Factors correlated with Falls in Inpatient Stroke Patients
Cristin McKenna1-3, Joan Alverzo1, Robin Hedeman1, Pei Chen1-3, Pasquale G. Frisina2, Ann M. Kutlik2, Mahesh Lellella1, Jeffrey Yangang Zhang1, and Anna M. Barrett1-3

1: Kessler Foundation Research Center; 2: Kessler Institute for Rehabilitation-a Select Medical Company
3: University of Medicine and Dentistry of New Jersey – New Jersey Medical School, Newark; *corresponding author

Background

- Falls in stroke patients represent a significant source of morbidity. Accurate identification of patients at high risk of falling may enable appropriate distribution of fall prevention resources which will in turn enhance care quality and in turn facilitate patient recovery.
- Although this problem has been approached by other research groups1-3, there is no single clinically accepted and widely used instrument, thus further work in this area is warranted4-6.
- We have developed a model that correlates factors measurable within the first 72 hours of admission. We intend to use this set of correlations to develop a predictive model of falls.

Objective

To develop a model to predict falls in the inpatient stroke patient population using data stemming from admission documentation and relevant to the rehabilitation population of patients. These factors were chosen because they are routinely collected data on every stroke inpatient.

To obtain this objective, we have correlated falls to based on:
- Functional Independence Measure (FIM)
- Demographic information
- Case mix group (CMG), which incorporates the presence or absence of comorbidities

Methods

- Retrospective chart analysis of 3112 consecutive stroke patients undergoing inpatient acute rehabilitation.
- We analyzed falls with respect to the number of hospitalization days until a fall occurred.
- We used a stepwise survival analysis to reveal which factors significantly predict fall risk.

Results

Table 1: Demographics of inpatient acute stroke patients. Of this group of patients, 2.3% were Asian, 19.3% were African American, 4.6% were Hispanic, and 71.5% were Caucasian.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>St dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>71.5</td>
<td>13.2</td>
</tr>
<tr>
<td>Education (yrs)</td>
<td>12.7</td>
<td>3.1</td>
</tr>
<tr>
<td>Length of stay (days)</td>
<td>19.1</td>
<td>11.8</td>
</tr>
<tr>
<td>Gender (M=1,F=2)</td>
<td>1.5</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Discussion

- Gender was also correlated with falls, with males being more likely to fall. The female vs. male hazard ratio was 0.727, p-value 0.04. In addition, older patients’ fall risk appeared to be lower than younger patients with patients in the group age 63 or less being more likely to fall than those older than 63. The age hazard ratio was 0.982, p-value 0.003. CMG which incorporates the presence or absence of comorbidities was also correlated with falls. Increasing burden of CMG had a hazard ratio of 1.3, p-value of 0.0001.

Conclusion and Implications for Practice

- Our results suggest that stroke patients who fall during their inpatient stay could be identified within the first 72 hours of admission to acute rehabilitation. Future work will test this model.

References


This work is supported by the Kessler Foundation and the Select Medical Corporation

This project has been approved by Kessler’s IRB.