Measurement Characteristics and Clinical Utility of the Stroke Impact Scale

Jane E. Sullivan, PT, DHS, MS

The Stroke Impact Scale (SIS) is a multidimensional, stroke-specific, self-report outcome measure. There are 59 items in 8 domains including strength, hand function, activities of daily living/instrumental activities of daily living, mobility, communication, emotion, memory and thinking, and participation/role function. Patients use a 5-point Likert scale to rate the level of difficulty they experience during each activity. Summative scores are generated for each domain. An additional item rates stroke recovery on a scale from 0 to 100. Adequate to excellent reliability has been reported.\textsuperscript{1,2} Normative data are available. Responsiveness data (minimal detectable change and minimal clinically important difference) have been reported for some domains of the measure.\textsuperscript{3} The test can be completed in 15 to 20 minutes. Mail, telephone, and proxy administration have been validated.\textsuperscript{1,4} A 16-item version measure (SIS-16) captures physical performance during daily activities.\textsuperscript{5} The cost of the measure for nonprofit users is free.

A full review of the SIS as well as reviews of nearly 200 other instruments can be found at \textsuperscript{6}www.rehabmeasures.org.\textsuperscript{6}

BIBLIOGRAPHY


This instrument summary is designed to facilitate the selection of outcome measures by trained clinicians. The information contained in this summary represents a sample of the peer-reviewed research available at the time of this summary’s publication. The information contained in this summary does not constitute an endorsement of this instrument for clinical practice. The views expressed are those of the summary authors and do not represent those of authors’ employers, instrument owner(s), the \textit{Archives of Physical Medicine and Rehabilitation}, the Rehabilitation Measures Database, the United States Department of Education, or the Retirement Research Foundation. The information contained in this summary has not been reviewed externally.

The Rehabilitation Measures Database and Instrument Summary Tear-sheets are funded by the National Institute on Disability and Rehabilitation Research, United States Department of Education through the Rehabilitation Research and Training Center on Improving Measurement of Medical Rehabilitation Outcomes (H133B090024) and the Retirement Research Foundation (2011-027).
**Rehabilitation Measures**

**Measure Name:** Stroke Impact Scale  
**Acronym:** SIS  
**Summary Author:** Sullivan J

**Population Reviewed:** Chronic Stroke, others reviewed at www.rehabmeasures.org

**Admin Time:** 15-20 minutes  
**Items:** 59  
**Score:** 0/100 (min./max.)

**Purpose and Administration Instructions:**  
- Assesses health status following stroke

**Required Equipment:**  
- Score sheet

**Validity:**
- *Criterion Validity:* Adequate for hand function*
- *Concurrent Validity:* Excellent for hand function and the MAL-QOM; ADL/IADL and the FIM*
- *Predictive Validity:* Initial FIM score predicted the overall and ADL, IADL domain scores*
- *Convergent Validity:*  
  - Excellent correlation between functional status and mobility and ADL/IADL.  
  - Excellent correlation between the Barthel Index and mobility and ADL/IADL  
  - Poor correlation between the HADS depression subscale and emotion

**Minimally Clinically Important Difference (MCID):**  
- *Chronic Stroke:*  
  - MCID for strength = 9.2; ADL/IADL = 5.9; mobility = 4.5; hand function = 17.8

**Minimal Detectable Change (MDC):**  
- *Chronic Stroke:*  
  - MDC for strength = 24.0; ADL/IADL = 17.3; mobility = 15.1; hand function = 25.9

**Considerations:**  
- The respondent must be able to follow a 3-step command  
- The author recommends that patients score at least 16 on the MMSE  
- The SIS can be administered by mail or telephone  
- The SIS can be completed by a proxy  
- Proxies are more likely to rate a patient as impaired
- Use caution in individuals with only mild impairment as some domains may not capture impairment  
- Omit home based items if client has not returned home

**Training:**  
- Read SIS Manual, available on website

**Reliability:**
- * Interrater Reliability:*
  - Excellent for hand function and mobility
  - Adequate for strength, ADL/IADL, memory, and communication
  - Poor for emotion and social participation
- * Internal Consistency:*
  - Excellent for all domains but emotion

**Scoring Instructions:**  
- For each domain: Transformed Scale = [Actual raw score - lowest possible raw score] / Possible raw score] x 100

**Score Interpretation:**  
- Scores are interpreted using the same scoring algorithm as the SF-36

**Standard Error of Measurement (SEM):**  
- *Chronic Stroke:*  
  - SEM for strength = 8.7; ADL/IADL = 6.3; mobility = 5.5; hand function = 9.4

**Abbreviations:**  
FIM: Functional Independence Measure  
HADS: Hospital Anxiety and Depression Scale  
(I)ADL: (Independent) Activities of Daily Living  
MAL-QOM: Motor Activity Log Amount of Use  
MMSE: Mini-Mental State Exam

<table>
<thead>
<tr>
<th>Cut-off Criteria</th>
<th>r</th>
<th>ICC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>≥ 0.6</td>
<td>≥ 0.75</td>
</tr>
<tr>
<td>Adequate</td>
<td>.31-.59</td>
<td>0.40-0.74</td>
</tr>
<tr>
<td>Poor</td>
<td>≤ 0.3</td>
<td>&lt; 0.4</td>
</tr>
</tbody>
</table>