Determining AM-PAC “6-Clicks” Scores to Predict Discharge Following Elective Joint Replacement in the Geriatric Population

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Background

• 2020 – Continued great emphasis on PT evaluations in acute care due to changing healthcare environment, push for shorter length of stay, and varied degrees of post-acute rehab opportunities

• Over the past 5+ years the AM-PAC “6-Clicks” have become a popular outcome measure providing acute care therapists with objective data in a non condition specific, quick and easy to interpret manner\textsuperscript{1-10}
Background

• Boston University AM-PAC Short Forms
  • Activity limitations instrument developed by researchers at Boston University
  • International Classification of Functioning, Disability, and Health (ICF) conceptual framework
  • Designed for use across patient diagnoses, conditions, and settings
  • 3 domains – Basic Mobility, Daily Activity, Applied Cognitive
  • Basic Mobility “6 Clicks”
    • How much difficulty does patient currently have… turning over in bed, sitting on and standing up from a chair with arms, moving from lying on back to sitting on side of bed
    • How much help from another person does the patient currently need…moving from a bed to a chair, to walk in hospital room, climbing 3-5 steps with railing
  • Scoring – Unable (1), A Lot (2), A Little (3), None (4)
  • Based on raw score, therapist can figure out degree of functional impairment
Background

- Current published research:
  - Established validity, and inter-rater reliability of the AM-PAC “6 Clicks” Basic Mobility and Daily Activity Short Forms\(^2,3\)
  - AM-PAC “6 Clicks” scores obtained during initial assessment demonstrated fair to good accuracy predicting discharge destination\(^4\)
    - Cut-off scores Basic Mobility Short Form - 42.9 (Raw score 17/24)
    - Limitations: discharge destination impacted by many factors, rater reliability not established
  - AM-PAC “6-Clicks” scores obtained within the first 24 hours post joint replacement predicted discharge disposition better than base model (age, sex, medical comorbidity, and procedure type)\(^5\)
    - Preoperative variables alone do not accurately predict discharge
    - Lower scores post-op were associated with non-routine discharge and longer hospital stay
Background

• Previous findings presented at prior CSM conferences
  • CSM 2016 (sample size 323 patients status post total joint replacement (TJR))
    • Low to moderate correlations between initial PT (r=.318, p<.001) “6 Clicks” scores and discharge destination (Home/Home Health; Rehab/SNF)
    • Robust correlations between discharge PT (r=.688, p<.001) “6 Clicks” scores and discharge destination (Home/Home Health; Rehab/SNF)
    • Statistically significant factors impacting discharge: age, type of insurance coverage, support at home, and use of an assistive device prior to surgery
  • CSM 2018
    • When evaluating patients who have TJR, PT can confidently consider recommending D/C to home for IE PT scores > 13.5 and confirm recommendation with D/C scores >20.5
  • CSM 2019
    • IE “6-Clicks” cutoff scores not impacted by age (> 65 years vs < 65 years) for PT (13.5/24), which was the same cutoff of the previous analysis of the broad sample
    • PT can consider recommending D/C to home for IE 6-Clicks scores > 13.5 for both THR and TKR
Purpose

• Specifically analyze 6-Clicks scores for the geriatric population to determine if different scores should be used to predict discharge to home for persons of advancing ages following elective TJR
Hypotheses

• Older ages would require higher cutoff scores for discharge to home

• Cutoff score would be equal to or slightly lower than previous research on patients with general medical conditions (given that patients were fairly healthy individuals who were significantly impacted by surgery related directly to functional mobility)

• Patients could be discharged to home in spite of lower IE scores due to compensatory strategies taught during hospital stay

• Predictability of “6 Clicks” would be somewhat limited due to the tool being strictly functional which does not account for other factors that impact discharge, such as house set up, social support, etc.
Methods

• Approval from University of Scranton Physical Therapy and Occupational Therapy Department Review Board

• Approval from hospital administration at Regional Hospital of Scranton, Scranton, Pennsylvania
  • Joint Commission Accredited Total Shoulder Replacement facility
  • Joint Commission Advanced Certification Total Hip and Knee Replacement facility

• Retrospective review of 494 charts of patients age 65+ having elective TJR between June 2013 and February 2015

• Data collected, entered into SPSS, and analyzed using Crosstabs (age, D/C destination, and 6-Clicks), ROC Curve analysis, and MEDCALC diagnostic test evaluation with help from statistician on campus
  • Initial Evaluation PT “6 Clicks” scores and discharge destination
## Results

Table 1. Age breakdown of sample

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>65+ years</td>
<td>494</td>
</tr>
<tr>
<td>70+ years</td>
<td>321</td>
</tr>
<tr>
<td>75+ years</td>
<td>185</td>
</tr>
<tr>
<td>80+ years</td>
<td>76</td>
</tr>
<tr>
<td>85+ years</td>
<td>18</td>
</tr>
</tbody>
</table>

** Average age 73.70 ± 5.834 years
Results

Table 2. Coordinates of the Curve IE “6 Clicks” 65+

<table>
<thead>
<tr>
<th>Score</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.5</td>
<td>81%</td>
<td>53%</td>
</tr>
<tr>
<td>13.5</td>
<td>68%</td>
<td>67%</td>
</tr>
<tr>
<td>14.5</td>
<td>47%</td>
<td>83%</td>
</tr>
</tbody>
</table>

Figure 1. ROC Curve IE “6 Clicks” 65+ years
Results

Table 3. Coordinates of the Curve “6 Clicks” 70+

<table>
<thead>
<tr>
<th>Score</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.5</td>
<td>88%</td>
<td>38%</td>
</tr>
<tr>
<td>12.5</td>
<td>82%</td>
<td>50%</td>
</tr>
<tr>
<td>13.5</td>
<td>66%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Figure 2. ROC Curve IE “6 Clicks” 70+ years
Results

Figure 3. ROC Curve IE “6 Clicks” 75+ years

Table 4. Coordinates of the Curve “6 Clicks” 75+

<table>
<thead>
<tr>
<th>Score</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.5</td>
<td>72%</td>
<td>55%</td>
</tr>
<tr>
<td>14.5</td>
<td>55%</td>
<td>79%</td>
</tr>
<tr>
<td>15.5</td>
<td>45%</td>
<td>86%</td>
</tr>
</tbody>
</table>
Results

![ROC Curve]

AUC = .722

Figure 4. ROC Curve IE “6 Clicks” 80+ years

Table 5. Coordinates of the Curve “6 Clicks” 80+

<table>
<thead>
<tr>
<th>Score</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.5</td>
<td>63%</td>
<td>71%</td>
</tr>
<tr>
<td>15.5</td>
<td>50%</td>
<td>85%</td>
</tr>
<tr>
<td>16.5</td>
<td>13%</td>
<td>99%</td>
</tr>
</tbody>
</table>
Discussion

• There are limited, evidence-based standardized measures available to assist therapists in the acute care setting for objective assessment of patient performance to guide decision making regarding discharge.

• Published research established reliability and validity for the “6-Clicks” as an outcome measure and there is some information regarding using it to predict discharge destination \(^2\text{-}^5\).

• Our presented research has demonstrated different cutoff scores in the TJR population, thus indicating that a one-size fits all cutoff score may not be appropriate \(^6\text{-}^9\).

• Analysis of data from this particular study also indicates a possible age component for applying cutoff scores to predict discharge, specifically that older individuals may need a higher cutoff score to predict a safe discharge to home.

• Perhaps, instead of using a specific cutoff score to predict discharge to home, a cutoff score could be used to trigger a consult with a physiatrist and, together with the interdisciplinary team, the most appropriate discharge destination can be determined.
Conclusions

- Higher 6-Clicks cutoff scores are recommended for determining discharge destination for persons age 75+ (>14.5/24)

- More research needs to be published on a much larger scale before exact cutoff scores should be used to predict discharge for all patients without considering other characteristics, such as age
Limitations

• Patients included were undergoing elective TJR and were otherwise healthy and independent prior to surgery

• Limited generalizability for the general acute care population who have a more complex medical history or lower mobility level prior to hospital admission

• All patients underwent surgery at the same hospital by a group of four surgeons

• Research by Dewhirst et al\textsuperscript{10} published in 2016 found that more research needs to be done to gain support for use of the AM-PAC “6 Clicks”, including more education for therapists when implementing it in the acute care setting
Future Research

• Scores specific for the geriatric population in the general acute care setting

• Assess hospital readmissions to determine if discharge to home was the appropriate recommendation

• Comparison of the findings of this study with findings involving patients who undergo surgical repair following hip fracture

• Comparison of the findings of this study with findings involving patients having general medical diagnoses

• Potential development of a tool that combines functional assessment with demographics and psychosocial factors to assist therapists in determining discharge destination early in the acute care stay
References


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9. Wagner BR, Maida DR, Bockelkamp H. Determining AM-PAC “6-Clicks” cutoff scores based on type of joint replacement to predict discharge destination. Department of Physical Therapy at the University of Scranton and Regional Hospital of Scranton, Scranton, Pennsylvania. APTA CSM 2019 Washington, DC.

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