Assessment of Patient Outcomes of Rehabilitative Care Provided in Inpatient Rehabilitation Facilities (IRFs) and After Discharge: Study Highlights for Amputees

Background: An estimated 185,000 upper and lower limb amputations are performed each year, contributing to an estimated prevalence of limb loss in the U.S. of 1.6 million persons. Rehabilitation after amputation is designed to limit the adverse effects of prolonged bed-rest following major surgery and stabilize underlying chronic diseases—like complicated diabetes—exacerbated by general anesthesia. Studies suggest that the post-acute care setting in which amputees receive rehabilitative care contributes to different patient outcomes. Among trauma-related and dysvascular-caused amputations of the lower limb, researchers find that amputees treated in inpatient rehabilitation facilities (IRFs) have significantly better six and 12 month post-amputation survival, functional status, and patient-reported physical and mental and emotional health outcomes, as well as fewer reamputations and a higher likelihood of obtaining prostheses compared to skilled nursing facility (SNF) placed amputees and amputees discharged home.

Key Findings: Results from our analysis of 1,756 clinically and demographically matched SNF to IRF Medicare amputation patients finds that IRF rehabilitated patients experience better long-term clinical outcomes than patients who received rehabilitation in a SNF. The average length of rehabilitation stay for the IRF cohort was less than half that of the average SNF patients (14.0 vs 29.6 days; p < 0.0001). Following the initial rehabilitation stay, compared to matched SNF discharged amputees, IRF patients experienced on average (all statistically significant at p < 0.0001 unless otherwise noted):

- 39.9 percent (11.8 percentage point difference) lower all-cause mortality rate over a two-year period
- 77.7 day difference in days alive over a two-year period
- 85.4 more days residing at home (i.e., not receiving facility-based care) over a two year period
- 155.4 fewer emergency room visits per 1,000 patients per year (p < 0.047)
- 428.3 fewer hospital readmissions per 1,000 patients per year
- There was no statistical difference in average cost per day between IRF and SNF settings over two years.

Discussion: Our findings are consistent with the published literature on comparative effectiveness of IRF and SNF rehabilitation for lower-limb amputees. The average cost of IRF amputees’ initial rehabilitation stay was nearly twice more expensive than the average SNF stay ($17,387 vs. $9,051; p < 0.0001), but the overall Medicare payments aggregated over two years were similar, as the higher average healthcare cost after SNF rehabilitation offset IRF amputees’ higher initial rehabilitation stay costs. Therefore, amputees treated in IRFs experienced better clinical outcomes for the same two-year healthcare cost as SNF patients.

Dysvascular disease, the leading cause of most amputations in the U.S., is expected to increase among Americans over 65 years as the relative incidence of diabetes in the pre-Medicare aged population grows. Some researchers attribute favorable outcomes in this population to IRFs’ ability to provide comprehensive care for unstable conditions with appropriately intense and varied rehabilitation services. Our findings underscore the importance of policies that preserve, if not expand, access to IRF services for the amputee population.

Difference in Mortality Rate between IRF and SNF Amputees Two Years after Initial Rehabilitation Stay

Difference in Number of Home Days* between IRF and SNF Amputees Over Two Years

*Number of days not receiving facility-based care

Difference in Readmissions per 1,000 Patients per Year between IRF and SNF Amputees
