Analysis of Variation in Medicare Margins for Inpatient Rehabilitation Facilities (IRFs)

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Analysis of Variation in Medicare Margins for Inpatient Rehabilitation Facilities (IRFs)

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EXECUTIVE SUMMARY

Dobson | DaVanzo was commissioned by the Federation of American Hospitals (FAH) to review the analysis performed by MedPAC that examined factors that may explain the observed wide variation in Medicare margins for inpatient rehabilitation facilities (IRFs).[1]

The results of our analyses confirm that Medicare margins varied widely across IRFs. In 2013, Medicare margins were -28.3 percent for the 20 percent of IRFs with the lowest Medicare margins (low-margin IRFs) compared to Medicare margins of 33.5 percent for the 20 percent of IRFs with the highest Medicare margins (high-margin IRFs). However, this result was not driven by higher Medicare payments to high margin IRFs. In fact, Medicare payments per discharge in 2013 were 12 percent lower for high-margin IRFs ($18,347) compared to low-margin IRFs ($20,938). Rather, we observed that cost per discharge was 55 percent lower for high-margin IRFs ($12,205) compared to low-margin IRFs ($26,866). Thus, differences in cost structures across IRFs is a primary driver of margin differences. Higher-margin IRFs tend to be larger (50 beds compared to 22 beds for low-margin IRFs), treat substantially more cases per year, have higher occupancy rates, and lower lengths of stay. All these indicators show that higher-margin IRFs tend to be more efficient in their operations than lower-margin IRFs, thus reducing costs on a per patient basis.

Similar to MedPAC, our analysis found that stroke and neurological patients treated in high-margin IRFs appeared to be less severely ill based on acuity as measured in the acute care hospital stay, which included average length of stay, case mix index, average number of ICU days, number of CCs and MCCs, and percent of cases that received outlier payment. However, the inpatient rehabilitation prospective payment system has a complex patient classification system that requires standard procedures, qualified trained clinical experts, and meticulous documentation to determine the most accurate assignment of each patient into the most appropriate case mix group. The process requires 1) well educated rehabilitation physicians to document the most appropriate impairment group code and co-morbidities; 2) trained and credentialed clinical FIM® raters; and 3) competent health information management diagnostic coders. Higher-margin IRFs tend to have standardized systems, training and credentialing programs, and rehabilitation professionals who are dedicated solely to navigating this complex payment system and assuring the most accurate assignment of each patient into the most appropriate case mix group.

Based on discussions with a freestanding IRF system we found that they have established standard practices used exclusively on a high volume of rehabilitation patients which produces accurate, reliable, and valid classification of patients. Such practices include:

- Providing formal standardized training across facilities in the system for FIM® scoring;

[1] MedPAC, "Assessing Payment Adequacy and Updating Payments: Inpatient Rehabilitation Facility Services", December 11, 2015

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- 100 percent of therapists, nurses and other professionals who will be responsible for FIM® scoring are trained and take a Uniform Data Set for Medical Rehabilitation (UDSmr) credentialing examination within 30 days of hire;
- Staff at this system receive a standardized training program and are re-credentialed every year, even though the standard re-credentialing is every 2 years;
- The system uses a team based approach to FIM® scoring. There is a dedicated person called a "PPS Coordinator" that compiles information from all clinical staff responsible for the patient to determine the most accurate FIM® score that is entered on the IRF-PAI;
- In addition to its own data-mining on FIM® scoring, the system is a subscriber to UDSmr which provides support for benchmarking FIM® scoring across all their subscribers in order to ensure FIM® scoring accuracy and identify additional training needs; and
- The system performs monthly audits of hospitals' FIM® scoring to identify potential outliers that may be indicative of inaccurate scoring.

The unique structure of the Inpatient Rehabilitation Facility Patient Assessment Instrument ("IRF PAI") and its FIM® elements could possibly mean that the system's staff are not "over scoring FIM®" but rather the hospital-based units may be "under scoring FIM®" because they are smaller facilities, have fewer rehabilitation cases, and FIM® scoring may be performed by acute care staff who may not have the same expertise as dedicated credentialed rehabilitation FIM® scorers in a freestanding IRF. Also, it goes without saying that IRFs are subject to Medicare Administrative Contractor (MAC) audits and Recovery Audit Contractor (RAC) scrutiny on their FIM® scoring and medical coding.

MedPAC staff suggested that IRFs may code conditions and score FIM® differently, so a comparison of costs between high and low margin IRFs for patients within the same case mix group (CMG) could be highly problematic because it may not yield an "apples-to-apples" comparison. Therefore to compensate for this suggestion, we examined costs, payments and margins for patients in specific diagnostic categories based on their acuity from the preceding acute care hospital, despite the limitation that MS-DRGs do not measure functional ability and coding of comorbidities in the acute care hospital and IRF setting are different. Using this methodology, we assume that categorizing patients based on their acuity level measured during the acute care hospitalization identifies diagnostically similar patients, but does not account for their functional impairment. We found the following for both stroke and neurological patients:

- Cost per discharge was substantially lower in high-margin IRFs for all MS-DRG and ICU/CCU status categories;
- Average Medicare payments per discharge for high-margin IRFs were actually lower than those for low-margin IRFs for the majority of categories of stroke and neurological patients that we examined;

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- For similar patients (as defined by their acuity in the acute care hospital), high-margin IRFs had substantially higher margins than did low-margin IRFs regardless of the type of patient;
- Even though low-margin IRFs typically received higher payments per discharge, the higher cost structures for these IRFs appear to be the key driver of lower Medicare margins for stroke and neurological patients and not differences in coding or FIM® scoring practices; and
- Low-margin IRFs treated substantially more stroke cases as a share of total case load than did high-margin IRFs, and high-margin IRFs treated substantially more neurological cases as a share of total case load than did low-margin IRFs. However, we did not find stroke margins to be substantially different from margins for neurological cases in either high-margin or low-margin IRFs. Thus, the fact that high-margin IRFs treat more neurological cases does not significantly influence overall IRF margins.

MedPAC expressed interest in a potential short-term policy intervention that would expand the IRF outlier pool to redistribute payments to low-margin IRFs. We found that the low-margin IRFs currently receive outlier payments that equal 12.1 percent of total payments as compared with high-margin IRFs that receive only 0.3 percent of their total Medicare payments through outliers. Increasing the outlier pool to 5, 8 or 10 percent would increase outlier payments as a percent of total payments for low-margin IRFs to 17.8, 24.3 and 27.6 percent respectively.

Since low-margin IRFs have substantially higher costs as well as higher payments, we found that outlier payments appear to be driven more by higher cost structures rather than patient case complexity. Providing high-cost hospitals with additional outlier payments due to their higher cost structures instead of their treating unusually high cost cases is contrary to the intent of the outlier policy and could undermine the integrity of the IRF PPS.

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INTRODUCTION

Dobson | DaVanzo was commissioned by the Federation of American Hospitals (FAH) to review the analysis performed by MedPAC that examined factors that may explain the observed wide variation in Medicare margins for inpatient rehabilitation facilities (IRFs).[2] The MedPAC analysis also identified differences in the acuity of patients treated in IRFs with high Medicare inpatient margins compared to those treated in IRFs with lower Medicare margins. The MedPAC analysis identified the following key findings:

- Lower-margin IRFs treated substantially more stroke cases as a share of total case load than did higher-margin IRFs and higher-margin IRFs treated substantially more neurological cases as a share of total case load than did lower-margin IRFs;

- Patients treated in higher-margin IRFs appeared to be less severely ill during the preceding acute care hospital stay than patients treated in lower-margin IRFs based on acute care hospital case mix, time spent in an ICU or CCU, and whether the acute care hospital discharge resulted in outlier payments. However, these patients appeared to be more impaired during the IRF stay based on lower motor and cognitive scores and more comorbidities that result in higher IRF payments.

This report attempts to replicate the MedPAC analysis and provide a deeper exploration into facility characteristics and patient characteristics of high and low margin IRFs. We examined 2013 Medicare hospital cost reports and identified 1,104 IRFs for which we could confidently compute Medicare inpatient margins. Similar to MedPAC, we ranked IRFs from lowest to highest Medicare margins and placed them into five equal groups (quintiles). ***Exhibit 1*** shows the distribution of IRFs across the five margin quintiles by hospital-based / freestanding and ownership type. This table shows that IRFs in the highest margin quintile are primarily freestanding IRFs (143 of 221) or for-profit (130 (23+107) of 221). IRFs in the lowest margin quintile are primarily hospital-based IRFs (207 of 221) or non- profit (147 (139+8) of 221).

Exhibit 1: Distribution of IRFs by Margin Quintile, Hospital-based/Freestanding and Ownership in 2013

	Hospital Based IRFs				Freestanding IRFs				
Margin Quintile	Gov't	Non Profit	For Profit	Total	Gov't	Non Profit	For Profit	Total	All IRFs
1 - Lowest	39	139	29	207	1	8	5	14	221
2	25	146	31	202	6	6	11	19	221
3	37	127	35	199	1	8	13	22	221
4	25	123	29	177		13	30	43	220
5 - Highest	9	46	23	78	2	34	107	143	221
Total	135	581	147	863	6	69	166	241	1,104

Source: Dobson | DaVanzo analysis of 2013 Medicare hospital cost reports.

[2] MedPAC, "Assessing Payment Adequacy and Updating Payments: Inpatient Rehabilitation Facility Services", December 11, 2015

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The following sections of our report examine cost structure differences between high and low margin IRFs, functional status coding differences between high and low margin IRFs, and whether coding differences between high and low margin IRFs explain the observed differences in costs and margins. We also provide a summary of our results.

Cost Structure Differences Between High and Low Margin IRFs

Similar to MedPAC's findings, the data in ***Exhibit 2*** shows a wide variation in Medicare margins across IRFs. We found that IRFs in the lowest margin quintile had an aggregate Medicare margin of -28.3 percent in 2013 compared with IRFs in the highest margin quintile of 33.5 percent, or a nearly a 62 percent spread. The larger margins for IRFs in the highest quintile were not the result of higher Medicare payments. In fact, Medicare payments per discharge were actually 12 percent lower for high-margin IRFs ($18,347) compared to low-margin IRFs ($20,938). However, Medicare cost per discharge was 55 percent lower for high-margin IRFs ($12,205) compared to low-margin IRFs ($26,866). Thus, differences in cost structures across the IRF margin quintiles are likely to be a primary driver of margin differences.

These data show that higher-margin IRFs tend to be larger (50 beds compared to 22 beds), treat substantially more rehabilitation patients per year, have higher occupancy rates, and lower lengths of stay. All of these indicators lead to the conclusion that higher-margin IRFs tend to be more efficient in their operations than lower-margin IRFs and economies of scale appear to play a role in lower cost of care.

Exhibit 2: Medicare Payments, Costs, Margins and Operating Characteristics of IRFs by Margin Quintile in 2013

Margin Quintile	Total Number of IRFs	Weighted Average Medicare Inpatient Margin	Average Medicare Cost Per Discharge	Average Medicare Payment Per Discharge	Annual Medicare Discharges Per IRF	Average Number of Beds	Occupancy Rate	Weighted Average Medicare CMI	Medicare ALOS
1 - Lowest	221	-28.3%	$26,866	$20,938	152	22	53.4%	1.1682	13.2
2	221	-8.0%	$20,147	$18,653	233	27	57.3%	1.1572	12.8
3	221	3.7%	$17,521	$18,186	276	28	63.3%	1.1592	12.7
4	220	16.2%	$15,228	$18,177	391	37	64.1%	1.1823	12.7
5 - Highest	221	33.5%	$12,205	$18,347	658	50	70.4%	1.2299	12.8
Total	**1,104**	**13.0%**	**$16,139**	**$18,554**	**342**	**33**	**63.3%**	**1.1922**	**12.8**
Percent Difference Quintile 1-5		**61.8%**	**-55%**	**-12%**	**334%**	**127%**	**32%**	**5%**	**-4%**

Source: Dobson | DaVanzo analysis of 2013 Medicare hospital cost reports and 2015 Medicare IRF PPS Final Rule Rate Setting File.

To help further understand the differences in costs between low and high margin IRFs, we decomposed costs into specific components of capital, allied health training, routine services and ancillary services. ***Exhibit 3*** shows significant differences in costs for each component across IRFs by margin quintile.

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Exhibit 3: Decomposition of Medicare Costs for IRFs by Margin Quintile in 2013

	IRF Margin Quintile						
Cost Components	Lowest -1	2	3	4	Highest - 5	All IRFs	Percent Difference Quintile 1-5
Number of IRFs	221	221	221	220	221	1,104	
Total Cost Per Discharge	$26,866	$20,147	$17,521	$15,228	$12,205	$16,139	-55%
Standardized Cost Per Discharge [1]	$20,504	$16,502	$14,646	$12,515	$9,925	$13,115	-52%
Detailed Standardized Cost Per Discharge							
Capital Costs	$1,944	$1,650	$1,469	$1,222	$909	$1,264	-53%
Allied Health Training	$21	$20	$26	$8	$2	$12	-90%
Operating Costs - Routine Services	$12,605	$9,443	$8,192	$6,866	$5,281	$7,331	-58%
Allocated Overhead Costs	$6,400	$4,736	$4,237	$3,567	$3,117	$3,913	-51%
Direct Costs	$6,205	$4,706	$3,954	$3,298	$2,164	$3,418	-65%
Operating Costs - Ancillary Services	$5,934	$5,389	$4,960	$4,418	$3,732	$4,509	-37%
Laboratory & Radiology	$444	$417	$405	$348	$325	$366	-27%
Therapies	$4,038	$3,727	$3,321	$2,968	$2,404	$3,007	-40%
Supplies	$295	$217	$249	$206	$218	$227	-26%
Drugs & Other Ancillary Services	$1,156	$1,028	$985	$896	$785	$909	-32%

1/ Medicare cost per discharge were standardized to remove the effects of wage index, rural location, teaching, low income patient load (LIP) and IRF case mix.
Source: Dobson | DaVanzo analysis of 2013 Medicare hospital cost reports and 2015 Medicare IRF PPS Final Rule Rate Setting File.

To account for differences in costs that are not in the IRF's control, we adjusted Medicare cost per discharge to remove the effects of wage index, rural location, teaching, low income patient load (LIP) and IRF case mix.

FUNCTIONAL STATUS CODING BETWEEN HIGH AND LOW MARGIN IRFS

The MedPAC analysis found that patients treated in higher-margin IRFs appeared to be less severely ill during the preceding acute care hospital stay than patients treated in lower-margin IRFs. The analysis found lower acute care hospital case mix, time spent in an ICU or CCU, and whether the acute care hospital discharge resulted in outlier payments for high-margin IRFs compared to low-margin IRFs. However, these patients appeared to be more impaired during the IRF stay based on lower motor and cognitive scores and more comorbidities (which typically results in higher IRF payments.)

Our analysis found similar results as we compared the characteristics of the acute care hospital stay for stroke (CMGs 101-110) and neurological (CMGs 601-604) patients in IRFs. ***Exhibit 4*** shows that after controlling for differences in IRF case mix for these patients[3], the acute care hospital average length of stay, case mix index, average number

[3] To control for differences in IRF case mix, we adjusted the rates so that both high and low margin IRFs had the same distribution of discharges across the 10 stroke CMGs. We used the same process for the 4 neurological CMGs.

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of ICU days, number of CCs and MCCs, and percent of cases that received outlier payment were lower for high-margin IRFs compared to low-margin IRFs.

Exhibit 4: Characteristics of Patient's Acute Care Hospital Stay for Stroke and Neurological Patients Treated in High-Margin and Low-Margin IRFs

	Stroke CMGs			Neurological CMGs		
Characteristics of Patient's Acute Care Hospital Stay	Low Margin IRFs	High Margin IRFs	Percent Difference	Low Margin IRFs	High Margin IRFs	Percent Difference
Average LOS	6.1	5.7	-6%	8.8	7.9	-12%
Acute CMI	1.8504	1.6649	-11%	2.6687	2.1798	-22%
Average ICU Days	3.4	3.1	-11%	4.4	4.0	-10%
Number CCs and MCCs	2.7	2.4	-15%	3.5	3.3	-5%
Percent Outlier Cases	7.9%	5.6%	-41%	17.3%	9.8%	-76%

Source: Dobson | DaVanzo analysis of 2013 and 2014 Medicare Inpatient Limited Data Set 100% Sample.

To help better understand the potential reason for these differences, we conducted a qualitative discussion with coders from a large freestanding IRF system. During this discussion we identified three potential differences between hospital units and freestanding IRFs in their FIM® scoring and coding practices: 1) organizational policies and procedures around physician documentation, FIM® scoring, diagnostic coding, and impairment group coding practice (e.g., coding policies that are explicit and in writing, formal compliance audits); 2) staff who perform the assessment/coding (acute care hospital staff versus IRF Health Information Management (HIM) coders, single individual evaluating patient, documenting and assigning score versus. team members all participating in the assessment by providing their observations, physiatrists as attending physicians versus other specialties); and 3) level and types of staff training and credentialing (formal training as well as exam-based credentialing and annual recredentialing for IRF staff).

1. Lack of Correspondence between MS-DRGs and CMGs

In the Final Report for CMS' Post-acute Care Payment Reform Demonstration, the research team stated that "The MS-DRG system uses ICD-9 codes to define the primary condition leading to admission, whether they were medical or surgical in nature, and assigns a severity of illness level based on complicating comorbidities, as all of those factors affect the relative complexity or costliness of patients at that level of illness within an acute care hospital. Although cognitive status may be impaired, it is assumed to consistently affect the costliness of nursing care in each diagnostic group and is not measured separately. If the effect of the cognitive condition varies within a case-mix group, it is directly measured as a complicating condition by including an ICD-9 code for the condition in the severity adjustment (e.g., dementia as a complicating severity factor within a DRG).

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The IRF payment policies use medical, functional, and, for some cases, cognitive factors to classify a patient's complexity. Primary reason for treatment is defined by Impairment Group (ICG) codes and ICD-9 codes that specify the etiologic or underlying medical condition. In this system, the etiologic or primary reason for treatment is used to classify the case, and the comorbidities are used to adjust payments. Functional status, cognitive status, and age are also taken into account."[4]

Thus, we would expect MS-DRGs and CMGs to produce different results. To infer IRF patients' intensity of care needs or IRF patients' functional status (based upon IRF PAI FIM® elements) from MS-DRG information is likely to be highly misleading. Additionally, comorbidities coding at acute care hospitals and IRFs are fundamentally different functions, and it is inaccurate to use coding results from the acute care hospital MS-DRG system as a comparison point for IRF PPS tier comorbidities.

2. Organizational Policies and Procedures

Our analysis is based on conversations with IRF staff within a system of freestanding IRFs, who reported that their facilities tend to have more formalized policies around the processes and validation of assessment and FIM® scoring than IRFs in hospital-based units. In freestanding IRFs, a focus of the nursing assessment is to understand the importance of the burden of care and how it relates to a patient's FIM® score.

The freestanding IRF system assessment process involves multiple steps, in that assessment data is sought on the patient from all team members (e.g., the patient may require a different level of care during the day than they do at night due to increased pain and fatigue following a busy day of therapy). Then a credentialed PPS coordinator synthesizes all of the various input and assigns a score based on CMS rules.

Respondents described their freestanding IRF system's formal FIM® Policy Coding and Compliance Plan that outlines the entire process from point of service to the billing statement or claim form. Regular coding reviews of patient's medical record are conducted according to the Coding and Compliance Plan.

3. Who Performs the Assessment in a Freestanding IRF?

The FIM® Instrument was intended to measure a patient's disability in terms of his or her need for assistance or the burden of care to healthcare providers. The FIM® instrument is an assessment tool and must be performed by trained, competent, credentialed clinical raters during the defined assessment periods on admission and discharge.

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[4] https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Reports/Downloads/PAC-PRD_FinalRpt_Vol 1of4.pdf

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It is critical that the nurses, therapists and all other clinicians develop knowledge and competency of each FIM® item and how it relates to the instrument as a whole. Discussed in the next section, all IRF credentialed FIM® raters undergo a rigorous training and take a test in order to prove competency. FIM® raters who are not educated and/or trained in the IRF-PPS system are therefore unaware of IRF-PAI coding guidelines, which are unique.[5]

4. Training and Credentialing

The IRF system respondents described the extensive training and credentialing process that their company has in place. FIM® raters require standardized training that follows the IRF-PAI manual. Newly hired FIM® scores at the IRF system do not score FIM® on their own until after they have completed training and passed the credentialing exam, all within 30 to 90 days of hire. Respondents reported that 100 percent of FIM® scoring staff at the company are credentialed, with annual review. The medical HIMs coders that assign the impairment group codes and ICD 9 (now ICD 10) follow the IRF-PAI guidelines and AHA coding guidelines and must receive training and competency prior to assigning diagnostic codes.

Respondents described their first-hand observations of the hospital-based IRFs that their system had acquired as part of prior transactions. Staff at these units had no formalized training or credentialing in FIM® scoring and medical coding. There was no one validating that FIM® scores were accurate and medical coders did not receive formal training or demonstrate competency as required in the free-standing IRF.

DO DIFFERENCES IN FIM® SCORING EXPLAIN DIFFERENCES IN COSTS AND MARGINS?

Potential differences in physician documentation as it relates diagnostic and comorbidity coding as well as competencies in FIM® scoring across IRFs could result in patients with similar impairments being categorized into different CMGs and/or different comorbidity tiers. This could result in payment differences and margin differences across IRFs. However, the above analyses (***Exhibit 2***) show dramatic differences in cost per discharge across IRFs by margin quintile which may explain differences in margins more than differences in coding practices.

Due to MedPAC's suggestion that IRFs code differently, a comparison of costs between high and low margin IRFs for patients within the same CMG could be problematic because it may not yield an "apples-to-apples" comparison. Therefore, the following analysis examines costs, payments and margins for patients in specific diagnostic categories based on the MS-DRG of the preceding acute care hospital and whether the patient's stay included an ICU/CCU stay. Using this methodology, we assume that categorizing patients based on the acuity level measured during the acute care

[5] https://www.supercoder.com/coding-newsletters/my-medicare-compliance-reimbursement-alert/rehab-rehab-facilities-make-costly-comorbidity-errors-120408-article

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hospitalization identifies diagnostically similar patients but does not account for their functional impairment. We then compare costs, payments and margins for patients in each of these categories between high and low margin IRFs. Although MedPAC also examined the portion of outlier cases as a possible indicator of acuity, we did not stratify on outlier cases because of the low volume of these cases. In addition, MedPAC examined length of stay in the ICU/CCU which we did not include in our stratification due to sample size issues.

Our hypotheses for this analysis is that if costs are similar for high and low margin IRFs for the same types of patients (as determined based on their preceding acute care hospital stay), then differences in coding practices are the key driver to differences in margins. However, if costs are different between high and low margin IRFs for the same type of patient, then differences in margins may be better explained by cost structure difference.

1. Costs, Payments and Margins for IRF Stroke Cases

Exhibit 5 shows average cost per discharge for Medicare IRF stroke patients by the preceding acute care hospital MS-DRG and whether the patient had an ICU stay in 2013. We selected the top 20 MS-DRGs for patients recorded as stroke patients in the IRF, which accounted for 80 percent of all IRF stroke cases. For MS-DRGs where we did not have a sufficient volume of cases with or without an ICU/CCU stay, we show only the total for the MS-DRG (signified as "Both"). Finally, we included only IRF discharges with an acute care hospital stay that preceded that IRF admission within 30 days.

This analysis shows that cost per discharge is substantially lower in high-margin IRFs for all MS-DRG and ICU/CCU status categories and differences ranged from 26 to 56 percent.

Exhibit 6 shows average Medicare payments (Medicare and beneficiary shares) per discharge for IRF stroke patients by the preceding acute care hospital MS-DRG and whether the patient had an ICU stay in 2013. Under the premise that high-margin IRFs code patients into higher paying CMG than do low-margin IRFs, then we would expect that Medicare payments for similar patients would be higher for high-margin IRFs. However, this analysis shows that average Medicare payments per discharge in 2013 for high-margin IRFs were actually lower than those for low-margin IRFs for 19 of the 29 categories of stroke patients that we examined. On average, Medicare paid $1,664 or 7 percent more per stroke case to low-margin IRFs than to high-margin IRFs in 2013.

Exhibit 7 shows average Medicare margins for IRF stroke patients by the preceding acute care hospital MS-DRG and whether the patient had an ICU stay in 2013. These data show that for similar patients as defined by their acuity in the acute care hospital, high-margin IRFs had substantially higher margins than did low-margin IRFs regardless of the type of patient.

The results of this analysis reject the hypothesis that costs are similar for high and low margin IRFs for the same types of stroke patients, as determined based on their preceding

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acute care hospital stay because we found that cost per discharge was substantially lower in high-margin IRFs for all MS-DRG and ICU/CCU status categories included in our analysis. Also, we would expect that Medicare payments for similar patients would be higher for high-margin IRFs if they "up code" motor scores and comorbidities. However, this analysis shows that average Medicare payments per discharge in 2013 for high-margin IRFs were actually lower than those for low-margin IRFs for the majority of categories of stroke patients. Even though low-margin IRFs typically received higher payments per discharge, as shown above, the higher cost structures for these IRFs appear to be the key driver of lower Medicare margins for stroke patients and not differences in coding practices.

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Exhibit 5: Comparison of Medicare Cost per Discharge Adjusted for Wage Index, LIP, Teaching, and Rural Location for Low and High Margin IRF Stroke Patients in 2013

	Prior Acute Care Hospital MS-DRG	ICU Stay	Lowest Margin Quintile	Highest Margin Quintile	Percent Difference
20	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W MCC	Both	$30,195	$17,584	-42%
23	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W MCC OR CHEMO IMPLANT	Both	$30,823	$18,491	-40%
24	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W/O MCC	Both	$24,234	$15,519	-36%
25	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W MCC	Both	$28,901	$16,950	-41%
37	EXTRACRANIAL PROCEDURES W MCC	Both	$25,459	$16,771	-34%
38	EXTRACRANIAL PROCEDURES W CC	Both	$20,725	$15,145	-27%
40	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W MCC	Both	$31,341	$17,534	-44%
41	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM	No	$26,097	$16,676	-36%
41	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM	Yes	$25,883	$18,540	-28%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	No	$24,898	$15,636	-37%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	Yes	$25,732	$14,183	-45%
61	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W MCC	Both	$28,802	$18,613	-35%
62	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC	No	$28,794	$12,631	-56%
62	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC	Yes	$25,297	$16,771	-34%
63	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W/O CC/MCC	Both	$19,090	$13,748	-28%
64	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC	No	$25,645	$16,457	-36%
64	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC	Yes	$28,492	$17,856	-37%
65	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC OR TPA IN 24 HRS	No	$24,747	$15,971	-35%
65	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC OR TPA IN 24 HRS	Yes	$27,326	$16,668	-39%
66	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC	No	$21,147	$13,715	-35%
66	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC	Yes	$21,463	$13,767	-36%
69	TRANSIENT ISCHEMIA	No	$19,865	$13,088	-34%
69	TRANSIENT ISCHEMIA	Yes	$23,376	$13,169	-44%
219	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W MCC	Both	$23,492	$17,304	-26%
280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC	No	$28,356	$16,134	-43%
280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC	Yes	$24,940	$16,566	-34%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	No	$29,671	$18,274	-38%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	Yes	$26,410	$19,006	-28%
981	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC	Both	$26,486	$16,464	-38%

Source: Dobson | DaVanzo analysis of 100% Medicare Inpatient LDS for 2013. Costs were computed using hospital specific routine per-diem costs and ancillary cost-to-charge ratios from the 2013 Medicare hospital cost reports applied to the number of covered days and ancillary charges recorded on the claims.

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Exhibit 6: Medicare Payment per Discharge for Low and High Margin IRF Stroke Patients in 2013

	Prior Acute Care Hospital MS-DRG	ICU Stay	Lowest Margin Quintile	Highest Margin Quintile	Percent Difference
20	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W MCC	Both	$29,981	$24,150	-19%
23	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W MCC OR CHEMO IMPLANT	Both	$28,861	$25,796	-11%
24	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W/O MCC	Both	$22,070	$22,852	4%
25	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W MCC	Both	$27,152	$24,830	-9%
37	EXTRACRANIAL PROCEDURES W MCC	Both	$24,748	$22,739	-8%
38	EXTRACRANIAL PROCEDURES W CC	Both	$19,596	$21,143	8%
40	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W MCC	Both	$25,334	$22,809	-10%
41	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM	No	$27,152	$24,476	-10%
41	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM	Yes	$23,966	$22,588	-6%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	No	$20,508	$22,770	11%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	Yes	$30,022	$21,991	-27%
61	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W MCC	Both	$26,538	$23,696	-11%
62	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC	No	$25,643	$23,069	-10%
62	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC	Yes	$23,721	$23,473	-1%
63	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W/O CC/MCC	Both	$19,354	$19,521	1%
64	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC	No	$23,532	$22,843	-3%
64	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC	Yes	$26,820	$23,678	-12%
65	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC OR TPA IN 24 HRS	No	$22,375	$22,360	0%
65	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC OR TPA IN 24 HRS	Yes	$24,731	$22,367	-10%
66	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC	No	$19,745	$19,518	-1%
66	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC	Yes	$21,065	$19,914	-5%
69	TRANSIENT ISCHEMIA	No	$18,146	$20,144	11%
69	TRANSIENT ISCHEMIA	Yes	$20,523	$21,513	5%
219	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W MCC	Both	$23,512	$23,882	2%
280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC	No	$21,661	$22,263	3%
280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC	Yes	$23,524	$21,946	-7%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	No	$31,768	$24,118	-24%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	Yes	$22,562	$23,823	6%
981	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC	Both	$23,196	$22,861	-1%

Source: Dobson | DaVanzo analysis of 100% Medicare Inpatient LDS for 2013. Payments include payments from Medicare as well as beneficiary deductible, coinsurance and blood deductible amounts.

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Exhibit 7: Medicare Margins for Low and High Margin IRF Stroke Patients in 2013

	Prior Acute Care Hospital MS-DRG	ICU Stay	Lowest Margin Quintile	Highest Margin Quintile	Percent Difference
20	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W MCC	Both	-23.8%	27.2%	51%
23	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W MCC OR CHEMO IMPLANT	Both	-24.2%	24.7%	49%
24	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W/O MCC	Both	-23.8%	29.8%	54%
25	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W MCC	Both	-24.1%	29.4%	54%
37	EXTRACRANIAL PROCEDURES W MCC	Both	-15.0%	26.5%	42%
38	EXTRACRANIAL PROCEDURES W CC	Both	-19.4%	29.1%	49%
40	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W MCC	Both	-30.8%	22.4%	53%
41	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM	No	-10.7%	29.7%	40%
41	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM	Yes	-23.4%	16.0%	39%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	No	-34.2%	30.9%	65%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	Yes	-6.4%	33.4%	40%
61	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W MCC	Both	-21.6%	19.4%	41%
62	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC	No	-39.9%	33.1%	73%
62	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC	Yes	-20.1%	26.3%	46%
63	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W/O CC/MCC	Both	-9.2%	29.1%	38%
64	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC	No	-18.5%	27.7%	46%
64	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC	Yes	-20.5%	23.3%	44%
65	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC OR TPA IN 24 HRS	No	-19.6%	28.2%	48%
65	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC OR TPA IN 24 HRS	Yes	-23.1%	24.5%	48%
66	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC	No	-15.8%	30.2%	46%
66	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC	Yes	-18.1%	30.2%	48%
69	TRANSIENT ISCHEMIA	No	-15.7%	35.4%	51%
69	TRANSIENT ISCHEMIA	Yes	-23.0%	37.3%	60%
219	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W MCC	Both	-14.0%	27.4%	41%
280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC	No	-25.3%	32.7%	58%
280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC	Yes	-17.8%	25.2%	43%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	No	-7.1%	26.0%	33%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	Yes	-26.3%	20.1%	46%
981	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC	Both	-23.3%	27.0%	50%

Source: Dobson | DaVanzo analysis of 100% Medicare Inpatient LDS for 2013. Costs were computed using hospital specific routine per-diem costs and ancillary cost-to-charge ratios from the 2013 Medicare hospital cost reports applied to the number of covered days and ancillary charges recorded on the claims. Payments include payments from Medicare as well as beneficiary deductible, coinsurance and blood deductible amounts. Margins computed as (revenues – costs) / revenues.

In order to illustrate the effect of cost structure differences between high and low margin IRFs, we simulated Medicare margins for stroke patients for high-margin IRFs assuming that they have the same cost per discharge as the low-margin IRFs for similar stroke patients within MS-DRG and ICU status. ***Exhibit 8*** shows that under these assumptions, Medicare margins for high-margin IRFs would become negative for 25 of 29 categories of stroke patients.

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Exhibit 8: Medicare Payment per Discharge for High Margin Matched with Cost per Discharge for Low Margin IRF Stroke Patients in 2013

	Prior Acute Care Hospital MS-DRG	ICU Stay	Cost Per Discharge of Low-Margin IRFs [1]	Payment Per Discharge of High-Margin IRFs [2]	Simulated Margin
20	INTRACRANIAL VASCULAR PROCEDURES W PDX HEMORRHAGE W MCC	Both	$30,185	$24,150	-25.0%
23	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W MCC OR CHEMO IMPLANT	Both	$32,366	$25,796	-25.5%
24	CRANIO W MAJOR DEV IMPL/ACUTE COMPLEX CNS PDX W/O MCC	Both	$25,066	$22,852	-9.7%
25	CRANIOTOMY & ENDOVASCULAR INTRACRANIAL PROCEDURES W MCC	Both	$29,887	$24,830	-20.4%
37	EXTRACRANIAL PROCEDURES W MCC	Both	$25,385	$22,739	-11.6%
38	EXTRACRANIAL PROCEDURES W CC	Both	$20,501	$21,143	3.0%
40	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W MCC	Both	$31,652	$22,809	-38.8%
41	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM	No	$26,936	$24,476	-10.1%
41	PERIPH/CRANIAL NERVE & OTHER NERV SYST PROC W CC OR PERIPH NEUROSTIM	Yes	$26,501	$22,588	-17.3%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	No	$25,060	$22,770	-10.1%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	Yes	$26,572	$21,991	-20.8%
61	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W MCC	Both	$29,568	$23,696	-24.8%
62	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC	No	$35,195	$23,069	-52.6%
62	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W CC	Yes	$26,094	$23,473	-11.2%
63	ACUTE ISCHEMIC STROKE W USE OF THROMBOLYTIC AGENT W/O CC/MCC	Both	$19,228	$19,521	1.5%
64	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC	No	$25,732	$22,843	-12.7%
64	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W MCC	Yes	$28,968	$23,678	-22.3%
65	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC OR TPA IN 24 HRS	No	$24,886	$22,360	-11.3%
65	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W CC OR TPA IN 24 HRS	Yes	$27,701	$22,367	-23.9%
66	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC	No	$21,005	$19,518	-7.6%
66	INTRACRANIAL HEMORRHAGE OR CEREBRAL INFARCTION W/O CC/MCC	Yes	$21,666	$19,914	-8.8%
69	TRANSIENT ISCHEMIA	No	$19,749	$20,144	2.0%
69	TRANSIENT ISCHEMIA	Yes	$23,933	$21,513	-11.2%
219	CARDIAC VALVE & OTH MAJ CARDIOTHORACIC PROC W/O CARD CATH W MCC	Both	$23,550	$23,882	1.4%
280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC	No	$26,349	$22,263	-18.3%
280	ACUTE MYOCARDIAL INFARCTION, DISCHARGED ALIVE W MCC	Yes	$24,727	$21,946	-12.7%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	No	$28,965	$24,118	-20.1%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	Yes	$26,448	$23,823	-11.0%
981	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS W MCC	Both	$26,844	$22,861	-17.4%

1/ Costs were computed using standardized costs from Exhibit 5 for low-margin IRFs and adjusted for hospital-specific adjusters of high margin IRFs (wage index, teaching, LIP and rural location).

2/ Payments for high-margin IRFs from Exhibit 6 by MS-DRG and ICU status.

Source: Dobson | DaVanzo analysis of 100% Medicare Inpatient LDS for 2013.

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2. Costs, Payments and Margins for IRF Neurological Cases

Exhibit 9 shows average cost per discharge for Medicare IRF neurological patients by the preceding acute care hospital MS-DRG and whether the patient had an ICU stay in 2013. We selected the top 25 MS-DRGs for patients recorded as neurological patients in the IRF, which accounted for 42 percent of all IRF neurological cases. For MS-DRGs where we did not have a sufficient volume of cases with or without an ICU/CCU stay, we show only the total for the MS-DRG (signified as "Both"). Similar to our results for IRF stroke patients, this analysis shows that cost per discharge is substantially lower in high-margin IRFs for all MS-DRG and ICU/CCU status categories and differences ranged from 11 to 63 percent.

Exhibit 10 shows average Medicare payments (Medicare and beneficiary shares) per discharge for IRF neurological patients by the preceding acute care hospital MS-DRG and whether the patient had an ICU stay in 2013. Under the premise that high-margin IRFs code patients into higher paying CMG than do low-margin IRFs, then we would expect that Medicare payments for similar patients would be higher for high-margin IRFs. However, this analysis shows that average Medicare payments per discharge in 2013 for high-margin IRFs were actually lower than those for low-margin IRFs for 34 of the 38 categories of neurological patients that we examined. On average, Medicare paid $2,474 or 14% more per neurological case to low-margin IRFs than to high-margin IRFs in 2013.

Exhibit 11 shows average Medicare margins for IRF neurological patients by the preceding acute care hospital MS-DRG and whether the patient had an ICU stay in 2013. These data show that for similar patients as defined by their acuity in the acute care hospital, high-margin IRFs had substantially higher margins than did low-margin IRFs regardless of the type of patient.

Similar to our findings for stroke patients, the results of this analysis reject the hypothesis that costs are similar for high and low margin IRFs for the same types of neurological patients, as determined based on their preceding acute care hospital stay because we found that cost per discharge was substantially lower in high-margin IRFs for all MS-DRG and ICU/CCU status categories included in our analysis. Also, we would expect that Medicare payments for similar patients would be higher for high-margin IRFs if they "up code" motor scores and comorbidities. However, this analysis shows that average Medicare payments per discharge in 2013 for high-margin IRFs were actually lower than those for low-margin IRFs for the majority categories for stroke patients. Even though low-margin IRFs typically received higher payments per discharge, as shown above, the higher cost structures for these IRFs appear to be the key driver of lower Medicare margins for neurological patients and not differences in coding practices.

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Exhibit 9: Comparison of Medicare Cost per Discharge Adjusted for Wage Index, LIP, Teaching, and Rural Location for Low and High Margin IRF Neurological Patients in 2013

	Prior Acute Care Hospital MS-DRG	ICU Stay	Lowest Margin Quintile	Highest Margin Quintile	Percent Difference
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	No	$18,407	$13,062	-29%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	Yes	$22,784	$12,722	-44%
59	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC	No	$26,440	$14,508	-45%
59	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC	Yes	$24,558	$13,115	-47%
60	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC	No	$21,839	$11,899	-46%
60	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC	Yes	$28,765	$10,502	-63%
74	CRANIAL & PERIPHERAL NERVE DISORDERS W/O MCC	Both	$25,824	$12,248	-53%
189	PULMONARY EDEMA & RESPIRATORY FAILURE	Both	$26,431	$13,673	-48%
190	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W MCC	Both	$23,063	$12,977	-44%
191	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W CC	Both	$18,295	$12,936	-29%
193	SIMPLE PNEUMONIA & PLEURISY W MCC	No	$21,351	$13,752	-36%
193	SIMPLE PNEUMONIA & PLEURISY W MCC	Yes	$24,408	$14,036	-42%
194	SIMPLE PNEUMONIA & PLEURISY W CC	Both	$17,775	$12,882	-28%
207	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT >96 HOURS	Both	$27,560	$15,841	-43%
208	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT <96 HOURS	Both	$28,332	$14,067	-50%
291	HEART FAILURE & SHOCK W MCC	No	$23,460	$13,962	-40%
291	HEART FAILURE & SHOCK W MCC	Yes	$24,186	$13,825	-43%
292	HEART FAILURE & SHOCK W CC	No	$18,881	$12,660	-33%
292	HEART FAILURE & SHOCK W CC	Yes	$18,033	$12,608	-30%
312	SYNCOPE & COLLAPSE	Both	$21,356	$12,254	-43%
329	MAJOR SMALL & LARGE BOWEL PROCEDURES W MCC	Both	$21,557	$13,842	-36%
460	SPINAL FUSION EXCEPT CERVICAL W/O MCC	No	$17,858	$10,607	-41%
460	SPINAL FUSION EXCEPT CERVICAL W/O MCC	Yes	$20,938	$11,181	-47%
490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM	No	$19,947	$11,480	-42%
490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM	Yes	$20,180	$12,196	-40%
552	MEDICAL BACK PROBLEMS W/O MCC	No	$18,069	$12,112	-33%
552	MEDICAL BACK PROBLEMS W/O MCC	Yes	$14,032	$12,510	-11%
641	MISC DISORDERS OF NUTRITION,METABOLISM,FLUIDS/ELECTROLYTES W/O MCC	Both	$20,714	$12,371	-40%
682	RENAL FAILURE W MCC	No	$29,435	$13,180	-55%
682	RENAL FAILURE W MCC	Yes	$20,177	$14,409	-29%
683	RENAL FAILURE W CC	No	$21,053	$13,139	-38%
683	RENAL FAILURE W CC	Yes	$21,371	$12,709	-41%
690	KIDNEY & URINARY TRACT INFECTIONS W/O MCC	Both	$22,072	$12,739	-42%
853	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W MCC	Both	$27,012	$14,968	-45%
870	SEPTICEMIA OR SEVERE SEPSIS W MV >96 HOURS	Both	$28,763	$15,195	-47%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	Both	$21,741	$14,264	-34%
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W/O MCC	No	$17,084	$13,298	-22%
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W/O MCC	Yes	$24,512	$13,244	-46%

Source: Dobson | DaVanzo analysis of 100% Medicare Inpatient LDS for 2013. Costs were computed using hospital specific routine per-diem costs and ancillary cost-to-charge ratios from the 2013 Medicare hospital cost reports applied to the number of covered days and ancillary charges recorded on the claims.

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Exhibit 10: Medicare Payment per Discharge for Low and High Margin IRF Neurological Patients in 2013

	Prior Acute Care Hospital MS-DRG	ICU Stay	Lowest Margin Quintile	Highest Margin Quintile	Percent Difference
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	No	$19,171	$19,058	-1%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	Yes	$21,658	$18,371	-15%
59	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC	No	$24,265	$20,218	-17%
59	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC	Yes	$25,287	$19,328	-24%
60	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC	No	$21,107	$18,385	-13%
60	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC	Yes	$26,022	$16,025	-38%
74	CRANIAL & PERIPHERAL NERVE DISORDERS W/O MCC	Both	$21,825	$17,650	-19%
189	PULMONARY EDEMA & RESPIRATORY FAILURE	Both	$17,668	$16,810	-5%
190	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W MCC	Both	$19,953	$16,887	-15%
191	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W CC	Both	$18,298	$16,471	-10%
193	SIMPLE PNEUMONIA & PLEURISY W MCC	No	$24,368	$18,468	-24%
193	SIMPLE PNEUMONIA & PLEURISY W MCC	Yes	$20,656	$18,271	-12%
194	SIMPLE PNEUMONIA & PLEURISY W CC	Both	$19,349	$17,946	-7%
207	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT >96 HOURS	Both	$21,220	$19,942	-6%
208	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT <96 HOURS	Both	$20,096	$18,766	-7%
291	HEART FAILURE & SHOCK W MCC	No	$22,228	$18,445	-17%
291	HEART FAILURE & SHOCK W MCC	Yes	$22,642	$19,155	-15%
292	HEART FAILURE & SHOCK W CC	No	$21,881	$17,228	-21%
292	HEART FAILURE & SHOCK W CC	Yes	$15,553	$18,324	18%
312	SYNCOPE & COLLAPSE	Both	$18,920	$17,470	-8%
329	MAJOR SMALL & LARGE BOWEL PROCEDURES W MCC	Both	$18,507	$18,493	0%
460	SPINAL FUSION EXCEPT CERVICAL W/O MCC	No	$19,448	$17,972	-8%
460	SPINAL FUSION EXCEPT CERVICAL W/O MCC	Yes	$21,024	$18,411	-12%
490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM	No	$21,802	$18,114	-17%
490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM	Yes	$23,499	$17,716	-25%
552	MEDICAL BACK PROBLEMS W/O MCC	No	$18,051	$17,925	-1%
552	MEDICAL BACK PROBLEMS W/O MCC	Yes	$18,985	$17,957	-5%
641	MISC DISORDERS OF NUTRITION,METABOLISM,FLUIDS/ELECTROLYTES W/O MCC	Both	$16,973	$17,920	6%
682	RENAL FAILURE W MCC	No	$25,073	$18,736	-25%
682	RENAL FAILURE W MCC	Yes	$19,557	$19,349	-1%
683	RENAL FAILURE W CC	No	$22,767	$18,618	-18%
683	RENAL FAILURE W CC	Yes	$22,481	$19,171	-15%
690	KIDNEY & URINARY TRACT INFECTIONS W/O MCC	Both	$22,760	$18,572	-18%
853	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W MCC	Both	$22,726	$19,393	-15%
870	SEPTICEMIA OR SEVERE SEPSIS W MV >96 HOURS	Both	$24,952	$19,798	-21%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	Both	$20,127	$19,066	-5%
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W/O MCC	No	$17,857	$18,148	2%
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W/O MCC	Yes	$24,444	$19,190	-21%

Source: Dobson | DaVanzo analysis of 100% Medicare Inpatient LDS for 2013. Payments include payments from Medicare as well as beneficiary deductible, coinsurance and blood deductible amounts.

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Exhibit 11: Medicare Margins for Low and High Margin IRF Neurological Patients in 2013

	Prior Acute Care Hospital MS-DRG	ICU Stay	Lowest Margin Quintile	Highest Margin Quintile	Percent Difference
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	No	-12.7%	29.0%	42%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	Yes	-21.2%	30.6%	52%
59	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC	No	-23.9%	24.6%	48%
59	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC	Yes	-19.3%	29.3%	49%
60	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC	No	-22.0%	32.1%	54%
60	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC	Yes	-42.7%	33.5%	76%
74	CRANIAL & PERIPHERAL NERVE DISORDERS W/O MCC	Both	-34.0%	29.6%	64%
189	PULMONARY EDEMA & RESPIRATORY FAILURE	Both	-47.8%	20.4%	68%
190	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W MCC	Both	-34.6%	24.3%	59%
191	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W CC	Both	-20.3%	23.0%	43%
193	SIMPLE PNEUMONIA & PLEURISY W MCC	No	1.2%	28.9%	28%
193	SIMPLE PNEUMONIA & PLEURISY W MCC	Yes	-14.7%	25.1%	40%
194	SIMPLE PNEUMONIA & PLEURISY W CC	Both	2.2%	30.0%	28%
207	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT >96 HOURS	Both	-31.6%	21.8%	53%
208	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT <96 HOURS	Both	-35.2%	26.5%	62%
291	HEART FAILURE & SHOCK W MCC	No	-16.0%	27.8%	44%
291	HEART FAILURE & SHOCK W MCC	Yes	-12.5%	27.9%	40%
292	HEART FAILURE & SHOCK W CC	No	-6.6%	31.2%	38%
292	HEART FAILURE & SHOCK W CC	Yes	-19.2%	32.6%	52%
312	SYNCOPE & COLLAPSE	Both	-20.9%	31.0%	52%
329	MAJOR SMALL & LARGE BOWEL PROCEDURES W MCC	Both	-25.6%	27.1%	53%
460	SPINAL FUSION EXCEPT CERVICAL W/O MCC	No	-10.1%	40.3%	50%
460	SPINAL FUSION EXCEPT CERVICAL W/O MCC	Yes	-26.8%	37.7%	65%
490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM	No	-15.9%	36.2%	52%
490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM	Yes	-12.5%	31.1%	44%
552	MEDICAL BACK PROBLEMS W/O MCC	No	-16.6%	32.0%	49%
552	MEDICAL BACK PROBLEMS W/O MCC	Yes	6.4%	29.1%	23%
641	MISC DISORDERS OF NUTRITION,METABOLISM,FLUIDS/ELECTROLYTES W/O MCC	Both	-26.7%	32.0%	59%
682	RENAL FAILURE W MCC	No	-33.0%	34.1%	67%
682	RENAL FAILURE W MCC	Yes	-8.5%	27.6%	36%
683	RENAL FAILURE W CC	No	-13.4%	31.8%	45%
683	RENAL FAILURE W CC	Yes	-4.0%	32.3%	36%
690	KIDNEY & URINARY TRACT INFECTIONS W/O MCC	Both	-12.1%	32.9%	45%
853	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W MCC	Both	-25.6%	24.5%	50%
870	SEPTICEMIA OR SEVERE SEPSIS W MV >96 HOURS	Both	-25.7%	24.8%	51%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	Both	-20.6%	27.0%	48%
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W/O MCC	No	-3.4%	30.4%	34%
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W/O MCC	Yes	-15.4%	32.0%	47%

Source: Dobson | DaVanzo analysis of 100% Medicare Inpatient LDS for 2013. Costs were computed using hospital specific routine per-diem costs and ancillary cost-to-charge ratios from the 2013 Medicare hospital cost reports applied to the number of covered days and ancillary charges recorded on the claims. Payments include payments from Medicare as well as beneficiary deductible, coinsurance and blood deductible amounts. Margins computed as (revenues – costs) / revenues.

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In order to illustrate the effect of cost structure differences between high and low margin IRFs, we simulated Medicare margins for neurological patients for high-margin IRFs assuming that they have the same cost per discharge as the low-margin IRFs for similar neurological patients within MS-DRG and ICU status. ***Exhibit 12*** shows that under these assumptions, Medicare margins for high-margin IRFs would become negative for 35 of 38 categories of neurological patients.

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Exhibit 12: Medicare Payment per Discharge for High Margin Matched with Cost per Discharge for Low Margin IRF Neurological Patients in 2013

	Prior Acute Care Hospital MS-DRG	ICU Stay	Cost Per Discharge of Low-Margin IRFs	Payment Per Discharge of High-Margin IRFs	Simulated Margin
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	No	$19,074	$19,058	-0.1%
57	DEGENERATIVE NERVOUS SYSTEM DISORDERS W/O MCC	Yes	$22,831	$18,371	-24.3%
59	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC	No	$27,782	$20,218	-37.4%
59	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W CC	Yes	$25,595	$19,328	-32.4%
60	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC	No	$22,901	$18,385	-24.6%
60	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA W/O CC/MCC	Yes	$29,196	$16,025	-82.2%
74	CRANIAL & PERIPHERAL NERVE DISORDERS W/O MCC	Both	$26,207	$17,650	-48.5%
189	PULMONARY EDEMA & RESPIRATORY FAILURE	Both	$25,854	$16,810	-53.8%
190	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W MCC	Both	$22,716	$16,887	-34.5%
191	CHRONIC OBSTRUCTIVE PULMONARY DISEASE W CC	Both	$17,926	$16,471	-8.8%
193	SIMPLE PNEUMONIA & PLEURISY W MCC	No	$20,388	$18,468	-10.4%
193	SIMPLE PNEUMONIA & PLEURISY W MCC	Yes	$23,783	$18,271	-30.2%
194	SIMPLE PNEUMONIA & PLEURISY W CC	Both	$17,326	$17,946	3.5%
207	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT >96 HOURS	Both	$27,143	$19,942	-36.1%
208	RESPIRATORY SYSTEM DIAGNOSIS W VENTILATOR SUPPORT <96 HOURS	Both	$27,794	$18,766	-48.1%
291	HEART FAILURE & SHOCK W MCC	No	$22,373	$18,445	-21.3%
291	HEART FAILURE & SHOCK W MCC	Yes	$24,174	$19,155	-26.2%
292	HEART FAILURE & SHOCK W CC	No	$17,667	$17,228	-2.5%
292	HEART FAILURE & SHOCK W CC	Yes	$17,669	$18,324	3.6%
312	SYNCOPE & COLLAPSE	Both	$20,998	$17,470	-20.2%
329	MAJOR SMALL & LARGE BOWEL PROCEDURES W MCC	Both	$20,990	$18,493	-13.5%
460	SPINAL FUSION EXCEPT CERVICAL W/O MCC	No	$18,059	$17,972	-0.5%
460	SPINAL FUSION EXCEPT CERVICAL W/O MCC	Yes	$21,463	$18,411	-16.6%
490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM	No	$20,068	$18,114	-10.8%
490	BACK & NECK PROC EXC SPINAL FUSION W CC/MCC OR DISC DEVICE/NEUROSTIM	Yes	$20,205	$17,716	-14.1%
552	MEDICAL BACK PROBLEMS W/O MCC	No	$18,173	$17,925	-1.4%
552	MEDICAL BACK PROBLEMS W/O MCC	Yes	$14,285	$17,957	20.5%
641	MISC DISORDERS OF NUTRITION,METABOLISM,FLUIDS/ELECTROLYTES W/O MCC	Both	$20,411	$17,920	-13.9%
682	RENAL FAILURE W MCC	No	$27,577	$18,736	-47.2%
682	RENAL FAILURE W MCC	Yes	$19,618	$19,349	-1.4%
683	RENAL FAILURE W CC	No	$20,356	$18,618	-9.3%
683	RENAL FAILURE W CC	Yes	$21,820	$19,171	-13.8%
690	KIDNEY & URINARY TRACT INFECTIONS W/O MCC	Both	$21,602	$18,572	-16.3%
853	INFECTIOUS & PARASITIC DISEASES W O.R. PROCEDURE W MCC	Both	$26,406	$19,393	-36.2%
870	SEPTICEMIA OR SEVERE SEPSIS W MV >96 HOURS	Both	$28,195	$19,798	-42.4%
871	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W MCC	Both	$21,202	$19,066	-11.2%
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W/O MCC	No	$16,237	$18,148	10.5%
872	SEPTICEMIA OR SEVERE SEPSIS W/O MV >96 HOURS W/O MCC	Yes	$24,141	$19,190	-25.8%

1/ Costs were computed using standardized costs from Exhibit 9 for low-margin IRFs and adjusted for hospital-specific adjusters of high margin IRFs (wage index, teaching, LIP and rural location).

2/ Payments for high-margin IRFs from Exhibit 10 by MS-DRG and ICU status.

Source: Dobson | DaVanzo analysis of 100% Medicare Inpatient LDS for 2013.

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3. Margins for All IRF Cases by Impairment Category

Using the same data described above, we examined the distribution of IRF discharges by impairment category and found that lower margin IRFs treated substantially more stroke cases as a share of their total case load than did higher-margin IRFs and higher-margin IRFs treated substantially more neurological cases as a share of their total case load than did lower-margin IRFs (***Exhibit 13***). However, we did not find stroke margins to be substantially different from margins for neurological cases in either high-margin or low-margin IRFs. Thus, the fact that high-margin IRFs treat more neurological cases should not significantly influence overall IRF margins.

Exhibit 13: Medicare Margins and Distribution of Cases for Low and High Margin IRFs by Impairment in 2013

		Estimated Medicare Margin by RIC			Distribution of Medicare Cases across RICs		
RIC	Description	Lowest Margin Quintile	Highest Margin Quintile	Difference	Lowest Margin Quintile	Highest Margin Quintile	Difference
1	Stroke	-19.9%	27.7%	47.6%	25.6%	14.7%	-11.0%
2	Traumatic brain injury	-17.6%	27.7%	45.3%	3.7%	2.6%	-1.1%
3	Non-traumatic brain injury	-19.1%	27.5%	46.6%	5.3%	4.5%	-0.7%
4	Traumatic spinal cord injury	-15.0%	26.8%	41.8%	1.1%	0.5%	-0.5%
5	Non-traumatic spinal cord injury	-17.5%	27.9%	45.4%	5.2%	2.6%	-2.6%
6	Neurological	-18.8%	30.2%	49.0%	6.6%	17.7%	11.2%
7	Fracture of lower extremity	-21.6%	25.4%	47.0%	11.9%	11.0%	-0.9%
8	Replacement of lower extremity joint	-22.8%	29.2%	52.0%	8.6%	8.6%	0.0%
9	Other orthopedic	-21.5%	29.2%	50.8%	5.0%	9.4%	4.5%
10	Amputation, lower extremity	-17.7%	26.3%	44.0%	2.8%	2.0%	-0.8%
11	Amputation, non-lower extremity	-12.8%	24.4%	37.2%	0.1%	0.1%	-0.1%
12	Osteoarthritis	-17.4%	30.5%	48.0%	0.2%	0.6%	0.4%
13	Rheumatoid, other arthritis	-21.1%	30.8%	51.9%	0.3%	0.6%	0.4%
14	Cardiac	-20.9%	25.7%	46.7%	4.6%	4.9%	0.3%
15	Pulmonary	-20.9%	24.4%	45.3%	1.5%	1.7%	0.1%
16	Pain syndrome	-20.1%	29.2%	49.3%	1.0%	0.9%	-0.1%
17	Major multiple trauma without brain or spinal cord injury	-17.6%	28.8%	46.4%	1.2%	1.8%	0.7%
18	Major multiple trauma with brain or spinal cord injury	-8.5%	29.0%	37.5%	0.4%	0.4%	0.0%
19	Guillian Barre	-16.1%	26.8%	42.9%	0.3%	0.1%	-0.1%
20	Miscellaneous	-18.5%	27.6%	46.1%	11.2%	11.1%	0.0%
21	Burns	-3.0%	40.0%	43.0%	0.1%	0.0%	-0.1%
50	Short-stay cases, length of stay is 3 days or fewer	-36.2%	15.8%	52.0%	3.4%	3.9%	0.5%
51	Expired	-32.5%	17.7%	50.2%	0.1%	0.1%	0.0%

Source: Dobson | DaVanzo analysis of 100% Medicare Inpatient LDS for 2013. Costs were computed using hospital specific routine per-diem costs and ancillary cost-to-charge ratios from the 2013 Medicare hospital cost reports applied to the number of covered days and ancillary charges recorded on the claims. Payments include payments from Medicare as well as beneficiary deductible, coinsurance and blood deductible amounts. Margins computed as (revenues – costs) / revenues.

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SUGGESTED OUTLIER POLICY INTERVENTION

MedPAC expressed interest in a potential short-term policy intervention that would expand the IRF outlier pool to redistribute payments to low-margin IRFs as a short-term solution for their observed differences and FIM® scoring and diagnostic coding. We analyzed the impact on IRFs of increasing the IRF outlier pool from 3 percent of total IRF PPS payments to 5, 8 and 10 percent while maintaining budget neutrality within the IRF PPS system. ***Exhibit 14*** shows that IRFs in the lowest margin quintile (low-margin IRFs) currently receive outlier payments that equal 12.1 percent of total payments as compared with IRFs in the highest margin quintile that receive only 0.3 percent of their total Medicare payments through outliers. Increasing the outlier pool to 5, 8 or 10 percent would increase outlier payments as a percent of total payments for low-margin IRFs to 17.8, 24.3 and 27.6 percent respectively.

Exhibit 14: Impact of Expanding the IRF PPS Outlier Pool

Margin Quintile	Total Medicare Payment Per Discharge	Medicare Outlier Payment Per Discharge	Outlier Payment as Percent of Total	Percent Change in Total Payment from 3% Outlier Pool Baseline
Baseline - 3-Percent Outlier Pool				
1 - Lowest	$24,732	$3,000	12.1%	
2	$21,391	$1,182	5.5%	
3	$20,240	$587	2.9%	
4	$20,275	$259	1.3%	
5 - Highest	$20,326	$69	0.3%	
5-Percent Outlier Pool				
1 - Lowest	$25,908	$4,624	17.8%	4.8%
2	$21,817	$2,024	9.3%	2.0%
3	$20,289	$1,041	5.1%	0.2%
4	$20,085	$483	2.4%	-0.9%
5 - Highest	$19,970	$131	0.7%	-1.8%
8-Percent Outlier Pool				
1 - Lowest	$27,220	$6,607	24.3%	10.1%
2	$22,458	$3,290	14.6%	5.0%
3	$20,440	$1,800	8.8%	1.0%
4	$19,880	$895	4.5%	-1.9%
5 - Highest	$19,463	$250	1.3%	-4.2%
10-Percent Outlier Pool				
1 - Lowest	$27,857	$7,694	27.6%	12.6%
2	$22,844	$4,094	17.9%	6.8%
3	$20,578	$2,345	11.4%	1.7%
4	$19,800	$1,230	6.2%	-2.3%
5 - Highest	$19,151	$357	1.9%	-5.8%

Source: Dobson | DaVanzo analysis using the 100% Medicare Inpatient LDS for 2014 with payments simulated using the IRF PPS payment rates, CMG relative weights, and facility level adjustments for FY 2016.

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We observed in our analyses that outlier payments appear to be driven more by higher cost structures than patient case complexity. This occurs because the outlier threshold is virtually the same for all providers and varies only by patient impairment, age, functional and cognitive status as well as facility adjustments, and providers receive outlier payments for a Medicare case if their cost exceeds the outlier threshold.[6] However, because costs vary dramatically across providers and because the outlier threshold is the same, high-cost providers will have more cases that exceed the outlier threshold due to the high cost structure and not necessarily due to the complexity of patients treated. Furthermore, outliers could be maldistributed. Providing high-cost IRFs with additional outlier payments due to their higher cost structures instead of their treating unusually high cost cases is contrary to the intent of the outlier policy and could undermine the integrity of the IRF-PPS.

MedPAC reported that "In general, hospital-based IRFs tend to have a much larger share of cases with extraordinarily high costs. In 2013, 10 percent of hospital-based IRF cases qualified for high-cost outlier payments compared with just 2 percent of freestanding IRF cases. Indeed, 86 percent of all IRF outlier payments were made to hospital-based facilities. It is not clear whether this disparity stems from differences in efficiency, unmeasured case complexity, or both.[7]" Thus, further research should be done on this issue prior to using outliers as a policy intervention.

For the 2002 IRF PPS Final Rule, CMS analyzed various outlier policies using 3, 4, and 5 percent of the total estimated payments, and concluded "that an outlier policy set at 3 percent of total estimated payments would optimize the extent to which we could reduce the financial risk to IRFs of caring for high-cost patients, while still providing for adequate payments for all other (non-high cost outlier) cases." CMS reiterated the view it expressed in 2002 a decade later as part of FY 2012 IRF PPS Final Rule, stating its belief that "the outlier policy of 3 percent of total estimated payments optimizes the extent to which we can encourage facilities to continue to take patients that are likely to have unusually high costs, while still providing adequate payment for all other cases."[8]

In fact, the IRF PPS outlier policy has faced substantial challenges in recent years to have the outlier pool maintained at 3 percent of total IRF payments, as evidenced by the multi-year trend of annual reductions in the outlier threshold amount. In FY 2012, CMS set the outlier threshold amount at $10,660 (resulting in outlier payments at 2.6% of total payments).[9] In FY 2013, CMS lowered the outlier threshold again to $10,466, then to $9,272 in FY 2014, to $8,848 in FY 2015, and finally down to $8,638 for FY 2016 – all

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[6] The outlier threshold is computed as the payment rate for the case after all payment adjustments are applied plus a fixed-loss threshold amount that is also adjusted for all of the payment variables. Medicare pays providers 80 percent of the costs that exceed the outlier threshold.
[7] MedPAC, "March 2015 Report to the Congress: Medicare Payment Policy", March 2015.
[8] Medicare Program; Prospective Payment System for Inpatient Rehabilitation Facilities, FY 2012 IRF PPS Proposed Rule, 76 Fed. Reg. 47835, 47868 (Aug. 5, 2011).
[9] *See id*. at 47868.

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while maintaining outlier payments at between 2.8 and 2.9 percent of total IRF payments. This amounts to a total 18.7 percent decrease in the outlier threshold amount in order to maintain the 3 percent outlier pool. This continued downward trend in the outlier threshold indicates that, for each of the past five years, there have not been enough cases that meet the prior year's threshold amount to maintain the 3 percent outlier pool. The inability to maintain the pool at 3 percent without reducing the threshold amount further demonstrates that the existing 3 percent pool is more than adequate to cover the existing number of extraordinarily high-cost cases in the IRF sector.

SUMMARY

Our analyses confirmed MedPAC's findings that Medicare margins varied widely across IRFs. However, this was not driven by higher Medicare payments to high margin IRFs. In fact, Medicare payments per discharge in 2013 were 12 percent lower for high-margin IRFs ($18,347) compared to low-margin IRFs ($20,938). Rather, we observed that Medicare cost per discharge was 55 percent lower for high-margin IRFs ($12,205) compared to low-margin IRFs ($26,866). Thus, differences in cost structures across the IRFs are likely to be a primary driver of margin differences. Higher-margin IRFs tend to be larger (50 beds compared to 22 beds for low-margin IRFs), treat substantially more cases per year, have higher occupancy rates, and lower lengths of stay. All these indicators shows that high-margin IRFs tend to be more efficient in their operations that low-margin IRFs, thus reducing costs on a per patient basis. Some of the differences may be due to economies of scale and the IRF PPS is designed to reward such efficiencies.

Our analyses found similar results to MedPAC's that stroke and neurological patients treated in high-margin IRFs appeared to be less severely ill based on acuity as measured in the acute care hospital stay, which included average length of stay, case mix index, average number of ICU days, number of CCs and MCCs, and percent of cases that received outlier payment. However, based on discussions with a freestanding IRF system we found that they have established standard practices used exclusively on a high volume of rehabilitation patients which produces accurate, reliable, and valid classification of patients. Such practices include:

- Providing formal standardized training across facilities in the system for FIM® scoring;
- 100 percent of therapists, nurses and anyone who will be responsible for FIM® scoring are trained and take a Uniform Data Set for Medical Rehabilitation (UDSmr) credentialing examination within 30 days of hire;
- Staff at this system receive a standardized training program and are re-credentialed every year, even though the standard re-credentialing is every 2 years;
- The system uses a team based approach to FIM® scoring. There is a dedicated person called a "PPS Coordinator" that compiles information from all clinical staff responsible for the patient to determine the most accurate FIM® score that is entered on the IRF-PAI;

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- In addition to its own data-mining on FIM® scoring, the system is a subscriber to UDSmr which provides support for benchmarking FIM® scoring across all their subscribers in order to ensure FIM® scoring accuracy and identify additional training needs; and
- The system performs monthly audits of hospitals' FIM® scoring to identify potential outliers that may be indicative of inaccurate scoring.

The unique structure of the Inpatient Rehabilitation Facility Patient Assessment Instrument ("IRF PAI") and its FIM® elements could possibly mean that the system's coders are not "over scoring FIM®" but rather the hospital-based units may be "under scoring FIM®" because they are smaller facilities, have fewer rehabilitation cases, and FIM® scoring may be performed by acute care hospital staff that may not have the same expertise as dedicated credentialed rehabilitation FIM® scorers in a freestanding IRF. Also, it goes without saying that IRFs are subject to Medicare Administrative Contractor (MAC) audits and Recovery Audit Contractor (RAC) scrutiny on their FIM® scoring and medical coding.

MedPAC staff suggested that IRFs may code conditions and score FIM® differently, so a comparison of costs between high and low margin IRFs for patients within the same case mix group (CMG) could be highly problematic because it may not yield an "apples-to-apples" comparison. Therefore to compensate for this suggestion, we examined costs, payments and margins for patients in specific diagnostic categories based on their acuity from the preceding acute care hospital, despite the limitation that MS-DRGs do not measure functional ability and coding of comorbidities in the acute care hospital and IRF setting are different. Using this methodology, we assume that categorizing patients based on their acuity level measured during the acute care hospitalization identifies diagnostically similar patients, but does not account for their functional impairment. We found the following for both stroke and neurological patients:

- Cost per discharge was substantially lower in high-margin IRFs for all MS-DRG and ICU/CCU status categories;
- Average Medicare payments per discharge for high-margin IRFs were actually lower than those for low-margin IRFs for the majority of categories of stroke and neurological patients that we examined;
- For similar patients as defined by their acuity in the acute care hospital, high-margin IRFs had substantially higher margins than did low-margin IRFs regardless of the type of patient;
- Even though low-margin IRFs typically received higher payments per discharge, the higher cost structures for these IRFs appear to be the key driver of lower Medicare margins for stroke and neurological patients and not differences in coding practices; and

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- Low-margin IRFs treated substantially more stroke cases as a share of total case load than did higher-margin IRFs and higher-margin IRFs treated substantially more neurological cases as a share of total case load than did lower-margin IRFs. However, we did not find stroke margins to be substantially different from margins for neurological cases in either high-margin or low-margin IRFs. Thus, the fact that high-margin IRFs treat more neurological cases should not significantly influence overall IRF margins.

MedPAC expressed interest in a potential short-term policy intervention that would expand the IRF outlier pool to redistribute payments to low-margin IRFs. We analyzed the impact on IRFs of increasing the IRF outlier pool from 3 percent of total IRF PPS payments to 5, 8 and 10 percent while maintaining budget neutrality within the IRF PPS system. We found that IRFs in the lowest margin quintile currently receive outlier payments that equal 12.1 percent of total payments as compared with IRFs in the highest margin quintile that receive only 0.3 percent of their total Medicare payments through outliers. Increasing the outlier pool to 5, 8 or 10 percent would increase outlier payments as a percent of total payments for low-margin IRFs to 17.8, 24.3 and 27.6 percent respectively.

We observed in our analyses that outlier payments appear to be driven more by higher cost structures than patient case complexity. This occurs because the outlier threshold is virtually the same for all providers and varies only by patient impairment, age, functional and cognitive status as well as facility adjustments, and providers receive outlier payments for a Medicare case if their cost exceeds the outlier threshold.[10] However, because costs vary dramatically across providers and because the outlier threshold is the same, high cost providers will have more cases that exceed the outlier threshold due to the high cost structure and not necessarily due to the complexity of patients treated. Furthermore, outliers could be maldistributed. Providing high-cost IRFs with additional outlier payments due to their higher cost structures instead of their treating unusually high cost cases is contrary to the intent of the outlier policy and could undermine the integrity of the IRF-PPS.

[10] The outlier threshold is computed as the payment rate for the case after all payment adjustments are applied plus a fixed-loss threshold amount that is also adjusted for all of the payment variables. Medicare pays providers 80 percent of the costs that exceed the outlier threshold.

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