

Appendix to Amputee Single Item Mobility Measure Manuscript

Detailed description of the AMPSIMM development

The Amputee Single Item Mobility Measure (AMPSIMM) was developed by a team of rehabilitation providers: two physiatrists with expertise in limb loss, an epidemiologist with expertise in mobility measurement and measure development, and two rehabilitation psychologists with expertise in limb loss. Two of panel members were also physical therapists by training.

The content of the measure was based on a combination of clinical expertise, review of existing measures, and integration of the components of mobility as defined by the International Classification of Function, Disability and Health framework. A systematic literature review was conducted to identify all patient reported outcome measures used in amputee populations. A pool of 46 measures was identified and reviewed for content, reliability and validity, and ease of use (based on total number of items and readability). These measures were synthesized in tables for side by side comparison with respect to content, scoring, and psychometric properties. Each panel member reviewed these tables independently and final decisions were made by consensus through an iterative process. Six measures were identified for secondary review because they best reflected important attributes of mobility and had the strongest psychometric properties: LCI-5,¹ three versions of the Prosthesis Evaluation Questionnaire (Prosthesis Evaluation Questionnaire-MS 12/5),² Prosthesis Evaluation Questionnaire Mobility Section (Likert 10 items),³ Prosthesis Evaluation Questionnaire Mobility Section (Likert 7 items),⁴ Orthotics and Prosthetics Users' Survey – Original (20 items),⁵ and the Orthotics and Prosthetics Users' Survey – Modified version (27 items).⁶

The panel reviewed the mobility activities/dimensions covered in the six selected measures to identify common mobility components. Though item structure varied, all measures assessed movements in a broad sense (e.g., get up from a low or soft chair, get in and out of a car or shower) and included multiple items assessing ambulation. Across measures, ambulation items addressed two common dimensions: location (i.e., indoor/home vs. community) and ability to navigate variation in terrain (e.g., slippery surfaces, stairs). The OPUS was unique in that it assessed endurance as part of ambulation also. All measures reviewed used multiple-choice responses, although the focus varied. The OPUS asked respondents to rate the difficulty of various tasks, while the PEQ required respondents to rate their ability to do various tasks. The LCI was unique in that it had the most descriptive response options, and asked participants to indicate whether they could do each mobility task independently or with assistance and whether or not ambulation aids were required.

The International Classification of Function, Disability and Health framework.⁷ organizes functioning into the components of body structures, functions, activities, participation, and environment and personal factors.⁸ Mobility is one of the components of activities and participation, and is further sub-categorized into walking, moving around, moving around in different locations and moving around using equipment. The six measures that we reviewed in detail also were highly consistent with this ICF definition of mobility, suggesting strong agreement about the importance of these dimensions. The AMPSIMM response options were crafted to reflect these mobility components: ambulatory and non-ambulatory mobility, mobility in different environments and mobility utilizing mobility aids. However, for the purposes of brevity and simplicity, “moving around” was assumed to be a precursor ability to “walking”, and as such is not specified in the items that focus on walking. Similarly, based on clinical

experience, we have crafted the items based on the assumption that home mobility is a precursor to community mobility.

Once content was finalized, item wording was revised to ensure that respondents of any mobility level would be able to unambiguously endorse a response category, and that response options were mutually exclusive. Items were tested by generating hypothetical respondents (based on clinical experience) and ensuring that there were appropriate options that reflected their mobility. Items were designed to be orthogonal and comprehensively address the range of mobility that was expected for this population. Face validity was facilitated by determining the extent to which the dimensions of mobility identified as important were clearly and unambiguously visible in the text of the item response options. To ensure ease of use, language was monitored and assessed. The final version of the measure had a Flesch-Kincaid Grade Level of 9.8, which reflects a reading level characterized by plain English easily understood by 13- to 15- year old students. No formal Delphi process was utilized to refine the item or response options. However, the process was iterative in nature and final decisions regarding content of the AMPSIMM required full consensus by the expert panel. A copy of the AMPSIMM can be found in the figure.

References

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Figure. The Amputee Single Item Mobility Measure (AMPSIMM)

How would you rate your current level of mobility? (pick one of the following that most closely describes you).

- 6 I am able to walk in the community, with *no* ambulation aids, unlimited distances (e.g., shopping mall).
- 5 I am able to walk in the community, with *no* ambulation aids, limited distances (egg, one block or equivalent).
- 4 I am able to walk in the community with ambulation aids (e.g., cane, crutches, walker).
- 3 I am able to walk inside my house with ambulation aids and use a wheelchair for community ambulation.
- 2 I am not able to walk but could get around my house and the community with a wheelchair.
- 1 I am not able to walk but could get around my house with a wheelchair but not get out into the community.
- 0 I am housebound and mostly bedridden and require help for all household transfers and mobility.