Outcomes From Inpatient Rehabilitation Following Traumatic Brain Injury in Canada

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Purpose
In 2003–2004, the Canadian Institute for Health Information (CIHI) reported that there were 18,000 acute hospital admissions for traumatic brain injury (TBI) in Canada. An average of approximately 280,000 each year, which is consistent with the steady increase in brain injuries in recent years. This reflects the severity of these injuries, which are often associated with significant disabilities and long-term care needs. For the purposes of this analysis, clients admitted to IR with TBI in all intensity groups confirm that such clients have significantly higher functional gains (mean total FIM® change = 38.6 ± 26.2), compared with total FIM® gains of 23.2 ± 13.7 and 17.5 ± 14.0 for the moderately and least resource intensive groups, respectively.

Methodology
Using data from the National Rehabilitation Reporting System (NRS), TBI patients discharged from IR between April 1, 2008, and March 31, 2013, were included in this analysis. CIHI's data demonstrates the need for sufficient resources to continue to be allocated to adult inpatient rehabilitation in Canada. As of 2012–2013, the NRS contained 10 years of data from more than 100 facilities in nine provinces. Sufficient resources should continue to be allocated to adult inpatient rehabilitation in Canada. As of 2012–2013, the NRS contained 10 years of data from more than 100 facilities in nine provinces. Facilities collect data on admission and discharge from the inpatient rehabilitation program and send it to CIHI. CIHI's comparative reporting system is available for all participating facilities and data is also made available to the public through Quick Stats and focused analytical publications.

Table 1: Characteristics of Patients Admitted to Inpatient Rehabilitation for Traumatic Brain Injury

<table>
<thead>
<tr>
<th>Client Group</th>
<th>Most Resource Intensive</th>
<th>Moderately Resource Intensive</th>
<th>Least Resource Intensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>2,510</td>
<td>5,020</td>
<td>1,036</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>78.02 (17.8)</td>
<td>66.1 (18.8)</td>
<td>72.08 (22.3)</td>
</tr>
<tr>
<td>Onset Days (Mean)</td>
<td>36.1 ± 28.2</td>
<td>31.5 ± 28.1</td>
<td>48.9 ± 31.5</td>
</tr>
<tr>
<td>Days Waiting for Admission (N = 2,665)</td>
<td>35.3</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>Days Waiting for Discharge (N = 2,665)</td>
<td>11.1</td>
<td>8.4</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1: Days Waiting for Admission and Days Waiting for Discharge

Summary of Findings
- Of those patients who waited for admission to IR, the mean admission wait days were greater for the most resource intensive patients (11.1 days), compared with the moderately and least resource intensive groups (9.0 and 8.4 days, respectively).
- Patients who waited for discharge in the most resource intensive group waited on average 42.8 days, compared with 33.3 days for the moderately and 13.0 days for the least resource intensive groups.
- LOS was longer for the most resource intensive patients at 43.5 days, compared with 41.4 and 32.6 for the moderately and least resource intensive groups.
- The most resource intensive group experienced the highest functional gains (mean total FIM® change = 38.6 ± 26.2), compared with total FIM® changes of 23.2 ± 13.7 and 17.5 ± 14.0 for the moderately and least resource intensive groups, respectively.
- Patients in the least resource intensive group returned home and to work (49.5% and 36.8%, respectively) more often after IR than those in the moderately (51.2% and 27.6%, respectively) and most resource intensive groups (50.2% and 19.8%, respectively).

Conclusions and Implications
- The most resource intensive group had the longest LOS and admission wait days, compared with the moderately and least resource intensive groups. The majority of patients identified those within one month of discharge, but a much smaller proportion returned to work in the same time frame. TBI patients in the NRS are more likely to return home or to work than are most clients in the NRS who receive IR for other impairments. Sustained recovery in clients admitted to IR with TBI is more intensive groups confirms that such clients can often benefit from IR's intensive care. CIHI's data demonstrates the need for further analysis and examination as to why the most resource intensive patients waited for longer admissions to IR than other TBI patients.
- A system management approach that aims to decrease admission wait days for discharge may improve IR's efficiency. Admission wait days range from 33.3 days for the moderately resource intensive group to 11.1 days for the least resource intensive group. The most resource intensive group also experienced the highest functional gains (mean total FIM® change = 38.6 ± 26.2), compared with total FIM® gains of 23.2 ± 13.7 and 17.5 ± 14.0 for the moderately and least resource intensive groups, respectively.

References