### Assessment of Patient Outcomes of Rehabilitative Care Provided in Inpatient Rehabilitation Facilities (IRFs) and After Discharge: Study Highlights for Spinal Cord Injury (SCI) Patients

**Background:** Patients with moderate to severe grade spinal cord injury (SCI) experience long-term, often permanent, neurological deficits and are at increased lifelong risk of rehospitalization from secondary comorbid conditions (e.g., urinary tract infections and pressure ulcers). While SCIs include traumatic and nontraumatic etiologies, U.S. incidence and prevalence estimates only capture trauma-related SCIs. According to the Centers for Disease Control and Prevention, there are up to 20,000 new traumatic SCI cases each year and an overall prevalence of approximately 200,000 persons. The incidence of nontraumatic SCI is believed, however, to be significantly greater than trauma-related SCI. Patients with either etiology are shown to benefit from specialized inpatient rehabilitation programs that utilize multidisciplinary approaches to establish patients’ therapeutic goals and design injury-specific rehabilitation regimens that include closely monitoring patients’ functional, cognitive, and self-care performance.

**Key Findings:** Results from our analysis of 4,068 clinically and demographically matched skilled nursing facility (SNF) to IRF SCI patients finds that IRF-rehabilitated patients experience better long-term clinical outcomes than SCI patients who received rehabilitation in a SNF. The average length of rehabilitation stay for the IRF cohort was nearly 40 percent shorter than the average SNF patient stay (13.5 vs. 22.2 days; p < 0.0001). Following the initial rehabilitation stay, compared to matched SNF discharged SCI patients, IRF patients experienced on average (all statistically significant at p < 0.0001 unless otherwise noted):

- **25.7 percent (6.7 percentage point difference) lower all-cause mortality rate** over a two-year period
- **45.3 day difference in days alive** over a two-year period
- **41.0 more days residing at home** (i.e., not receiving facility-based care) over a two-year period
- **80.3 fewer emergency room visits** per 1,000 patients per year (p < .005)
- Cost $20.66 more per day observed over a two-year period

We observed no statistically significant difference in annual readmission rates between IRF and SNF SCI patients.

**Discussion:** Our findings indicate that SCI patients treated in IRFs experience better clinical outcomes than matched SCI patients who received rehabilitation in a SNF. This observation may be the result of key differences in the multidisciplinary, hospital-level resources and capabilities between IRF and SNF settings. Unlike SNFs, IRFs are required to use an interdisciplinary approach to rehabilitative care.

The proportion of elderly Americans who sustain SCIs has increased in recent years, as has their rates of rehospitalization and admission to nursing homes. That IRF-placed SCI patients in our study had lower mortality and less facility-based care after rehabilitation underscores the importance of policies that preserve, if not expand, access to IRF services for the SCI patient population.

### Difference in Mortality Rate between IRF and SNF SCI Patients Two Years after Initial Rehabilitation Stay

<table>
<thead>
<tr>
<th>Year</th>
<th>IRF</th>
<th>SNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>19.4%</td>
<td>26.1%</td>
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</tbody>
</table>

### Difference in Number of Home Days* between IRF and SNF SCI Patients Over Two Years

<table>
<thead>
<tr>
<th>Days at Home</th>
<th>IRF</th>
<th>SNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>597.9</td>
<td></td>
<td></td>
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<tr>
<td>556.8</td>
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### Difference in Emergency Visits per 1,000 Patients per Year Between IRF and SNF SCI Patients

<table>
<thead>
<tr>
<th>Visits per 1,000 Patients per Year</th>
<th>IRF</th>
<th>SNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>80.3 Fewer ER Visits per 1,000</td>
<td>621.3</td>
<td>701.6</td>
</tr>
</tbody>
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*Number of days not receiving facility-based care

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