The Rankin Focused Assessment—Ambulation: A Method to Score the Modified Rankin Scale with Emphasis on Walking Ability

Richa D. Patel, BS,*† Sidney Starkman, MD,* Scott Hamilton, PhD,‡ Sharon Craig, RN, BSN,* Anna Grace, RN,* Robin Conwit, MD,§ and Jeffrey L. Saver, MD*

Background: In the assessment of poststroke functional outcome, there are 2 alternative approaches to rating patient independence in motion: (1) focusing solely on patient ambulation (discounting self-use of wheelchair) and (2) focusing broadly on patient mobility (counting self-use of wheelchair). This study was undertaken to create and assess the inter-rater reliability of a version of the Rankin Focused Assessment (RFA) that focuses on ambulation (Rankin Focused Assessment—Ambulation [RFA-A]), as an alternative to the original RFA that focused on mobility (Rankin Focused Assessment—Mobility [RFA-M]). *Methods:* The RFA-A was created by changing instructions in the RFA-M for handling of nonambulatory, wheelchair-using patients. Paired study coordinators then applied the RFA-A to 50 consecutive patients enrolled in a phase 3 acute stroke trial. *Results:* Among the 50 patients, the mean age was 72 years (range 43-93) and 48% were female. Overall, study coordinator pairs assigned the same modified Rankin Scale (mRS) grades to 48 of the 50 patients, yielding a weighted κ of .98 (95% confidence interval [CI] .96-1.00) and an unweighted κ of .95 (95% CI .89-1.02). At day 90, 43 patients were alive and 7 had died. Among surviving patients, the weighted κ was .98 (95% CI .95-1.00) and the unweighted κ was .94 (95% CI .86-1.02). The κ

From the *Comprehensive Stroke Center, Department of Neurology, University of California Los Angeles, Los Angeles, California; †Boston University School of Medicine, Boston, Massachusetts; ‡Stanford Stroke Center, Department of Neurology, Stanford University, Palo Alto, California; and §National Institute for Neurological Disorders and Stroke, Bethesda, Maryland.

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Address correspondence to Jeffrey L. Saver, MD, Department of Neurology, Comprehensive Stroke Center, University of California Los Angeles, 710 Westwood Plaza, Los Angeles, CA 90095. E-mail: jsaver@ucla.edu.

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values for all 6 dichotomizations of the mRS score ranged from .93 to 1.00. *Conclusions:* The RFA-A demonstrates high inter-rater reliability in grading global functional outcome. The RFA-A is a useful tool for assigning an mRS score in research and clinical practice when functional assessment focused on ambulation is desired. **Key Words:** Scales—disability—ambulation—Rankin—assessment.

The modified Rankin scale (mRS) of global functional outcome is the most common primary outcome measure in acute stroke trials.[1,2] The mRS classifies stroke patients among 7 levels of functional outcome ranging from 0 (no symptoms) to 6 (death). In addition to its applications in randomized trials, the mRS has also now become a standard element of clinical practice, as a measure collected at discharge for all stroke patients in the Get With the Guidelines—Stroke quality improvement program and as a measure collected at 3 months in reperfusion therapy patients in Joint Commission-certified Comprehensive Stroke Centers.[3,4] However, prior studies have shown that holistic, unstructured assignment of Rankin grades results in substantial variability between raters.[5] Such discordance among raters not only introduces noise and reduces clinical trial power but also, in routine clinical practice, diminishes precision in judging the impact of quality improvement efforts.

Structured assessments have been created to ensure more consistent scoring of the mRS, reducing subjective judgment and minimizing inter-rater variability in assigning a modified Rankin grade.[6-9] The Rankin Focused Assessment (RFA) is one such structured assessment tool that was developed by the National Institutes of Health Field Administration of Stroke Therapy—Magnesium (NIH FAST-MAG) Phase 3 clinical trial to better improve the inter-rater reliability of the mRS.[9]

The original RFA uses a patient's mobility as a determining factor for disability. However, for users wishing to focus disability assessment on ambulation rather than mobility, it would be helpful to have a version of the RFA that is operationalized around ambulation rather than mobility.

Methods

The primary objective of this study was to develop and test the reliability of a structured assessment tool, the Rankin Focused Assessment—Ambulation (RFA-A), that handles gait difficulty as a severe functional impairment, irrespective of a patient's mobility. To clearly distinguish the difference between the new RFA-A and the original instrument, we propose that that the original instrument be renamed the Rankin Focused Assessment—Mobility (RFA-M).

Tool Development

The derivation of the original RFA-M has been previously described.[9] The RFA-A is similar in all regards to the original RFA-M, except for different wording guidance on how to categorize the subset of patients who are using wheelchairs.

Like the RFA-M, the RFA-A comprises a 4-page questionnaire and a 5-page instruction sheet (see supplemental material) and has been made freely available for use under a Creative Commons license. These materials provide detailed, operationalized descriptions of the breakpoints in the mRS to provide clear guidance on which findings place a patient in each mRS category. Like the RFA-M, the RFA-A requires 3-5 minutes to complete and uses all sources of information available on patients including self-report, caregiver report, healthcare provider report, and rater objective evaluation.[9] The RFA-A rating form and instruction set includes yes and no checkboxes for component items, descriptive text stating qualifying findings for each mRS level, and an open text box space for documenting an explanation of reasons for assigned values for particular items, allowing later review.

The RFA-A differs from the RFA-M in the wording for guidance on how to categorize the subset of patients who are using wheelchairs. Where the RFA-M rates patients on their ability to be mobile, and takes into account both walking and wheelchair capabilities, the RFA-A instead rates patients based on their ability to ambulate, taking into account only walking capability. As a result, the descriptive criteria in the rating form for Rankin grades 4 and 5 were reworded. For example, the RFA-M allows nonambulatory patients to have mRS scores of 1-3 or lower so long as they can maneuver well in a wheelchair. The RFA-A does not permit patients who cannot walk to achieve mRS scores of 1-3, even if they maneuver well in a wheelchair. If a patient were using a wheelchair (with assistance or even self-propelling), he or she would only qualify for an mRS score of 4.

Assessment of Reliability

This study was an expanded analysis of data previously collected. In the original study of the RFA-M, 50 patients undergoing a day 90 visit in the multicenter NIH FAST-MAG clinical trial were consecutively evaluated using the RFA-M by 2 different study coordinators. The