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# Analysis of the Classification Criteria for Inpatient Rehabilitation Facilities (IRFs)

## Report to Congress

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ANALYSIS OF THE CLASSIFICATION CRITERIA FOR  
INPATIENT REHABILITATION FACILITIES (IRFS)

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Draft Report to Congress

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## EXECUTIVE SUMMARY

This report, prepared by the Research Triangle Institute International (RTI) under contract with the Centers for Medicare & Medicaid Services (CMS), responds to the requirements of section 115(c) of the Medicare, Medicaid and SCHIP Extension Act (MMSEA) of 2007, which are the following:

(A) An analysis of Medicare beneficiaries' access to medically necessary rehabilitation services, including the potential effect of the 75 percent rule (now known as the "60 percent rule") on access to care.

RTI's analysis of Inpatient Rehabilitation Facility-Patient Assessment Instrument (IRF-PAI) data, presented in section 2 of this report, summarizes the types of Medicare beneficiaries admitted to IRFs in CY 2008. It shows that the lower extremity joint replacements and the cardiac conditions, two conditions that are generally not included in the 60 percent rule criteria, still represent a large share of those using inpatient rehabilitation facilities (IRFs). The most common type of admission was the stroke patient (20.9 percent) and the second most common type of admission was patients with a lower extremity fracture or orthopedic disorder (15.6 percent). These were followed by the post-surgical Replacement of Lower Extremity conditions (13.1 percent), neurological conditions (7.8 percent) and other orthopedic (5.99 percent) and cardiac populations (4.5 percent).

Table 2 shows trends over time in these impairment categories since the establishment of the inpatient rehabilitation facility prospective payment system (IRF PPS) in 2002, and suggests that there has been a shift in the types of patients admitted to IRFs. While lower extremity joint replacements still remain important, they account for a smaller percent of IRF admissions. Declines also occurred in the relative admissions of arthritis patients, major multiple trauma patients, and cardiac, pulmonary, and pain syndrome patients (Centers for Medicare and Medicaid Services, 2007). These were offset by increases in the percent of admissions with stroke, brain injury and nervous system disorders.

One of the key factors identified by clinical panels that were convened by the Government Accountability Office (GAO) and the Institute of Medicine (IOM) for assessing appropriate rehabilitation services is the functional status and the patients' potential for improvement. While the potential for improvement is difficult to assess from secondary data, this report includes two tables that provide information on beneficiaries' functional status at IRF admission and discharge in 2008, as well as the level of functional change overall. The IRF-PAI data are useful for understanding the functional impairments of the populations admitted to IRFs but they are limited in their ability to answer whether the IRF admissions are appropriate. Analysis of the change scores illustrates the *potential* for improvement by documenting the extent to which IRF services are associated with functional improvement. However, they do not address whether similar patients treated in other settings could have just as much or more potential for improvement.

This report presents empirical evidence from the peer-reviewed literature regarding the appropriateness of one rehabilitation setting versus another. While there is extensive literature on the importance of acute rehabilitation services for different populations, very little peer-reviewed research has been published comparing the relative effectiveness of inpatient rehabilitation facility services to those provided by other post-acute (PAC) care settings, such as long term care hospitals (LTCHs), skilled nursing facilities (SNFs), and home health agencies.(HHAs). Many of the existing studies on the comparative effectiveness of IRFs have been sponsored by the rehabilitation industry, with the bulk of this research comparing the outcomes of patients treated in IRFs to those treated for similar conditions in SNFs. However, the usefulness of this research for assessing the relative effectiveness of IRFs and SNFs tends to be limited by the fact that it does not adequately control for selection bias. Even less research exists comparing IRFs to other PAC settings, such as home health. Much of this is due to the lack of comparable information across settings, as would be provided by a uniform assessment tool (Walsh & Herbold, 2006). As a result, most literature measures the impact of rehabilitation services within a setting rather than across settings, and much of that literature is based on services provided in IRFs. Much of the comparative research that does exist focuses primarily on two conditions – hip fracture and stroke – both of which are included in the 13 qualifying conditions and account for a substantial share of Medicare skilled rehabilitation cases. This report outlines the literature by condition-specific effectiveness, costs, and staffing models.

(B) An analysis of alternatives or refinements to the 75 percent rule (now known as the “60 percent rule”) policy for determining criteria for inpatient rehabilitation hospital and unit designation under the Medicare program, including alternative criteria which would consider a patient’s functional status, diagnosis, co-morbidities, and other relevant factors.

RTI’s analysis, presented in section 3 of this report, is based on the information obtained from several public hearings and a Technical Expert Panel that RTI held in February 2009 to collect input on alternative approaches for classifying IRFs. Further, the analysis builds on the results of earlier studies by the GAO and the IOM, which found that for some conditions, such as stroke, diagnosis alone was not sufficient for determining appropriateness of IRF services. Many participants in the GAO and IOM studies argued for considering patients’ functional status and their potential for improvement. This issue was also one of the prime foci of the Technical Expert Panel convened by RTI in preparation for this report. Technical Expert Panel members represented clinicians providing rehabilitation services in a variety of settings, including IRFs, SNFs, LTCHs, HHAs as well as representatives of the various provider associations and the Medicare Payment Advisory Commission (MedPAC).

The panel members raised several different issues in the discussion of the MMSEA directives. First, they suggested that separate approaches are needed to identify appropriate IRF admissions and to certify IRFs. They expressed concerns that reviews conducted by the Recovery Audit Contractors (RACs) have inappropriately used the 60 percent rule criteria to determine the appropriateness of IRF admissions, rather than the medical necessity criteria. Panel members suggested that updates to the medical necessity criteria were needed to better identify medically necessary IRF services<sup>1</sup>, and that these criteria needed to be separate from the criteria

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<sup>1</sup> Since the TEP, CMS has updated the medical necessity criteria for IRFs.

for classifying IRFs. Additionally, panel members pointed out that staffing is an important factor in distinguishing intensity of rehabilitation services available in different settings, and for determining patient outcomes. Both SNF and IRF have therapy staff, but there are no current regulations in place to ensure minimum staffing levels in either setting. It was suggested that establishing conditions of participation for IRFs would be one vehicle to put thresholds into place. We note that CMS is currently considering establishing conditions of participation for IRFs through notice and comment rulemaking. Current inpatient standards established by the Commission on Accreditation of Rehabilitation Facilities (CARF) do not distinguish between the IRF and SNF settings for rehabilitation, and do not specify staffing characteristics. This section of the report outlines other factors to consider in focusing on patient characteristics, such as clinical complexity, facility and service characteristics to classify IRFs, and patient characteristics.

(C) An analysis of the conditions for which individuals are commonly admitted to inpatient rehabilitation hospitals that are not included as a condition formerly described in section 412, 23(b)(2)(iii) (redesignated as 412.23(b)(2)(ii) in the FY 2009 IRF PPS final rule (73 FR 46370 at 46391 through 46392)) of title 42, Code of Federal Regulations, to determine the appropriate setting of care, and any variation in patient outcomes and costs, across settings of care, for treatment of such conditions.

RTI's analysis, presented in section 4 of this report, indicates that one of the outstanding issues is the inability to compare across settings that use different data standards or measures of functional impairment. RTI summarizes how they will address these issues by examining data from the Post-Acute Care Payment Reform Demonstration (PAC PRD) mandated by the Deficit Reduction Act of 2005. These data are not yet available for inclusion in the analysis in this report.

Experts from across the country have suggested that many types of patients' functional status can be improved from intensive rehabilitation services provided by hospitals such as IRFs. However, little empirical evidence exists to examine whether IRF services are necessary to achieve these outcomes or whether less intensive rehabilitation settings may be as appropriate or more appropriate for certain patient populations. Section 4 of this report identifies some of the outstanding issues needing research over the coming year to answer these questions about appropriate IRF admissions.

The Technical Expert Panel and participants in the public forums had a variety of research recommendations to help modify the IRF classification criteria. They also noted that the research should investigate patient outcomes across settings and noted the importance of having a standard way of measuring patients, as with the CARE tool. They recommended several comparative analyses, including examining the outcomes of similar patients who were refused IRF admission with those who were admitted to IRFs to measure whether access to needed rehabilitation services is reduced for certain populations who could benefit from intensive rehabilitation.

A second suggestion was to select patients with conditions outside of the 13 qualifying conditions and examine their outcomes when treated at IRFs compared to similar patients treated in other settings. The PAC PRD data should provide the opportunity to identify "similar"



patients and examine the costs and outcomes for these patients associated with treatment in alternative settings. The demonstration includes both patient assessment and case-mix data as well as staff resource data. Together, they allow identification of similar patients and comparisons of resources used in alternative rehabilitation sites of care.

Several outcome measures were recommended to assess patients across settings, including the following: FIM<sup>®2</sup> efficiency (a potentially problematic measure which could incentivize premature discharge), discharge destination (particularly rates of discharge to home, and time to that discharge), lengths of stay, total costs for the entire episode of illness (not just IRF care), or six-month outcomes (lower costs in one setting may not result in total lower costs to Medicare if there are subsequent re-admissions). Recommended outcomes also included resource use, time to death, and other measures that geriatricians typically use. Other measures to account for include services supplied, patient pre-morbid functional level, resource availability – both the patient-level (environmental and social support, financial, additional insurance) and geographic/regional differences – and patient combination of medical and functional complexity (case-mix). In particular, they noted a few comorbidities to consider (heart disease, blood clot, infection, aspiration pneumonia, severity, disability, resources available at home, type of disability, depression, cognitive impairment, swallowing disorder, need for orthotics) as important in the rehabilitation population.

Participants recommended that research should identify specific factors that distinguish care in different settings, including process factors such as the skill mix of staff and other processes and program standards. Stakeholders recommended that the research was needed to examine the impacts of the make-up of the treatment team (including the training of who leads the team or whether it is interdisciplinary) and the frequency and intensity of care.

The final section of this report discusses conclusions and next steps, including identifying areas needing additional research. Under the Medicare program, beneficiaries may receive rehabilitation services in several types of settings, including IRFs and long term care hospitals (both hospital-level), skilled nursing facilities, home health agencies, and outpatient therapy providers, including hospital outpatient departments, independent therapists, rehabilitation agencies, and comprehensive outpatient rehabilitation facilities. Yet, the differences in patient needs that would direct a patient to one inpatient setting versus another are not well understood. The issues identified in this report are important for ensuring that beneficiaries who have the potential for significant functional improvement can access the necessary services in the most appropriate setting. However, identifying the most appropriate setting depends a great deal on the potential costs and outcomes associated with the various treatment options.

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<sup>2</sup> FIM<sup>®</sup> is a trademark of Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities, Inc.

## SECTION 1 INTRODUCTION

### 1.1 *Requirements of the Medicare, Medicaid and SCHIP Extension Act of 2007*

In 2007, Congress directed CMS, through the Medicare, Medicaid and SCHIP Extension Act (MMSEA) to develop a Report to Congress with the following:

- A. An analysis of Medicare beneficiaries' access to medically necessary rehabilitation services, including the potential effect of the 75 percent rule (now known as the "60 percent rule") on access to care.
- B. An analysis of alternatives or refinements to the 75 percent rule (now known as the "60 percent rule") policy for determining criteria for inpatient rehabilitation hospital or unit designation under the Medicare program, including alternative criteria which would consider a patient's functional status, diagnosis, co-morbidities or other relevant factors.
- C. An analysis of the conditions for which individuals are commonly admitted to inpatient rehabilitation hospitals that are not included as a condition formerly described in section 412.23(b)(2)(iii) (redesignated as 412.23(b)(2)(ii) in the FY 2009 IRF PPS final rule (73 FR 46370 at 46391 through 46392)) of title 42, Code of Federal Regulations, to determine the appropriate setting of care, and any variation in patient outcomes and costs, across settings of care, for treatment of such conditions.

The MMSEA also required CMS to consult with stakeholders, including physicians, administrators of inpatient rehabilitation, acute care hospitals, skilled nursing facilities, and other settings providing rehabilitation services, Medicare beneficiaries, trade organizations representing inpatient rehabilitation hospitals and units and skilled nursing facilities, and the Medicare Payment Advisory Commission (MedPAC). To address this requirement, CMS hosted two national, public meetings: a Town Hall Meeting on February 2, 2009 and an Open Door Forum on February 9, 2009. These meetings were announced through the CMS open door forum lists and through industry newsletters and communications. Participants included clinicians, administrators, beneficiary advocates, trade organizations, MedPAC, and others interested in the topic. All participants were invited to submit written comments.

RTI also convened a Technical Expert Panel on February 23, 2009 to review the public comments and discuss issues needing further analysis. TEP members included physicians (both geriatricians and physiatrists), nurses, physical therapists, occupational therapists, speech and language pathologists, hospital and nursing facility administrators, patient advocates, and members of the disability community. The TEP also included representatives of rural and urban inpatient rehabilitation facilities, representatives from the Uniform Data System for Medical Rehabilitation (UDSMR), the Commission on Accreditation of Rehabilitation Facilities (CARF), and professional and provider associations.

This Report to Congress presents the findings of RTI's analysis of the requirements in the MMSEA and identifies remaining issues that need to be addressed when the data from the Post-Acute Care Payment Reform Demonstration (PAC PRD) become available for analysis. The

Report is written in four parts. The first three parts address the analyses required by the MMSEA. These sections summarize the issues and provide empirical evidence (both published literature and current data analysis where data exist). The last section builds on the literature and the provider community's input and identifies the analytic questions that remain to be addressed in developing alternative classification/certification approaches.

The issues identified in this report are important for ensuring that beneficiaries who have the potential for significant functional improvement can access the necessary services in the most appropriate setting. However, identifying the most appropriate setting depends a great deal on the potential costs and outcomes associated with various treatment options.

## **1.2 Overview of the Issues**

Inpatient rehabilitation facilities (IRFs) are an important part of the Medicare delivery system. In contrast to skilled nursing facilities that provide extended care services within the post-acute care spectrum, these specialized hospitals provide inpatient hospital-level services in physical medicine and rehabilitation. IRF patients typically have a primary diagnosis related to musculoskeletal or neurological disorders or injuries and need inpatient hospital-level physical rehabilitation treatments. About 80 percent of the IRF admissions are admitted from acute care hospitals following treatment for a hip or knee surgery, a stroke, heart attack, amputation or other acute event (Gage, et al., 2008). In 2006, almost 12 percent of all Medicare hospitalizations were discharged to an IRF, up from 8 percent in 2004 making it the third most frequent post-acute service used following hospital discharge, with skilled nursing facilities and home health agencies being the first and second most frequently used post-acute care services. (Gage, Morley, Spain, & Ingber, 2009). Beneficiaries typically are admitted for 7-14 days and about 46 percent are discharged home with home health for additional therapy or nursing services; another 17 percent are discharged home with outpatient therapy, about 13 percent are discharged to skilled nursing facilities, about 12 percent use only IRF services, and about 12 percent return to an acute hospital (Ibid).

Medicare pays inpatient rehabilitation facilities under the IRF Prospective Payment System (PPS), which has a base rate that is almost 2.5 times higher than the acute Inpatient Prospective Payment System (IPPS) rate. Like the IPPS, the IRF PPS uses case-mix adjusted payment rates to pay for each Medicare discharge (Gage, Bartosch, & Osber, 2005). The case-mix system adjusts the base rate for each admission to reflect a patient's expected costliness associated with their functional impairments and medical conditions. However, in FY 2009, the base rate for the IRF PPS was \$12,958, almost 2.5 times greater than the IPPS rate. In exchange, Medicare asks IRFs to provide more intensive rehabilitation services to a higher acuity patient.

To qualify for the IRF PPS, IRFs must meet the Medicare classification criteria commonly known as the "75 percent rule" or more currently, the "60 percent rule" (42 C.F.R. 412. 23). This compliance rule requires that 60 percent of all admissions to an IRF be for treatment of one of 13 conditions<sup>3</sup>. If an IRF is compliant, then care for all Medicare cases is

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<sup>3</sup> The 13 qualifying conditions include stroke; spinal cord injury; congenital deformity; amputation; major multiple trauma; fracture of femur (hip fracture); brain injury; neurological disorders (Multiple Sclerosis, motor neuron disease, polyneuropathy, muscular dystrophy, Parkinson's Disease); burns; active polyarticular rheumatoid

paid for at the IRF PPS rate, regardless of whether an individual patient's condition is included in the 60 percent rule. IRFs that fail to meet the criteria are paid under the acute IPPS at the substantially lower rate per case noted above.

This compliance rule has been part of the IRF payment criteria since the implementation of the IPPS in 1983. Its purpose is to ensure that IRFs are primarily providing intensive rehabilitation services to patients that cannot be served in other, less intensive rehabilitation settings. The rule has undergone substantial changes over the last 10 years. Originally, the rule required that 75% of the patients in an IRF had to have a primary diagnoses in 1 of 10 conditions for an IRF to qualify for reimbursement at the higher IRF PPS rates, rather than the IPPS rates. However, in 2002, CMS instructed the Fiscal Intermediaries (FI) to delay enforcement of the 75% rule because of concerns that the criteria was not enforced uniformly across the country (Tilson, 2006). In 2004, CMS reinstated the rule and expanded the compliance list to 13 qualifying conditions. In addition, a three year transition period was instituted to gradually increase the compliance rate from 50% in 2004 to 75% by 2007 (Tilson, 2006). In 2007, Congress passed the Medicare, Medicaid and SCHIP Extension Act (MMSEA) of 2007, which set the IRF compliance rule at no more than 60%, mandated the continued use of comorbid conditions in considering compliance thresholds, and directed CMS to prepare and submit a report to Congress.

This mandate from Congress builds on preceding studies conducted by the Government Accountability Office (GAO), the Institute of Medicine (IOM), and CMS. Congress, in the Medicare Prescription Drug Improvement and Modernization Act of 2003, directed the GAO to assess, in consultation with clinical experts, whether the list of 10 conditions represented a clinically appropriate standard for defining IRF services, and if not, to determine what *additional conditions* should be added to the list (Kanof, 2005). In response, the GAO asked the IOM to convene a clinical panel to address this question. The experts IOM convened questioned the evidence for adding conditions to the list. They noted that little information was available on the need for IRF-level rehabilitation by cardiac, transplant, pulmonary, and oncology patients and that the evidence for certain orthopedic conditions was particularly weak. They further noted that for some conditions, only a subgroup of patients required IRF-level services, and that functional status needed to be considered in addition to condition (Ibid.). The GAO concluded that more information was needed to describe the subgroup of patients within a condition who need IRF-level care.

During the last 10 years, the Medicare program has gone through numerous payment policy changes. In 2002, the IRF payment system changed from a cost-based system to a case-mix adjusted PPS, which recognizes the variation in individual patient costs. This gave IRFs the incentive to broaden the types of cases they admitted by moving their payment structure away from the historical, provider-specific average cost system that was used to pay IRFs prior to 2002 to a prospective payment system that better reflected the costs of cases they currently treat.<sup>4</sup>

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arthritis, psoriatic arthritis, and seronegative arthropathies; systemic vasculidities with joint inflammation; severe/advanced osteoarthritis; knee/hip joint replacement if bilateral, obese or 85 years or older

<sup>4</sup> Medicare payments to IRFs between 1983 and 2002 were determined in accordance with the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA, Public Law 97—248). According to TEFRA, payments to IRFs

However, the compliance rules that allow IRFs to be paid outside of the general acute, DRG-based system require them to specialize in treating a subset of conditions that typically need intensive rehabilitation services. Little is known about whether particular subsets of patients with other conditions might also benefit from the intensive rehabilitation services provided in IRFs. These issues become more important as medical and technological advances in physical medicine and rehabilitation change the potential usefulness of these rehabilitation services for a broader population. As a result, certain types of programs like acute cardiac rehabilitation, pulmonary rehabilitation, and pain management programs are commonly available by rehabilitation hospitals despite these populations remaining outside of the 13 condition groups identified for compliance.

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were based on the IRFs' costs of providing care, subject to a facility-specific limit on the amount of allowable costs per discharge.

## **SECTION 2**

### **MEDICARE BENEFICIARY ACCESS TO MEDICALLY NECESSARY REHABILITATION SERVICES, AND THE POTENTIAL EFFECT OF THE 60 PERCENT RULE**

The first analysis required by the MMSEA focuses on access to appropriate rehabilitation services and the effects of the 60 percent rule on access. This section addresses these issues by defining access, presenting IRF-PAI data on who used IRF services in 2008, and presenting literature on what is known about the appropriateness of IRF services.

#### **2.1 Defining Access to Medically Necessary Services**

Under the Medicare program, beneficiaries may receive rehabilitation services in several types of settings, including IRFs and long term care hospitals (both hospital-level), skilled nursing facilities, home health agencies, and outpatient therapy providers, including hospital outpatient departments, independent therapists, rehabilitation agencies, and comprehensive outpatient rehabilitation facilities. Yet, the differences in patient needs that would direct a patient to one inpatient setting versus another are not well understood.

The Medicare program rules establish that the need for intensive rehabilitative IRF services can be demonstrated by the need for at least 3 hours of skilled rehabilitative therapy a day for at least 5 days a week. In addition, there is an expectation that, at the time of admission, IRF patients will improve significantly from the intensive rehabilitation.

While there are not yet separate conditions of participation for IRFs, the Medicare program rules require IRFs to meet the hospital conditions of participation, including those relating to optional services for the provision of rehabilitation. For payment purposes, IRFs must also specialize in treating certain specific illnesses or injuries related to physical medicine and rehabilitation. Their staff must specialize in rehabilitation medical care, which means that these facilities must have on staff physiatrists, rehabilitation nurses, and physical, occupational, and speech-language pathology therapists. The primary diagnoses treated in these hospitals are for rehabilitation medicine, both exacerbations of chronic conditions and acute illnesses (Gage et al., 2007).

Long-Term Care Hospitals are certified as acute hospitals and also provide skilled post acute rehabilitation services. LTCHs must have an average patient length of stay greater than 25 days or be paid under the IPPS. In areas without IRFs, LTCHs often provide intensive skilled rehabilitation services; in areas with LTCHs, some of their populations, such as spinal cord injury, traumatic brain injury, major multiple trauma patients, may overlap (Ibid).

Skilled Nursing Facilities provide skilled post-acute rehabilitation services in addition to skilled nursing services. Skilled rehabilitation services include ongoing assessment of rehabilitation needs and potential, therapeutic exercises or activities, gait evaluation or training, range of motion exercises and maintenance therapy all performed by or under the supervision of a qualified physical or occupational therapist, or services of a speech pathologist or audiologist (CFR 409.33). SNF rehabilitation patients typically require less physician oversight than IRF patients because they are typically less severely impaired. However, SNFs vary in the acuity of the patients they accept. As a result, their case-mix indices and relative staffing mix between

nursing and physical rehabilitation staff vary. SNFs typically provide a lower-intensity service than IRFs, which are certified as hospitals (Gage et al., 2007). It should be noted though that there are some specialized SNFs that provide more intensive, post-acute treatments, such as ventilator monitoring, or more intensive rehabilitation therapy than other SNFs.

Admission practices in IRFs, SNFs, and LTCHs vary by geographic area. IRFs are not available in all parts of the country and where they are not, LTCHs and SNFs may be providing rehabilitation services for these populations (Gage et al., 2008).

In sum, IRF patients need intensive rehabilitative services (e.g. participation in 3 hours of skilled rehabilitative therapy per day). However, the LTCH and SNF can potentially provide these same services, although typically the LTCH specializes in patients requiring longer lengths of stay for medically complex conditions in addition to their skilled rehabilitation needs, and the SNF is designed to provide extended care services. This section of the report is focusing on whether the 60 percent rule is contributing to reduced access to skilled rehabilitation services for patients, especially those with IRF level needs who have conditions not found among the 13 qualifying diagnoses.

## **2.2 Who Uses IRFs?**

One way to address this question of access is to examine a) who is using IRF services and b) how the patient demographic has changed over the past 7 years and c) whether these changes are related to changes in the enforcement of the 60 percent rule, keeping in mind that simultaneous changes in IRF payment policy and availability of other types of providers in the market might also be influencing IRF utilization.

**Table 1** shows the types of Medicare beneficiaries admitted to IRFs in CY 2008 along with the proportion of those admissions which would qualify under the presumptive compliance criteria or the 60% Rule. The most common type of admission was the stroke patient (20.9%). The second most common type of admission was patients with a lower extremity fracture or orthopedic disorder (15.6%). These were followed by the post-surgical Replacement of Lower Extremity conditions (13.1%), miscellaneous conditions (11.5%), neurological conditions (7.8%), other orthopedic (5.99%), and cardiac populations (4.5%). The five most frequent types of miscellaneous admissions by percentage of miscellaneous admissions were debility (76.6%), other disabling impairments (7.0%), respiratory disorders that were not ventilator dependent (4.4%), neoplasms (2.8%), and other medically complex conditions (2.8%). Non-traumatic brain dysfunction and spinal cord dysfunction also accounted for a large number of IRF admissions in 2008.

**Table 2** shows that about 75% of the 2008 IRF admissions would qualify under the presumptive compliance criteria. This table is important for considering whether access to an IRF is impeded for conditions outside of the 13 qualifying groups, such as the lower extremity replacements and the cardiac conditions. They show that these two populations still represent a large share of those using IRFs. However, Table 2 also suggests that there has been a shift in the types of patients admitted to IRFs since the establishment of the IRF PPS in 2002. While lower extremity joint replacements remain important, they account for a smaller percent of IRF admissions in 2006. Concurrent with these shifts, MedPAC has published analyses showing increases in high intensity resource utilization groups (RUGs) in SNFs from 2000 to 2006 (Medicare Payment Advisory Commission (MedPAC), 2008). Declines also occurred in the relative admissions of arthritis patients, major multiple trauma patients, and cardiac, pulmonary, and pain syndrome patients (Centers for Medicare and Medicaid Services, 2007). These were offset by increases in the percent of admissions with stroke, brain injury and nervous system disorders.



**Table 1<sup>5</sup>**  
**RIC Frequencies by Admission and Qualifying Admission**

RIC	<u>All Admissions</u>		<u>Qualifying Admissions</u>		Percent of Qualifying Admissions
	Frequency	Percent of Total	Frequency	Percent of RIC	
Stroke (01)	86,012	20.9%	86,009	100.0%	27.7%
Traumatic Brain Dysfunction (02)	11,916	2.9%	11,916	100.0%	3.8%
Non-Traumatic Brain Dysfunction (03)	17,524	4.3%	17,059	97.3%	5.5%
Traumatic Spinal Cord Dysfunction (04)	3,223	0.8%	3,180	98.7%	1.0%
Non-Traumatic Spinal Cord Dysfunction (05)	15,243	3.7%	12,228	80.2%	3.9%
Neurological Conditions (06)	31,897	7.8%	28,796	90.3%	9.3%
Fracture, Orthopedic Disorders (07)	64,044	15.6%	58,400	91.2%	18.8%
Replacement, Orthopedic Disorders (08)	53,772	13.1%	42,349	78.8%	13.7%
Other Orthopedic (09)	24,605	6.0%	7,150	29.1%	2.3%
Amputation, Lower Limb (10)	12,129	3.0%	12,126	100.0%	3.9%
Amputation, Upper Limb or Other (11)	530	0.1%	287	54.2%	0.1%
Osteoarthritis (12)	1,916	0.5%	1,079	56.3%	0.3%
Rheumatoid Arthritis (13)	2,264	0.6%	1,800	79.5%	0.6%
Cardiac Disorders (14)	18,511	4.5%	4,067	22.0%	1.3%
Pulmonary Disorders (15)	6,647	1.6%	1,716	25.8%	0.6%
Pain Syndrome (16)	4,722	1.2%	1,408	29.8%	0.5%
Major Multiple Trauma-Non-Brain/Spinal Cord Injury (17)	5,787	1.4%	4,307	74.4%	1.4%
Major Multiple Trauma-Brain/Spinal Cord Injury (18)	1,645	0.4%	1,644	99.9%	0.5%
Guillain-Barre Syndrome (19)	832	0.2%	830	99.8%	0.3%
Miscellaneous (20)	47,376	11.5%	13,535	28.6%	4.4%
Burns (21)	300	0.1%	300	100.0%	0.1%
<b>TOTAL</b>	<b>410,895</b>	<b>100.0%</b>	<b>310,186</b>	<b>75.5%</b>	<b>100.0%</b>

Source: RTI Analysis of IRF-PAI data from calendar year 2008.

<sup>5</sup> \*For this analysis, cases within RIC 8 with impairment group codes of 8.51 (unilateral hip replacement), 8.61 (unilateral knee replacement), and 8.71 (knee and hip replacements) where the patient has a BMI greater than 49 are not included under the presumptive compliance criteria due to data limitation on BMI.

**Table 2. Distribution of Discharges by IRF Impairment Category**

RIC	Descriptor	2002	2003	2004	2005	2006
1	Stroke	17.8%	16.7%	16.6%	18.3%	20.0%
2	Brain Dysfunction, Traumatic	1.3	1.4	1.6	2.0	2.3
3	Brain Dysfunction, Non-Traumatic	2.1	2.1	2.3	2.9	3.5
4	Spinal Cord Dysfunction, Traumatic	0.6	0.5	0.6	0.6	0.7
5	Spinal Cord Dysfunction, Non-Traumatic	3.5	3.7	3.7	3.8	3.9
6	Neurological Conditions	4.4	4.6	5.1	5.8	6.6
18	MMT With Brain/Spinal	0.2	0.2	0.2	0.3	0.3
19	Guillain-Barre	0.1	0.1	0.1	0.1	0.2
	<b>Nervous System &amp; Brain</b>	<b>30.1</b>	<b>29.3</b>	<b>30.2</b>	<b>33.9</b>	<b>37.6</b>
7	Lower Extremity Fracture	12.0	12.5	13.0	14.4	15.9
8	Lower Extremity Joint Replacement	23.3	24.2	24.1	22.4	18.8
9	Other Orthopedic	4.8	5.0	5.1	5.1	5.2
12	Osteoarthritis	2.3	2.2	1.6	0.9	0.7
13	Rheumatoid And Other Arthritis	1.0	1.1	0.9	0.8	0.7
17	MMT Without Brain/Spinal Cord Injury	1.1	1.2	1.1	1.0	1.2
	<b>Musculoskeletal</b>	<b>44.6</b>	<b>46.1</b>	<b>45.9</b>	<b>44.6</b>	<b>42.5</b>
10	Amputation, Lower Extremity	2.7	2.5	2.6	2.8	2.9
11	Amputation, Non-Lower Extremity	0.3	0.3	0.2	0.2	0.2
14	Cardiac	5.6	5.5	5.2	4.5	3.9
15	Pulmonary	2.3	2.0	1.9	1.6	1.4
16	Pain Syndrome	2.2	2.1	1.9	1.6	1.4
20	Miscellaneous	12.2	12.2	12.0	10.8	10.0
21	Burns	0.1	0.1	0.1	0.1	0.1
	<b>Medical</b>	<b>25.3</b>	<b>24.6</b>	<b>23.9</b>	<b>21.5</b>	<b>19.9</b>
	<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Based on calendar year 2002-2006 from CMS Medicare claims.

SOURCE: Inpatient Rehabilitation Facility PPS and the 75 Percent Rule, CMS, June 2007.

While these changes occur simultaneously with changes in the enforcement of the 60 percent rule, they also appear to reflect changes in incentives, as mentioned in Section 1.2, to

admit a wider range of patients as IRFs moved to case-mix adjusted PPS in 2002. This was a result of PPS's design to give increased payments for certain types of patients based on the predicted costs associated with their care. Some of the shift may be due to concurrent changes in the competitive environment as LTCHs moved to a PPS and continued growing in number. LTCHs also treat multiple traumas, pulmonary, and some cardiac populations. Additional factors potentially influencing the shift in placement for lower extremity joint replacements include advances in minimally invasive surgery.

One of the key factors identified by the GAO and IOM panels for assessing appropriate rehabilitation services is the functional status and the patients' potential for improvement (Kanof, 2005). While the potential for improvement is difficult to assess from secondary data, Table 3 provides information on beneficiaries' functional status at IRF admission and discharge in 2008, as well as the level of functional change overall. This information is also stratified to show the 5 discrete areas of function (motor, cognition, self-care, sphincter control, and mobility) included in the measure. FIM<sup>®</sup> scores range from 1 (total dependence) to 7 (total independence) across 18 items measuring the 5 functional areas. Total FIM<sup>®</sup> scores range in the potential for change from an improvement of 119 points to a decline in ability measured by a loss of 108 points, depending on the impairment level in each of the 18 items. On average, patients are admitted to IRFs with a FIM<sup>®</sup> score of 61 and discharged with a score of 85, showing functional improvements of 24 points. Expected changes vary by functional area; much of the change occurs in the physical function or motor scores (21 points on average) while cognitive scores only change, on average, by 3 points.<sup>6</sup> FIM<sup>®</sup> *change scores* are an important indicator of the benefits derived from skilled rehabilitation services, as they represent the change in functional ability between admission and discharge from the facility.

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<sup>6</sup> Patients have to be cognitively able to be educated by the therapists during the intensive rehabilitation.

**Table 3. FIM® SCORES BY TYPE OF FACILITY AND AREA OF FUNCTION**

	All Admits	Free standing	Rehab Units
<b>Total FIM® Scores</b>			
Total FIM® ADM	61	58	63
Total FIM® DC	85	84	86
Total FIM® Change	24	27	23
<i>The min. possible admission score is 7 and for discharge 18</i>			
<i>The max. possible admission or discharge score is 126 (18 items, score of 7 = independence)</i>			
<i>The max. possible positive change score is 119 (126-7) and negative is -108 (18-126)</i>			
<b>Motor FIM® Scores</b>			
Total FIM® ADM	37	35	39
Total FIM® DC	58	58	58
Total FIM® Change	21	23	20
<i>The min. possible admission score is 2 and for discharge 13</i>			
<i>The max. possible admission or discharge score is 91 (13 items, score of 7 = independence)</i>			
<i>The max. possible positive change score is 89 (91-2) and negative is -78 (13-91)</i>			
<b>Cognitive FIM® Scores</b>			
Total FIM® ADM	24	22	25
Total FIM® DC	27	26	28
Total FIM® Change	3	4	3
<i>The min. possible admission score is 5 and for discharge 5</i>			
<i>The max. possible admission or discharge score is 35 (5 items, score of 7 = independence)</i>			
<i>The max. possible positive change score is 30 (35-5) and negative is -30 (5-35)</i>			
<b>Self Care FIM® Scores</b>			
Total FIM® ADM	20	18	21
Total FIM® DC	29	29	29
Total FIM® Change	9	10	9
<i>The min. possible admission score is 0 and for discharge 6</i>			
<i>The max. possible admission or discharge score is 42 (6 items, score of 7 = independence)</i>			
<i>The max. possible positive change score is 42 (42-0) and negative is -36 (6-42)</i>			
<b>Sphincter Control Scores</b>			
Total FIM® ADM	7	7	7
Total FIM® DC	10	9	10
Total FIM® Change	3	3	2
<i>The min. possible admission score is 2 and for discharge 2</i>			
<i>The max. possible admission or discharge score is 14 (2 items, score of 7 = independence)</i>			
<i>The max. possible positive change score is 12 (14-2) and negative is -12 (2-14)</i>			
<b>Mobility FIM® Scores</b>			
Total FIM® ADM	11	10	11
Total FIM® DC	20	20	20
Total FIM® Change	9	10	9
<i>The min. possible admission score is 0 and for discharge 5</i>			
<i>The max. possible admission or discharge score is 35 (5 items, score of 7 = independence)</i>			
<i>The max. possible positive change score is 35 (35-0) and negative is -30 (5-35)</i>			

SOURCE: RTI analysis of IRF-PAI data from calendar year 2008.

The IRF-PAI data are also useful for examining whether populations outside of the 13 qualifying conditions have access to IRFs. However, these data are limited by their inability to answer whether other similar cases with these conditions were *not* admitted due to concerns about the 60 percent rule. Data are needed on the range of beneficiaries with these conditions who use alternative sites of care following hospital discharge. Second, it is also important to note that these data show no information on how similar patients would fare in other settings like SNFs or LTCHs. Also, the extent to which patients who receive care in IRFs are systematically different than those who receive care in LTCHs or SNFs has not been extensively evaluated, making it difficult to make comparisons in patient outcomes across settings.

### **2.3 Are these Services Appropriate?**

The IRF-PAI data are useful for understanding the functional impairments of the populations admitted to IRFs but they are limited in their ability to answer whether the IRF admissions are appropriate. Analysis of the change scores illustrates the *potential* for improvement by documenting the extent to which IRF services are associated with functional improvement. However, they do not address whether similar patients treated in other settings could have just as much or more potential for improvement. This section presents empirical evidence from the peer-reviewed literature regarding the appropriateness of one rehabilitation setting versus another.

#### **2.3.1 Peer Reviewed Research on IRF Effectiveness**

While there is extensive literature on the importance of acute rehabilitation services for different populations, very little peer-reviewed research has been published comparing the relative effectiveness of inpatient rehabilitation facility (IRF) services to those provided by other post-acute (PAC) care settings, such as long term care hospitals (LTCHs), skilled nursing facilities (SNFs), and (HHAs). Many of the existing studies on the comparative effectiveness of IRFs have been sponsored by the rehabilitation industry, with the bulk of this research comparing the outcomes of patients treated in IRFs to those treated for similar conditions in SNFs. However, the usefulness of this research for assessing the relative effectiveness of IRFs and SNFs tends to be limited by the fact that it does not adequately control for the selection bias that exists among patients treated in the two settings. In the absence of random assignment, it can be difficult to adequately control for baseline differences in patient characteristics in the different setting types, given unmeasured factors that may determine why a patient is receiving care in one setting versus another. Econometric techniques exist that begin to address these methodological issues, including two stage regression using instrumental variables, but have not been widely used in this research yet. Even less research exists comparing IRFs to other PAC settings, such as home health. Much of this is due to the lack of comparable information across settings, as would be provided by a uniform assessment tool (Walsh & Herbold, 2006). As a result, most literature measures the impact of rehabilitation services within a setting rather than across settings, and much of that literature is based on services provided in IRFs. Much of the comparative research that does exist focuses primarily on two conditions – hip fracture and stroke – both of which are included in the 13 qualifying conditions and account for a substantial share of Medicare skilled rehabilitation cases.

### 2.3.2 Condition-Specific Effectiveness

A subset of the peer-reviewed literature compares patient outcomes across PAC settings for specific conditions including stroke, hip fracture, and other conditions within the 13 included in the 60 percent rule. Outcome measures include changes in activities of daily living (ADL or self-care) scores, the probability of discharge to the community, and differences in length of stay. Shorter lengths of stay to achieve the same outcomes are better than longer lengths of stay, all else equal.

#### *Stroke*

Published literature on the effectiveness of IRF treatment for stroke patients has been relatively uniform in the conclusion that patients treated in IRFs experience greater improvements with shorter lengths of stay. Research comparing outcomes across rehabilitation settings suggest some advantage to receiving care from IRFs, though as stated previously the potential role of selection bias in patients who receive care in IRFs, as relative to other settings, is unknown and should be considered when interpreting results.

Deutsch and Granger (2006) used Uniform Data System for Medical Rehabilitation (UDSMR) data as well as Medicare Provider and Analysis and Review (MedPAR) files from 1996-1997 to compare stroke patient outcomes in IRFs and SNFs. The Deutsch study, which stratified patients by severity and controlled for a large quantity of patient characteristics, found that outcomes varied by strata of patient severity. Less severe cases, those with minimal motor disabilities, fared equally well in IRF and SNF settings; however, cases with more severe disabilities had better discharge Functional Independence Measure (FIM<sup>®</sup>) motor scores when treated in IRFs. IRF patients also had shorter lengths of stay and higher likelihoods of community discharge (Deutsch et al., 2006).

A study by Kane et al. in 2000, which used two stage regression techniques to control for variation in characteristics correlated with site of care that might introduce bias into results, found that IRF patients showed statistically significantly greater improvement in ADL scores in seven categories than patients treated in SNFs (Kane et al., 2000). The Kane et al. study used data collected through in-person interviews of Medicare patients at discharge, six weeks, six months, and one year post discharge. An earlier study by Kramer et al. (1997) had similar findings. Post-stroke patients treated in IRFs recovered more Activities of Daily Living (ADLs) in five categories and were more likely to be discharged to the community than patients treated in SNFs (Kramer et al., 1997). Kramer's analysis considered information on 485 randomly selected patients as collected by staff of 92 facilities across 17 states. The study noted that patients treated in SNFs are more likely to be older, not have a caregiver, have more comorbidities, and have more impaired physical and cognitive function at admission. These factors may contribute to the poorer outcomes associated with SNF use.

While there are several studies comparing outcomes for stroke patients of IRFs and SNFs, there is a dearth of domestic research on the effectiveness of IRFs in comparison with Home Health Agencies (HHAs) for patients with stroke. In research conducted in Britain, Gladman, Forester and Young found that there did not seem to be a difference in outcomes between therapy provided in the home and therapy provided at a hospital, if the therapies were of equal intensity. The study followed patients who were discharged after stroke in 1995.

(Gladman, Forster, & Young, 1995). A randomized trial in Australia by Anderson et al. compared treatment outcomes and associated costs between 86 patients who had an acute stroke event that were assigned to early discharge with home-based rehabilitation or in-hospital rehabilitation with community care in 1997 and 1998 (Anderson et al., 2000). The clinical outcomes between the two groups were similar at the 6-month follow-up. Anderson et al. concluded that the associated costs for the home-based rehabilitation group were lower, but the differences were not statistically significant.

### *Joint Replacement*

Several studies have been completed in the last five years comparing rehabilitation outcomes for lower extremity joint replacement patients receiving care from IRFs and SNFs. Findings generally do not indicate a clear advantage for joint replacement patients receiving care in one setting versus the other. This section summarizes the results of a large multi-setting prospective cohort study (JOINTS I & II) funded by the IRF industry that have just been published, and additional studies including a MedPAC funded study conducted by RAND.

The JOINTS I study conducted by De Jong et al. included 2,158 knee and hip replacement patients receiving care from 20 facilities across the country: 11 IRFs, eight free standing SNFs, and one hospital-based SNF (DeJong et al., 2009a). The study trained the SNFs staff on the FIM<sup>®</sup> to have a standard assessment tool across IRFs and SNFs. A typical patient in the study was 71.2 years old, female (65.1%), white (81.4%) and lived alone prior to admission (35.2%). SNF patients were older than IRF patients. The study found that average length of stay for knee and hip replacement patients in free standing SNFs was longer than for those in IRFs (14.8 days vs. 8.9 days for knee replacement, 15.0 days, vs. 10.1 days for hip). Differences in length of stay were greater after accounting for case-mix. Hip replacements in the more severe case-mix groups (CMG 805-806), had average length of stays in free standing SNFs of 24.3 days, compared to 12.9 days for IRFs (12.7 for hospital based SNFs). In general, authors found an inverse relationship between length of stay and intensity of therapy. They found that IRFs provided a higher level of intensive therapy than either type of SNF. The authors did caution that they did not conduct reliability testing on the FIM<sup>®</sup> training at SNFs, they cannot fully account for the role of other interventions on studied outcomes, and that the potential of selection bias still exists (DeJong et al., 2009a).

In a second paper from the JOINTS I study, DeJong, et al. (2009b) published findings on analysis of functional outcomes upon discharge from IRF versus SNF for knee (n=1,401) and hip (n=751) replacement patients. The outcome measures included motor FIM<sup>®</sup> scores and measures of therapy intensity which was based on the amount of therapy provided in 5 minute increments which included (PT and OT) and patient length of stay. Authors kept the hospital-based SNF separate in analyses because of noteworthy differences from the freestanding SNFs including the sharing of therapy staff with an affiliated IRF by the hospital-based SNF. Patients in this study were similar across the settings except bilateral knee replacement was represented more among IRF cases (18% versus 4% freestanding SNFs) as was bilateral hip replacement (3.5% versus 0.5% in freestanding SNF) (DeJong et al., 2009b). Other limitations of this study that should be noted include concerns about generalizability of findings, participation in the study was voluntary, facilities that participated might be very different in terms of patient care and outcomes, and while 80% of IRFs are hospital based, this study was restricted to freestanding

IRFs (DeJong et al., 2009b). Authors found that both SNF and IRF patients improved their motor FIM<sup>®</sup> scores from admission to discharge. When results were stratified by volume of cases, the medium volume IRFs demonstrated the greatest gains between admission and discharge as opposed to the low volume SNFs which demonstrated the least FIM<sup>®</sup> gains between admission and discharge. Authors suggested these findings support the conclusion that IRFs had the greatest efficiencies in that they attained more FIM<sup>®</sup> gains within shorter length of stay and within the IRF setting, the greatest efficiencies were seen by the medium volume IRFs. DeJong et al found that when controlling for patient characteristics, IRFs showed better discharge FIM<sup>®</sup> motor scores although they note that the effect size was not large and that further variations by setting were even smaller. They conclude that early and intense therapy was a key characteristic to better outcomes and that facilities that were medium volume demonstrated better outcomes (DeJong et al., 2009b).

DeJong, et al, then conducted a follow-up study called JOINTS II, which included telephone interviews with 856 JOINTS I patients from 6 IRFs and 6 SNFs (5 free standing, one hospital based) (DeJong et al., 2009c). Interviewers asked patients about the amount of home health rehabilitation, outpatient and other health services since their IRF or SNF stay. Phone-FIM<sup>®</sup> and a Short-Form 12-Item Health Survey were also included in the interview. Results from the JOINTS I study were linked with the answers to the JOINTS II study to form patient profiles. IRF patients had more serious medical and functional limitations at admission. The authors did not find a difference in frequency of post-IRF or SNF service use by types of inpatient setting where patients originally received rehabilitation services (not case-mix adjusted). IRF patients with hip replacements had higher rates of rehospitalization than either type of SNF. Multivariate analysis did not show any SNF or IRF effect on rehospitalization rates. The authors noted that this study was limited by the same factors mentioned for JOINTS I, and that the study did not take into account the sequence of post-discharge rehabilitation (DeJong et al., 2009c). In an additional paper from the JOINTS II study, the authors looked at functional and health outcomes of these patients six to nine months after discharge from their PAC stay. The authors used the FIM<sup>®</sup> scores at admission, discharge and follow-up and the results from the Short-Form 12-Item Health Survey (SF-12) as assessment instruments (DeJong et al., 2009d). Using bivariate analyses, unadjusted for case-mix, the authors found few statistically significant differences in patient outcomes among the three types of facilities. IRF patients did make the largest FIM<sup>®</sup> gains among the three types of facilities, however, when adjusted for case-mix, outcome differences among the three types of facilities were smaller. After using multivariate analyses, the authors could not explain much of the variance based on setting; most of the explained variance was due to patient characteristics. The authors concluded that no one setting produced better outcomes. The authors noted this study also included the limitations of the JOINTS I study and that smaller SNFs and IRFs were underrepresented by the facility sample (DeJong et al., 2009d).

In 2006, Walsh et al. examined this issue by collecting primary data on matched samples of total hip replacement and unilateral total knee replacement patients treated in an IRF and 5 affiliated SNFs. The patient pairs were matched on age, gender, type of prior surgery, and FIM<sup>®</sup> admissions scores. Outcome measures included FIM<sup>®</sup> motor score, ambulation distance, ambulation device, and length of stay. This study found that the IRF patients had greater gains in



FIM<sup>®</sup> scores, could walk further with less assistance, and had shorter lengths of stay than those treated in a SNF (Walsh & Herbold, 2006). However, because this study matched patients on a relatively small set of characteristics, the differences in outcomes may have been due largely to underlying differences in the characteristics of patients admitted to IRFs and SNFs, rather than to the relative effectiveness of the different settings of treatment.

The RAND Corporation conducted a study for MedPAC in 2005 comparing Medicare beneficiaries from January 2002 to June 2003 with lower extremity joint replacements in IRFs and SNFs (Buntin, Deb, Hoverman, Paddock, & Sood, 2005). The descriptive analysis found, patients who started at a SNF have higher functional status scores at the beginning of the stay, but IRF patients have higher functional scores towards the end of their stay. Both settings showed increases in functional scores during the stay. IRF patients are more likely to be rehospitalized, but SNF patients are more likely to die or be institutionalized. IRF patients tended to have shorter lengths of stay, however SNF care tended to be cheaper. RAND also conducted two multivariate regressions controlling for observable patient characteristics such as individual predictors (e.g. age and gender), clinical predictors (e.g. cancer, congestive heart failure), characteristics of discharging hospitals (e.g., size), PAC availability (closest IRF/SNF to patient home, number of IRFs/SNFs in patient area), payments, length of stay and functional status. Overall, they found that health outcomes in these two settings are heavily biased by factors associated with the types of patients using different types of PAC services. RAND also conducted an IV test and found no difference in mortality among PAC sites, but the chances of institutionalization were higher than for patients that were discharged to home. RAND explained this could be further evidence of selection based on patient characteristics (Buntin et al., 2005).

Mahomed et al. randomized 234 patients to either inpatient rehabilitation or home-based rehabilitation after hip or knee joint replacement. Patients were assessed before surgery and three to twelve months after surgery using the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), Short Form-36 and patient satisfaction. Researchers found that both groups showed similar improvement across function, health status and satisfaction, and similar occurrence of post-surgery complications, but higher costs among the inpatient rehabilitation patients. The authors concluded that home-based rehabilitation would be a more cost-effective way to treat patients after joint replacements (Mahomed et al., 2008).

### *Hip Fracture*

Results of analyses of the comparative effectiveness of IRF and SNF treatment for hip fracture patients are varied, with some studies indicating better outcomes for hip fracture patients treated in IRFs than those treated in SNFs, and others showing better results among those treated in SNFs depending on the outcomes measured.

Kane et al. found that IRF discharges had higher ADL scores than patients treated in a SNF (Kane et al., 2000). Similarly, Munin et al. found that IRF patients experienced better outcomes in terms of FIM<sup>®</sup> motor scores and shorter lengths of stay (Munin et al., 2005). In contrast, a study by Deutsch et al. used UDSMR data to examine discharge motor FIM<sup>®</sup> ratings, lengths of stay, and rates of community discharge for hip fracture patients treated in IRFs and SNFs. This study found no differences between less severe hip fracture cases treated in IRFs and SNFs (Deutsch et al., 2005). Further, contrary to other studies, Deutsch et al. found that hip

fracture patients with severe and moderate to severe disabilities fared better when treated in a SNF than in an IRF. The unadjusted percent of patients discharged to the community by IRFs and SNFs were roughly similar across the five case-mix groups and decreased as patient severity increased; however, after adjusting for several factors, patients within the two most severely disabled case-mix groups treated in SNFs had a statistically significantly higher likelihood of community discharge than those patients treated in IRFs (Deutsch, Granger et al. 2005). These results are consistent with earlier research conducted by Kramer et al. which found no difference in outcomes between hip fracture patients treated in IRF or SNF settings. They studied 518 patients from November 1991 to February 1994 to examine ADL recovery at 3 and 6 months (Kramer et al., 1997).

No randomized controlled studies of the effect of setting on hip fracture outcomes have been done in the US, however, a German study conducted by Roder , Schwab, Aleker, Morike and Thon randomized 145 hip fracture patients to orthopedic inpatient rehabilitation, geriatric inpatient rehabilitation, or home following surgical treatment between 1996 and 1998 (Roder, Schwab, Aleker, Morike, & Thon, 2003). The primary outcome measures of ADLs and IADLs along with a quality of life index (Spitzer's) were measured at baseline, the third day, discharge, and at the 6- and 12-month points. The researchers found that there were no significant differences across the three groups and no differences in overall mortality. This study had a small sample size which may not be representative of the population (due to the inclusion criteria); nonetheless, the study is interesting because it is both randomized and prospective and because outcomes are measured at a few time points (Roder et al., 2003).

#### *Other Conditions*

Additional studies have been done looking at the impact of inpatient rehabilitation on a variety of outcomes for a variety of conditions, which are discussed below. For the most part these studies do not compare across types of settings or, if they do, it is not clear that they have adequately controlled for baseline differences in patients who receive care from inpatient rehabilitation facilities and those who receive care from other types of PAC settings to draw firm conclusions. We have included summaries of these studies, including the non-comparative ones, here because several investigate the impact of inpatient rehabilitation on conditions outside of the 13 qualifying conditions; however few of them allow conclusions to be drawn about whether patients fare better in one type of setting versus another.

The Agency for Healthcare Research and Quality (AHRQ) sponsored a literature review to investigate the impact of inpatient rehabilitation on conditions not included in the 60 percent rule, including cardiac, pulmonary, transplant, total knee or hip replacement, back surgery and cancer. AHRQ found very few relevant studies comparing patient outcomes in IRFs to other settings for these conditions (Lau et al., 2005). The studies they did find tended to be old or non-US and highly variable with regard to sample, design and methods (Lau et al., 2005).

AHRQ also identified multiple non-comparative prospective cohort studies assessing the impact of inpatient rehabilitation services on chronic obstructive pulmonary disease (COPD) patients. These studies tended to find improvements in exercise tolerance and quality of life following receipt of inpatient rehabilitation services, though findings with regard to resting ventilation were mixed (Carter et al., 1988; Connor, O'Shea, O'Driscoll, Concannon, &

McDonnell, 2001; Guyatt, Berman, & Townsend, 1987; Lau et al., 2005; Sabers et al., 1999; Stewart et al., 2001). A retrospective study using medical records to assess outcomes of COPD patients receiving care from IRFs and from outpatient rehabilitation settings found improvements in 12 minute walk distance, regardless of patient age, and evidence of effectiveness of the educational component of therapy for patients receiving therapy in both settings (Couser, Guthmann, Hamdeh, & Kane, 1995; Lau et al., 2005).

Vincent, Stephenson, Omli and Vincent (2008) conducted a comprehensive review of the existing research from 1965 to March 2008 on cardiac and pulmonary patients to compare rehabilitation outcomes across three post-acute care settings including inpatient rehabilitation, SNF, and home health. The authors noted that the review of the literature for the cardio-pulmonary rehabilitation programs showed that positive outcomes can be achieved through rehabilitation regardless of setting, in some cases reducing all-cause mortality (Vincent et al., 2008) When discussing the cross-setting analyses however, the authors noted that there are likely differences in patient populations and therapy services across these settings, and therefore the differences in outcomes across the settings, observed in the studies they reviewed, are 'not well characterized' (Vincent et al., 2008). One such study done by Vincent et al. examined outcomes for cardiopulmonary patients treated in two IRFs and one SNF. Outcomes measured in this study were FIM<sup>®</sup> scores, MDS scores, lengths of stay, and rates of discharge to home. The study found that, after adjusting for age, gender, widowship, presence of dementia, and body mass index (BMI), IRF patients had shorter lengths of stay, higher rates of home discharge, and greater functional independence than SNF patients. Mortality rates were higher in SNF, and the cost of care was higher in IRFs (Vincent & Vincent, 2008). However, these results should be interpreted with caution as they may be attributable to differences in functional measurement as this study relied on 2 different measures: FIM<sup>®</sup> scores in the IRF and MDS scores in the SNF, in addition to unmeasured differences in patient characteristics across setting type.

Kane, et. al., in the prospective study referred to above, which used instrumental variable design to control for selection bias, compared functional outcomes for patients with stroke, congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), hip procedures and hip fractures receiving care from SNF, IRF, home health or discharged to home without services. The study, using patients from 2000, found that patients fared better on ADL when receiving rehabilitation services at an IRF or from a home health agency than from a SNF or if they were discharged home with no rehabilitation services (Kane et al., 2000).

Dillingham and Pezzin employed a retrospective design, using Medicare claims data from 1996-1997 to assess outcomes of older adults with lower extremity amputation receiving services in IRFs, SNFs or at home. This study used 1996-1997 data and found that patients receiving services in IRFs had reduced mortality, and reduced occurrence of subsequent amputation. IRF patients were more likely to subsequently acquire prosthetic devices and be medically stable (Dillingham & Pezzin, 2008). However, it is unclear whether this is due to biased samples or actual differences since the analyses were limited to claims data, which have fewer variables available to use to control for differences.<sup>7</sup>

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<sup>7</sup> Claims data are very limited in their ability to risk-adjust or “match” patients on severity.

### 2.3.3 Cost

One question that could also be relevant to understanding access to appropriate rehabilitation services is whether beneficiaries may be receiving the same service in different sites of care where the costs to the Medicare program or to the beneficiary may differ.

#### *Costs to Medicare*

Research by Vincent et al. found that per-patient IRF charges were more than double those of SNFs for cardiopulmonary patients (\$22,162 for IRFs versus \$10,873 for SNFs) based on data from January 2001 through June 2006 (Vincent & Vincent, 2008). Deutsch et al. also found IRF care to be more costly to Medicare than SNF care. Using data from 1996-1997 (Deutsch et al., 2005; Deutsch et al., 2006). However, Kane et al. found that nursing home care was less cost-effective than care in other PAC settings during a 2000 study (Kane et al., 2000).

These studies are limited by their reliance on administrative data. Since the current assessment forms use different measures of functional impairment and medical severity, it is difficult to compare patients across settings. Yet, this information is critical to making cost comparisons based on similar severity levels of different types of patients.

**Medicare Payment Base Rates and Out of Pocket Cost Sharing, By Facility Type, FY 2009**

	Payment Base Rate FY2009 (\$)	Out of Pocket Cost Sharing
Acute	5,124.56	<ul style="list-style-type: none"> <li>• Deductible of \$1,068 and a copayment of \$267 per day for the 61st through 90th day</li> </ul>
LTCH	39,114.36	<ul style="list-style-type: none"> <li>• If admitted from Acute hospital, no deductible;</li> <li>• If admitted from community, a deductible of \$1,068 and a copayment of \$267 per day for the 61st through 90th day</li> </ul>
IRF	12,958	<ul style="list-style-type: none"> <li>• If admitted from Acute hospital, no deductible;</li> <li>• If admitted from community, a deductible of \$1,068 and a copayment of \$267 per day for the 61st through 90th day</li> </ul>
SNF (Urban)	See Below	<ul style="list-style-type: none"> <li>• \$0 for the first 20 days each benefit period;</li> <li>• \$133.50 per day for days 21-100 each benefit period;</li> <li>• All costs after day 100 in a benefit period</li> </ul>
SNF (Rural)	See Below	
HHA	2,271.92	<ul style="list-style-type: none"> <li>• \$0 for home health costs;</li> <li>• 20% of Medicare approved amount for durable medical equipment</li> </ul>

Sources:

Acute: <http://edocket.access.gpo.gov/2008/pdf/E8-17914.pdf>

LTCH:

[http://www.cms.hhs.gov/LongTermCareHospitalPPS/downloads/CMS1393F\\_Fact\\_Sheet.pdf](http://www.cms.hhs.gov/LongTermCareHospitalPPS/downloads/CMS1393F_Fact_Sheet.pdf)

IRF: <http://edocket.access.gpo.gov/2008/pdf/e8-17797.pdf>

HHA: [http://www.medpac.gov/documents/MedPAC\\_Payment\\_Basics\\_08\\_HHA.pdf](http://www.medpac.gov/documents/MedPAC_Payment_Basics_08_HHA.pdf)

**SNF Medicare Daily Base Rates FY 2009**

Rate Component	Nursing	Therapy (for rehab. RUGs)	Therapy (for non-rehab. RUGs)	Other
Urban	151.74	114.30	15.05	77.44
Rural	144.97	131.80	16.08	78.87

Source: <http://edocket.access.gpo.gov/2008/pdf/e8-17948.pdf>

As shown in the tables above, Medicare costs are dependent on the Medicare Prospective Payment Rates (PPS). Medicare pays the PPS base rate to each facility, plus an adjustment based on the diagnoses of each patient and other factors. For an IRF, the FY2009 Medicare base rate was \$12,958, compared to \$5,124.56 for an acute hospital, \$39,114.36 for an LTCH, and \$2,271.92 for Home Health services (SNF payment rates are broken down above).

*Costs to Beneficiaries*

Deutsch et al. found that patients being treated in SNFs were more likely to have higher out-of-pocket costs than those treated in IRFs. In 1997, 48% of SNF patients had deductibles or copayments, where only 14% of IRF patients had deductibles or copayments (Deutsch et al., 2005). These findings are supported by the data shown in the tables above. Costs to beneficiaries are different based on the setting. As shown above, if the patient is admitted to an acute hospital,

a beneficiary must pay a \$1,068 deductible at admission. If a patient is then transferred to a LTCH or IRF, the patient is not responsible for the deductible because it was paid at the acute level. However, if a patient is admitted to a LTCH or IRF directly from the community, the patient is responsible for the \$1,068 deductible. Patients who stay at each of the three facilities for 61-90 days need to pay a copayment of \$267 per day. Patients admitted to SNFs do not incur any additional costs for the first 20 days of the benefit period, but need to pay a deductible of \$133.50 for each day from day 21-100 of the benefit period, and the beneficiaries are responsible for all costs afterwards. Patients that receive home health care do not have any deductibles or copays, but they are responsible for 20% of the costs for durable medical equipment.

#### **2.3.4 Staffing Models**

Current research illustrates a clear association between acuity-based nurse staffing (or nurse staffing based on patient needs) and patient outcomes (Abt Associates, 2001; Harrington, Zimmerman, Karon, Robinson, & Beutel, 2000; Horn, Buerhaus, Bergstrom, & Smout, 2005; Institute of Medicine, 1996, 2001; United States Department of Health and Human Services Centers for Medicare and Medicaid Services (CMS), 2001). However, most of this research on staffing models typically is restricted to acute care hospital and nursing facility settings. While some professional associations recommend guidelines regarding competency levels that meet rehabilitation nursing standards of practice and onsite involvement of certified rehabilitation registered nurses (ARN, 2009), few empirical studies address rehabilitation nursing models and associated impacts on patient outcomes in post acute settings. Only a few studies focus on inpatient rehabilitation hospitals.

Although there is limited information on post-acute staffing models, empirical evidence does exist to provide some understanding of rehabilitation staffing models and patient outcomes. For example, Duncan, et al. (2005) reported that while there is little difference in total staffing between facilities providing inpatient rehabilitation and traditional medical settings, organizational factors, such as adherence to staffing rehabilitation guidelines, were associated with improved patient outcomes in IRFs. This conclusion does not compare IRF patient outcomes to patients in other settings instead, it simply identifies the value of rehabilitation staffing in improving outcomes for these populations.

Another study of 54 rehabilitation facilities (Nelson et al., 2007), funded by the Association of Rehabilitation Nurses (ARN) and UDS<sub>MR</sub>, reported a positive relationship between a unit manager's ratings of non-RN staff rehabilitation competency and case-mix adjusted FIM<sup>®</sup> resident acuity gain. Shorter patient length of stay was associated with a higher proportion of nurses certified in rehabilitation nursing (i.e., a 1% increase in CRRNs was associated with a 6% decrease in LOS). In addition, the patient acuity (i.e., the rehabilitation impairment categories) was positively associated with total and RN nursing hours per patient day (HPPD) (but not associated with non-RN HPPDs). Nelson, et al., suggest evidence for a minimum nurse-patient ratio in rehabilitation settings that addresses both nursing ratios (RN and non-RN proportions inclusive of non-RN competency) and patient acuity.

In summary, few empirical studies specifically address rehabilitation staffing models and the associated impacts on patient outcomes; none address rehabilitation staffing models across post acute rehabilitation delivery settings. Staffing elements associated with improved

rehabilitation patient outcomes (e.g., increased FIM<sup>®</sup> score, decreased LOS) in rehabilitation facilities included non-RN staff rehabilitation competency; staff adherence to staffing rehabilitation guidelines and the proportion of nurses certified in rehabilitation nursing. Patient acuity is an important factor associated with any staffing element. It should be noted that the influence of other facility characteristics or residual effects of baseline differences in characteristics of patients being admitted into IRFs with higher or lower rates of nurse rehabilitation certification and other staffing may have had a role in these findings.

## **SECTION 3 ALTERNATIVE APPROACHES TO**

### **IDENTIFYING APPROPRIATE IRF ADMISSIONS**

The second analysis required by the MMSEA is whether there are alternatives or refinements to the 60 percent rule policy for identifying appropriate IRF admissions. The legislation specifically requires analysis of whether patients' functional status, comorbidities or other patient-related factors may be better for identifying appropriate IRF populations than the list of conditions that we currently have. This analysis builds on the results of the earlier GAO and IOM studies which suggest that other factors should be weighed when determining appropriateness of IRF services. Many argued for considering patients' functional status and their potential for improvement. For example, the stroke guidelines issued by AHRQ (1995) note the importance of considering a patient's motor and cognitive function, physical activity endurance, and social support when selecting appropriate rehabilitation settings for post-stroke populations. Similar observations were made in more recent studies (Deutsch et al., 2006; Dobkin, 2004) and by those who submitted comments through the Town Hall Meeting and Open Door Forums conducted by RTI for CMS in February 2009. (See Appendix 1 for a summary of the issues raised through the public forums.)

This issue was one of the prime foci of the Technical Expert Panel convened in preparation for this report. Technical Expert Panel members represented clinicians providing rehabilitation services in a variety of settings, including IRFs, SNFs, LTCHs, and home health agencies as well as representatives of the various provider associations (see Appendix 2 for TEP membership list). The panel members raised several different issues in the discussion of the MMSEA directives. First, they suggested that separate approaches are needed to identify appropriate IRF admissions and to certify IRFs. They expressed concerns that reviews conducted by the Recovery Audit Contractors (RACs) have inappropriately used the 60 percent rule criteria to determine the appropriateness of IRF admissions, rather than the medical necessity criteria. Panel members suggested that updates to the medical necessity criteria were needed to better identify medically necessary IRF services, and that these criteria needed to be entirely separate from the criteria for classifying IRFs. Some members of the TEP also suggested that facility and service characteristics should be considered when classifying IRFs. These factors and other considerations such as clinical complexity are discussed below.

#### **3.1 Facility and Service Characteristics to Classify IRFs**

TEP members, particularly representatives of the American Rehabilitation Providers Association (AMRPA), called for greater specificity of facility characteristics in defining rehabilitation certification rules. They indicated that the criteria for certifying a rehabilitation provider should be based on factors similar to other Medicare conditions of participation for other types of hospitals that can distinguish between different levels of therapy services. We note that CMS is currently considering establishing conditions of participation for IRFs through notice and comment rulemaking. Such factors might include:

- intensity and breadth of services provided,



- discipline and licensure levels of staff at the facility,
- structural characteristics, such as availability of laboratory, radiology, and pharmacy services,
- specialization and volume, and
- quality of care and outcomes associated with the rehabilitation services.

As noted above, some of these issues, such as the staffing and organizational characteristics are already in regulation. While IRFs do not have a separate set of Conditions of Participation, IRFs must meet additional requirements under 42 CFR 412.23, 412.25 and 412.29 to receive payment. These additional requirements require IRF units of acute care hospitals to have the following characteristics:

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

In addition, staffing requirements in 42 CFR 412.23 and 412.29 specify that IRFs must use qualified personnel to provide rehabilitation nursing, physical therapy, occupational therapy, speech-language pathology, social services, psychological and neuropsychological services, and orthotic and prosthetic services, as needed. In addition, these regulations require that the hospital be led by a doctor of medicine or osteopathy who has completed at least 2 years of rehabilitation training or experience, after completing a one-year hospital internship.

In addition, IRFs must treat at least 60 percent of their patients for one or more of the qualifying 13 conditions. Further, IRFs must limit their patients to only those patients who meet the IRF medical necessity criteria, as required in 42 CFR 412.622(a)(3), (4), and (5) and as discussed in Chapter 1, Section 110 of the Medicare Benefit Policy Manual.

CMS recently issued a final rule updating the medical necessity criteria for IRF admissions (74 FR 39762, 8-7-09). This rule builds on discussions with the rehabilitation industry. In addition, CMS updated the Medicare Benefit Policy Manual (MBPM), which further interprets the regulations for determining whether an IRF admission is “reasonable and necessary.” The rule also modifies some of the program requirements, such as calling for interdisciplinary teams, rather than just multidisciplinary team management of the patient. Further, the rule requires that a rehabilitation physician be the key decision-maker regarding a beneficiary’s need for intensive rehabilitation and includes additional procedural changes related to determining whether IRF stays are reasonable and necessary.

While the clinical communities have guidelines for treating patients with different conditions (i.e., stroke, spinal cord injury, brain injury), program standards distinguishing between the need for different levels of treatment (e.g., hospital-level, extended care, maintenance) do not exist. Yet, staffing levels may be an important factor for distinguishing between different levels of treatment. For example, both SNF and IRF have therapy staff, but they may differ in the intensity of services provided as measured by the number of licensed staff or the mix of staff used to treat different populations. The TEP suggested that establishing conditions of participation for IRFs would be one vehicle for measuring the intensity of services provided to beneficiaries in different levels of treatment. CMS is currently considering establishing conditions of participation for IRFs through notice and comment rulemaking.

Accreditation standards are often useful criteria for distinguishing among different levels of care. The Commission on Accreditation of Rehabilitation Facilities (CARF) specializes in accrediting rehabilitation providers and programs. However, their *comprehensive integrated inpatient program standards* do not distinguish between rehabilitation provided in an LTCH, IRF, or SNF, although the medical acuity of patients varies extensively across these three settings. CARF also accredits specialized programs for treating specific conditions (e.g., amputation). While these CARF standards focus on quality and intensity of services provided by the program, again, the standards do not distinguish expected rehabilitation intensity among the three inpatient settings and do not specify staffing levels.

RTI also examined private sector standards commonly used by other insurers for determining appropriate standards of care. These largely reflected the Medicare program standards, distinguishing between acute and post-acute rehabilitation only in terms of the hours of skilled rehabilitation services needed per week. While this is a useful standard for distinguishing program intensity, it does not address the underlying patient characteristics that would explain the need for two hours versus three hours of skilled rehabilitation a day.

### **3.2 Patient Characteristics**

The stakeholder community, including both the TEP members and participants in the other public meetings, made several recommendations for examining patient characteristics to explain differences in outcomes and costs of care. Foremost among these was the suggestion that IRF patients should be defined the way they are characterized in practice, based on functional severity, not diagnosis by using functional impairment measures, such as FIM<sup>®</sup> or FIM<sup>®</sup>-like measures, and the patients' ability to tolerate therapy rather than a measure of intensity of therapy needs. Further, TEP members noted that appropriateness of care should be based on the totality of the patient, including their comorbid conditions, functional status, cognitive status, pain levels, need for close medical supervision, and their potential to benefit from the multidisciplinary approach provided in intensive rehabilitation settings. It is important to note the challenges associated with establishing such criteria and the work that would be needed to explore the feasibility of and to establish criteria based on patient characteristics. If the 60 percent rule were abolished in favor of patient-specific criteria, patient-specific criteria would need to be focused enough to identify patients who are appropriate for IRFs and exclude those who are not.

TEP members were also asked to consider whether the list of qualifying conditions should be kept but expanded. Among the participating IRFs, the comment was offered that the qualifying conditions were not harmful to access now that the compliance threshold was set at 60 percent. However, the clinicians identified several groups of patients who they felt could benefit extensively from intensive rehabilitation programs as offered by IRFs, but which were outside of the list of 13 qualifying conditions. These populations included the following:

- Complex cardiac (e.g. open-heart or major-thoracic surgery, recurrent admissions for heart failure, complicated course post-myocardial infarction, coronary-artery bypass graft, cardiac implantable devices)
- Pulmonary
- Transplant
- Myelopathy, myopathy and neuropathies
- Other orthopedic diagnoses
- Pain
- Cancer

TEP members also pointed out that diagnoses alone were inadequate for identifying appropriate admissions. They suggested that key factors to consider when identifying appropriate IRF admissions were the severity of the functional impairment, the potential for improvement, and the complications of cognitive impairments. In general, they said that it was important to consider the total patient complexity in addition to the diagnoses. They raised the point that complications, including a history of infected joint, DVT or pulmonary embolism, existence of associated neurological condition, and blood loss anemia (among others) could have substantial implications for the need for the more intensive services provided by an IRF for populations, such as joint replacement patients.

One issue that was raised repeatedly was that rehabilitation patients vary in their needs for services to achieve functional independence. While this discussion focused on defining appropriate populations for IRF admission, members pointed to the absence of standards across the range of services. Some called for approaching these issues as a full system and developing a sound total post-acute care system with a common assessment instrument and common quality and outcome measures. It should be noted that work is being done by CMS through the Post-Acute Care Demonstration Program to develop such an instrument, (the CARE tool) which will allow common severity metrics, quality and outcome measures, regardless of provider setting.

## **SECTION 4**

### **COMPARATIVE COSTS AND OUTCOMES ANALYSIS OF POPULATIONS WITH CONDITIONS OUTSIDE OF THE 13 QUALIFYING GROUPS WHO ARE TREATED IN IRFS AND OTHER SETTINGS**

As noted in Section 3, little evidence exists regarding comparative costs and outcomes for rehabilitation populations in general. One of the outstanding issues is the inability to compare across settings that use different data standards, or measures of functional impairment. CMS will address this issue by examining this question with data from the Post-Acute Care Payment Reform Demonstration (PAC PRD) mandated by the Deficit Reduction Act (DRA) of 2005. Given the dearth of information in this area, RTI will build on the data available from the DRA study to begin to address these questions.

Experts from across the country have suggested that many types of patients' functional status can be improved from intensive rehabilitation services provided by hospitals such as IRFs. However, little empirical evidence exists to examine whether IRF services are necessary to achieve these outcomes or whether less intensive rehabilitation settings may be as appropriate or more appropriate for certain patient populations. This section identifies some of the outstanding issues needing research over the coming year to answer these questions about appropriate IRF admissions.

#### **4.1 Key Research Questions**

- **Does medical severity differentiate among cases admitted to IRFs from those admitted to other rehabilitation settings?**
- **Does functional impairment differentiate cases admitted to IRFs from those admitted to other rehabilitation settings?**
- **Do costs and outcomes differ for similar types of cases treated in IRFs compared to those treated in other rehabilitation settings?**

##### **4.1.1 Research Suggestions from Technical Expert Panel and Public Forums**

The Technical Expert Panel and participants in the public forums had a variety of research recommendations to help modify the IRF classification criteria. They also noted that the research should investigate patient outcomes across settings and noted the importance of having a standard way of measuring patients, as with the CARE tool. They recommended several comparative analyses, including examining the outcomes of similar patients who were refused IRF admission with those who were admitted to IRFs to measure whether access to needed rehabilitation services is reduced for certain populations who could benefit from intensive rehabilitation.

A second suggestion was to select patients with conditions outside of the 13 qualifying conditions and examine their outcomes when treated in IRFs compared to similar patients treated in other settings. The PAC PRD data should provide the opportunity to identify "similar" patients and examine the costs and outcomes for these patients associated with treatment in alternative settings. The demonstration includes patient assessment and case-mix data as well as

staff resource data. Together, they allow identification of similar patients, outcomes, and comparisons of resources used in alternative rehabilitation sites of care.

Several outcome measures were recommended to assess patients across settings, including the following: FIM<sup>®</sup> efficiency (a potentially problematic measure which could incentivize premature discharge), discharge destination (particularly rates of discharge to home, and time to discharge), lengths of stay, total costs for the entire episode of illness (not just IRF care), or six-month outcomes (lower costs in one setting may not result in total lower costs to Medicare if there are subsequent re-admissions). Recommended outcomes also included resource use, time to death, and other measures that geriatricians typically use. Other measures to account for in analyses include services supplied, patient pre-morbid functional level, resource availability – both the patient-level (environmental and social support, financial, additional insurance) and geographic- or regional-level differences, and patient combination of medical and functional complexity (case-mix). In particular, they noted a few comorbidities to consider (heart disease, blood clot, infection, aspiration pneumonia, severity, disability, resources available at home, type of disability, depression, cognitive impairment, swallowing disorder, need for orthotics) as important in the rehabilitation population.

Participants also recommended that research should identify specific factors that differentiate care in different settings, including process factors such as the skill mix of staff and other processes and program standards. Stakeholders recommended that the research was needed to examine the impacts of the make-up of the treatment team (including the training of who leads the team or whether it is interdisciplinary) and the frequency and intensity of care.

## **SECTION 5 CONCLUSIONS AND NEXT STEPS**

Each of the IPPS-exempt hospitals in the Medicare program are responsible for treating select types of patients, and are reimbursed at substantially higher levels than traditional IPPS hospitals. For example, psychiatric hospitals (IPFS) are “primarily engaged in providing psychiatric services for the diagnosis and treatment of mentally ill persons.” (Medicare Benefit Policy Manual, Section 2). LTCHs are expected to serve medically complex patients needing longer term services (MMSEA, 2007). While the LTCH regulations do not specify exact diagnoses, LTCHs are expected to maintain an aggregate average length of stay of at least 25 days. IRFs use diagnosis as the primary criterion for admission, and at least 60 percent of patients must be admitted for treatment of one or more of 13 specified diagnoses. However, we recognize that diagnosis alone is not a guarantee that a patient needs an intensive level of rehabilitation, or that patients being treated for different diagnoses/conditions do not require the high level, interdisciplinary services furnished by an IRF. Thus, in considering changes to the 60 percent rule, we need to establish policies that ensure the availability of IRF services to beneficiaries whose intensive rehabilitation needs cannot be adequately served in other settings. At the same time, we need to ensure that criteria for IRF classification focus on the intensity of service needs that justify the higher IRF payment rate.

As noted in the public comments and Technical Expert Panel conclusions, an IRF stay is not needed for all patients having a rehabilitation-type diagnosis. Patient characteristics, such as medical comorbidities, prognosis for improvement and cognitive deficits, are important to consider when identifying appropriate IRF patients. More research is needed to propose reasonable levels of illness and impairment for identifying appropriate IRF patients.

As the CARE data become available from the PAC PRD, CMS will analyze the standardized data to determine whether there are individual patient characteristics that are associated with differences in outcomes for rehabilitation populations. Characteristics considered will include patient medical, cognitive, and functional factors in addition to availability of social supports.

It is also important to understand how IRFs are used with, or in the absence of, other PAC providers and how this differs for different types of conditions and market supply factors. Focusing on a small set of types of cases, such as stroke, orthopedic, TBI, or others commonly treated in IRFs and other settings will provide some information on differences between those who do/do not use IRFs for cases that look similar medically in terms of their prior hospitalization. Understanding the reasons for different discharge dispositions may complement some of the patient characteristics identified with the common CARE assessment data.

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**APPENDIX 1**  
**ANALYSIS OF THE CLASSIFICATION CRITERIA FOR INPATIENT**  
**REHABILITATION FACILITIES (IRFS)**  
**SUMMARY OF TOWN HALL AND OPEN DOOR FORUM COMMENTS FOR**  
**TECHNICAL EXPERT PANEL REVIEW AND DISCUSSION**  
**MONDAY, FEBRUARY 23, 2009**

In 2007, Congress directed CMS, through the Medicare, Medicaid and SCHIP Extension Act (MMSEA) to develop a Report to Congress with the following:

- A. An analysis of Medicare beneficiaries' access to medically necessary rehabilitation services, including the potential effect of the 75 percent rule (now known as the "60 percent rule") on access to care.
- B. An analysis of alternatives or refinements to the 75 percent rule (now known as the "60 percent rule") policy for determining criteria for inpatient rehabilitation hospital or unit designation under the Medicare program, including alternative criteria which would consider a patient's functional status, diagnosis, co-morbidities or other relevant factors.
- C. An analysis of the conditions for which individuals are commonly admitted to inpatient rehabilitation hospitals that are not included as a condition formerly described in section 412.23(b)(2)(iii) (redesignated as 412.23(b)(2)(ii) in the FY 2009 IRF PPS final rule (73 FR 46370 at 46391 through 46392)) of title 42, Code of Federal Regulations, to determine the appropriate setting of care, and any variation in patient outcomes and costs, across settings of care, for treatment of such conditions.

CMS has hosted two public meetings, a Town Hall Meeting on February 2, 2009 and an Open Door Forum on February 9, 2009, and established an email box to invite stakeholder input into these critical discussions. Representatives of rural and urban inpatient rehabilitation facilities have participated, in addition to representatives from the Uniform Data System for Medical Rehabilitation (UDSMR), the Commission on Accreditation of Rehabilitation Facilities (CARF), professional and provider associations including the American Physical Therapy Association (APTA), the Association of Academic Physiatrists (AAP), the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR), the American Medical Rehabilitation Providers Association (AMRPA), the American Occupational Therapy Association (AOTA), the American Academy of Physical Medicine and Rehabilitation (AAPM&R), the American Hospital Association (AHA) and the California Hospital Association (CHA). Participants have included nurse administrators, physical therapists, physiatrists, and patient advocates including representatives from the Center for Medicare Advocacy and the Coalition to Preserve Rehabilitation. All participants were invited to submit written comments.

The following is a summary of the written and oral comments received by CMS as of February 18, 2009. Please note that this outline, for your review and discussion at this Technical Expert Panel, is a reporting of the feedback the participants generously shared with the project team, and not an endorsement of the included comments.

## 1. Criticism of the 75% rule

*Respondents voiced concerns about perceived changes in access to quality rehabilitation services in response to 75% rule.*

- a. **Observations of instability in the rehabilitation market including organizational and physician departure:**
  - i. Physicians leaving acute settings for outpatient
  - ii. Declines in patient volume, staffing and available beds
  - iii. Closure of IRF facilities
- b. **Concerns that current criteria may force IRF-appropriate patients into other settings:**
  - i. Patients who would benefit specifically from acute rehabilitation (who would qualify if criteria included functional status, etc.) may be denied access based on current criteria
  - ii. Any current or future classification rules should not impede the Americans with Disabilities act goals
  - iii. Older beneficiaries may be more likely to be denied access to IRFs
- c. **Concerns about access to quality rehabilitation services at all levels:**
  - i. Respondents suggested standards should be more explicit for rehabilitation provided in all settings
  - ii. Medically fragile patients receiving care in non-acute rehabilitation settings may be at greater risk for ‘failure to rescue’
  - iii. Small IRFs may be taking complex patients they are less well equipped to treat
  - iv. Data are currently inadequate to evaluate outcomes and quality across setting types

## 2. Recommendations for Revisions to Classification Criteria

- a. **General Recommendation: Separate IRF Classification criteria from Medical Necessity criteria**

*Speakers generally agreed that the criteria used to identify facilities that are providing acute rehabilitation should be distinct from the criteria used to identify patients who are eligible for Medicare coverage of IRF services.*

- i. Participants observed that IRF classification criteria have been used as coverage policy
  1. They also observed that interpretation of Medicare policy is not always uniform across Fiscal Intermediaries
- ii. Many suggested the development of a separate, explicit Medical Necessity policy which might include:

1. Criteria based on evidence or expert medical judgment in absence of research
  2. Include pre-admission screening and corresponding modifications to patient assessment instrument
  3. Focus on the following patient characteristics:
    - a. prognosis
    - b. medical, surveillance, rehabilitation needs
    - c. social/environment
  4. One respondent suggested the policy laid out in Medicare Benefit Policy Manual (Ch.1. section 11.4.1) might be a useful starting point
- iii. Several participants observed that current classification criteria are being used during Recovery Audit Contractor (RAC) reviews to justify denials with negative impacts on subsequent admission decisions. Speakers also made the following suggestions regarding RAC reviews:
1. Make it easier for IRFs to get feedback on what is a qualified stay
  2. Allow Medicare Advantage to be included in the compliance testing process

**b. Use *facility and service characteristics* to classify IRFs**

*Participants suggested that criteria should not focus on patient diagnoses but rather on characteristics of the facility, including:*

- i. Services available (intensity and breadth)
- ii. Disciplines and skill set of staff
- iii. Quality of care and outcomes
- iv. Structural characteristics (e.g. available laboratory, radiology, pharmacy facilities)
- v. Specialization and volume
- vi. Other facility characteristics

**c. Use a *functional-based approach*, taking into account patient clinical complexity, as an alternative or in addition to the 75% rule**

*Speakers suggested that IRF patients should be defined the way they are characterized in practice, based on functional severity, not diagnosis:*

- i. Define IRF patients using function and impairment status, including FIM<sup>®</sup> or FIM<sup>®</sup>-like measures, intensity of therapy needs and ability to tolerate therapy

- ii. Look at the totality of patient:
  - 1. conditions,
  - 2. functional status,
  - 3. cognitive status,
  - 4. pain,
  - 5. need for close medical supervision, and
  - 6. potential benefit from multidisciplinary approach

d. **If the 75% rule is kept, the list of qualifying diagnoses should be expanded and other modifications should be considered.**

*Commentators were in favor of the stability established by CMS formally distinguishing IRFs from other hospitals, but suggested modifications to the existing rule.*

i. **Additional diagnoses could include:**

- 1. Complex cardiac (e.g. open-heart or major-thoracic surgery, recurrent admissions for heart failure, complicated course post-myocardial infarction, coronary-artery bypass graft, cardiac implantable devices, RIC 14),
- 2. Pulmonary (RIC 15)
- 3. Transplant
- 4. Myelopathy, myopathy and neuropathies
- 5. Other orthopedic diagnoses (RIC 09)
- 6. Pain (RIC 16)
- 7. Cancer

ii. **Other diagnosis related comments:**

- 1. Consider complications and comorbidities and total patient complexity in addition to diagnoses
- 2. Create a new category for “Medically Fragile” or “Catastrophic Illness” that would include patients meeting the following criteria:
  - a. Minimum acute hospitalization stay ( $\geq 2$  weeks) just prior to IRF admission
  - b. Occurrence of one of a list of serious complications during that acute stay: stroke, GI bleed, respiratory failure, sepsis, acute renal failure, etc.
- 3. List of eligible diagnoses should reflect current patient populations and medical practice

4. Age cutoff for joint replacement is arbitrary, and other complications or history of complications should be considered (history of infected joint, DVT or pulmonary embolism, existence of associated neurological condition, blood loss anemia)
5. Consider using rehabilitation impairment categories (RICs)

iii. **Other issues to consider if the 75% rule is kept:**

1. Stress on providers has been lessened by keeping the threshold at 60%
2. The definition of Medical Necessity still needs refinement
3. RAC reviews still need scrutiny
4. Consider using the 75% rule as a first screen with a second tier review by an expert panel for those facilities that don't pass

e. **Accreditation**

*Multiple speakers suggested accreditation as an alternative or supplement to IRF qualification criteria:*

- i. Skilled surveyors would review patient records and evaluate facilities on standards, process, clarity of information collected, use of resources, patient outcomes, efficiency and appropriateness of care
- ii. Consider accreditation for rehabilitation in all settings

f. **Other Broader Approaches**

*Speakers suggested additional system-level strategies for classifying IRFs, defining Medical Necessity, and establishing standards for rehabilitation programs across the continuum of care:*

- i. **Establish an expert Rehabilitation Advisory Panel**
  1. Use a consensus model to review Medical Necessity rules
  2. Allows responsiveness to changes in medical practice over time
  3. Could assist in the development and update of rehabilitation standards in all settings
- ii. **Full system approach to problem**
  1. Develop a sound total post-acute care system
  2. Develop a common assessment instrument, and quality measures,
  3. Incentivize quality and efficiency through payment policy

**APPENDIX 2**  
**CRITERIA FOR CLASSIFYING INPATIENT REHABILITATION FACILITIES**  
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