver able to learn care, home environment safe and accessible) **skilled treatment; 1 or > criteria** (i.e. chest physiotherapy/nebulizer, ostomy management) **Skilled Medical, both:** **level of care appropriateness: all, 5 criteria** (i.e. skilled nursing services daily, physician/NP/PA assessment one or more times a week) **skilled treatment; 1 or > criteria** (i.e. at least 1 respiratory intervention 7d/wk, clinical assessment 1-2x/24h) **Subacute Medical, both:** **level of care appropriateness; all, 4 criteria** (i.e. hemodynamic and neurologic stability > or = 24h, skilled nursing services > = 4h/24h) **skilled treatment; 1 or > criteria** (i.e. 2 or more respiratory interventions 7d/wk, ventilator management)

Appendix D
Margin Definitions

Appendix D
Margin Definitions

LTCH Margins Study Data Sources

The two principal data sources for this study are the Medicare cost report (MCR) file that was released January 20, 2006, and MedPAR claims files covering discharges between October 1, 2002 and December 31, 2004.

Cost report data were extracted from the following worksheets: S-2 (facility characteristics); S-3 part 1 (operating statistics); D-1 (per-diem costs, total program routine and ancillary costs, TEFRA incentives/penalties); E-3 Part 1 (Program payments); and G-3 (facility operating and total margins). Location and Medicare participation data were merged from the March 2005 update of the Online Survey and Certification Report (OSCAR). Additional payment-related variables were merged from the CMS Impact files. Additional facility-level case-mix information was derived from MedPAR claims files by summarizing data on DRG and outlier status at the provider level and merging this information to the appropriate cost report. These variables include: unadjusted case-mix index (CMI, defined as average DRG weight without adjustment for short-stay or high-cost outliers); the percent of total cases that qualifying as high-cost outliers; the percent of total cases qualifying as short-stay outliers; the percent of cases with covered length of stay (LOS) of 4 days or less; and the percent with LOS at or below 50% of the published geometric ALOS for its DRG; and the percent of facility cases accounted for by DRGs 475 (ventilator support), 249 (aftercare, musculoskeletal) 262 (rehab) and 12 (degenerative nervous system disorders).

To compute LTCH margins at the individual claims level, charges on each claim were multiplied by service-specific cost-to-charge ratios (CCRs) computed from the MCR applicable to the period in which the claim discharge data fell. Service-level CCRs were computed by grouping department-level costs and charges on the MCR to reflect into for groups of charges that match, as closely as possible, to the types of charges grouped in the MedPAR files. Post-PPS MedPAR claims were converted to cost by applying these ratios to covered charges on the claims.

Facilities

Summary information on the MCR study sample by federal fiscal year, payment system and exclusion status is presented in ***Table D-1***. The January 2006 MCR file includes records for 1,178 LTCH cost reports filed by 367 different facilities, covering reports filed during federal fiscal years 2001 through 2004, with the latest report periods ending in July of 2005. More than half of the facilities represented in this file have four or more cost reports, and all but fourteen have a least one post-PPS cost report. There were twenty LTCHs identified in the OSCAR file for which there were no records in the MCR files; there were also two LTCH facilities in the MCR that were not identified as LTCHs in OSCAR.

Table D-11
MCR Study Sample

	Unique facility count	Federal fiscal year				***Total records***
		2001	2002	2003	2004	
# LTCH reports in MCR Files, as of Jan 20, 2006	367	279	301	337	261	1,178
Payment system						
"Cost"		4	5	0	0	9
"TEFRA"		275	295	0	0	570
"PPS/TEFRA phase-in		0	0	51	15	66
"PPS/100% federal"		0	1	286	246	533
Study sample exclusions						
Cost-based provider		4	5	0	0	9
<=90 days in report period		1	3	9	4	17
Low Medicare use		11	10	13	6	40
Number in study sample, after applying exclusion criteria	358	263	283	315	251	1,112
Provider cost reports failing data quality edits		9	10	6	8	33
Number in final analysis sample	347	254	273	309	243	1,079

NOTES
(1) "Low Medicare Use" defined as having fewer than 25 Medicare discharges or total program payment or costs valued at less than $1,000 in a give report.

Reports were excluded from the study sample if the facility reported receiving cost-based reimbursement, if the accounting period was less than or equal to 90 days, or if the facility had fewer than 25 Medicare discharges or less than $1,000 in program payments or costs in any reporting period. About 6 percent of cost reports were excluded from the sample based on these criteria.

In addition to the sample exclusion criteria described above, a set of data quality edits was applied to identify reports where data on program discharges, days of care, expenses or revenues were likely to reflect reporting errors. Likely errors were detected by identifying extreme values in average overall and Medicare lengths of stay, average cost or revenue per discharge, and facility occupancy rates. Records were excluded for an additional 33 reports (or another 3 percent of the study sample), where one or more of these measures fell outside the range of +/- 3 standard deviations of the geometric mean value for the full MCR sample.

Sample exclusion criteria had a disproportionate effect on publicly owned facilities, such that public LTCHs accounted for 9 percent of all cost reports filed over the four years, but 55 percent of all exclusions. One-half of the filed reports in this group (54 out of 110) were excluded, of which 33 were for low Medicare volume and 20 were for data quality edits. Exclusions were more likely to occur among facilities with greater bed capacity, longer lengths of stay and those located in New England ($p<.001$ on all characteristics).

Claims

The claims study sample uses all LTCH cases with non-zero charges appearing in the 2003 and 2004 MedPAR files that can be matched by discharge date to hospitals with reports in the LTCH facility study sample. Additional edits were applied to exclude facilities with extreme CCR values. Some claims-level margin computations are restricted to facilities electing payment based on 100% of the federal rate. Summary information on the claims study sample is presented in ***Table D-2.***

Table D-12
LTCH Claims Study Sample

	Calendar year of discharge			All	Percent total
	2002	2003	2004		
LTCH claims matched to MCRs	3,009	80,046	104,787	187,842	100%
Less: not paid under 100% federal rate	-568	-12678	-7663	-20,909	-11%
Subtotal: LTCH PPS claims	2,441	67,368	97,124	166,933	89%
Exclusions					
Hospital excluded from study	-4	-3162	-8773	-11,939	-6%
Covered charges < total charges	-137	-5008	-6996	-12,141	-6%
No covered days of care	-2	-18	-17	-37	-0%
Claim failed DRG price edits	-52	-138	-206	-396	-1%
Claim failed CCR and/or margin edits(*)	-8	-526	-977	-1,511	-1%
Claims remaining in analysis sample	2,238	58,516	80,155	140,909	75%

NOTES
(*)Hospital (and all of its matched claims) was excluded if its overall CCR was less than 0.05 or greater than 5.0 or if it reported fewer than 25 Medicare cases on its cost report.
(**) Individual claims were excluded if (a) CCRs for individual departments *and* for aggregated service groups fell outside 3 standard deviations of geometric mean or (b) payment/cost ratio for that claim fell outside 3 standard deviations of geometric mean.

SOURCE: RTI analysis of CMS MedPAR files, FFY 2004 through FFY 2004.

Margin Definitions

Computations for **facility-level margins** used in this report are as follows:

Medicare inpatient margin =
[(expected payments – allowable program costs) / expected payments] *100

Facility operating margin =
[(operating revenue – operating expenses) / operating revenue] * 100

Facility Total margin =
[(total revenue – operating expenses - other expenses) / total revenue] * 100

Expected payments for Medicare beneficiaries are identified on Worksheet E of the cost report and stated as totals, including expected amounts from beneficiary coinsurance or deductibles, plus any primary payer amounts. No adjustments were made for Medicare bad debts. Costs include program operating plus capital costs. Direct medical education and organ acquisition payments and costs are not included in the margin computation.

Allowable program costs attributable to Medicare beneficiaries are determined on the Medicare cost report by applying per-diem cost amounts to the total number of covered program days in the inpatient nursing units, and applying cost-to-charge ratios to total covered program charges for all other patient services.

Operating revenues are computed at the facility level only and include expected collections for patient services ("net patient revenue") plus other fees and sales that offset costs of operation, such as rents or cafeteria income.

Total revenues include operating revenue plus income from investments, grants, donations and government appropriations, plus any other non-patient income that is not specifically identified.

Other expenses include any other reported expense adjustments.

Table D-3 identifies the Medicare Cost Report worksheet names, line numbers and column numbers used for these computations.

Table D-13
Medicare Cost Report Sources for Computed Hospital-level Margins

Description	***CMS 2552 worksheet, column number and line number***
For Medicare Inpatient Margins:	
Program Inpatient Costs	D1 column 1 line 49
Program Payments if under TEFRA	E3 part II column 1 line 1
Program Payments if under PPS w/ phase-in	E3 part II column 1 line 1.06
Program Payments if under PPS w/ 100% federal rate	E3 part II column 1 line 1.06
For Facility Margins:	
Total operating expenses	G-3 column 1 line 4
Net patient revenues	G-3 column 1 line 3
Other operating revenues	G-3 column 1 lines 8-22
Non-operating revenues	G-3 column 1 lines 6,7,23,24
Other expense adjustments	G-3 column 1 line 30

Computations for **claims-level margins** and **payment-to-cost ratios** used in this report are based on total expected payments including any deductibles and coinsurance, and on MedPAR charges discounted to cost using cost-to-charge ratios computed from the Medicare Cost Report, but aggregated to levels corresponding to the types of charges appearing on the MedPAR claims. ***Table D-4*** identifies the MedPAR variables and associated Medicare Cost Report cost center line numbers used for these computations.

Table D-4
MedPAR Sources for Computed Claims-level Margins

Description	MedPAR (838) variable numbers	MCR department line numbers included in computation of cost-to-charge ratios
Payments:		
DRG Price Amount	49	
Outlier Amount	50	
Charges:		
Private Room	63	
Semi-Private Room	64	25
Ward	65	
ICU	66	26, 28-30
CCU	67	27
Other IP	68	25
Pharmacy	69	56, 48
Supplies	70	55
DME	71	66, 67
Physical Therapy	73	50
Occupational Therapy	74	51
Speech Pathology	75	52
Inhalation Therapy	76	49
Blood Products	77	46
Blood Administration	78	47
Operating Room	79	37, 38
Lithotripsy	80	
Cardiology	81	53
Anesthesia	82	40
Lab	83	44
Radiology	84	41 – 43
MRI	85	
Other OP Services	86	58, 63
Emergency	87	61
Ambulance	88	65
Pro Fees	89	not applicable (0 cost)
ESRD	91	57
Clinic	92	60