

ONLINE APPENDIXES

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**Medicare's post-acute care:  
Trends and ways to  
rationalize payments**

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ONLINE APPENDIX

# 7-A

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**Site-neutral payments for select  
conditions treated in inpatient  
rehabilitation facilities and  
skilled nursing facilities**

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## Medicare’s rules regarding services furnished in IRFs and SNFs

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While there is overlap in the patients that skilled nursing facilities (SNF) and inpatient rehabilitation facilities (IRF) treat, the mix of services they provide differs. Compared with SNFs, IRFs have more extensive requirements regarding the amount of therapy and the frequency and level of medical supervision their patients receive. To qualify for a covered IRF stay, a beneficiary must be able to tolerate and benefit from intensive therapy, typically described as consisting of three hours of therapy a day at least five days a week. In addition, a beneficiary must require active and ongoing therapy in at least two modalities. IRFs must use a coordinated interdisciplinary team approach to care led by a physician, and the rehabilitation services must be supervised by a rehabilitation physician through face-to-face visits at least three days a week. IRFs must also meet all conditions of participation for acute care hospitals, including 24-hour nursing availability, and patients must meet medical necessity criteria.

In comparison, SNF patients generally receive less therapy. Days assigned to the highest rehabilitation (ultra-high) case-mix groups (54 percent of SNF rehabilitation days) receive 720 or more minutes a week of therapy (slightly less than 2.4 hours a day), use one therapy modality 5 days per week, and a second modality 3 days per week. Days assigned to the very high rehabilitation case-mix groups (25 percent of rehabilitation days) receive between 500 and 719 minutes of therapy a week in at least one therapy modality five days a week. Services in SNFs are not necessarily supervised by a rehabilitation physician, and registered nurses are not required to be onsite around the clock. SNFs are required to coordinate their care using interdisciplinary teams that include, but are not necessarily led by, physicians. For SNF stays to be covered by Medicare, physicians must certify at admission that the beneficiary requires daily skilled services. Recertifications, which can be conducted by nurse practitioners or physicians’ assistants, must also be done at day 14 and at least every 30 days thereafter.

IRFs must comply with the 60 percent rule, which requires that at least 60 percent of all cases an IRF admits have at least 1 of 13 conditions that CMS has determined typically require intensive rehabilitation therapy.<sup>1</sup> The intent of the 60 percent rule is to distinguish IRF care from acute hospital care, by identifying patients who would benefit

from this intensive rehabilitation setting. Cases can qualify based on the diagnosis codes for the primary condition or certain comorbidities. Stroke, hip fracture, and a subset of joint replacement conditions are among the 13 qualifying conditions. However, most of the clinical categories are defined broadly. Of the 13 conditions, only hip and knee replacement and arthritis are defined with specific clinical factors that limit which cases count toward the 60 percent rule (e.g., counting only joint replacements for patients who are over 85 years old, are obese, or underwent bilateral procedures).

Medicare pays for patients admitted to SNFs on a per day basis. For the vast majority of days (92 percent), payments vary in large part by the amount of rehabilitation therapy a patient receives and a patient’s ability to perform activities of daily living.<sup>2</sup> The patient classification system uses a handful of diagnoses to assign days to resource utilization groups for medically complex patients.<sup>3</sup> There are no additional payments for facilities having a teaching program or treating low-income patients or high-cost outlier cases. Base payments to rural and urban facilities differ, and payments are adjusted for differences in wages across areas.

In contrast, for patients admitted to IRFs, Medicare pays on a per discharge basis. IRF patients are classified into case-mix groups based on the patient’s relatively broad primary reason for rehabilitation care (e.g., stroke, neurological disorder, hip fracture), age, and level of functional impairment at admission.<sup>4</sup> Within case-mix groups, patients are further categorized into one of four payment tiers based on the presence of certain comorbidities that have been identified as increasing the cost of care.<sup>5</sup> Payments per discharge are adjusted for the facility’s wage index and whether the facility is located in a rural area. Unlike SNFs, IRFs may also qualify for additional payments per discharge—which we refer to as “add-on payments” here—for having a teaching program, treating low-income patients, or having high-cost outlier stays.<sup>6</sup>

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## Identifying conditions for site-neutral payments

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To identify conditions that could be appropriate for site-neutral payments, we looked at conditions frequently treated in IRFs. Consistent with prior work, we used the Medicare severity–diagnosis related group (MS–DRG) of

**TABLE  
7-A1**

**In markets with IRFs, the majority of Medicare stays for the select conditions were treated in SNFs, 2012**

MS-DRG of preceding hospital stay	Condition	Percent treated in SNFs	
		All markets	Markets with IRFs and SNFs
003	ECMO or tracheostomy with ventilator support 96+ hours	64%	53%
190	Chronic obstructive pulmonary disease with MCC	93	89
193	Pneumonia with MCC	94	90
194	Pneumonia with CC	95	92
208	Respiratory system diagnosis with ventilator support < 96 hours	87	80
219	Cardiac valve without cardiac catheterization with MCC	65	54
233	Coronary bypass with cardiac catheterization with MCC	62	51
239	Amputation for circulatory disorders with MCC	67	55
240	Amputation for circulatory disorders with CC	65	52
291	Heart failure and shock with MCC	93	90
292	Heart failure and shock with CC	94	90
467	Revision of hip or knee replacement with CC	79	70
536	Fractures of hip & pelvis without MCC	84	76
690	Kidney & urinary tract infections without MCC	96	93
853	Infectious & parasitic diseases with OR procedure with MCC	87	81
871	Septicemia or severe sepsis without ventilator support with MCC	94	91
872	Septicemia or severe sepsis without ventilator support without MCC	95	92

Note: IRF (inpatient rehabilitation facility), SNF (skilled nursing facility), MS-DRG (Medicare severity–diagnosis related group), ECMO (extracorporeal membrane oxygenation), MCC (major complication or comorbidity), CC (complication or comorbidity), OR (operating room). MS-DRG was assigned to the stay based on the MS-DRG of the preceding hospital stay. “Market” is defined as a hospital service area. Stays were assigned to SNFs or IRFs based on the first setting used, so a stay beginning in an IRF and subsequently going to a SNF would be considered an IRF stay. We excluded from our analysis SNF and IRF stays for beneficiaries who were enrolled in Medicare Advantage plans, who died during the IRF or SNF stay or within 30 days after discharge from either setting, or who stayed 3 or fewer days in the first post-acute care setting after discharge from the hospital.

Source: MedPAC analysis of 2012 Medicare SNF and IRF claims.

the preceding acute care hospital stay to identify patients treated in IRFs and SNFs for similar conditions (Medicare Payment Advisory Commission 2014). Most of these cases would be coded into similar condition categories in the IRF because the reason for rehabilitation (the case-mix group (CMG) assignment) would be tied to the principal reason for the hospitalization (the MS-DRG assignment). However, cases classified in some MS-DRGs (such as renal failure) could be assigned to a wide range of CMGs in the IRF. We excluded five MS-DRGs from further consideration because they lacked a clear mapping to an impairment group, the principal reason for rehabilitation—bowel procedures (MS-DRG 329); renal failure with and without major comorbidities or complications (MS-DRGs 682 and 683); miscellaneous disorders of nutrition, metabolism, and electrolyte imbalance (often dehydration,

MS-DRG 641); and medical back problems (MS-DRG 552).

In its June 2014 Report to the Congress, the Commission reported its analysis of three conditions (major joint replacement, hip and femur procedures, and stroke). The results of those analyses are not replicated here.

**Conditions frequently treated in SNFs**

To ensure that the conditions can be appropriately treated in SNFs, we examined the share of cases treated in SNFs nationwide and in markets (defined as hospital service areas, or HSAs) with both SNFs and IRFs.<sup>7</sup> In 2012, in markets with both types of facilities, 17 conditions had at least 50 percent of cases treated in SNFs, and 11 of those conditions had at least three-quarters of cases treated in SNFs (Table 7-A1).

**TABLE  
7-A2**

**Medicare payments to IRFs were considerably higher than those to SNFs for select high-volume conditions, 2012**

MS-DRG of preceding hospital stay	Condition	SNF payment per discharge	IRF total payment per discharge	Ratio IRF total to SNF payment	IRF base payment per discharge	Ratio IRF base payment to SNF payment
003	ECMO or tracheostomy with ventilator support 96+ hours	\$19,786	\$26,074	1.32	\$21,085	1.07
190	Chronic obstructive pulmonary disease with MCC	\$9,860	\$17,028	1.73	\$15,648	1.59
193	Pneumonia with MCC	\$10,360	\$18,584	1.79	\$17,093	1.65
194	Pneumonia with CC	\$10,678	\$17,749	1.66	\$16,489	1.54
208	Respiratory system diagnosis with ventilator support < 96 hours	\$10,748	\$18,886	1.76	\$17,179	1.60
219	Cardiac valve without cardiac catheterization with MCC	\$9,671	\$18,350	1.90	\$16,477	1.70
233	Coronary bypass with cardiac catheterization with MCC	\$9,552	\$18,285	1.91	\$16,440	1.72
239	Amputation for circulatory disorders with MCC	\$12,107	\$22,397	1.85	\$19,751	1.63
240	Amputation for circulatory disorders with CC	\$13,376	\$19,443	1.45	\$17,572	1.31
291	Heart failure and shock with MCC	\$9,964	\$18,017	1.81	\$16,592	1.67
292	Heart failure and shock with CC	\$10,038	\$16,897	1.68	\$15,628	1.56
467	Revision of hip or knee replacement with CC	\$10,834	\$14,799	1.37	\$13,513	1.25
536	Fractures of hip & pelvis without MCC	\$14,239	\$17,567	1.23	\$16,394	1.15
690	Kidney & urinary tract infections without MCC	\$12,056	\$18,227	1.51	\$17,048	1.41
853	Infectious & parasitic diseases with OR procedure with MCC	\$12,140	\$20,807	1.71	\$17,886	1.47
871	Septicemia or severe sepsis without ventilator support with MCC	\$11,181	\$19,531	1.75	\$17,697	1.58
872	Septicemia or severe sepsis without ventilator support without MCC	\$11,260	\$18,457	1.65	\$17,240	1.53
	Average of 17 conditions	\$11,052	\$18,901	1.64	\$17,076	1.49

Note: IRF (inpatient rehabilitation facility), SNF (skilled nursing facility), MS-DRG (Medicare severity–diagnosis related group), ECMO (extracorporeal membrane oxygenation), MCC (major complication or comorbidity), CC (complication or comorbidity), OR (operating room). MS-DRG was assigned to the stay based on the MS-DRG of the preceding hospital stay. Total IRF payments include the additional payments many IRFs receive for teaching programs, treating low-income patients, or having high-cost outlier cases. Base payments exclude the additional payments. Both IRF base payments and SNF payments include adjustments for the facility’s wage index and whether the facility is located in a rural area. The average is weighted by the stay counts. Stays were assigned to SNFs or IRFs based on the first setting used, so a stay beginning in an IRF and subsequently going to a SNF would be considered an IRF stay. We excluded from our analysis SNF and IRF stays for beneficiaries who were enrolled in Medicare Advantage plans, who died during the IRF or SNF stay or within 30 days after discharge from either setting, or who stayed 3 or fewer days in the first post-acute care setting after discharge from the hospital.

Source: MedPAC analysis of 2012 Medicare SNF and IRF claims.

**Differences in Medicare payments to IRFs and SNFs for select conditions**

We compared Medicare spending for SNF and IRF stays for the 17 conditions. To convert the SNF day-based payments to stay-based payments, we summed the program’s payments across the SNF stay. In 2012, total Medicare payments per discharge (including the add-on

payments made to many IRFs for teaching programs, share of low-income patients, and high-cost outlier cases) for 17 conditions commonly treated in IRFs and SNFs averaged 1.64 times the payments made for patients treated in SNFs (64 percent higher) (Table 7-A2). On average, IRF base rates per discharge (exclusive of add-on payments) were 1.49 times the SNF payments per discharge (49 percent higher).

**TABLE  
7-A3****Comparison of demographics of beneficiaries discharged to IRFs and SNFs for patients with 1 of 17 conditions, 2012**

Demographic	IRF users	SNF users
Average age (in years)	76	79
Share of patients who were:		
Under 65 years old	15%	10%
85 years or older	20	36
Minority	16	17
Female	52	61
Dually eligible for Medicare and Medicaid	22	34

Note: IRF (inpatient rehabilitation facility), SNF (skilled nursing facility). The 17 conditions are listed in Table 7-A1 (p. 4). Data shown are for SNFs and IRFs located in markets (defined as a hospital service area) with both types of facilities. Stays were assigned to SNFs or IRFs based on the first setting used, so a stay beginning in an IRF and subsequently going to a SNF would be considered an IRF stay. We excluded from our analysis SNF and IRF stays for beneficiaries who were enrolled in Medicare Advantage plans, who died during the IRF or SNF stay or within 30 days after discharge from either setting, or who stayed 3 or fewer days in the first post-acute care setting.

Source: MedPAC analysis of Medicare IRF and SNF claims and Medicare enrollment files, 2012.

### Similarity of patients treated in IRFs and SNFs

To assess the similarity of risk profiles of patients treated in IRFs and SNFs, we compared their demographics and comorbidities. In markets with both IRFs and SNFs, patients treated in SNFs were older and more likely to be female or dually eligible compared with patients treated in IRFs (Table 7-A3).

With regard to Medicare risk scores (the hierarchical condition categories, or HCCs) in 2012, patients treated in IRFs and SNFs had either similar risk scores or the patients treated in SNFs had higher scores (Table 7-A4). For beneficiaries with 1 of the 17 conditions, SNFs had higher or similar shares of patients with 8 of the 10 comorbidities (Table 7-A5, p. 8).

Among beneficiaries with 1 of the 17 conditions, those with the highest severity at discharge from the hospital were more likely to go to SNFs compared with IRFs (Table 7-A6, p. 9). Across the 17 conditions, the percentage of the most severely ill (as measured by the all-patient refined–severity of illness (APR–SOI) level 4) going to SNFs averaged 84 percent, ranging from 49 percent to 93 percent.

### Spending during the 30 days after discharge from an IRF or SNF

For the 17 conditions, we examined total Medicare spending per episode during the 30 days after discharge from the IRF or SNF and found that patients who had been treated in IRFs had episode spending that was 1.07 times the spending (7 percent higher) for patients treated in SNFs (Table 7-A7, p. 9). The episode spending in the 30-day period included total program payments for hospital readmissions, additional PAC (such as home health care or IRF or SNF care after a hospital readmission), physician services, outpatient therapy, hospice, and other Part B services (such as lab tests). The spending associated with the use of a second (or more) PAC service averaged 1.39 times (39 percent higher) for patients treated in IRFs compared with SNF patients, while IRF spending on readmissions was considerably lower.

### Estimating the impact of site-neutral payments for IRFs on Medicare spending

To estimate the difference in payment at the case level, we compared base payments to IRFs in 2012 with SNF

**TABLE  
7-A4**

**For beneficiaries with 1 of the 17 conditions, the average risk score for beneficiaries treated in SNFs was comparable or higher than the average score for patients treated in IRFs, 2012**

MS-DRG of preceding hospital stay	Condition	Average HCC score for patients treated in:	
		IRFs	SNFs
003	ECMO or tracheostomy with ventilator support 96+ hours	1.9%	2.4%
190	Chronic obstructive pulmonary disease with MCC	2.9	3.0
193	Pneumonia with MCC	2.9	2.9
194	Pneumonia with CC	2.5	2.5
208	Respiratory system diagnosis with ventilator support < 96 hours	2.6	3.0
219	Cardiac valve without cardiac catheterization with MCC	2.0	2.0
233	Coronary bypass with cardiac catheterization with MCC	1.8	1.8
239	Amputation for circulatory disorders with MCC	3.8	4.0
240	Amputation for circulatory disorders with CC	2.9	3.0
291	Heart failure and shock with MCC	3.1	3.2
292	Heart failure and shock with CC	2.9	2.9
467	Revision of hip or knee replacement with CC	2.0	1.9
536	Fractures of hip & pelvis without MCC	2.0	2.0
690	Kidney & urinary tract infections without MCC	2.5	2.3
853	Infectious & parasitic diseases with OR procedure with MCC	2.6	2.8
871	Septicemia or severe sepsis without ventilator support with MCC	2.7	2.8
872	Septicemia or severe sepsis without ventilator support without MCC	2.3	2.4
	Average risk score (HCC)	2.6	2.7

Note: SNF (skilled nursing facility), IRF (inpatient rehabilitation facility), MS-DRG (Medicare severity–diagnosis related group), HCC (hierarchical condition category), ECMO (extracorporeal membrane oxygenation), MCC (major complication or comorbidity), CC (complication or comorbidity), OR (operating room). Risk score was measured by the beneficiary hierarchical condition category. MS-DRG was assigned to the stay based on the MS-DRG of the preceding hospital stay. Data shown are for SNFs and IRFs located in markets (defined as a hospital service area) with both types of facilities. Stays were assigned to SNFs or IRFs based on the first setting used, so a stay beginning in an IRF and subsequently going to a SNF would be considered an IRF stay. We excluded from our analysis SNF and IRF stays for beneficiaries who were enrolled in Medicare Advantage plans, who died during the IRF or SNF stay or within 30 days after discharge from either setting, or who stayed 3 or fewer days in the first post-acute care setting after discharge from the hospital.

Source: MedPAC analysis of the 2012 Medicare risk score file.

payment rates. To calculate SNF payments on a discharge basis, we summed the daily payments for the stay. This approach bases the IRF payment on the average SNF length of stay and assumes the 2012 distributions of resource utilization groups for SNF payments and CMGs and tiers for IRF payments. We assumed that a site-neutral policy would not affect the add-on payments many IRFs receive for their teaching programs, their treatment of low-income patients, or their high-cost outliers.

To estimate the total financial effects of site-neutral payments on IRFs in 2012, we estimated base payments under the IRF PPS for all IRF cases and netted out the impact of paying IRFs the SNF rates for the select

conditions. Payments for the teaching programs, treating low-income patients, and having high-cost outliers were accounted for by adding 9 percent to the aggregate base payments (the average difference between base and total payments). To estimate an IRF’s number of select-condition cases, we used 2012 hospital claims with the relevant MS-DRGs and with IRFs as the discharge destination. We did not factor in any changes to IRFs’ patient admission practices in response to the proposed policy or changes in the 30-day spending in the 30 days after discharge from the IRF.

Although we estimate the impact using the current SNF PPS, we note that the Commission has long recommended

**TABLE  
7-A5****For beneficiaries with 1 of the 17 conditions, SNF users are more likely to have common comorbidities compared with IRF users, 2012**

Share of patients with common comorbidities	IRF users	SNF users
Share of patients with:		
Chronic obstructive pulmonary disease	28%	36%
Congestive heart failure	33	37
Diabetes without complications	19	20
Heart failure and shock	18	20
Major depressive, bipolar, paranoid disorders	6	12
Polyneuropathy	20	17
Renal failure	29	34
Rheumatoid arthritis	9	8
Specific heart arrhythmias	32	37
Vascular disease	28	36

Note: SNF (skilled nursing facility), IRF (inpatient rehabilitation facility), HCC (hierarchical condition category). The 17 conditions are listed in Table 7-A1. Polyneuropathy is nerve damage to peripheral nerves (beyond the brain and spinal cord) and can result from uncontrolled diabetes. Data shown are for SNFs and IRFs located in markets (defined as a hospital service area) with both types of facilities. Stays were assigned to SNFs or IRFs based on the first setting used, so a stay beginning in an IRF and subsequently going to a SNF would be considered an IRF stay. We excluded from our analysis SNF and IRF stays for beneficiaries who were enrolled in Medicare Advantage plans, who died during the IRF or SNF stay or within 30 days after discharge from either setting, or who stayed 3 or fewer days in the first post-acute care setting after discharge from the hospital.

Source: MedPAC analysis of the 2012 Medicare risk score file.

that the SNF PPS be redesigned to base payments on patient characteristics and not the amount of therapy furnished to patients (Medicare Payment Advisory Commission 2008). The alternative design is more sensitive to differences in patient comorbidities and care needs compared with the current SNF PPS, offering better risk adjustment for payments. Prior Commission analysis estimated that payments under the recommended alternative PPS design for SNFs would be comparable to current payments (it is intended to be budget neutral overall), so we did not estimate these (Medicare Payment Advisory Commission 2014).

### Including stroke in a site-neutral policy

The Commission examined stroke for inclusion in a site-neutral policy. In June 2014, we reported that the majority of stroke cases were treated in IRFs, not the lower payment SNF setting. In addition, there were differences between the patients treated in the two settings. IRFs treated younger and less sick stroke patients, perhaps because older, sicker patients cannot always tolerate the intensive therapy required in IRFs. Our analysis of

outcomes showed mixed results. To better understand the referral of stroke patients to IRFs and SNFs, the Commission undertook additional analyses. These analyses underscored the wide variation in stroke cases and practice patterns across markets. Given the lack of a clear explanation of when SNFs or IRFs are used for stroke cases, the Commission decided not to include the condition in a site-neutral policy at this time.

### Interviews with practitioners revealed widely varying referral patterns

We interviewed 12 practitioners who treat or refer stroke patients. They included a director of a unit at a major teaching hospital dedicated to the treatment of stroke patients, an internist at the Department of Veterans Affairs who conducts research on stroke outcomes, geriatricians who direct units for elderly patients at hospitals, medical directors at nursing homes, and hospital managers who guide placement decisions. All practice in markets with IRFs. The themes we heard prompted additional data analysis on three topics: the patient's health status (as measured by the severity of illness using the APR-SOI), the severity of the stroke, and whether IRF use was related to their occupancy rates.

**TABLE  
7-A6****For beneficiaries with 1 of the 17 conditions, the most severely ill are more likely to go to SNFs compared with IRFs, 2012**

MS-DRG of preceding hospital stay	Condition	APR-SOI 4 (the most severely ill)	
		Percent treated in IRF	Percent treated in SNF
003	ECMO or tracheostomy with ventilator support 96+ hours	47%	53%
190	Chronic obstructive pulmonary disease with MCC	12	88
193	Pneumonia with MCC	11	89
194	Pneumonia with CC	9	91
208	Respiratory system diagnosis with ventilator support < 96 hours	20	80
219	Cardiac valve without cardiac catheterization with MCC	47	53
233	Coronary bypass with cardiac catheterization with MCC	51	49
239	Amputation for circulatory disorders with MCC	42	58
240	Amputation for circulatory disorders with CC	46	54
291	Heart failure and shock with MCC	12	88
292	Heart failure and shock with CC	9	91
467	Revision of hip or knee replacement with CC	21	79
536	Fractures of hip & pelvis without MCC	19	81
690	Kidney & urinary tract infections without MCC	7	93
853	Infectious & parasitic diseases with OR procedure with MCC	20	80
871	Septicemia or severe sepsis without ventilator support with MCC	10	90
872	Septicemia or severe sepsis without ventilator support without MCC	7	93
	Weighted average of 17 conditions	16	87

Note: IRF (inpatient rehabilitation facility), SNF (skilled nursing facility), MS-DRG (Medicare severity–diagnosis related group), APR-SOI (all-patient refined–severity of illness), ECMO (extracorporeal membrane oxygenation), MCC (major complication or comorbidity), CC (complication or comorbidity), OR (operating room). Data shown are for SNFs and IRFs located in markets (defined as a hospital service area) with both types of facilities. Stays were assigned to SNFs or IRFs based on the first setting used, so a stay beginning in an IRF and subsequently going to a SNF would be considered an IRF stay. We excluded from our analysis SNF and IRF stays for beneficiaries who were enrolled in Medicare Advantage plans, who died during the IRF or SNF stay or within 30 days after discharge from either setting, or who stayed 3 or fewer days in the first post-acute care setting after discharge from the hospital.

Source: MedPAC analysis of the 2012 Medicare inpatient hospital claims.

**TABLE  
7-A7****Medicare spending per episode in 30 days after discharge from IRFs is higher than stays that began in SNFs for 17 conditions examined, 2012****Spending during 30 days after discharge from initial PAC setting**

Initial stay setting	Subtotal	Subsequent PAC	Hospital readmission	Other services
IRF	\$12,053	\$6,761	\$3,532	\$1,760
SNF	\$11,240	\$4,852	\$4,696	\$1,692
Ratio IRF to SNF	1.07	1.39	0.75	1.04

Note: IRF (inpatient rehabilitation facility), SNF (skilled nursing facility), PAC (post-acute care). The 17 conditions are listed in Table 7-A1. "Other services" includes physician, outpatient therapy, and other Part B services. Stays were assigned to SNFs or IRFs based on the first setting used, so a stay beginning in an IRF and subsequently going to a SNF would be considered an IRF stay. We excluded from our analysis SNF and IRF stays for beneficiaries who were enrolled in Medicare Advantage plans, who died during the IRF or SNF stay or within 30 days after discharge from either setting, or who stayed 3 or fewer days in the first post-acute care setting after hospital discharge. Data shown are for SNFs and IRFs located in markets (defined as a hospital service area) with both types of facilities.

Source: MedPAC analysis of Medicare IRF and SNF claims, 2012.

**TABLE  
7-A8**

**Share of cases treated in SNFs and IRFs by severity level, in markets with both types of facilities, 2011**

MS-DRG of preceding hospital stay	Condition	APR-SOI 1		APR-SOI 2		APR-SOI 3		APR-SOI 4	
		Percent treated in IRF	Percent treated in SNF	Percent treated in IRF	Percent treated in SNF	Percent treated in IRF	Percent treated in SNF	Percent treated in IRF	Percent treated in SNF
64	Stroke with MCC	56%	44%	58%	42%	48%	52%	40%	60%
65	Stroke with CC	56	44	67	33	54	46	44	56
66	Stroke, no CC/MCC	68	32	63	37	52	48	0	0
	Total	56	44	67	33	54	46	44	56

Note: SNF (skilled nursing facility), IRF (inpatient rehabilitation facility), APR-SOI (all-patient refined-severity of illness), CC (complication or comorbidity), MCC (major complication or comorbidity). APR-SOI is a measure of patient severity of illness. Patients in APR-SOI 1 are the least severely ill; patients in APR-SOI 4 are the most severely ill. "Market" is defined as a hospital service area.

Source: MedPAC analysis of 2011 hospital claims.

Each interviewee reported having “clear” decision-making rules about how IRFs were used; however, there was little agreement about those rules except that IRF patients needed to be able to tolerate and benefit from intensive therapy and have the potential to go home in the time frame of a typical IRF stay (two weeks). Some told us the sickest patients go to SNFs because the patients cannot tolerate intensive therapy; others told us they go to IRFs because the nursing and physician coverage was higher in that setting. Neither comorbidities nor the need for special services dictated the choice of setting. We heard that patients recovering from mild strokes could be discharged home, not needing the services of either setting (and should not count toward IRF compliance). Given the wide range in what we heard, we concluded that placement was likely to vary by the capabilities of the SNFs in the market.

**Use of SNFs and IRFs for severely ill stroke patients**

We examined the severity of illness of patients during the hospital stay because this variation can influence placement decisions. We found that while 57 percent of stroke patients were treated in IRFs, the use of IRFs and SNFs differed by severity of illness, as measured by the APR-SOI (Table 7-A8). Across the three MS-DRGs, SNFs treated the majority (56 percent) of the most severely ill beneficiaries (APR-SOI 4), while IRFs treated the majority (56 percent) of the least severely ill (APR-SOI 1). The most severely ill patients are less likely

to tolerate the intensive therapy required in IRFs and therefore are more likely than less severely ill beneficiaries to be treated in SNFs. This pattern of the more severely ill patients being treated in SNFs was persistent across most of the 16 comorbidities we examined.

A medical society for physical medicine and rehabilitation gave us a list of comorbidities and complexities more appropriate for placement in an IRF compared with a SNF. We found that several of these conditions (such as insulin-dependent diabetes or tracheostomy care) were infrequently treated in either setting. More common comorbidities were more likely to be treated in SNFs, though some of the differences in the shares of patients treated in SNFs and IRFs were small.

**Use of IRFs and SNFs for patients recovering from severe strokes**

A second theme was that selection of the setting was based on the severity of the stroke. We did not have data on the severity of the stroke but examined three proxies. First, we looked at the share of patients recovering from dominant side paralysis, who are expected to have a more difficult rehabilitation (Grider 2007). Among all stroke patients, those with paralysis were more likely to be referred to IRFs (64 percent compared with 57 percent) (Table 7-A9, p. 11). However, those with dominant-side paralysis were slightly less likely to be treated in IRFs (66 percent) compared with cases with nondominant side paralysis (69 percent).

**TABLE  
7-A9**

**Analysis of paralysis indicated in hospital diagnoses for stroke cases, 2011**

Stroke group	Number of cases	Percent treated in:	
		IRFs	SNFs
Paralysis indicated	30,446	64%	36%
Unspecified side	26,416	63	37
Dominant side	2,118	66	34
Nondominant side	1,941	69	31
All strokes	78,158	57	43

Note: IRF (inpatient rehabilitation facility), SNF (skilled nursing facility). Data are for stays treated in IRFs and SNFs located in markets (defined as hospital service areas) with both types of facilities. "All strokes" includes patients with and without paralysis indicated.

Source: MedPAC analysis of 2011 Medicare inpatient hospital claims.

Another indicator of stroke severity is whether the stroke is ischemic or hemorrhagic (more severe). Patients recovering from hemorrhagic stroke were less likely to be treated in IRFs compared with all stroke patients. While 57 percent of strokes were treated in IRFs, a smaller share (53 percent) of hemorrhagic stroke patients was discharged to IRFs.

A third proxy of stroke severity is the level of beneficiaries' function at admission to SNFs in markets with and without IRFs. If IRFs systematically admit patients with lower (or higher) levels of function, we would expect to see corresponding differences in the patients admitted to SNFs in markets with IRFs compared with SNFs in markets without IRFs. We looked at 15 measures of function (measuring mobility, self-care, bladder and bowel incontinence, and cognition) using the initial patient assessment (the day-5 assessment) conducted in SNFs.<sup>8</sup> We found that SNF patients in markets with IRFs have lower or similar levels of

functioning compared with SNF patients in markets without IRFs.<sup>9</sup> We infer from this distinction that IRFs generally admit patients with higher functioning compared with SNFs.

**Use of SNFs and IRFs based on IRF bed availability**

Some interviewees told us that SNFs are used more frequently when IRF occupancy rates are high, while others told us that in markets where IRF beds were "tight," beds could be reserved for brain injury or orthopedic cases. We examined the share of stroke cases going to SNFs in HSA markets with low and high average IRF occupancy rates.<sup>10</sup> We found no consistent pattern in the relationship between IRF occupancy and the share of stroke patients referred to SNFs, reinforcing the conclusion that there are not strong patterns of IRF and SNF use for stroke patients. IRF use is likely to differ by prevailing practice patterns and the dynamics of individual markets. ■

## Endnotes

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- 1 The 13 qualifying conditions are stroke; spinal cord injury; congenital deformity; amputation; major multiple trauma; hip fracture; brain injury; neurological disorders; burns; three arthritis conditions for which appropriate, aggressive, and sustained outpatient therapy has failed; and hip or knee replacement when bilateral, when body mass index is 50 or more, or when the patient is age 85 or older.
- 2 For more information, see the Commission's *SNF Payment Basics* document at <http://medpac.gov/documents/payment-basics/skilled-nursing-facility-services-payment-system-14.pdf?sfvrsn=0>.
- 3 Days assigned to a case-mix group that considers diagnoses or special service use (such as ventilator or tracheostomy care) account for less than 10 percent of SNF days.
- 4 There are five special case-mix groups for patients discharged before the fourth day (short-stay outliers) and for those few who die during their stay.
- 5 The first and highest paid tier includes codes for comorbidities associated with renal dialysis, tracheostomy, and paralysis of vocal cords. The codes in the second tier are related to difficulty swallowing and certain infections. The third tier includes a variety of comorbidities associated with more than 900 ICD-9-CM codes, including paralysis, pneumonia, morbid obesity, and a range of infections. The fourth tier is for patients with no comorbidities associated with higher costs of care.
- 6 For more information, see the Commission's *IRF Payment Basics* document at <http://medpac.gov/documents/payment-basics/inpatient-rehabilitation-facilities-payment-system-14.pdf?sfvrsn=0>.
- 7 Nationwide, the number of SNFs far outnumbers the IRF count. Three-quarters of markets (defined as hospital service areas, or HSAs) do not have IRFs, but the majority of beneficiaries (69 percent) live in markets with at least one IRF. Almost all HSAs with IRFs also have at least one SNF. To assess whether the majority of cases are treated in SNFs, we examined shares of cases treated in each setting in markets with both types of facilities. Our reasoning is that if the majority of cases elect to go to SNFs, even in markets with an IRF, then the condition can generally be considered safe in the SNF.
- 8 The measures include the Barthel score, bowel incontinence, bladder incontinence, locomotion, bed mobility, transfer support, walking, hygiene, toileting, bathing, dressing, eating, short-term memory, making self understood, and cognitive skills for decision making.
- 9 Patients treated in SNFs in markets with IRFs had lower functioning for the measures of incontinence, instruments of activities of daily living, and cognition, while the measures of mobility were comparable.
- 10 To calculate the average IRF occupancy rate in the HSA, we weighted each IRF's occupancy rate by its bed count.

## References

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