

Supplementary material to article by M. Alt Murphy et al. "Implementation of evidence-based assessment of the upper extremities in stroke rehabilitation: From evidence to clinical practice"

Supplement 1. Clinical practice routine/guideline for upper extremity assessment in people with stroke for occupational therapists and physiotherapists working at Sahlgrenska University Hospital

Background and aim

Assessment of upper extremity function and activity capacity in patients with stroke is essential for selection of intervention. There is a need to develop local recommendations for assessment of upper extremity, since the national Swedish stroke guidelines do not specify which assessments should be used, by which health professionals, and at what timepoint.

This local clinical practice routine is developed both for occupational therapists (OT) and physiotherapists (PT) to facilitate and support clinical reasoning and decision making in assessment of upper extremity functioning. The routine will ensure evidence-based, effective, equal, knowledge-based individually tailored rehabilitation for persons with stroke within the available resources in the organization at the Sahlgrenska University Hospital.

The recommendation is based on the International Classification of Functioning, Disability and Health (ICF), current available research evidence and available clinical practice guidelines and recommendations. The recommendation specifies what should be included in the assessment, what outcome measures should be used at what time points after stroke. Assessments are performed at four levels:

Assessments

- 1. First assessment/screening within 24 hours** after stroke onset/admission is applied to all patients with stroke diagnosis and includes the initial screening/assessment of sensorimotor function, passive range of motion, muscle tonus, pain, hand oedema, functional movements, grip function and ability to perform basic manual tasks. Standardised assessments, as listed below, can be used when appropriate. Assessment can be performed jointly by OT and PT. The assessment guides the clinical decision-making in selection of outcome measures for further assessment, when identifying problem areas, in evaluation of rehabilitation need and intervention planning. If no effects of stroke on upper extremity function is noted, this will be recorded in the medical chart. This first assessment aims to identify the problem areas in upper extremity functioning caused by stroke to guide further assessment and intervention.
- 2. Full in-depth assessment within the first week of stroke onset/admission**
 - a) Within 72 hours (3 days)** after stroke onset SAFE (PT) and ARAT-2 (OT) are used to screen/assess the upper extremity function and activity, respectively. The assessment aims to guide prognosis and treatment planning.
 - b) Within the 1st week** after stroke onset FMA-UE (PT), Jamar, Box and Block Test (BBT), and 9-Hole Peg test (9-HPT) (OT) are used. The assessment aims to define and quantify specific sensorimotor functioning problems, guide prognosis and treatment planning.

SAFE and ARAT-2 are two short screening instruments used early after stroke to guide prediction of the upper extremity functioning and need of further assessment or selection of intervention. Prediction algorithms are valid when the assessment is performed 3 days post stroke and can be used to guide further need of assessment.

SAFE assesses muscle strength in shoulder abduction and finger extension by using the 0-5 manual muscle testing scale. ARAT-2 comprises two items from the Action Research Arm Test, to lift the affected arm on top of the head and to pour water from a glass. ARAT-2 can be used to assess the upper extremity activity capacity during the first 2-4 weeks, but needs to be complemented with more comprehensive instruments after 4 weeks or when the patient reaches the maximum score.

Fugl-Meyer Assessment of Upper Extremity (FMA-UE) is used to assess the motor function and to guide prediction.

Box and Block Test (BBT) assesses the gross motor manual dexterity and Nine Hole Peg test (9-HPT) the fine motor dexterity at the activity capacity level according to the ICF.

- 3. Complementary assessment** includes recommended assessments individually selected according to the patient's functioning level, treatment goal. The assessment aims to quantify the specific sensorimotor functioning problems, improve prognosis and guide treatment planning. Examples on assessments that can be considered: Action Research Arm Test (ARAT), Modified Sollerman, Grooved and Purdue pegboard tests, standardized drinking task and Abilhand questionnaire.
- 4. Evaluation and follow-up assessments** at 4 weeks and/or discharge, and 3-, 6- and 12-months post stroke. The assessment aims to guide prognosis, intervention planning and evaluation of recovery and treatment. Outcome measures that were performed at previous assessments should be prioritized, e.g. FMA-UE, grip strength, BBT and 9-HPT.

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