Assessment of Patient Outcomes of Rehabilitative Care Provided in Inpatient Rehabilitation Facilities (IRFs) and After Discharge

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Study Highlights

- **Dobson | DaVanzo was commissioned by the ARA Research Institute (an affiliate of the American Medical Rehabilitation Providers Association – AMRPA) to conduct the most comprehensive national study to date comparing the clinical outcomes of patients treated in IRFs to those treated in SNFs**
- **Over a two-year period, IRF patients clinically and demographically similar to SNF patients:**
  - Returned home from their initial stay two weeks earlier
  - Remained home nearly two months longer
  - Stayed alive nearly two months longer
- **Of matched patients treated:**
  - IRF patients experienced an 8% lower mortality rate during the two year study period than SNF patients
  - IRF patients experienced 5% fewer emergency room (ER) visits per year
  - For five of the 13 conditions, IRF patients experienced significantly fewer readmissions per year

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Study Highlights (cont'd)

- **Receiving rehabilitation in IRFs improves quality of life for the patient, defined as living longer, reducing the use of facility-based care including hospitals and ER visits, and remaining in their homes with outpatient services**

- **Significantly better clinical outcomes could be achieved by treating patients in an IRF with an additional cost to Medicare of $12.59 per day (while patients are alive during the two-year study period) across all conditions**

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Study Purpose

- **The ARA Research Institute commissioned Dobson DaVanzo & Associates, LLC to conduct a retrospective study of clinical outcomes and Medicare payments for *clinically and demographically similar matched cohorts of patients who received rehabilitative services in IRFs compared to SNFs* following the implementation of the revised 60% Rule in July 2004**

- **Study findings are intended to profile downstream comparative utilization and clinical effectiveness of post-acute care pathways within two years of discharge from the initial rehabilitation stay, as well as the total episode cost of treatment during the five years following implementation of the 60% Rule**

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Study Objectives

- **To identify the patient groups that have been affected most by Medicare payment policy changes that have shifted patients from IRFs to other post-acute care settings between the years 2005 and 2009**
- **To explore the long-term effect of the 60% Rule on patient outcomes and health care utilization of Medicare beneficiaries across clinical conditions between 2005 and 2009**

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Study Context

- **Under the IRF prospective payment system (IRF-PPS), at least 60 percent of a facility's admissions must be in one or more of 13 clinical conditions specified by CMS ("60% Rule")**
- **Medicare beneficiaries with certain conditions previously treated in IRFs are now treated in SNFs or other settings because of this requirement**
- **The long-term effect on beneficiaries' health outcomes and health care utilization of being treated in other settings has not been thoroughly investigated**
- **This study serves as the most comprehensive national study to date that examines the long-term patient outcomes of clinically similar beneficiary populations treated in IRFs and SNFs**
  - The sample size across all conditions is more than 100,000 matched pairs of Medicare beneficiaries (i.e., an IRF patient matched to a nearly clinically identical SNF patient), followed over a two-year study period

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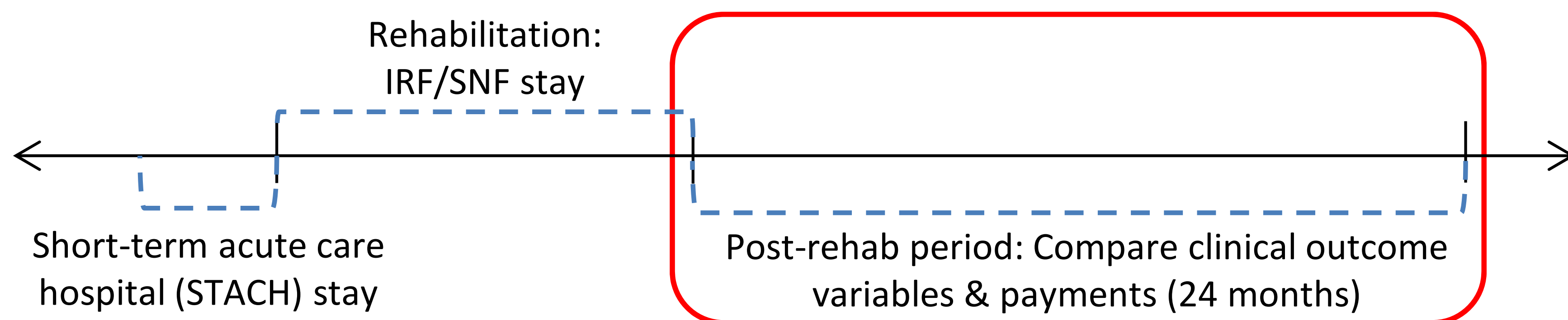
Comparing Patient Outcomes for Two Years Following Rehabilitation



- **Patients treated in IRFs were matched to clinically and demographically (e.g., age/gender, comorbidities, prior health care utilization) similar patients treated in a SNF for the same condition (based on MS-DRG and ICD-9s) following a hospital discharge**
- **Clinical and payment outcomes are captured after discharge from the IRF or SNF over a two-year period**
- **Extended study period (two years) allowed for a longer-term assessment of patient outcomes compared to the results of other published studies**

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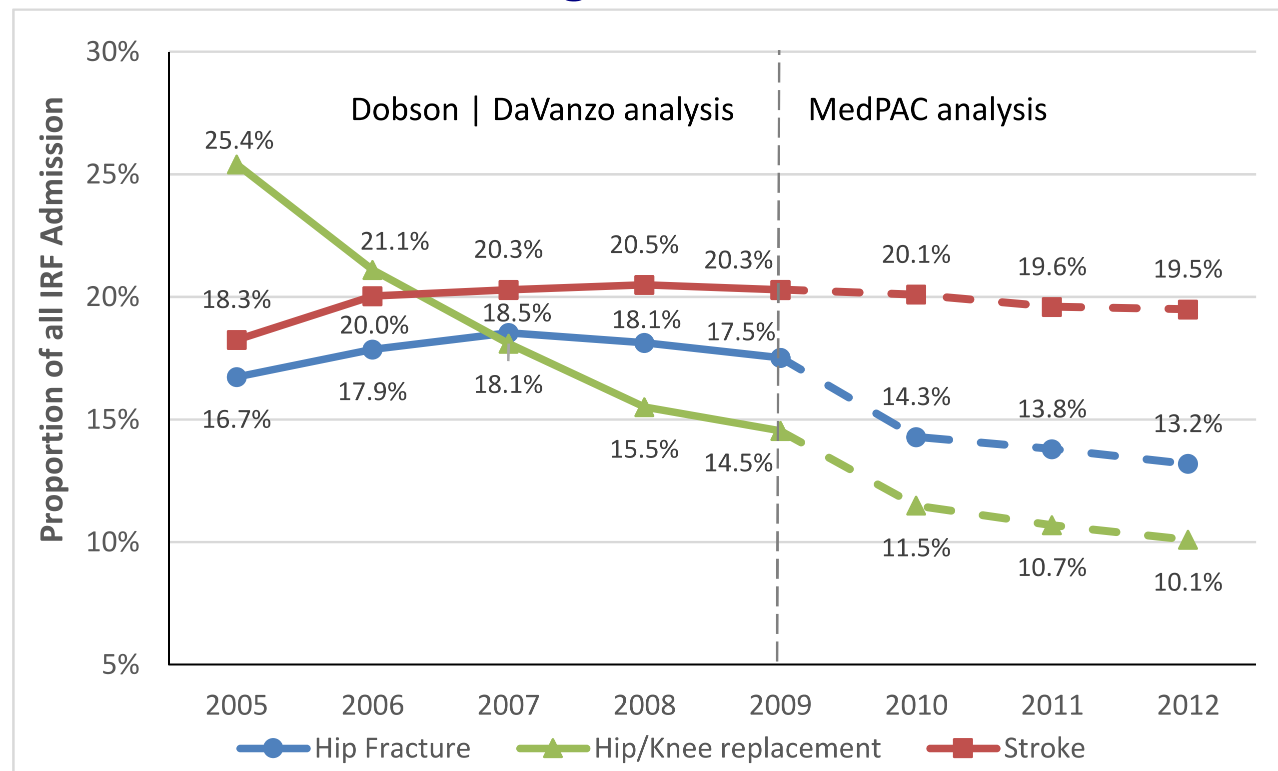
Patients were Shifted out of IRFs Under the 60% Rule

- **Patients with hip fractures and hip/knee replacements continue to be treated in other care settings**



Dobson | DaVanzo analysis of research identifiable 20% sample of Medicare beneficiaries, 2005-2009.
MedPAC Report to Congress: Medicare Payment Policy, March 2013 (2010-2012). Note: MedPAC estimates for hip fractures and hip/knee replacements are generally lower than Dobson | DaVanzo's estimates by about two percentage points due to methodology differences. Therefore, a portion of the decrease between 2009 and 2010 may not reflect true decreases in volume in these conditions.

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IRF Patients Left Rehab Earlier and Stayed Home Longer than SNF Patients

- **Over the two-year study period, patients treated in IRFs were discharged from their initial hospital rehabilitation stay two weeks earlier than clinically similar patients treated in SNFs**
- **Following the shortened initial hospital rehabilitation stay, IRF patients remained at home without facility-based care (hospital, IRF, SNF, or LTCH stays) 52 days longer than clinically comparable patients treated in SNFs over the two-year period**

Average Difference in Length of Stay for Initial Rehabilitation Stay and Number of Days at Home:* Matched IRF and SNF Patients

	Average Difference in Days (IRF minus SNF)*	
Condition	**Initial IRF/SNF Length of Stay**	**Days at Home****
Amputation	-15.7	85.4
Brain Injury	-16.9	95.0
Cardiac Disorder	-11.9	72.1
Hip Fracture	-19.4	52.8
Hip/Knee Replacement	-5.3	4.1
Major Medical Complexity	-12.9	72.8
Major Multiple Trauma	-23.1	34.8
Neurological Disorders	-19.2	45.4
Other Orthopedic	-14.3	28.8
Pain Syndromes	-14.5	56.9
Pulmonary Disorders	-13.0	47.7
Spinal Cord Injuries	-8.7	41.0
Stroke	-16.5	92.0
Overall Average	**-13.9**	**51.5**

Dobson | DaVanzo analysis of research identifiable 20% sample of Medicare beneficiaries, 2005-2009.
*All differences are statistically significant at $p<0.0001$ with the exception of the difference in days at home for hip/knee replacements, major multiple trauma, and other orthopedic conditions, which are not statistically significantly different.
**Days in the home represents the average number of days per patient over two year episode not spent in a hospital, IRF, SNF, or LTCH.

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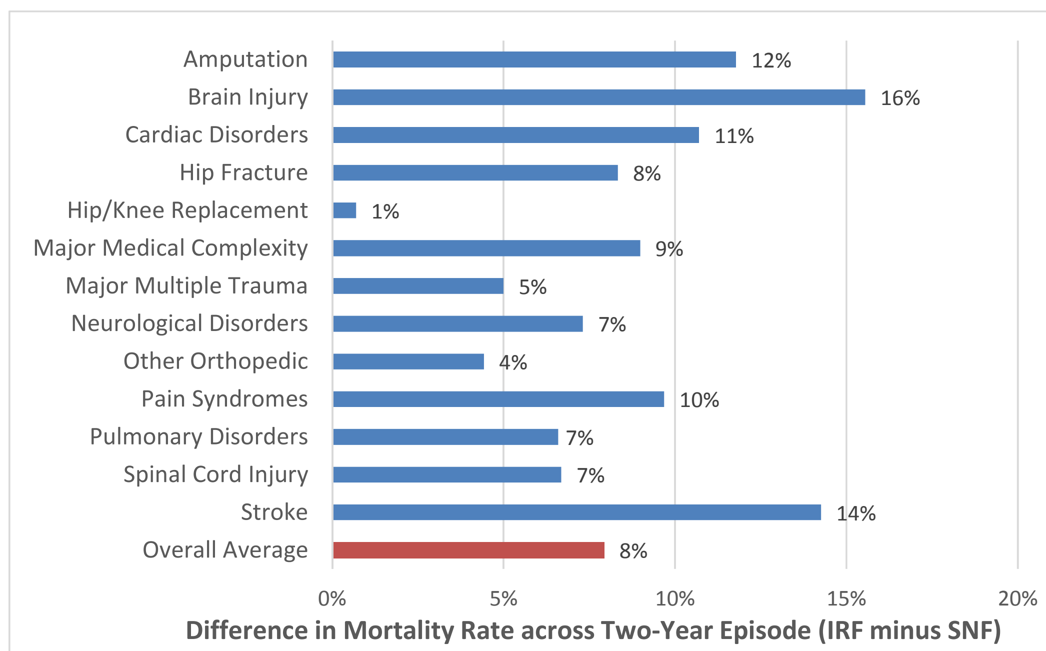
IRF Patients had an 8% Lower Mortality Rate During the Two-Year Study Period than SNF Patients

- **The significantly lower risk of death among IRF patients across all condition categories may have been related to the intense hospital rehabilitation that limited clinical deterioration**
- **For five of the 13 conditions, IRFs saved 10 or more lives per 100 treated than SNFs, with an overall average of eight lives per 100 treated**

Difference in Mortality Rate across Two-Year Study Period: Matched IRF and SNF Patients*



Dobson | DaVanzo analysis of research identifiable 20% sample of Medicare beneficiaries, 2005-2009.
*All differences are statistically significant at p<0.001.

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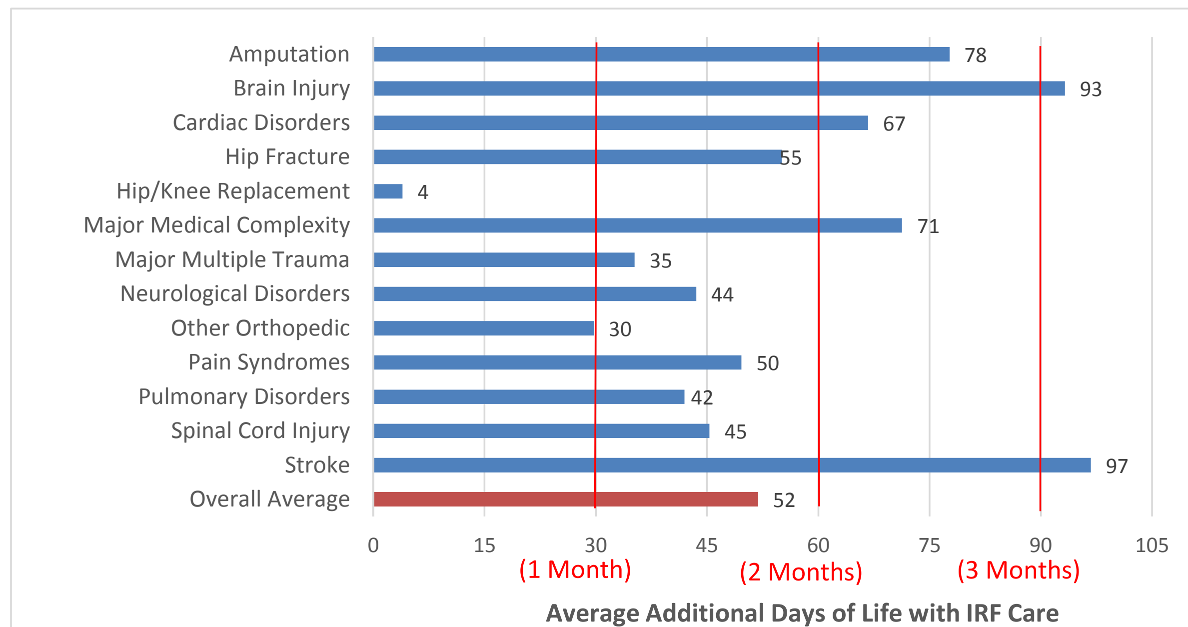
IRF Patients Stayed Alive Nearly Two Months Longer than SNF Patients

- **Consistent with the lower mortality rate, IRFs extended clinically comparable patient lives by an average of two months over a two-year period compared to SNFs**
- **Patients treated for stroke or a brain injury survived three months longer after rehabilitation in an IRF compared to those treated in a SNF**

Average Additional Days of Life when Receiving IRF Care: Matched IRF and SNF Patients*



Dobson | DaVanzo analysis of research identifiable 20% sample of Medicare beneficiaries, 2005-2009.
*All differences are statistically significant at $p<0.0001$ with the exception of major multiple trauma, which is significant at $p< 0.01$.

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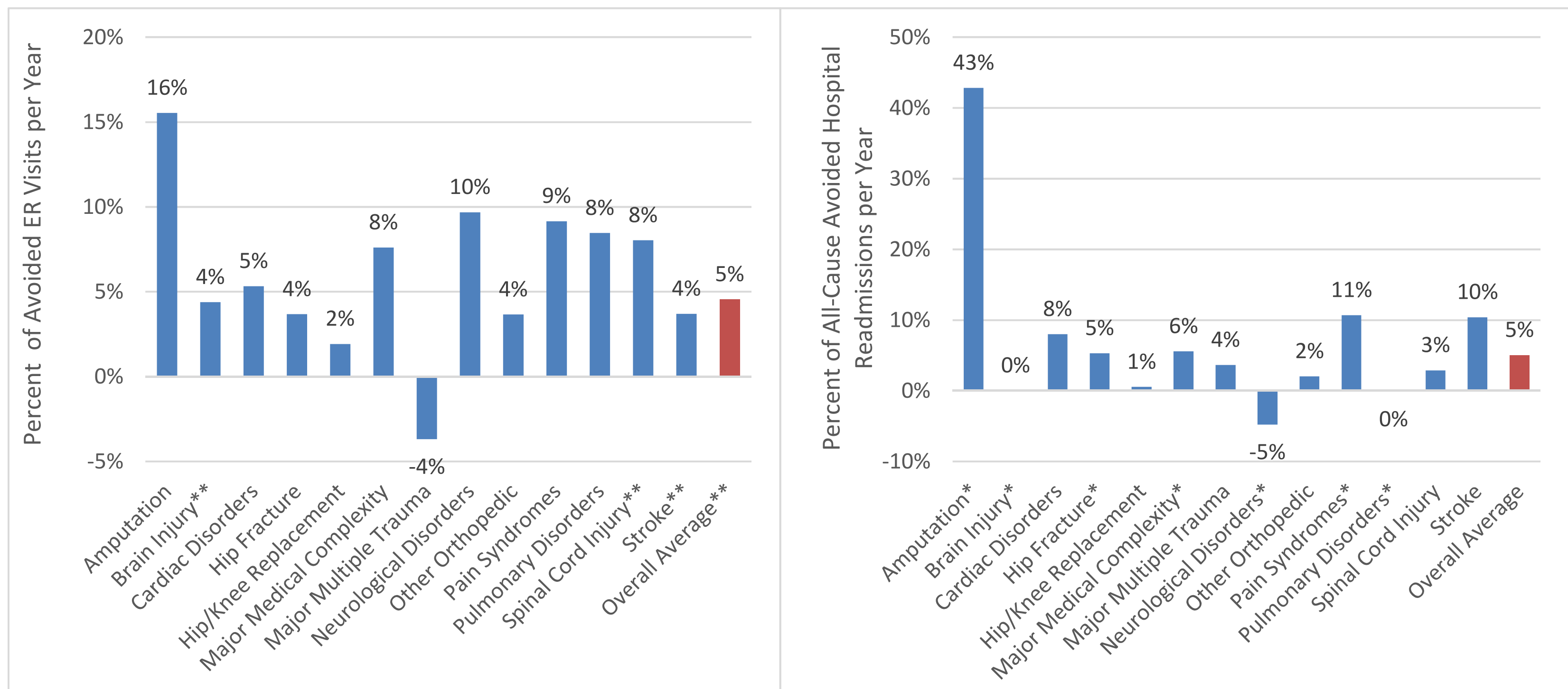
IRF Patients Experienced 5% Fewer ER Visits and Significantly Fewer Hospital Readmissions Per Year than SNF Patients

- **Patients treated in IRFs experienced 4.5% fewer ER visits on average per year and significantly fewer hospital readmissions per year (for five of the 13 conditions) compared to matched patients treated in SNFs**

Average Percent Difference in Number of ER and All-Cause Hospital Readmissions per Year: Matched IRF and SNF Patients



Dobson | DaVanzo analysis of research identifiable 20% sample of Medicare beneficiaries, 2005-2009.
* Difference is statistically significant at $p<0.01$; ** Difference is statistically significant at $p<0.05$

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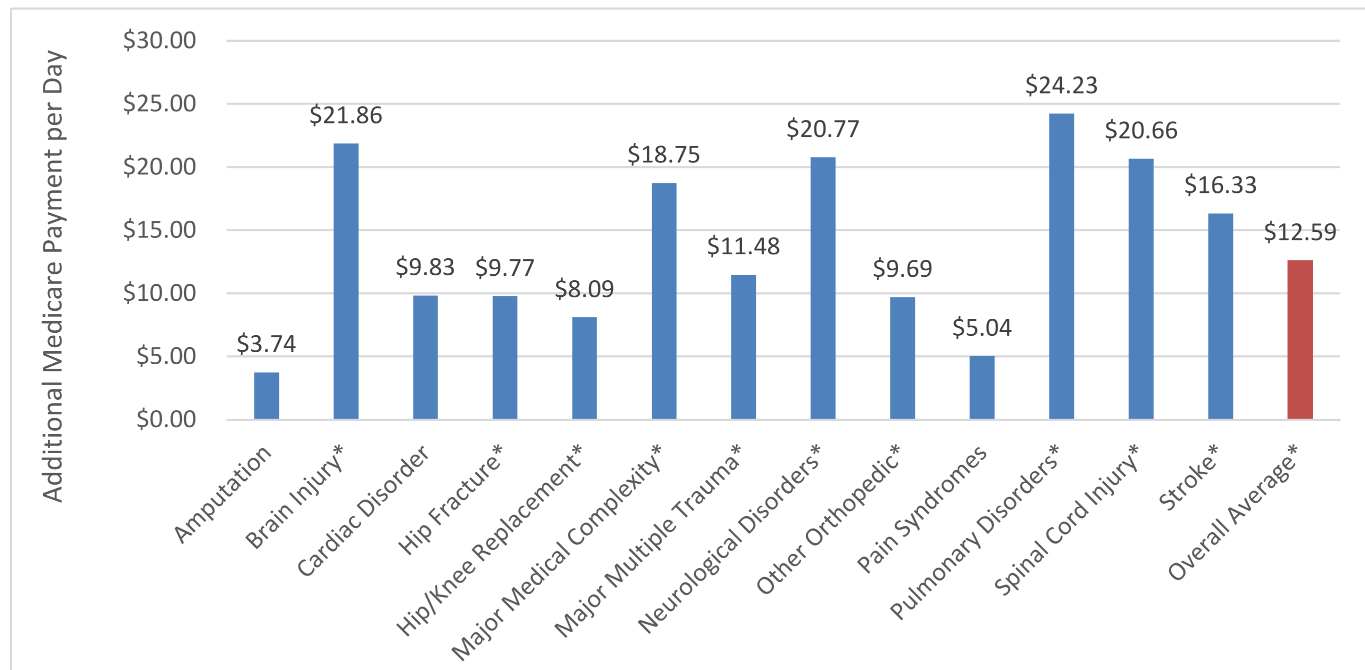
IRF Care Resulted in Better Outcomes for Patients for an Additional $12.59 per Day

- **For an additional $12.59 per day (including the initial rehabilitation stay and while patients are alive during the two-year study period), IRF patients achieved better clinical outcomes and remained in their homes longer than matched patients treated in a SNF**

Average Additional Medicare Payment per Day for IRF Care Compared to SNF Care: Matched IRF and SNF Patients



Dobson | DaVanzo analysis of research identifiable 20% sample of Medicare beneficiaries, 2005-2009.
* Difference is statistically significant at $p<0.001$

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Further Considerations

- **Medicare fee-for-service claims do not include utilization or payments for other payers, including Medicare Advantage and Medicaid**
  - Therefore, long-term care services such as Medicaid nursing home stays could not be included and were interpreted in the data as a patient residing in the home
  - Inclusion of these services and costs may have increased the payments for SNF patients and reduced the number of home and community-based days as well
- **Exclusion of Medicare payments for durable medical equipment (as well as physician services) may have underestimated the care patients received**
  - Less effective rehabilitation resulting in more use of wheelchairs, walkers and/or canes could result in significant beneficiary out-of-pocket expenses

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Study Conclusions

- **IRFs are known to provide intense, standardized, and focused inpatient hospital rehabilitation under the direction of rehabilitation physicians.[1,2,3] This treatment structure is consistent with Medicare patients being discharged faster and with better outcomes over the two years of life following rehabilitation than clinically and demographically similar SNF patients**
- **Receiving rehabilitation in IRFs improves quality of life for the patient, defined as living longer, reducing the use of facility-based care including hospitals and ER visits, and remaining in their home with outpatient services**
- **Difference in outcomes of matched IRF and SNF patients suggests that the care provided in these settings is different**

1. Keith RA. (1997). Treatment strength in rehabilitation. Arch Phys Med Rehabil: 90; 1269-1283.
2. Harvey RL. (2010, January). Inpatient rehab facilities benefit post-stroke care. Managed Care.
3. DeJong G, Hsieh C, Gassaway J, et al. (2009). Characterizing rehabilitation services for patients with knee and hip replacement in skilled nursing facilities and inpatient rehabilitation facilities. Arch Phys Med Rehabil: 90;1269-1283.

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Study Conclusions (cont'd)

- **While this study focused on the shifting of patients out of an IRF immediately following the implementation of the 60% Rule, recent MedPAC analyses have confirmed these trends**
  - A follow-on study is underway that extends the study window to include claims through 2012 in order to investigate the impact of changes in practice patterns on outcomes
- **The shifting of clinically similar patients out of IRFs into SNFs might adversely affect Medicare beneficiaries**
  - Matched patients treated in SNFs instead of IRFs had an increased risk of death, more facility-based care (hospital, IRF, SNF, or LTCH) days, and more ER visits and hospital readmissions

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