



The LEWIN GROUP

Evaluation of the Proposed Coding Adjustment to the Standardized Payment Amount for FY 2007

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Executive Summary

The Lewin Group was commissioned by HealthSouth Corporation to evaluate the proposed 2.9 percent reduction of the Medicare standard payment amount under the inpatient rehabilitation facility prospective payment system (IRF PPS) for fiscal year (FY) 2007 to account for alleged coding changes. In doing this, the Lewin Group conducted three sets of interrelated analyses as follows:

- (1) An analysis of the Centers for Medicare and Medicaid Services' (CMS) interpretation of RAND inpatient rehabilitation facility (IRF) case mix study which was completed in 2004 and was the basis for rulemaking in FY2006:¹

In this analysis, we investigate the degree to which RAND or CMS produces convincing arguments that RAND's higher estimate of coding change (5.9 percent) over the 1999 to 2002 time frame should be used to support a further reduction in the IRF Medicare standard payment amount by 2.9 percent.

- (2) An analysis of CMS arguments in support of reducing the IRF Medicare standard payment amount based on trends observed after 2002:

In this analysis, we evaluate anecdotal estimates of changes in IRF providers' costs and margins as well as changes in comorbidity² coding practices occurring after 2002 that have been relied upon by CMS to justify a coding adjustment near the high end of the RAND estimated range.

- (3) An analysis of IRF case mix components from 2002 through the first quarter of calendar year 2006.

In this analysis, we attempt to quantify the effects upon the IRF case mix of changes to the 75% Rule that were implemented in 2004 as well as changes to the CMS IRF Grouper that were implemented in FY 2006.³

Background

When a cost-reimbursement system is replaced by a prospective payment system (PPS), providers have an increased incentive to report all appropriate codes for their patients, because this now will increase their payment. For the first year of a PPS system, CMS must set payment

¹ Grace M. Carter and Susan M. Paddock, "Preliminary Analyses of Changes in Coding and Case Mix Under the Inpatient Rehabilitation Facility Prospective Payment System," RAND Corporation., 2004.

² A comorbidity is a specific patient condition (ICD – 9 diagnoses or select procedure codes) that is secondary to the patient's principal diagnosis or impairment. IRF Patient Assessment Form allows one to include up to 10 comorbidities. A patient could have one or more comorbidities present during the IRF stay. The presence of certain comorbidities could have a major effect on the cost of furnishing inpatient rehabilitation care.

³ The 2006 Grouper incorporated a number of changes relative to the 2002 Grouper. These changes involved the reclassification of cases into CMGs, list of tier comorbidities, and CMG weights.

rates based on the codes reported in the pre-implementation period, which can result in providers being overpaid. This potential overpayment is measured in terms of the impact of coding changes on a case mix index, which in turn measures the resources needed to treat patients.

Section 1886(j)(2)(C)(ii) of the Balanced Budget Act of 1997 requires the Secretary to adjust the standardized payment amount for IRF services to eliminate the effect of coding or classification changes that do not reflect real changes in case mix, to the extent that such changes affect aggregate payments under the classification system. Based on this section of the Act, in the FY 2006 IRF PPS final rule, CMS applied a one-time payment reduction of 1.9 percent to the standard payment amount to make a payment correction in response to changes in provider coding practices. In addition, CMS has proposed a further reduction to the standard payment amount by 2.9 percent for FY 2007 to make a payment correction in response to provider coding practices. CMS requests comments on this payment reduction and also on making an alternative reduction of 2.2 percent. CMS states several reasons for the proposed reduction, but CMS did not redo the RAND study upon which their coding adjustments are based.

In its 2004 study, RAND found that the case mix index for IRFs increased by 4.5 percent from 1999 (pre PPS) to 2002, the first full year under the IRF PPS. RAND also estimated that from 1.9 percent to 5.9 percent of the increase in per case payments over that period were the result of changes in provider coding practices that could not be tied to changes in patient acuity.⁴ This 5.9 percent upper bound has been cited as the basis for the 2.9 coding adjustment proposed by CMS for FY 2007. CMS, however, appears to justify the proposed 2.9 percent based on independent anecdotal analyses of selected 2002 to 2005 data and trends rather than a full update of the RAND analysis using more recent data. The lack of an analytic link between subsequent analyses of 2002 to 2005 data to the time period and methodology used by the RAND study represents a serious flaw in the reasoning underlying the Notice for Proposed Rulemaking (NPRM).

1. CMS' Interpretation of the RAND Report

Last year CMS applied a 1.9 percent reduction to the standardized payment amount based on the RAND study on case mix analyses. This year's proposed 2.9 percent coding adjustment for FY 2007 indicates that CMS believes it has found sufficient evidence to propose an additional adjustment. As discussed more fully in later sections of this report, we do not find sufficient evidence in either the original RAND report or in data from subsequent periods to warrant a further change of this magnitude.

By its own terms, the RAND report does not furnish an adequate basis for the proposed additional coding adjustment of 2.9 percent. The report itself (p. 58) placed greater confidence in the lower bound estimate by recommending that CMS "reduce the conversion factor by at least 1.9 percent...in order to ensure that future payments reflect only real changes in resource needs". The report, however, fails to quantify or otherwise describe the confidence interval or precision of the 5.9 percent estimate. For this reason, we believe that CMS was appropriately

⁴ The FY 2006 NPRM reports the upper-bound estimate to be 5.8 percent (p. 28123), whereas the RAND report reports it as 5.9 percent (e.g., p. 58).

cautious in rejecting the 5.9 percent upper bound and instead relying upon the lower 1.9 percent estimate in the FY 2006 final rule.

The next section of this report analyzes CMS' arguments based on post-implementation data. Ideally, CMS' analysis of post-implementation period (2002-present) would be methodologically equivalent to the RAND analysis of pre-implementation period (1999-2002). However, whereas RAND calculated case mix index (CMI) one way (using denominator in which transfer cases were adjusted by length of stay), CMS calculated it another way (using denominator in which each case was given the same weight). And whereas RAND used acute-care diagnoses to predict CMI, CMS analyzed only other metrics, such as provider margins. The analyses of the two periods are not explicitly integrated. Hence, the proposed 2.9 percent reduction is not analytically based or otherwise systematically related to the RAND analysis.

2. CMS' Arguments Based on Post-Implementation Data

CMS makes three arguments why it now believes that a second reduction for code change is justified:

- IRF provider margins increased after the IRF PPS implementation,
- Providers appear to be very responsive to changes in coding rules, and
- Cases have shifted to higher payment tiers within CMGs over time.

First, CMS argues that IRF margins have increased between 1999 and the 2002-2004 period.⁵ In fact, more recent analyses by MedPAC predict that IRF margins will decline in FY 2006 and FY 2007 due in large measure to the effects of changes to the 75% Rule, resulting in more resource intensive change in RIC distribution of cases and substantial reductions in IRF admissions attributable to the rule.⁶ A recent report by the Moran Company indicates that the number of IRF cases declined by almost 14 percent from CY 2004 to CY 2005.⁷ This is important because a decline in patient census requires providers to spread the fixed costs and the overhead over a smaller number of patients, thereby leading to higher costs per discharge. At the same time, if the cases remaining eligible for IRF admission have more functional deficits and increased medical acuity, they may require additional resources and cause variable costs to increase as well.

Second, CMS argues that providers respond quickly to changes in the PPS coding Grouper.⁸ The text accompanying the FY 2007 IRF PPS proposed rule cites only one example of this effect and it is therefore difficult to assess the validity of this observation. If true, it actually suggests that the bulk of any coding changes due to IRF PPS implementation would have occurred in 2002, the first full year of implementation, and should be accounted for in the RAND analysis.

⁵ We address the reliance by CMS on trends in IRF margins from an economic standpoint only. We are aware of questions concerning the Secretary's statutory authority to consider this information in PPS rate-setting but offer no independent assessment of this issue

⁶ Medicare Payment Advisory Commission, "Report to the Congress," March 2006, Chapter 4D, p. 238.

⁷ The Moran Company report "Utilization Trends in Inpatient Rehabilitation: Update Through Q1 2006" issued in June 2006.

⁸ The inadvertent inclusion of the overweight code, 278.02 resulted in providers coding for overweight. CMS contends that IRFs responded more quickly to coding changes than expected.

Third, CMS cites several trends in the overall distribution of cases from 2002 to 2005 to demonstrate that the proportion of cases in the highest paying tiers have increased. Unfortunately, the analysis does not attempt to identify reasons for the observed trends. Our own analysis, described in Section V of this report, indicates that at least 95 percent of the observed increase can be attributed to changes in the RIC/CMG distribution of cases as a result of changes to the 75% Rule. The remaining 5 percent can be attributed to increases in case mix index due to the increase in comorbidities as evident by the increased acuity reported by acute hospitals for patients discharged to IRFs.

3. Lewin Analysis of Changes in IRF Case Mix

1. Change in IRF Case Mix Index Due to FY 2006 Grouper

The change in IRF payment classification and taxonomy implemented in the FY 2006 IRF PPS rule decreased the case mix index by 3.2 percent during the first six months of FY 2006 (see Exhibit ES-1). Similar changes can be observed by applying the FY 2006 Grouper to IRF discharges during prior years. This effect is not mentioned or discussed in the NPRM. This decrease in case mix index is due entirely to CMS measurement techniques implemented in the FY 2006 IRF PPS rule and is additive to the 1.9 percent reduction.

Exhibit ES-1: Change in IRF Case Mix Index Due to Changes in Grouper

	Q2-Q4 FY 2002	FY 2003	FY 2004	FY 2005	Q1-Q2 FY 2006
2002 Grouper	1.079	1.102	1.117	1.165	1.221
2006 Grouper	1.050	1.066	1.077	1.123	1.182
Percent Change	-2.7%	-3.3%	-3.6%	-3.6%	-3.2%

Source: The Lewin Group Analysis of IRF PAI data provided by CMS. IRF case mix is calculated using the admission relative weight.

Lewin and RAND calculate the case mix index in slightly different manners. Lewin CMI is based on admission relative weights and does not account for special CMGs and transfer cases. As CMS based their coding adjustment on the RAND report, we analyze the change in RAND CMI due to the change from 2002 to 2006 Grouper. The definition of the “case mix specification” is presented on page 17 of the RAND report. In Exhibit ES-2, the same definition is used to calculate a modified CMI (RAND CMI). The calculations, as provided by UDS_{MR} are based on data representing 592 facilities⁹, indicate a difference in Q1 2006 of 2.2 percent (1.184/1.158) based solely on the change in Grouper methodology. We use this 2.2 percent in our analysis and not the 3.2 percent to be consistent with the RAND methodology.

As this difference is consistent with the definition of case mix methodology used by RAND, and in turn by CMS in their support of the RAND report to justify the 1.9 percent reduction to the IRF standardized payment amount, it appears that CMS has essentially taken two coding adjustments with a cumulative value of 4.1 percent – once with the 1.9 percent reduction (per the

⁹ 592 facilities comprise a single, consistent cohort of facilities that reported data to UDS from 2002 to 2006.

FY 2006 IRF PPS Rule) and again with the 2.2 percent reduction achieved through the change in the use of the 2006 Grouper as it replaced the 2002 Grouper. This would indicate that, at a minimum, another 2.9 percent should not be taken out of the standardized payment amount and to the extent that the 2.9 percent is not otherwise justified, 2.2 percent should be added back to the IRF standardized payment amount.

Exhibit ES-2: Change in IRF Case Mix Index due to Changes in Grouper Based on RAND Methodology

	CY 2002				CY 2005				CY 2006
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
2002 Grouper	1.039	1.053	1.062	1.066	1.133	1.153	1.160	1.165	1.184
2006 Grouper	1.022	1.031	1.040	1.039	1.099	1.118	1.124	1.135	1.158
Percent Change	-1.6%	-2.1%	-2.1%	-2.6%	-3.1%	-3.2%	-3.2%	-2.6%	-2.2%

Note: This summary information was provided by UDS_{MR}, for the benefit of the rehabilitation field, and is used with prior written permission of UDS_{MR}. Copyright © 2006 Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities, Inc.

RAND CMI is an adjusted value that uses the relative weights assigned to each case using the CMG and comorbidities assigned. It accounts for special CMGs and adjusts both the relative weight and count for early transfer cases. CMI calculation is based on RAND's methodology of CMI calculation.

In recommending this, we are consistent with the FY 2006 budget neutrality adjustment at 0.981 (1.9 percent reduction), that is linked to coding changes recommended by the RAND report, because we use the RAND definition of case mix.

2. Effect of Payment on Redistribution of Cases at the Tier Level

The implementation of changes to the 75% Rule also directly affected the CMI. The distribution of cases across the rehabilitation impairment groups (RICs) changed substantially since 2004. Given the correlation between functional acuity and comorbidities, the increase in the proportion of cases in the higher paying tiers could be attributed to changes in the distribution of cases across RICs as a result of the 75% Rule. The change to the 75% Rule resulted in more resource intensive changes in RIC/CMG distribution of cases, in particular with an increasing neurologic mix and a decreasing orthopedic mix.

In order to quantify the portion of the change in case mix index from 2002 to 2006 that could be attributed to changes in resource intensive change in RIC distribution of cases, we calculated what the CMI would have been in 2006 if the distribution of cases across tiers had not changed since 2002. That is, we calculated the CMI with the 2006 distribution of cases *across* CMG but the 2002 distribution of cases *within* each CMG. The results for each year in the 2002-06 time period are shown in Exhibit ES-3:¹⁰ This analysis allows us to isolate the change in case mix index due to tier comorbidities (which are more likely affected by provider coding) from

¹⁰ The CMG effect is calculated as the ratio of increase in two indices: index without tier and the actual index.

RIC/CMG changes which are not affected by provider coding. The results for each year in the 2002 – 06 time period are shown in Exhibit ES-3.

Exhibit ES-3: Change in Case Mix Index without the effect of the Comorbidities

Measure	CMI based on 2002 Grouper					Change, 02-06
	2002	2003	2004	2005	2006	
Actual index	1.079	1.102	1.117	1.165	1.221	13.2%
Index w/o any effect of tier	1.079	1.097	1.111	1.156	1.214	12.5%
CMG effect (proportion)	NA	0.783	0.842	0.895	0.951	0.951

Source: The Lewin Group Analysis of IRF PAI data provided by CMS. IRF case mix is calculated using the admission relative weight. Represents federal fiscal years.

Ne: FY 2002 includes 9 months of data from January 1, 2002 to September 30, 2002.
 FY 2006 includes 6 months of data from October 1, 2005 to March 30, 2006.

Over this time period, more than 95 percent of the increase in CMI reflects the impact of RIC/CMG changes and less than 5 percent reflects the impact of tier changes. This finding is hardly consistent with the imagery in CMS’ language of “patient severity was not increasing substantially over this time period. Thus, we believe this lends further support to the conclusion that a substantial portion of the unexpected increase in IRF payments since the establishment of the IRF PPS is due to changes in provider coding practices.”¹¹ From 2002 to 2006, the CMI including comorbidities rose by 13.2 percent from 1.079 to 1.221. The constant tier CMI increased by 12.5 percent from 1.079 to 1.214. The difference between the two (5 percent) can be attributed to increase in ICD-9 coding without the effect of the changes in RIC distribution of cases.

3. Change in Acute Care Case Mix Index from 2002 to 2005 for Cases Discharged to IRFs

Based on our analyses of the 2002 and 2005 MedPAR data (Medicare discharges from short term acute care hospitals, we found that the DRG-based CMI of cases discharged to IRFs increased by 5 percent from 1.95 in 2002 to 2.05 in 2005. This increase in case mix index from 2002 to 2005 timeframe, points to increased severity in the acute care discharges to IRFs. This is supportive of the notion that IRF real case mix index may have increased over time.

Furthermore, we also found that of the acute care cases discharged to IRFs, the proportion of cases categorized as DRGs with complications and comorbidities increased by 3 percent from 25 percent in 2002 to 28 percent in 2005. This implies that the real case mix index due to comorbidities most likely increased for the cases discharged to IRFs.

Even if there is a close association between acute-care comorbidities and IRF comorbidities, one cannot presume that a given percentage increase in acute-care comorbidities translates into the

¹¹ 71 Fed. Reg. 28106, 28124 (May 15, 2006).

same percentage increase in IRF comorbidities and hence tier weights. The RAND project estimates this relationship, using diagnoses and selected procedure codes to predict tier (p. 9). With those results, one could calculate the impact on IRF CMI from the increase in acute-care comorbidities. However, the results are unavailable either on RAND website or in Appendix B, which we obtained directly from RAND. Any subsequent work on IRF coding changes should include an analysis of this relationship.

Conclusion

In the 2007 NPRM, CMS proposes that the IRF standardized payment amount should be reduced by 2.9 percent, in addition to the FY 2006 reduction of 1.9 percent, to account for case mix up-coding that occurred between 1999 and 2002. In this report we argue that the basis for this 2.9 percent increase is without analytic merit. To this end, we present several original analyses which indicate that:

1. The change from the 2002 to the 2006 Grouper reduces CMI (CMI as calculated in the RAND study) by 2.2 percent. This suggest that CMS has in effect taken two coding adjustments with a cumulative effect of 4.1 percent – once with the 1.9 percent reduction and again with the 2.2 percent reduction achieved with the change from the 2002 Grouper to the 2006 Grouper.
2. Over the 2002 to 2006 time frame, approximately 95 percent of the observed case mix change is due to change in RIC distribution of cases and is unrelated to coding changes reflecting patient severity. The change in RIC/CMG distribution of cases in the recent years can be attributed to the implementation of changes to the 75% Rule.
3. The remaining 5 percent of observed case mix change may simply reflect changes in the acute care hospital DRG case mix for patients subsequently admitted to IRFs and by the increase in complications and co-morbidities for those patients.

Exhibit ES-4 summarizes our results in terms of possible adjustments to the IRF standardized payment amount. The exhibit indicates that CMS, with its proposed additional reduction to the IRF standardized payment amount of 2.9 percent, would effectively be reducing the standardized payment amount by 7.0 percent. This is much larger than the RAND upper bound of 5.9 percent and is not supportable with observed changes in case mix using the RAND formula for case mix severity.

As shown in the shaded row in Exhibit ES-4, the Lewin findings suggest adjustments to the 2007 IRF standardized payment amount ranging from a 2.2 percent increase to a 0.47 percent decrease. The 2.2 percent adjustment increase is based on the assumption that the RAND 1.9 percent decrease of the IRF standardized payment amount is the correct adjustment. If so, this would require a return of the 2.2 percent reduction in CMI associated with the change in the Grouper from the 2002 version to the 2006 version. We refer to this as the “higher estimate” because it could be most favorable financially to the industry.

The mid range adjustment estimate is predicated on an overall adjustment target that splits the difference between the RAND lower bound and higher bound estimate $[(1.9 + 5.9) \div 2 = 3.9]$. Achieving this could require a .2 percent addition to the IRF standardized payment amount.

The lower estimate assumes that the 1.9 percent adjustment is inadequate. We calculate a -0.47 percent adjustment as follows:

- 9.36 percent change in CMI from 2002 (1.079) to 2006 (1.18; 2006 CMI using the 2006 Grouper (refer to Exhibit ES-1))
- X 5 percent of CMI accounted for increase in tier comorbidity coding

- 0.47 percent payment reduction

This range of possible adjustments, in terms of logic and rationale, indicates to us that the NPRM proposed adjustment of negative 2.9 percent is far from definitive. A prudent course of action might be to not change the standardized payment at this time until a re-analysis of the 2002 to 2006 case mix data using something like the RAND methodology can be conducted and carefully vetted by all concerned. This would necessitate that CMS make the underlying data and methods publicly available.

Exhibit ES-4: A Range of Possible Changes to the IRF Standardized Payment Amount

CMS Policies		Lewin Analytic Findings		
		Higher Estimate	Mid Range	Lower Estimate
	-1.9% 2006 Coding Adjustment -2.2% Change in CMI due to revised Grouper (2002 vs. 2006)	-1.9% 2006 coding adjustment per RAND study -2.2% Change in CMI due to revised Grouper (2002 vs. 2006)	-1.9% 2006 coding adjustment per RAND study -2.2% Change in CMI due to revised Grouper (2002 vs. 2006)	-1.9% 2006 coding adjustment per RAND study NA
Subtotal	-4.1%	-4.1%	-4.1%	-1.9%
Policy Adjustment for FY 07	-2.9%	2.2%	0.2%	-0.47%**
Total Adjustment	-7.0%	-1.9%	-3.9%*	-2.37%

* Mid point of RAND upper (-5.9%) and lower (1.9%) coding adjustments

** (Change in IRF PPS Grouper from 2002(1.079) to 2006(1.18; based on 2006 Grouper): 9.36%) X (Change in CMI driven by increase in tier comorbidities: 0.05) = 0.47%;

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I. PURPOSE

The Lewin Group was commissioned by HealthSouth Corporation to evaluate the proposed 2.9 percent reduction of the Medicare standard payment amount under the inpatient rehabilitation facility prospective payment system (IRF PPS) for fiscal year (FY) 2007 to account for alleged coding changes. In doing this, the Lewin Group conducted three sets of interrelated analyses as follows:

- (1) An analysis of the Centers for Medicare and Medicaid Services' (CMS) interpretation of RAND inpatient rehabilitation facility (IRF) case mix study which was completed in 2004 and was the basis for rulemaking in FY2006.¹²

In this analysis, we investigate the degree to which RAND or CMS produces convincing arguments that RAND's higher estimate of coding change (5.9 percent) over the 1999 to 2002 time frame should be used to support a further reduction in the IRF Medicare standard payment amount by 2.9 percent.

- (2) An analysis of CMS arguments in support of reducing the IRF Medicare standard payment amount based on trends observed after 2002:

In this analysis, we evaluate anecdotal estimates of changes in IRF providers' costs and margins as well as changes in comorbidity¹³ coding practices occurring after 2002 that have been relied upon by CMS to justify a coding adjustment near the high end of the RAND estimated range.

- (3) An analysis of IRF case mix components from 2002 through the first quarter of calendar year 2006.

In this analysis, we attempt to quantify the effects upon the IRF case mix of changes to the 75% Rule that were implemented in 2004 as well as changes to the CMS IRF Grouper that were implemented in FY 2006.¹⁴

II. BACKGROUND

When a cost-reimbursement system is replaced by a prospective payment system (PPS), providers have an increased incentive to report all appropriate codes for their patients, because this now will increase their payment. For the first year of a PPS system, CMS must set payment rates based on the codes reported in the pre-implementation period, which can result in providers

¹² Grace M. Carter and Susan M. Paddock, "Preliminary Analyses of Changes in Coding and Case Mix Under the Inpatient Rehabilitation Facility Prospective Payment System," RAND Corporation., 2004.

¹³ A comorbidity is a specific patient condition (ICD – 9 diagnoses or select procedure codes) that is secondary to the patient's principal diagnosis or impairment. IRF Patient Assessment Form allows one to include up to 10 comorbidities. A patient could have one or more comorbidities present during the IRF stay. The presence of certain comorbidities could have a major effect on the cost of furnishing inpatient rehabilitation care.

¹⁴ The 2006 Grouper incorporated a number of changes relative to the 2002 Grouper. These changes involved the reclassification of cases into CMGs, list of tier comorbidities, and CMG weights.

being overpaid. This potential overpayment is measured in terms of the impact of coding changes on a case mix index, which in turns measures the resources needed to treat patients.

Since January 2002, IRFs have been paid by Medicare on a predetermined per discharge rate based primarily on patient characteristics, the facility's wage index and facility characteristics. Before the implementation of IRF PPS in 2002, the IRFs were paid under the Tax Equity and Fiscal Responsibility Act of 1982, on the basis of their average costs per discharge, up to an annually adjusted facility-specific limit.

Medicare IRF PPS payments are case-based. To determine the IRF PPS payment for a particular patient, the patient is first classified into a major group, called a RIC, based on the patient's primary reason for receiving inpatient rehabilitation. Thereafter, the patient is assigned to a CMG based on functional status, cognitive status, and age. Each of the CMGs is further classified into tiers (Tier 1 being the most severe, Tier 3 being the least severe, and Tier 0 having no comorbidities) based on comorbidities.¹⁵ These characteristics are recorded in the IRF patient assessment instrument (IRF PAI). To calculate a payment rate, the base rate is adjusted for case mix. This rate is then adjusted for other facility-specific adjustments, such as rural areas, teaching institutions, and proportion of low-income patients. IRFs also receive additional payments for patients that are high cost outliers. Finally, Medicare pays IRFs special low rates for patients who have very short stays.

Section 1886(j)(2)(C)(ii) of the Balanced Budget Act of 1997 requires the Secretary to adjust the IRF standardized payment amount to eliminate the effect of coding or classification changes that do not reflect real changes in case mix, to the extent that such changes affect aggregate payments under the classification system. Based on this section of the Act, CMS applied a one-time adjustment of 1.9 percent to the standard payment amount for FY 2006 to account for changes in provider coding practices. In addition, CMS has proposed a reduction to the standard payment amount by an additional 2.9 percent for FY 2007 to account for coding changes due to provider coding practices. CMS states several reasons for this proposed reduction, which we carefully address in this report.

RAND found that the case mix index for IRFs increased by 4.5 percent from 1999 (pre PPS) to 2002. Based on two separate approaches, RAND estimated either 1.9 percent or 5.9 percent of the increase in IRF CMI change.¹⁶ In the 2006 final rule, CMS reduced the IRF standardized payment amount by 1.9 percent based on RAND study results. In the 2007 Notice for Proposed Rulemaking (NPRM), CMS now contends that an additional 2.9 percent reduction is warranted. Our analyses indicate that the CMS supporting arguments are incomplete and not supportive of their conclusion.

In the proposed rule for FY 2007, CMS also includes a discussion of trends in IRF margins and costs as supportive argument for the coding adjustment. Recent MedPAC report indicates that IRF profit margins increased from 1.5 percent in 2001 (pre-PPS), 11.1 percent in 2002, 17.7

¹⁵ A comorbidity is a specific patient condition (ICD – 9 diagnoses or select procedure codes) that is secondary to the patient's principal diagnosis or impairment. IRF Patient Assessment Form allows one to include up to 10 comorbidities.

¹⁶ The FY 2006 NPRM reports the upper-bound estimate to be 5.9 percent (p. 28123), whereas the RAND report reports it as 5.9 percent (e.g., p. 58).

percent in 2003, and 16.3 percent in 2004.¹⁷ During the same time period, costs increased only 2.4 and 3.6 percent in 2003 and 2004 respectively. The relatively low cost increases along with substantial increase in margins leads CMS to infer that the real case mix index did not increase for IRF patients and the increase in payments could be attributed to provider coding practices.

CMS also examines the distribution of cases by tiers to provide a rationale for the coding adjustment. Based on CMS' analyses, the proportion of IRF patients in the lowest-paying tier decreased by 6 percentage points between 2002 and 2005. Conversely, the proportion of patients in each of the three higher paying tiers increased each year. The decrease in the proportion of cases in the lowest paying tier along with the modest growth in cost (MedPAC's analysis) led CMS to infer that the increase in IRF payments is due to changes in provider coding practices.

In addition, CMS also provides the case of inadvertent inclusion of ICD-9-CM code 278.02 (overweight) as an example of "facilities responding quickly to the coding changes."

CMS notes that it also considered a 2.2 percent reduction and it invites comments on the appropriate adjustment to account for changes in coding.

The first section of this report provides a critique of the CMS interpretation of the RAND report. Next, we critique the logic used by CMS to support the proposed coding adjustment. In the third section, we provide the results of our analyses on case mix index issues. Finally, we provide a discussion of relationship between CMS logic and our analyses of the case mix issues.

III. CMS' INTERPRETATION OF THE RAND REPORT

By its own terms, the RAND report does not furnish an adequate basis for the proposed additional coding adjustment of 2.9 percent. The RAND report offers two estimates of the increase in measured casemix index that can be attributed to coding changes. One estimate is considered to be an upper bound (5.9 percent) and the other, a lower bound (1.9%). The upper-bound estimate itself is subject to estimation error.

To make the upper-bound estimate, RAND used diagnoses from an acute-care hospital stay to predict case mix weight in a subsequent IRF stay. This estimation process involved multiple steps. In statistical analyses—whether basic or complex—one typically reports measures of how confident one can be with the estimate itself through a confidence interval. The RAND report has no discussion of "confidence interval," "t-value," or "standard error," although some results are present in Appendix B (discussed below). In addition, given the complexity of the RAND approach, it is not clear how such measures could be constructed.

The lower-bound estimate is the result of a simpler estimation procedure. About half of the change in CMI results from a change in the definition of bladder and bowel items in the motor score (p. xix, 38). Whatever its conceptual characteristics, it is apparently less vulnerable to

¹⁷ Medicare Payment Advisory Commission, "Report to the Congress," March 2006, Chapter 4D, p. 238.

uncertainty in its estimation. In sum, RAND's upper-bound estimate for casemix change has not passed the usual statistical evaluation and validation and hence should be used with care.

In its present form, the RAND report would not pass peer review for a professional journal, in part because key aspects of its technique is opaque to the professional reader. A report such as this would typically have discussions of statistical specification such as

- independent variables,
- functional form, and
- type of regression (i.e., logit vs. OLS).

Neither the body of the report nor Appendix A on "Methodological Details" has more than minimal discussion on these basic methodological issues.

Appendix B on "Regression Models"—which is not available on the NPRM-cited webpage—has tables of regression results for some but not all of the equations. These tables list independent variables and offer t-values and R-squares. However, the methodological approach has two stages: in the first stage, RIC is regressed (results not reported) on acute-care diagnoses, and in the second stage, case weight (and other dependent variables) is regressed on predicted RIC. However, no summary measure is offered of the precision of the estimated impact of acute-care diagnoses on case weight. The reader is unable to judge the robustness of this methodology.

In addition,

- Multiple terms are used to label the lower-bound technique ("direct estimate," p. 56; "ad hoc approach," p. 8; "selection model," p. 10).
- The various estimates and their components need to be presented together in a single table, so the reader can see the relationships between them. For instance for the upper bound estimate, the key steps are as follows:
 - CMI change of 4.55%,
 - weights per discharge change of 3.40%,
 - real change (ignoring case/discharge) of -3.45%,
 - real change of -2.35, and
 - (following an adjustment for the UDS sample) the final real change of -1.4%.

In sum, much of the methodology is opaque to the reader.¹⁸

In addition to the shortfalls in the RAND report supporting the argument for the proposed coding adjustment, CMS misinterprets some of the RAND findings. The FY2006 Final Rule (p. 47906) states, "RAND recommended decreasing the standard per discharge payment amount by between

¹⁸ One of the more prominent findings is that between 1999 and 2002 there was a shift from higher-weight RICs into lower-weight ones. This is odd, because in 1999 under TEFRA payments to IRFs faced a per-discharge limit, which did not recognize that some types of discharges are inherently more expensive than otherwise. When in 2002 PPS started to pay IRFs more for such categories of patients, one would expect hospitals would have shifted from lower- to higher-weight patients, to the extent they could. Although RAND recognized this incentive (p. 63), it did not attempt to explain the observed pattern in the opposite direction.

Another test of scholarship is whether a result can be replicated by scholars other than the original one. The data used by RAND has not been accessed by others, so that no one has had the opportunity to attempt to replicate its results.

1.9 and 5.9 percent to adjust for the coding changes,” implying that RAND has equal confidence in its upper- and lower-bound estimates. In fact, the RAND report “recommends” reducing “the conversion factor by at least 1.9 percent” (p. 58), suggesting its authors had greater confidence in its lower-bound estimate.

IV. CMS’ ARGUMENTS BASED ON POST-IMPLEMENTATION DATA

A. Trends in IRF Margins and Costs

CMS also supports the argument for their coding adjustment factor based on the margin and cost trends of IRFs. Recent MedPAC analyses indicate that the margins for IRFs have been rising steadily between 2001 and 2004.¹⁹ It is worth noting that the cost report data used by MedPAC in its March 2006 Report to arrive at these margins may be incomplete as it does not include the home office costs and depreciation costs of HealthSouth for 2002 and 2003. Furthermore, the cost increases over this time period have been relatively modest. Nevertheless, CMS may not have the legal authority to reduce payments for providers due to growth in margins and relatively low cost increases. Additionally, such a policy would disincentivize efficient providers.

With the implementation of changes to the 75% Rule, the number of IRF patients is expected to decline. This might lead to a drop in Medicare margins. In 2005, the number of IRF Medicare cases decreased by 9 percent based on eRehab data and 14 percent based on MedPAC’s analysis of IRF PAI data. Prior Moran Company reports indicated that the volume of cases declined by over 40,000 for the first program year under the new classification criteria. Recent Moran report indicates that the number of cases fell by approximately 4,000 cases based on their analyses of UDS and eRehab data. MedPAC’s report states that they expect IRFs’ costs per case to rise in 2007 as facilities spread total costs over fewer patients. MedPAC estimates that the Medicare margin will drop from 16.3 percent in 2004 to an estimated 9.2 percent in 2006. MedPAC states that based on its analysis, it assumes that facilities will lower patient volume by as much as 25 percent to meet the 60 percent threshold if the facilities cannot substitute cases. If the IRFs are unable to lower their overhead costs in response to the drop in patient volume, the Medicare margins could be approximately 7.2 percent which goes against CMS policies directionally. It is worth noting that MedPAC simulated the Medicare margins for 2005 based on their assumptions and 2002 Medicare cost report data.²⁰

Therefore we believe that CMS’s rationale for decreasing the standard payment conversion rate based on the relative increase of costs to the increase in payments is not supported by the law creating the IRF PPS. In their interpretation of the MedPAC report, CMS does not acknowledge the MedPAC finding of the expected increase in costs and decrease in margins in FY 2006 and

¹⁹ Medicare Payment Advisory Commission, “Report to the Congress,” March 2006, Chapter 4D, p. 238.

²⁰ We are aware of questions whether the statute creating the inpatient rehabilitation facility prospective payment system (IRF PPS) provides for consideration of payment and cost differentials (margins) in making recommendations for refinements to the system. Section 4421 of the Balanced Budget Act of 1997 outlines the factors the Secretary is to take into account in determining the need to make adjustments to the system. These include changes in treatment patterns, technology, case mix, number of payment units and the factors affecting relative use of resources. The statute does not mention including the rate of change in cost per case as compared to payment under the system as a factor to be considered in making decisions regarding standard payment rate.

2007. CMS reasoning of basing their 2.9 percent reduction on growth in 2003 and 2004 margins and costs is unjustified.

B. Rapidity of IRFs' Response to Grouper Changes

CMS reported that a clerical error in the GROUPER added a comorbidity (278.02, overweight). Within one quarter, use of this code increased from essentially 0 percent to 2 percent, from which CMS concluded that “providers respond more rapidly to coding changes than we initially believed.” CMS states that this code appears on 2 percent of the IRF PAI forms through the first quarter of FY 2006. There is no evidence that the industry acted inappropriately, as one of its responsibilities is to supply the information necessary to calculate payment. Providers would be expected to respond to changes in the comorbidities or any coding changes to more accurately reflect the patient’s status and codes.

Furthermore, code 278.02 was not recommended by the Coordinating and Maintenance Committee and approved by the National Center for Health Care Statistics for use until October 2005. Therefore, CMS did not find any use of this particular code before 2005. We would also like to add that literature indicates that there is a high prevalence of “overweight” condition among the patient population in IRFs.

In support of its argument, CMS contends that only 8 cases in FY 2005 included the code 278.02 compared to 2 percent of the IRF PAI forms through the first quarter of FY 2006. As code 278.02 was not recommended by the Coordinating and Maintenance Committee and approved by the National Center for Health Care Statistics for use until October 2005, code 278.0 might have been used to code “overweight” cases instead of code 278.02 in 2005.

Taken at face value, this observation weakens the argument for upcoding in the post-implementation period (i.e., after 2002). If providers immediately respond to changes in coding rules, all of the impact on coding of IRF PPS implementation would have been felt in 2002—and none since then.

C. Redistribution of Cases at the Tier Level

CMS analyzed changes in the distribution of cases by tier, 2002-2005. The conceptual underpinnings of this analysis were left unstated. Apparently, CMS believes that upcoding is much more plausibly the result of greater coding of comorbidities (affecting tier) than change in RIC distribution of cases as a result of changes in conditions qualifying for 75% Rule.

CMS found a shift into more-costly tiers, concluding that “a substantial portion of the unexpected increased in IRF payments since the establishment of the IRF PPS is due to changes in provider coding practices.” The language is hardly precise: What constitutes “a substantial portion” and what increase was “unexpected”? More fundamentally, because weights or payment did not directly enter the analysis, the linkage between tier distribution and payment was not made, rendering the analysis incomplete.

Also CMS did not attempt to analyze how much the change in tiers is a function of the acuity of patients as opposed to increase in coding due to increase in real case mix index. CMS also did not attempt to analyze how much of the changes in the tiers is a function of changes to RIC/CMG distribution of cases due to changes to the 75% Rule.

In order to understand the changes in IRF case mix index, we performed a more complete analysis in the next section.

V. LEWIN ANALYSIS OF CHANGES IN IRF CASE MIX

The IRF CMI increased by approximately 9.36 percent from 1.079 in 2002 to 1.18 in 2006. This change in IRF CMI can be attributed to a variety of reasons, such as increases in patient severity, changes in IRF PPS payment classification system and most importantly, the shift in RIC due to the 75 percent implementation rule. In this section, we examine the increase in IRF CMI due to each of these factors.

A. Change In Case Mix Index Due To FY2006 Grouper

Beginning in FY 2006, the CMG weights were reclassified and decreased in addition to the reduction in weights. Using the IRF PAI data provided by CMS, we examined the effect of the FY 2006 changes to the CMG weights (refer to Exhibit 1). First, we computed the CMI for Medicare IRF cases from 2002 to 2006 using the 2002 GROUPER and relative weights. Next, we calculated the CMI for 2002 to 2006 using the 2006 GROUPER and relative weights. The difference between the case mix indices using the 2002 and 2006 is consistently between 2.7 to 3.6 percentage points from 2002 to 2006 data. This implies that the CMS implementation of the 2006 Grouper effectively lowered the case mix index by 3.2 percent in 2006.

Exhibit 1: Change in IRF Case Mix Index Due to Changes in Grouper

	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
2002 Grouper	1.079	1.102	1.117	1.165	1.221
2006 Grouper	1.050	1.066	1.077	1.123	1.182
Percent Change	-2.7%	-3.3%	-3.6%	-3.6%	-3.2%

Source: The Lewin Group Analysis of IRF PAI data provided by CMS. IRF case mix is calculated using the admission relative weight.

Note: FY 2002 includes 9 months of data from January 1, 2002 to September 30, 2002. FY 2006 includes 6 months of data from October 1, 2005 to March 30, 2006.

Lewin and RAND calculate the case mix index in slightly different manners. Lewin CMI is based on admission relative weights and does not account for special CMGs and transfer cases. As CMS based their coding adjustment on the RAND report, we analyze the change in RAND CMI due to the change from 2002 to 2006 Grouper. The definition of the “case mix specification” is presented on page 17 of the RAND report. In Exhibit 2, the same definition is

used to calculate a modified CMI (RAND CMI). The calculations, as provided by UDS_{MR} are based on data representing 592 facilities²¹, indicate a difference in Q1 2006 of 2.2 percent (1.184/1.158). We use this 2.2 percent in our analysis and not the 3.2 percent to be consistent with the RAND methodology.

As this difference is consistent with the definition of case mix methodology used by RAND, and in turn by CMS in their support of the RAND report to justify the 1.9 percent reduction to the IRF standardized payment amount, it appears that CMS has essentially taken two coding adjustments with a cumulative value of 4.1 percent – once with the 1.9 percent reduction and again with the 2.23 percent reduction achieved through the change in the use of the 2006 Grouper as it replaced the 2002 Grouper. The RAND CMI is different from the CMI based on admission weight as the CMI based on admission weight does not account for special CMGs or transfers.²² This would indicate that, at a minimum, another 2.9 percent should not be taken out of the standardized payment amount and to the extent that the 2.9 percent is not otherwise justified 2.2 percent should be added back to the IRF standardized payment amount.

Exhibit 2: Change in IRF Case Mix Index due to Changes in Grouper Based on RAND Methodology

		CY 2002				CY 2005				CY 2006
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
2002	Admission Relative Weight	1.085	1.097	1.104	1.111	1.179	1.199	1.205	1.211	1.233
Grouper	RAND CMI	1.039	1.053	1.062	1.066	1.133	1.153	1.160	1.165	1.184
2006	Admission Relative Weight	1.060	1.068	1.075	1.076	1.136	1.155	1.161	1.174	1.197
Grouper	RAND CMI	1.022	1.031	1.040	1.039	1.099	1.118	1.124	1.135	1.158
	Change in Admission Relative Weight	2.4%	2.8%	2.7%	3.3%	3.8%	3.8%	3.7%	3.2%	3.0%
	Change in RAND CMI	1.6%	2.1%	2.1%	2.6%	3.1%	3.2%	3.2%	2.6%	2.2%

Note: This summary information was provided by UDS_{MR}, for the benefit of the rehabilitation field, and is used with prior written permission of UDS_{MR}. Copyright © 2006 Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities, Inc.

Admission relative weight is the average of the relative weights assigned to each case using the CMG and comorbidities assigned. It does not account for special CMGs and does not adjust relative weights for early transfers.

CMI is an adjusted value that uses the relative weights assigned to each case using the CMG and comorbidities assigned. It accounts for special CMGs and adjusts both the relative weight and count for early transfer cases. CMI calculation is based on RAND's methodology of CMI calculation.

²¹ 592 facilities comprise a single, consistent cohort of facilities that reported data to UDS from 2002 to 2006.

²² RAND CMI is an adjusted value that uses the relative weights assigned to each case using the CMG and comorbidities assigned. It accounts for special CMGs and adjusts both the relative weight and count for early transfer cases. It is calculated in the following manner:

First, adjusted relative weight is calculated for each case, adjusting early transfer cases by multiplying their relative weight by ((Actual LOS + .5) / CMS CMG Average LOS). All other cases have their discharge relative weight.

Next, adjusted count for each case is calculated, adjusting early transfer cases to count as ((Actual LOS + .5) / CMS CMG Average LOS). All other cases should have a count value of 1.

Finally, adjusted relative weights and counts are summed, and then the SUM of the adjusted relative weights is divided by the SUM of the adjusted counts.

In recommending this, we are consistent with the FY 2006 budget neutrality adjustment at 0.981 (1.9 percent reduction), that is linked to coding changes recommended by the RAND report, because we use the RAND definition of case mix (refer to Exhibit 3). The FY 2006 budget neutrality adjustments for tiers and CMG was 0.9995. Our case mix index analyses and recommendations correspond directly to the RAND analyses.

Exhibit 3: Calculation of Budget Neutrality Adjustments for FY 2006

Calculation of Budget-Neutral Conversion Factor		
Adjustment For	Adjustment %	Conversion Factor
FY2005 Standardized payment conversion factor		12,958
Market basket increase	1.036	13,424
Coding changes, per RAND report	0.981	13,169
Wages	0.9995	13,163
Tiers & CMGs	0.9995	13,156
Rural	0.9961	13,105
Low-income patients	0.9851	12,910
Teaching	0.9889	12,766
FY2006 Standardized payment conversion factor		12,766
Total adjustment	0.9852	
Total adjustment w/o market basket	0.9510	

Source: Final Rule, Aug. 15, 2005, pp. 47938-39

B. Effect on Payment on Redistribution of Cases at the Tier Level

Due to the changes to the 75% Rule, there has been a substantial increase in proportion of cases in select RICs (refer to Exhibit 4). The patients categorized in these RICs are more resource intensive and have a greater relative weight.

Exhibit 4: Change in RIC Distribution of Cases from 2002 to 2006

Percent of Medicare patients in IRFs					
RIC Description	2002	2003	2004	2005	2006
Stroke	17.73	16.89	16.53	18.52	20.37
Brain Dysfunction, Traumatic	1.31	1.42	1.56	2.01	2.37
Brain Dysfunction, Non-Traumatic	2.06	2.08	2.27	2.95	3.49
Spinal Cord Dysfunction, Traumatic	0.57	0.55	0.57	0.66	0.75
Spinal Cord Dysfunction, Non-Traumatic	3.46	3.59	3.69	3.82	3.9
Neurological Conditions	4.47	4.49	4.85	5.8	6.4
Lower Extremity Fracture	11.83	12.31	12.71	14.28	15.84
Lower Extremity Joint Replacement	23.54	23.95	24.3	22.3	18.89
Other Orthopedic	4.69	5.04	5.08	5.08	5.05
Amputation, Lower Extremity	2.75	2.59	2.59	2.85	2.89
Amputation, Non-Lower Extremity	0.29	0.26	0.24	0.18	0.15
Osteoarthritis	2.42	2.17	1.72	0.88	0.69
Rheumatoid and Other Arthritis	1.02	1.06	0.99	0.75	0.69
Cardiac	5.57	5.53	5.31	4.41	3.86
Pulmonary	2.46	1.98	1.95	1.58	1.5
Pain Syndrome	2.19	2.16	1.91	1.62	1.37
MMT without Brain/Spinal Cord Injury	1.1	1.24	1.17	1.12	1.23
MMT with Brain/Spinal Cord Injury	0.2	0.26	0.26	0.29	0.36
Guillan-Barre	0.15	0.14	0.14	0.15	0.16
Miscellaneous	12.14	12.21	12.09	10.64	9.93
Burns	0.07	0.07	0.07	0.08	0.1

Source: The Lewin Group Analysis of IRF PAI data provided by CMS. Represents federal fiscal years.

Note: FY 2002 includes 9 months of data from January 1, 2002 to September 30, 2002. FY 2006 includes 6 months of data from October 1, 2005 to March 30, 2006.

In order to ascertain the cause of increase in case mix index, we decomposed the CMI into two components:

- Changes in the distribution of cases across tiers (within each CMG) and
- Changes in the distribution of cases across CMGs (and RICs).

We directly calculated what the CMI would have been in, say, 2006 if the distribution of cases across tiers had not changed since 2002. That is, we calculated the CMI with the 2006 distribution of cases *across* CMI but the 2002 distribution of cases *within* each CMI. As shown in Exhibit 5, the results for each year in the 2002-06 time period are as follows:²³

²³ The CMG effect is calculated as the ratio of increase in two indices: index without tier and the actual index.

Exhibit 5: Change in Case Mix Index Without the Effect of the Comorbidities

Measure	CMI based on 2002 Grouper					Change, 02-06
	2002	2003	2004	2005	2006	
Actual index	1.079	1.102	1.117	1.165	1.221	13.2%
Index w/o any effect of tier	1.079	1.097	1.111	1.156	1.214	12.5%
CMG effect (proportion)	NA	0.783	0.842	0.895	0.951	0.951

Source: The Lewin Group Analysis of IRF PAI data provided by CMS. IRF case mix is calculated using the admission relative weight. Represents federal fiscal years.

Note: FY 2002 includes 9 months of data from January 1, 2002 to September 30, 2002. FY 2006 includes 6 months of data from October 1, 2005 to March 30, 2006.

The CMG effect is calculated as the ratio of increase in two indices: index without tier and the actual index.

Over this time period, at least 95 percent of the increase in CMI reflects the impact of the redistribution of cases at CMG level and less than 5 percent reflects the impact of tier changes. This finding is hardly consistent with the imagery in CMS' language of "patient severity was not increasing substantially over this time period. Thus, we believe this lends further support to the conclusion that a substantial portion of the unexpected increase in IRF payments since the establishment of the IRF PPS is due to changes in provider coding practices."²⁴ From 2002 to 2006, the constant tier CMI increased by 12.5 percent from 1.079 to 1.21. The CMI including comorbidities rose by 13.2 percent from 1.07 to 1.22. The difference between the two can be attributed to increase in ICD-9 coding without the effect of change in more resource intensive RIC distribution of cases.

The implementation of the 75-percent rule in 2004 limited the opportunity of IRFs to admit patients in RICs that generally had lower-than-average weights and thus is hypothesized to increase the CMI. Even without the effect of the increase in tier comorbidities, we observe a sharp increase in CMI from 2004 to 2005 and 2006. This implies that the recent increase in CMI can be largely attributed to the change in RIC/CMG distribution of cases as a result of changes to the 75% Rule.

Given CMS' belief that upcoding is more plausible at the tier level than in the RIC distribution of cases, it is unlikely that upcoding has had a major impact on the increase in the CMI after 2002 (the last year analyzed in the RAND report). Put differently, the vast majority of the CMI increase apparent represents real change in case mix. Upcoding is more of an issue in the initial implementation period than latter.

²⁴ 71 Fed. Reg. 28106, 28124 (May 15, 2006).

C. Change in Acute Care Case Mix Index from 2002 to 2005 for Cases Discharged to IRFs

The acute care (inpatient prospective payment system (IPPS)) CMI for cases discharged to IRFs reflects the patient severity of the patients discharged to IRFs. As the patient severity is measured in prior hospitalization, it is believed to be unaffected by the IRF CMI. The CMI for the prior hospitalization can be assumed to be a proxy measure of the “real” case mix index. Based on our analyses of the 2002 and 2005 MedPAR data (Medicare discharges from short term acute care hospitals, we found that the CMI (DRG-based CMI) of cases discharged to IRFs increased by 5 percent from 1.95 in 2002 to 2.05 in 2005.

Furthermore, we also found that of the acute care cases discharged to IRFs, the proportion of cases categorized as DRGs with complications and comorbidities increased by 3 percent from 25 percent in 2002 to 28 percent in 2005. This implies that the real case mix index due to comorbidities most likely increased for the cases discharged to IRFs.

Even if there is a close association between acute-care comorbidities and IRF comorbidities, one cannot presume that a given percentage increase in acute-care comorbidities translates into the same percentage increase in IRF comorbidities and hence tier weights. The RAND project estimates this relationship, using diagnoses and selected procedure codes to predict tier (p. 9). With those results, one could calculate the impact on IRF CMI from the increase in acute-care comorbidities. However, the results are unavailable either on RAND website or in Appendix B, which we obtained directly from RAND. Any subsequent work on IRF coding changes should include an analysis of this relationship.

VI. CONCLUDING COMMENTS

In the 2007 NPRM, CMS proposes that the IRF standardized payment amount should be reduced by 2.9 percent, in addition to the FY 2006 reduction of 1.9 percent, to account for case mix up-coding that occurred between 1999 and 2002. In this report we argue that the basis for this 2.9 percent increase is without analytic merit. To this end, we present several original analyses which indicate that:

1. The change from the 2002 to the 2006 Grouper reduces CMI (CMI as calculated in the RAND study) by 2.2 percent. This suggest that CMS has in effect taken two coding adjustments with a cumulative effect of 4.1 percent – once with the 1.9 percent reduction and again with the 2.2 percent reduction achieved with the change from the 2002 Grouper to the 2006 Grouper.
2. Over the 2002 to 2006 time frame, approximately 95 percent of the observed case mix change is due to change in RIC distribution of cases and is unrelated to coding changes reflecting patient severity. The change in RIC/CMG distribution of cases in the recent years can be attributed to the implementation of changes to the 75% Rule.

3. The remaining 5 percent of observed case mix change may simply reflect changes in the acute care hospital DRG case mix for patients subsequently admitted to IRFs and by the increase in complications and co-morbidities for those patients.

Exhibit ES-4 summarizes our results in terms of possible adjustments to the IRF standardized payment amount. The exhibit indicates that CMS, with its proposed additional reduction to the IRF standardized payment amount of 2.9 percent, would effectively be reducing the standardized payment amount by 7.0 percent. This is much larger than the RAND upper bound of 5.9 percent and is not supportable with observed changes in case mix using the RAND formula for case mix severity.

As shown in the shaded row in Exhibit 6, the Lewin findings suggest adjustments to the 2007 IRF standardized payment amount ranging from a 2.2 percent increase to a 0.47 percent decrease. The 2.2 percent adjustment increase is based on the assumption that the RAND 1.9 percent decrease of the IRF standardized payment amount is the correct adjustment. If so, this would require a return of the 2.2 percent reduction in CMI associated with the change in the Grouper from the 2002 version to the 2006 version. We refer to this as the “higher estimate” because it could be most favorable financially to the industry.

The mid range adjustment estimate is predicated on an overall adjustment target that splits the difference between the RAND lower bound and higher bound estimate $[(1.9 + 5.9) \div 2 = 3.9]$. Achieving this could require a .2 percent addition to the IRF standardized payment amount.

The lower estimate assumes that the 1.9 percent adjustment is inadequate. We calculate a -0.47 percent payment reduction as follows:

	9.36 percent change in CMI from 2002 (1.079) to 2006 (1.18; 2006 CMI using the 2006 Grouper (refer to Exhibit 1))
X	5 percent of CMI accounted for increase in tier comorbidity coding
	<u>- 0.47 percent payment reduction</u>

The -0.47 percent payment reduction does not take into account any real increase in case mix due to increase in comorbidities and is, therefore, a conservative estimate.

This range of possible adjustments, in terms of logic and rationale, indicates to us that the NPRM for the FY 2007 IRF PPS proposed adjustment of negative 2.9 percent is far from definitive. A prudent course of action might be to not change the standardized payment at this time until a re-analysis of the 2002 to 2006 case mix data using something like the RAND methodology can be conducted and carefully vetted by all concerned. This would necessitate that CMS make the underlying data and methods publicly available.

Exhibit 6: A Range of Possible Changes to the IRF Standardized Payment Amount for FY 2007

CMS Policies		Lewin Analytic Findings		
		Higher Estimate	Mid Range	Lower Estimate
	-1.9% 2006 Coding Adjustment -2.2% Change in CMI due to revised Grouper (2002 vs. 2006)	-1.9% 2006 coding adjustment per RAND study -2.2% Change in CMI due to revised Grouper (2002 vs. 2006)	-1.9% 2006 coding adjustment per RAND study -2.2% Change in CMI due to revised Grouper (2002 vs. 2006)	-1.9% 2006 coding adjustment per RAND study NA
Subtotal	-4.1%	-4.1%	-4.1%	-1.9%
Policy Adjustment for FY 07	-2.9%	2.2%	0.2%	-0.47%**
Total Adjustment	-7.0%	-1.9%	-3.9%*	-2.37%

* Mid point of RAND upper (-5.9%) and lower (1.9%) coding adjustments

** (Change in IRF PPS Grouper from 2002(1.079) to 2006(1.18; based on 2006 Grouper): 9.6%) X (Change in CMI driven by increase in tier comorbidities: 0.05) = 0.47%;