Validating a Multi-factorial Falls Risk Assessment

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Result of Google search on “Falls”
Result of Google search by Falls-people

Does it hurt?
Background

- Falls identified as national safety goal by the Joint Commission on Accreditation of Healthcare Organizations
- 2010 OASIS requirements for assessing risk of falls with a valid, multi-factorial tool
- Opportunity to design and carry out a clinical research project supported by MLHS

Who are we?

- The Home Care Network of the Main Line Health System, based outside Philadelphia
- Falls Committee activities: trending, developed risk assessments, staff education
- Co-researchers—opportunity to participate in MLH Nursing Research Fellowship in 2010
Additional Resources

- Agency Management
- Lankenau Institute for Medical Research staff: librarians, administrative, IRB
- Clinical educators/mentors
- Statisticians at LIMR

Falls—what we know

- Aging population, aging in place, social challenges
- Impact of falls on society, individuals
- Costs
- Questions about accurate assessment, interventions, outcomes
- Surveys
What we learned—literature review

- Little research done in home setting
- No validated tools available in 2010
- Simplicity of use versus accuracy
- Applicability to home setting
- TUG—”gold standard?”
- Multiple disciplines; differences in assessment skills

What was important to us in choosing our topic?

- Need for a validated tool
- Difficulty of designing a prospective study
- Cross-disciplinary applicability between nursing and therapy
- Impact on clinical practice at our agency
- Meaningfulness: impact in patient satisfaction, outcomes
Our Purpose Statement

- The primary purpose is to determine if the score on the multi-factorial Falls Risk Assessment accurately identifies the risk of falls in a homebound client.
- In addition, we examined if any individual item had a higher correlation with the incidence of falls.

Hypothesis

- There is a positive relationship between an elevated score of combined factors and incidence of falls occurring in the home.
Our Process

- Define the problem: what is a fall?

A fall is defined as an event resulting in a person coming to rest unintentionally on the ground or other lower level, and not as a result of a major intrinsic event (e.g. stroke, syncope) or overwhelming hazard; an overwhelming hazard was defined as a hazard that could have resulted in a fall by the youngest, healthiest people (Tinetti, Speechley, Ginter, 1988).
Our Process

- Identifying subjects: 100 fallers, 25 non-fallers
- Design of data collection tools, refining process
- Collecting data—method
- Assessing the assessment (limitation of software—could complete without answering all the questions)

**Data Collection Tool**

<table>
<thead>
<tr>
<th>Falls Risk Assessment in /ROC OASIS-C—indicate score</th>
<th>Score</th>
<th>NA</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of consciousness/mental status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of falls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambulation/Elimination status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vision status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timed Up and Go</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gait and Balance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthostatic changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predisposing diseases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment Issues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total score</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Disciplinary involvement

<table>
<thead>
<tr>
<th>Co-ordination/Referrals</th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing or ST: PT ordered at referral or added by SN if high Falls Risk is identified.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PT or ST: SN referral ordered if score in combined Ambulation/elimination and Medication sections is 4 or above.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall risk noted on home health aide POC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Barriers/speed bumps

- New software system in 2011!
- Event reports on paper—identifying subjects was tedious, reports not complete or accurate in some cases
- Finding time to work on the project
- Elusive resources (Statistician, fellowship leadership)
- Late request to add comparative group of non-fallers
Progress

- Effective mentorship was found
- Data was collected eventually
- New statistician—useful analysis

Results

- Fallers and non-fallers had mean scores indicating high falls risk
- Fallers’ scores were significantly higher than non-fallers
Mean scores

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean Score</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fallers</td>
<td>100</td>
<td>14.61</td>
<td></td>
</tr>
<tr>
<td>Non-Fallers</td>
<td>25</td>
<td>12.52</td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td></td>
<td>2.09</td>
<td>0.035</td>
</tr>
</tbody>
</table>

Significant Variables

- All variables were significant
- No single variable was highly correlated with a fall
No single variable...

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Consciousness</td>
<td>0.99793</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>History of Falls</td>
<td>0.98060</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Ambulation/Elimination</td>
<td>1.00226</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Vision Status</td>
<td>1.00686</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Timed Up and Go</td>
<td>1.00834</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Gait and Balance</td>
<td>1.01757</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Orthostatic Changes</td>
<td>1.02372</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Medications</td>
<td>0.99891</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Predisposing Diseases</td>
<td>1.01709</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Equipment Issues</td>
<td>1.02726</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Surprises?

- TUG was not significantly predictive
- Low compliance with completion of FRA
- Non-fallers scores were high—why don’t they fall?
Limitations

- Variability of clinicians performing assessments—lack of quality control aside from staff education and assumption of competence
- Inability to ask clinicians for clarification due to timeframe, limited access to records due to software change
- Initial data analysis results were inscrutable

What do those numbers mean?

- The multi-factorial FRA we used was accurate at predicting falls. (If another agency repeated our study, we could validate this tool?)
- Some factors were more predictive than others, all were significant, but no one was significantly predictive alone
What’s next?

• Looking at differences between people with high risk who fall and those who do not.
• Assessing interventions which may be effective in preventing falls in people at high risk
• What is the effect of caregivers on falls?

References


