Development of the Prediction of Falls in Rehabilitation Settings Tool (Predict_FIRST): a cohort study

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Background

- Falls in hospital can result in prolonged hospital stays, injury and death
- 11% of rehab ward participants in our Sydney-based cluster RCT fell\(^1\)
- Current hospital falls tools rate people as high risk or low risk
- *How likely is it that Mr X will fall?* seems a more useful question

\(^1\)Cumming et al BMJ 2008, n = 3999
Aim

- To develop a simple falls prediction tool for rehabilitation settings
Methods

• Assessment of possible predictors of falls on admission
• Monitoring of falls during rehabilitation unit stay
• Consecutively-admitted patients aged 50 years+
  • Hornsby Ku-ring-gai Hospital
  • Prince of Wales Hospital
Possible predictors

• Medical records
  • medical conditions
  • medications
  • FIM

• Nursing staff
  • STRATIFY

• Physical assessment
  • within 48 hours of admission to the ward
  • vision, strength, proprioception, peripheral sensation
  • balance and mobility: sit to stand, standing balance (5 positions), gait speed, timed up and go and stepping ability
  • delirium: Confusion Assessment Method
533 participants

- Average age of 82 years (SD = 8.3)
- 71% women
- Average length of stay of 25 days (SD = 15)
- Primary diagnosis
  - 23% fracture
  - 7% neurological
  - 11% fall or syncope
Falls

- 75 people (14%) had 110 falls during rehabilitation stays
  - 19 people (4%) 2+ falls
  - 9 people (2%) 3+ falls

- Strong predictors (OR>2) included male gender, CNS medication, falls history, continence, cognition, delirium, balance and mobility
Prediction of Falls In Rehabilitation Settings

Tool: Predict-FIRST  (AUC = 0.73)

<table>
<thead>
<tr>
<th>Score</th>
<th></th>
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<tbody>
<tr>
<td>Male</td>
<td>1</td>
</tr>
<tr>
<td>CNS medication</td>
<td>1</td>
</tr>
<tr>
<td>Fall in the past year</td>
<td>1</td>
</tr>
<tr>
<td>Frequent toileting</td>
<td>1</td>
</tr>
<tr>
<td>Unable to do tandem stance</td>
<td>1</td>
</tr>
</tbody>
</table>

| Total Score                   | /5 |

Probability of falling for different scores:
0 = 2%, 1 = 4%, 2 = 9%, 3 = 18%, 4 = 33%, 5 = 52%.
Actual and predicted risk of falling by score
Conclusions

- The *Predict_FIRST* tool
  - good discrimination between fallers and non-fallers
  - enables the probability of falling (absolute risk) to be calculated for individual patients
- Methods used are likely to enhance generalisability
- Plans for external validation

Acknowledgements

- Participants
- Hospital staff
- NSW Health
- NHMRC fellowship funding
- QldHealth Healthy Active Ageing Image Library