Article Title:
The Aphasia Rapid Test: an NIHSS-like aphasia test.

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**APHASIA HANDICAP SCALE**

0  Normal language

1  Minor difficulties of language without disability (no impact on normal life)

2  Mild language-related disability (without restrictions in the autonomy of verbal communication in daily life)

3  Moderate language-related disability (restricted autonomy of verbal communication)

4  Severe language-related disability (lack of effective verbal communication)

5  Mutism or total loss of verbal expression and comprehension

**Rationale:** The Aphasia Handicap Scale (AHS) has been designed as an attempt to quantify aphasia-related handicap/disability in stroke patients. It is modeled on the modified Rankin scale (mRS), which is widely used to quantify global handicap/disability in stroke patients. Despite the diversity of stroke-induced neurological impairments, the mRS has been instrumental in the development of prognostic and therapeutic stroke research, and is preferred to impairment scales in judging the efficacy of therapeutic trials in acute stroke patients. We therefore reasoned that a similar scale would be useful for aphasia research. In addition, the implementation of the AHS should be facilitated by the fact that the mRS is already familiar to the entire stroke care community.

**AHS scoring system:** Like the mRS, the AHS is a 5-point scale, in which the difference between 1 and 2 is based on disability, the difference between 2 and 3 on autonomy in everyday life, and the difference between 3 and 4 on loss of function. Scores 0-3 are based on the self-rating by the patient regarding the impact of the disability (if possible with confirmation from a proxy). The patient is scored 3 if it is possible to use an ADL scale such as the Barthel index during a face-to-face interview by oral communication with the patient alone, and is scored 4 if the help of a proxy is necessary. The difference between scores 4 and 5 is based on the examiner's judgment.

The examiner obtains a pre-score during a face-to-face interview, typically during the outpatient neurological follow-up, and we suggest asking the following questions depending on the pre-score.

Pre-score 0-1: you have made an excellent recovery of language abilities. Do you still have a slight language impairment? No: 0; Yes: 1.

Pre-score 1-2: You have made a good recovery, but you obviously still have some language difficulties. In your opinion, are these difficulties now non disabling symptoms or are they still a disability or a handicap? Non-disabling: Are you sure? Yes: 1; Disabling: Despite this
language disability, have you recovered language autonomy? Are you able to communicate alone with unknown people on topics of everyday life? Yes: 2; No: 3.

Pre-score 3: You are improving, but do you consider that you still have some difficulty in communicating verbally with other peoples? Yes: 3, No: Do you consider that you have regained language autonomy in everyday life? Yes: 2; No: 3.

Comparison with the BDAE APHASIA SEVERITY RATING SCALE
(The Assessment of Aphasia and Related Disorders. Goodglass H., Kaplan E.

We compared the AHS with the BDAE aphasia severity rating scale in 126 chronic aphasic stroke patients, who received a formal assessment of aphasia in our speech therapy department 3-12 months post-stroke. None of these patients were included in the current study. The agreement between scores obtained on the two scales was very good, with a weighted Kappa value of 0.873 (95% CI: 0.830-0.916). It should be noted that AHS scores 5, 4, 3, 2, 1 and 0 correspond to BDAE scores 0, 1, 2, 3, 4 and 5. The contingency table is shown below. Note that the correspondence between AHS handicap scores and BDAE disability scores is better for low (0-1) and high (4-5) AHS scores than for intermediate AHS scores (2-3), suggesting that the perception of mild or moderate handicap corresponds to a wider range of disability levels than the absence of handicap or extreme handicap.

<table>
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<tr>
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<td>8</td>
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<td>3</td>
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</table>

We also looked for the best agreement between AHS-defined poor outcome (4-5) and good outcome (0-2) groups with similar BDAE-defined groups. In this series, the best agreement for the poor outcome group was found with a BDAE score of 0-1: 97.6 % concordance; Kappa value = 0.922 (0.835-1.00). The best agreement for the good outcome group was found with a BDAE score of 3-5: 95.2 % concordance; Kappa value = 0.884 (0.793-0.975).

Reproducibility of the AHS

The reproducibility of the AHS was tested in 109 aphasic stroke patients by two independent observers with a delay in scoring of < 24 hours. Of these patients, 71 were scored 1-4 weeks post-stroke in our stroke unit by two senior residents in Neurology (reference: Olivier Detante, Medical Thesis: Aphasie handicap score; Université Pierre et Marie Curie (Paris VI) Faculté de médecine Pitié-Salpêtrière 2004), and 38 chronic stroke patients were referred for the evaluation of aphasia 3 months post-stroke to our speech therapy unit, where they were evaluated by two speech therapy students. The inter-rater agreement was excellent for both
sets of raters, with a weighted Kappa value of 0.927 (0.898-0.956). The contingency table is shown below:

<table>
<thead>
<tr>
<th>Observer B</th>
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<td>0</td>
<td>0</td>
<td>3</td>
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</table>

When patients were dichotomized into poor (AHS 4-5) and good (AHS 0-2) outcome groups, the inter-rater agreement was still excellent; poor outcome group (AHS 4-5): concordance 94.5%; Kappa value: 0.853 (0.738-0.967); good outcome group (AHS 0-2): concordance 92.7%; Kappa value: 0.853 (0.733-0.950).