Clinician-Reported Inpatient Physical Function: A new measure derived from PROMIS Adult Physical Function

Joeffrey Hatton, MBA
Regional Director, Hospital Quality & Patient Safety, The Permanente Medical Group, Kaiser Permanente

June 6, 2019
© 2018 The Permanente Medical Group
Agenda

1. Problem Identification
2. Methodology
3. Results
4. Limitations
5. Next Steps
6. Conclusions
What is the problem we’re trying to solve?

Ideally, we would systematically track the functional trajectories of our patients across care settings, conditions, and time.
Currently, we lack a common set of tools and practices, resulting in a fragmented picture of Niche, domain-specific assessments.

Inconsistent evaluation, lacking baseline
The Missing Link

The PROMIS tools enable us to understand our patient’s functional status across most care settings, except the hospital.
Considerations for the Hospital Setting

We needed an assessment tool that mapped to the PROMIS domain scale and addressed the unique needs of the hospital setting, including:

- Setting Appropriate Questions
- Clinician Assessment
- Ease of Use
- Integration
- Role Agnostic
Identify PROMIS item candidates
Targeted content to low-level functional activity

PROMIS PF Patient-report Items

<table>
<thead>
<tr>
<th>Item ID</th>
<th>Item Stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFC52</td>
<td>Are you able to turn from side to side in bed?</td>
</tr>
<tr>
<td>PFA51</td>
<td>Are you able to sit on the edge of a bed?</td>
</tr>
<tr>
<td>PFA45</td>
<td>Are you able to get out of bed into a chair?</td>
</tr>
<tr>
<td>PFA15</td>
<td>Are you able to stand up from an armless straight chair?</td>
</tr>
<tr>
<td>PFC6r1</td>
<td>Are you able to walk a block (about 100 m) on flat ground?</td>
</tr>
<tr>
<td>PFB10</td>
<td>Are you able to climb up five steps?</td>
</tr>
<tr>
<td>PFA9</td>
<td>Are you able to bend down and pick up clothing from the floor?</td>
</tr>
<tr>
<td>PFB40</td>
<td>Are you able to stand up on tiptoes?</td>
</tr>
<tr>
<td>PFA41</td>
<td>Are you able to squat and get up?</td>
</tr>
</tbody>
</table>

Responses (Score)
Unable to do (1)  With much difficulty (2)  With some difficulty (3)
With a little difficulty (4)  Without any difficulty (5)
9 PROMIS item candidates: Score range, Reliability

Projected T-score-level Reliability

- 9-item SF
- SB 5-item SF
- 0.90 Standard
- 0.70 Standard
From patient-report to clinician-report: Revising items, new item construction

Revised Clinician-Report Item Stem

*How much human assistance does the person need to*

1. Turn from side to side in bed?
2. Sit on the edge of a bed?
3. Get out of bed into a chair?
4. Walk about 100 m on flat ground?
5. Climb up 5 steps?
6. Are you able to stand up from an armless straight chair?
7. Bend down and pick up clothing from the floor?
8. Stand up on tiptoes?
9. Squat and get up?

New Item Stems

1. Sit on the edge of the bed to lean forward to reach for something?
2. Walk around the room?
3. Walk 50 ft?

New Responses

1. Total
2. Quite a bit
3. A little bit
4. Supervision
5. None
Methodology – Field Testing

Goal = Convenience sample of 500 patients

Patient Self-Assessment
‘Are you able to’

Clinician Assessment
‘How much human assistance does the person need to’

12 PF item Stems (previous slide)

<table>
<thead>
<tr>
<th>Responses</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Unable to do</td>
<td>1 Total</td>
</tr>
<tr>
<td>2 With much difficulty</td>
<td>2 Quite a bit</td>
</tr>
<tr>
<td>3 With some difficulty</td>
<td>3 A little bit</td>
</tr>
<tr>
<td>4 With a little difficulty</td>
<td>4 Supervision</td>
</tr>
<tr>
<td>5 Without any difficulty</td>
<td>5 None</td>
</tr>
</tbody>
</table>
Methodology - Field Testing

Process

12 Physical Therapists in 3 locations assessed patients by:

- Instructing patients to:
  - Respond based on their perception of ability, without performing actual tasks
  - Decide how they want to factor in the use of walking devices

PT & patient complete independent unbiased assessment
### Results

#### Baseline characteristics (n=515)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age, years</td>
<td>66.2</td>
</tr>
<tr>
<td>Male gender</td>
<td>231 (44.9%)</td>
</tr>
</tbody>
</table>

#### Psychometric Analysis:
1. Assessing clinician items, 2. linking to PROMIS metric

<table>
<thead>
<tr>
<th></th>
<th>Measure Analysis</th>
<th>Linking Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal consistency reliability</td>
<td>.97</td>
<td>.97</td>
</tr>
<tr>
<td>Item-adjusted total score r</td>
<td>min r = .72, mean r = .85, max r = .91</td>
<td>min r = .65, mean r = .78, max r = .85</td>
</tr>
<tr>
<td>CFA overall model fit indices</td>
<td>CFI = .99, TLI = .99, RMSEA = .18</td>
<td>CFI = .97, TLI = .97, RMSEA = .16</td>
</tr>
<tr>
<td>r w/ pt. report items</td>
<td>summed score r = .73</td>
<td>Disattenuated r = .77</td>
</tr>
</tbody>
</table>
Results

Constructing a Short Form

An expert team of PTs, nurses, and physicians constructed a 5-item SF intended for regular inpatient use, meeting the following criteria:

1. Clinically meaningful
2. Easy to complete
3. Able to discriminate physical function in ranges important for hospital-based decision-making
Results
5-item PF Short Form item content & score-level reliability

How much human assistance does the person need to:

1. Turn from side to side in bed?
2. Sit on the edge of the bed?
3. Get out of bed into a chair?
4. Walk around the room?
5. Walk about 100 m on flat ground?

Responses:
Total     Quite a bit     A little bit     Supervision     None
### Results

Characteristics of Patients Assessed using the PF5

<table>
<thead>
<tr>
<th>Baseline Characteristics (n=481)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age (IQR), years</td>
<td>68 (58 – 77)</td>
</tr>
<tr>
<td>Male gender</td>
<td>219 (45.5%)</td>
</tr>
<tr>
<td>Median length of stay, days</td>
<td>3.3 (2.0 – 5.9)</td>
</tr>
<tr>
<td>Discharge disposition</td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>225 (46.8%)</td>
</tr>
<tr>
<td>Home with home health</td>
<td>141 (29.3%)</td>
</tr>
<tr>
<td>SNF/Rehab</td>
<td>100 (20.8%)</td>
</tr>
<tr>
<td>Hospice</td>
<td>9 (1.9%)</td>
</tr>
<tr>
<td>Death</td>
<td>6 (1.3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Function 5 (PF5) scores</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinician-reported raw score</td>
<td>17 (13 – 20)</td>
</tr>
<tr>
<td>Clinician-reported T-score</td>
<td>30.2 (23.1 – 35.9)</td>
</tr>
</tbody>
</table>
Results

PF5 scores were strongly and independently associated with discharge disposition (aOR- = 9.82)

Odds ratio (95% CI) for home and home health versus any other discharge disposition

<table>
<thead>
<tr>
<th>Predictor</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-score value per 10 points</td>
<td>9.53 (5.83 – 17.06)</td>
</tr>
<tr>
<td>Age, per year</td>
<td>0.96 (0.94 – 0.98)</td>
</tr>
<tr>
<td>COPS2, per 10 pts</td>
<td>1.00 (0.95 – 1.06)</td>
</tr>
<tr>
<td>LAPS2, per 10 pts</td>
<td>0.97 (0.88 – 1.07)</td>
</tr>
<tr>
<td>Male gender</td>
<td>0.73 (0.42 – 1.26)</td>
</tr>
<tr>
<td>Predicted mortality, per 1%</td>
<td>1.30 (0.72 – 2.36)</td>
</tr>
</tbody>
</table>
Project Limitations

1. Analysis only focused on patients receiving a PT consult

2. Relatively small sample size (N = 481)

3. Convenience sampling strategy could limit generalizability

4. Did not assess timing of evaluation relative to hospital discharge

5. Inter-rater reliability between PTs and other clinical members has not been established and can’t be assumed
Next Steps

Incorporating the PF5 into operations
  - Early adoption by our Physical Therapists
  - Agreement to embed into nursing workflow at admission and discharge

Improving EMR (Epic) documentation to facilitate easy assessment and visualization of information
Conclusion

- PROMIS PF5 appears to be an effective and efficient means of assessing inpatient physical function.

- PF5 values were strongly associated with discharge disposition, confirming the tremendous impact that physical function has on discharge disposition.
Our Team

Heather E Brown, MSPT
Michael Kallen, PhD
Joeffrey R Hatton, MBA
Ryan Murphy, MPT

Ryan Elliott, PT OCS
Ann T Tran, MBA
Mark Gutierrez, BA
John D Litten, MPT MBA

Richard Gershon, PhD
Vincent Liu, MD MSc
William Doyle, PT
Thank you
Questions and Answers