Motor Activity Log (MAL) Manual

UAB CI Therapy Research Group

written by:

Edward Taub, Karen McCulloch, Gitendra Uswatte, David M. Morris

with contributions by:

Mary Bowman, Jean Crago, Danna Kay King, Staci Bishop, Francilla Allen, Sherry Yakley

Manual
Upper Extremity Motor Activity Log
(UE MAL)

1. General

This instrument is a structured interview intended to examine how much and how well the subject uses their more-affected arm outside of the laboratory setting. Participants are asked standardized questions about the amount of use of their more-affected arm (Amount Scale or AS) and the quality of their movement (How Well Scale or HW) during the functional activities indicated. The scales are printed on separate sheets of paper and are placed in front of the participant during test administration. participants should be told that they can give half scores (i.e., 0.5,1.5,2.5,3.5,4.5) if this is reflective of their ratings.

2. Rating Scales

Both the AS and HW scales are used during all test administrations, except for the periodic administration(s) of the MAL during treatment, when only the HW scale is used. In all administrations except those done during treatment, begin with the AS scale and ask participants to rate all tasks using the AS scale first. (See **Comment 1** at the end of the manual) The tester then describes to the participant the difference between the AS and HW scales (as suggested in the instructions) and the UE MAL HW Rating Video is shown. The participant then rates all tasks performed with the HW scale. The UE MAL Demonstration Video is not shown at the screening administration (first administration) or for administrations during treatment, but it is shown again during post-treatment administration. (See **Comment 5c**) The tester should not ask the participant to rate the more-affected UE on the HW scale if they have already rated the more-affected UE as a 0 for the AS.

Amount Scale
0 - Did not use my weaker arm (**not used**).
.5
1 - Occasionally used my weaker arm but only very rarely (**very rarely**).
1.5
2 - Sometimes used my weaker arm but did the activity most of the time with my stronger arm (**rarely**).
2.5
3 - Used my weaker arm about half as much as before the stroke (**half pre-stroke**).
3.5
4 - Used my weaker arm almost as much as before the stroke (**3/4 pre-stroke**).
4.5
5 - Used my weaker arm as often as before the stroke (**same as pre-stroke**).

How Well Scale

0 - My weaker arm was not used at all for that activity (**not used**).

.5

1 - My weaker arm was moved during that activity but was not helpful (**very poor**).

1.5

2 - My weaker arm was of some use during that activity but needed some help from the stronger
     arm, moved very slowly, or with difficulty (**poor**).

2.5

3 - My weaker arm was used for that activity but the movements were slow or were made only with
     some effort (**fair**).

3.5

4 - The movements made by my weaker arm for that activity were almost normal but not quite as
     fast or accurate as normal (**almost normal**).

4.5

5 - The ability to use my weaker arm for that activity was as good as before the stroke (**normal**).

3. Asking Questions

***Step One*:** Read the UE MAL instructions (see the Instructions for Participant – the last paragraphs
of this Manual) to the participant and explain the rating scales. Answer any questions that the
subject may have. The tester should remind the participant that the questions on the MAL pertain to
what they <u>actually do</u> outside the treatment setting – not what they think they <u>may be able to do</u>.

***Step Two*:** The project staff member should inquire about the use of the more-affected arm for each
activity using the following questions:

a. <u>Screening Evaluation</u> (first test administration) - "*Considering your activities during the past
week, did you use your weaker arm to...* (state the activity)?" If no, then ask why and direct the
participant to the list of possible reasons why the arm was not used. For scoring on the recording
form, use the codes at the bottom of the score sheet to categorize the participant's response. It is
desirable to have these codes printed on a separate sheet so that it is easy for the participant to make
a selection. If Yes, go to step three.

b. <u>Pre-treatment Administration</u> (second test administration) - *"Considering your activities during
the past <u>week</u>, did you use your weaker arm to ...* (state the activity*)?"* If no, then ask why and direct
the participant to the list of possible reasons why the arm was not used. For scoring on the
recording form, use the codes at the bottom of the score sheet to categorize the participant's
response. It is desirable to have these codes printed on a separate sheet so that it is easy for the
participant to make a selection. If Yes, go to step three. **Note:** If the screening evaluation took place
less than one week prior to pre-treatment testing, say *" Since the last time you were evaluated for
this project, did you... (*state the activity*)?"*

c. Periodic MAL Administrations During Treatment- The time period covered by the MAL questions depends on the specific treatment schedule.

d. Post-treatment Testing- *"Considering your activities since the last time I asked you these questions, have you used your weaker arm to…* (state the activity)?" If no, then ask why and direct the participant to the list of possible reasons why the arm was not used. For scoring on the recording form, use the codes at the bottom of the score sheet to categorize the participant's response. It is desirable to have these codes printed on a separate sheet so that it is easy for the participant to make a selection. If Yes, go to step three.

e. All Other Test Administrations - *"Considering your activities during the past week, did you use your weaker arm to ...* (state the activity*)?"* If no, then ask why and direct the participant to the list of possible reasons why the arm was not used. For scoring on the recording form, use the codes at the bottom of the score sheet to categorize the participant's response. It is desirable to have these codes printed on a separate sheet so that it is easy for the participant to make a selection. If Yes, go to step three. (See **Comment 2** at the end of the manual)

Step Three: Rating the Amount of Use and How Well
a. Amount Rating: Ask the participant, *"Using the Amount Rating Scale, tell me how you would rate the amount you used your weaker arm to...* (state the activity)." Once the participant selects a rating, *verify* their response by repeating the selected rating in the following manner; " *So, you believe that you* (read the description of the selected AS rating) – *Is that correct?*" When verifying the descriptor, at a minimum, repeat the abbreviated descriptor in the parentheses (e.g., half pre-stroke). For screening and pre-treatment testing, once they agree, record the response in the blank AS space provided for that question. For all other UE MAL administrations, after the participant's response has been verified, the tester should proceed with probing the response. (See Step Four (b) and **Comment 6***)."*

For pre-treatment, post-treatment, and follow-up testing, once the AS is completed, show the participant the *UE MAL HW Rating Scale Video* (see **Comment 5c**) in its entirety. Then proceed with the HW rating of the affected UE.

b. How Well Rating: Ask the subject, *"Using the How Well Rating Scale, tell me how you would rate how well you used your weaker arm to... (*state the activity*)"* For the screening evaluation and pre-treatment testing (first and second administrations), emphasize the difference between the AS and HW scales (See **Comment 3**). Once the participant selects a rating, *verify* the selected rating in the following manner; *" So, you believe that you...* (read the selected HW rating scale) **-** *Is that correct?"* (See Step Four(a) below) Once they agree, record the response in the blank HW space provided for that question during screening and pre-treatment administrations. For all other administrations (other than screening or pre-treatment), proceed with *probing* the participant's

response for the HW scale. (See Step Four (b) below and **Comment 6**)

Note: During the pre-treatment testing (second test administration) and after the participant provides an HW rating, ask the subject to demonstrate an approximation of the first several activities (at least six) by saying, "*Please show me how you do that activity.*" (See **Comment 5a**)

Step Four: *Verifying and Probing the Response*

a. Verifying the response: Each number rating that a participant selects should be verified by restating the description verbally back to the subject in the form of a question. Both the Amount Rating and the How Well Rating scores will be verified.

Common frame of reference: During the pre-treatment testing (second test administration), the tester sets up an agreed-upon rating framework with the participant. If obvious discrepancies exist between what is observed and the rating provided, the tester should discuss the rating with the participant to develop a common frame of reference (i.e., *"You rated that activity a "5". However, you moved your arm very slowly to do the activity. So, for this project that would be more like a "2". Do you agree?"*). The final rating is determined by the participant.

> Establishing a common frame of reference during the pre-treatment testing, before therapy has begun, is a critically important step. For suggestions on how to accomplish this, see **Comment 5.** The first administration of the MAL is very important and an hour or more should be devoted to it so that an appropriate frame of reference is established. This should include asking the participant to pantomime at least the first 6 activities that they score above 0 (see **Comment** 5a) and showing the participant the UE MAL HW Rating Scale video (See **Comment 5c**).

b. Probing the Response: During all test administrations (other than screening and pre-treatment), after verifying the participant's score the tester should refer back to the scores of the immediately previous test administered to confirm that there has been a change. That score sheet should be out of view of the subject. For example, the previous MAL score sheet might be kept on a clipboard next to the tester, but covered by a piece of cardboard to shield it from the participant's view. If a rating change occurs (increase or decrease), the tester should *probe* the response using the following questions:

> 1. *"Today, you rated this activity...* (state either "higher" **or** "lower" - whichever is accurate) *than during the last test when you gave it a* (repeat the previous score)." *"Why is that?"* or *"Does this represent a real change?"*
>
> 2. *"So, now that you have thought about it more, how would you rate it?"*

3. *"So, you believe that the rating should be…* (read the specified rating*). Is that accurate?"* If *Yes,* record the answer and go to the next question. If *No*, ask *"Why?"* and go back to question 2 – just above. (See **Comment 6**).

4. **Caregiver MAL Testing**

This MAL should be administered to a caregiver or significant other; the participant should not be present. The same significant other should be tested on both occasions and should preferably be someone living with the subject. The AS scale, UE MAL Demonstration video, and HW scale should be used for caregiver administrations.

5. **Scoring**

After administering the MAL, a mean MAL score is calculated for both scales by adding the rating scores for each scale and dividing by the number of items asked. As noted above, if during testing a subject answers *No* (they did not do the task), then try to determine why. Use the codes at the bottom of the forms to specify the reason. If you find that it is impossible for the subject to carry out the activity (e.g., can't comb hair because they are completely bald), the question is dropped from that and all other MALs and the mean score is calculated with the remaining items only (e.g., divide by 29 instead of 30). Otherwise, a rating score of zero is entered for "no" responses, and the mean score is calculated using the entire MAL (e.g., divide by 30). For further considerations concerning the N/A score, see **Comment 4**.

If a subject does an activity *during treatment* and then does not do it because an opportunity doesn't present itself since the last MAL administration, the last score is carried forward. This is a conservative method of scoring since it is unlikely that performance would get worse during treatment and much more likely that it would get better. If a subject does an activity pre-treatment, but cannot do it during treatment (e.g., the hotel room where the subject is staying during treatment does not have a refrigerator that the subject would have at home), the score for that item is "not applicable" (n/a or a dot or left blank, depending on the data entry system being used). However, when the subject returns home and the activity that the subject performed pre-treatment can again be performed, scoring of that item is resumed.

If a person says that he never uses his more-affected arm for any purpose when you start administering the MAL, do not accept this assertion at face value. Instead, go through the first 10 items. If the answer to all 10 is zero, then one can assume that the initial response is substantially correct and one can assign a score of "0" to the remaining items without asking them individually.

Comments

Comment 1: Using the rating scales

  The AS rating scale should only be used during the test administrations conducted before treatment (screening evaluation and pre-treatment testing), post-treatment, and in follow-up. It should not be used during treatment since treatment involves restraint of the less-affected arm thereby inducing greatly increased use of the more-affected arm. This would artificially inflate the appearance of a therapeutic effect and might not persist after the end of treatment. Thus, the meaning of ratings on the AS scale during treatment would be questionable.

Comment 2: Timeframes used in questions

  In the screening evaluation (first test administration) and follow-up testing, ratings should be obtained for activities carried out during the previous week. The use of a one-week time frame should increase the likelihood that participant will have had opportunities to perform a representative sample of their full range of activities. However, at times, the pre-treatment (second MAL administration) will occur less than one week after the screening (first administration). In such cases, the pre-treatment testing (second administration) should involve obtaining ratings for activities carried out since the screening evaluation (first administration) (e.g., 3 days). In all other test administrations, ratings should be obtained for the time since the subject was last asked about that specific task. Since only one half of the MAL should be administered daily during the treatment period, this time frame will typically be 2 days.

Comment 3: Differentiating between the two rating scales

  When both scales are being used to rate activities, particularly during screening evaluation and pre-treatment testing, it is very important to make sure that the participant understands the difference between the scales. The following phrases may be used before asking about the HW rating scale to accomplish this. *"Remember that I am asking you to rate something different on this scale, the How Well Scale, than you did before on the Amount Scale. Before you were supposed to rate how much you used your more-affected arm. Now I would like you to rate how well you used your more-affected arm, if you did use it. For example, you might have used your more-affected hand to pick up a glass and drink only rarely. The Amount rating might therefore be a 1.5 or 2. However, when you did use it, your use of the hand was really quite good: let us say between fair and almost normal, or a 3.5. Is the difference between the two types of ratings I am asking you to make clear?"* Go over this several times if necessary and have the person verbalize the difference between the two types of ratings to make sure they understand it.

Comment 4: Using the "N/A" code

  When a task is impossible, such as combing the hair if the person is bald, the "N/A" score should be used. However, "N/A" should be used sparingly since many times a subject might

indicate that an activity is impossible, but it is actually not being performed because it is either very difficult for the participant, inconvenient, or requires increased time for completion. It has been found that when subjects progress through CI therapy, they will sometimes begin doing tasks that they may have previously identified as impossible. Thus an item is to be noted as "N/A" only when that activity is truly impossible; that item is then dropped from the test and the mean scores are calculated with the remaining items only (e.g., divide by 29 rather than 30).

Comment 5: Establishing a context or a common frame of rating reference for the HW scale:

a.   During the pre-treatment testing, the subject should be asked to demonstrate a number of activities (at least six activities) they have rated on the HW scale; the participant should pantomime the activities in question. The activities for which demonstration is requested will most usefully be activities at the beginning of the MAL; this will allow the tester to get an idea of the subject's general frame of reference and will reduce the need for demonstration of activities on later MAL items. During the pre-treatment administration, demonstration of the performance of an activity should also be requested whenever the tester is unsure of what the participant means by a rating. The demonstration should be carried out after the participant attempts to rate the activity and only when using the HW rating scale. Observation of the pantomime of an activity allows the tester an opportunity to discuss the participant 's HW rating in order to set an agreed-upon rating frame of reference. Since this process should increase the likelihood that the participant understands the intended motor referent or meaning of the HW rating scale, it should increase the comparability of results across participant s. The tester need not have the participant demonstrate every item on the MAL if in their opinion the HW rating is consistent with the performance previously demonstrated on a similar task (e.g., opening a refrigerator and opening a door by turning a door knob/ handle). Establishing a context should be used during pre-treatment testing only, so that experimenter bias and demand characteristics resulting from this procedure cannot artificially increase the appearance of a treatment effect.

b. When a clear disparity exists between the participant 's HW rating and what the tester has observed concerning the subject's motor ability, the tester should explain the meaning of the HW rating scale for the task in question with examples being given for each step, especially those that focus on the HW rating in question (e.g., "*You rated that activity a "3". However, you moved your arm very slowly to do the activity. So, for this project that would be more like a "2". Do you agree?*"). Participant s will usually be influenced by the tester's explanation. If they are not and they continue to reiterate the original estimate, the tester should politely continue the discussion until the patient accepts the laboratory/clinic's frame of reference. Thus, the MAL has aspects of both a self-report instrument and a structured interview. Again, this process should be completed prior to the beginning of treatment to decrease the chance that experimenter bias will influence the HW rating scores.

c. **Videotape:** This laboratory has developed a UE MAL HW Rating Scale Video that provides examples of different rating levels for several UE MAL activities. This videotape is extremely helpful in establishing a common frame of reference with a patient. It should be shown in its entirety to the patient at the pre-treatment test administration and discussed thoroughly at that time. The UE MAL HW Rating Scale Video should also be shown at post - treatment testing and at follow-ups at 6, 12, and 24 months to refresh the subject's frame of reference for the rating of MAL activities. Also, based on direct observation of behavior during therapy, if the tester believes at any time that the subject's frame of reference has shifted, the UE MAL HW Rating Scale Video should be shown again and discussed.

Comment 6: Verifying and probing responses

Verifying the participant's responses should be done for each administration. Each number rating that a subject selects should be verified by restating the description of that rating verbally back to the participant in the form of a question.

Probing the participant's responses is performed for all administrations except screening and pre-treatment testing. During the standardized questioning, the subjects are not told their previous scores. However, if their report reflects a change in score, whether an increase or a decrease, the change in rating should be probed to determine whether it reflects a true change, as noted above. The most common type of situation in which probing has been found to increase response accuracy sometimes occurs approximately half way through the intervention period. Some participant s become so pleased with their large and rapid improvement in motor function that they tend to magnify and overestimate it. Thus, the majority of errors made by participant represent an overestimation of the HW rating score. Probing usually results in revisions in the direction of performance decrement (i.e., a lower HW rating score), which therefore lead to a more conservative (and probably more accurate) estimate of the treatment effect than would otherwise be obtained.

During early experiments in the UAB lab (Taub et. al., 1993), probing was not carried out for the first two patients. The graphs of the daily MAL records for these two participants presented a jagged appearance, with days of decrement following days of large improvement. This variability appeared to testers not to be reflective of the reality of the situation. The improvements were frequently greater than appeared warranted and decrements seemed to underestimate performance. When the probing procedure was implemented, the curve connecting the MAL data points became smooth. However, it is important to note that the final performance was not greater than that recorded for the first two participant s (where probing was not used). The project staff had the clear opinion that the smoothed curves more accurately described subjects' performance and that this was achieved by eliminating "noise" from the rating process (e.g., lack of attention by subjects during the testing, spontaneous change in the participant s' frame of reference, etc.).

Comment 7: Administration times

UAB Training for CI Therapy

Administration of the MAL during treatment provides valuable data and tracks a patient's progress during the therapy phase. Concerns have arisen because it was felt that administration of the MAL during the treatment period might have a "treatment effect" in itself. If this were so, it would jeopardize the MAL's credibility as an outcome measure. It was felt that the treatment effect might result from the way in which the test focuses attention on the participant's activities at home. However, it should be noted that the entire CI Therapy approach focuses attention on using the more-affected arm in the lab and at home. Consequently, the effect produced by the MAL would be minimal in relation to the treatment effects brought about by the various aspects of the CI Therapy package (i.e., prolonged and concentrated task practice, wearing a mitt for 90% of waking hours, the behavioral contract, etc.). Evidence indicating that the administration of the MAL does not have a therapeutic effect in itself has been obtained in two experiments. First, in W. Miltner's group research laboratory at the University of Jena, the MAL was administered to eight patients with chronic stroke two weeks prior to treatment and on the pre-treatment testing day. Analysis revealed no reliable difference in the rating scores obtained during these two administrations. In addition, 21 participants participating in a two-week general fitness program designed as a placebo control procedure for the UAB CI Therapy Project were given the MAL repeatedly on the same basis as experimental subjects (i.e., pre-treatment, on a daily basis during the placebo treatment, post-treatment, and in follow-up). This group did not show a significant change in MAL scores as a result of therapy.

Recently a study has been conducted indicating that the MAL is psychometrically robust: inter-test reliability for the 2 MAL scales = .99 and .96; correlation of the scales of the MAL with the Abilhand Test - .88 and .71. (Johnson A, Judson L, Morris D, Uswatte G, Taub E. The reliability and validity of the 45-item upper extremity motor activity log. Paper presented at the American Physical Therapy Association, Combined Sections Meeting, Nashville, February, 2004.)

Instructions for Participant

"The purpose of this test is to examine how much and how well you use your more-affected arm when you are not in our laboratory. You will use two separate rating scales to describe how much and how well you use your weaker arm while you are doing specific activities. Please note that you can give half ratings if that best describes your performance of the activity in question. If for some reason, you do not perform these tasks, we will try to determine why. We will first discuss how much you do each of the activities with your weaker arm and then we will discuss how well you do them when using your weaker arm. I will be showing you a film of other people who had a stroke, carrying out the activities on the questionnaire at different levels of ability. I would like you to use the ratings on the videotape as the basis for forming a judgment of how well you do these activities yourself. It is important that you realize that these questions are about what you actually do outside of the laboratory setting – not what you think you may be able to do with your weaker arm. There are no right or wrong answers; simply select the ratings you believe best describes what you do. Please understand that I must follow a script with this procedure. Do you have any questions?"

When administering the MAL during a screening evaluation, both the AS and the HW scale should be used. The UE MAL HW Rating Scale Video is not shown to participant at screening unless the tester questions the potential subject's frame of reference for rating themselves. In these cases, the UE MAL HW Rating Scale Video may be shown to help to establish an appropriate frame of reference. Use the following **introductory paragraph for the screening**:

"The purpose of this test is to examine how much and how well you use your more-affected arm when you are not in our laboratory. You will use two separate rating scales to describe how much and how well you use your weaker arm while you are doing specific activities. Please note that you can give half ratings if that best describes your performance of the activity in question. If for some reason, you do not perform these tasks, we will try to determine why. We will first discuss how much you do each of the activities with your weaker arm and then we will discuss how well you do them when using your weaker arm. It is important that you realize that these questions are about what you actually do outside of the laboratory setting – not what you think you may be able to do with your weaker arm. There are no right or wrong answers; simply select the ratings you believe best describes what you do. Please understand that I must follow a script with this procedure. Do you have any questions?"

SID_____ Name _____ Date _____ Visit _____ Examiner _____

Motor Activity Log (UE MAL) Score Sheet

<u>Amount Scale</u>   <u>How Well Scale</u>

1. Turn on a light with   ____   ____   if no, why? (use code) _____
    a light switch   Comments _____

2. Open drawer   ____   ____   if no, why? (use code) _____
                                                                        Comments _____

3. Remove an item   ____   ____   if no, why? (use code) _____
    of clothing from a drawer   Comments _____

4. Pick up phone   ____   ____   if no, why? (use code) _____
                                                                        Comments _____

5. Wipe off a kitchen   ____   ____   if no, why? (use code) _____
    counter or other surface   Comments _____

6. Get out of a car   ____   ____   if no, why? (use code) _____
    (includes only the movement needed to get   Comments _____
    body from sitting to standing outside of the car,
    once the door is open).

7. Open refrigerator   ____   ____   if no, why? (use code) _____
                                                                        Comments _____

8. Open a door by   ____   ____   if no, why? (use code) _____
    turning a door knob/   Comments _____
    handle

9. Use a TV remote   ____   ____   if no, why? (use code) _____
    control   Comments _____

10. Wash your hands   ____   ____   if no, why? (use code) _____
    (includes lathering and rinsing hands; does   Comments _____
not include turning water on and off with a faucet handle).

Codes for recording "no" responses:

1. "I used the unaffected arm entirely." (assign "0").

2. "Someone else did it for me." (assign "0").

3. "I never do that activity, with or without help from someone else because it is impossible." For example, combing hair for people
   who are bald. (assign "N/A" and drop from list of items).

4. "I sometimes do that activity, but did not have the opportunity since the last time I answered these questions." (carry-over last
   assigned number for that activity).

5. Non-dominant hand hemiparesis. (only applicable to #24; assign "N/A" and drop from list of items).

UE MAL

SID_____ Name _____ Date _____ Visit _____ Examiner _____

Amount Scale **How Well Scale**

11. Turning water on/off _____ _____ if no, why? (use code) _____
    with knob/lever on faucet Comments _____

12. Dry your hands _____ _____ if no, why? (use code) _____
     Comments _____

13. Put on your socks _____ _____ if no, why? (use code) _____
     Comments _____

14. Take off your socks _____ _____ if no, why? (use code) _____
     Comments _____

15. Put on your shoes _____ _____ if no, why? (use code) _____
    (includes tying shoestrings and fastening straps) Comments _____

16. Take off your shoes _____ _____ if no, why? (use code) _____
    (includes untying shoestrings and unfastening straps) Comments _____

17. Get up from a chair _____ _____ if no, why? (use code) _____
    with armrests Comments _____

18. Pull chair away from _____ _____ if no, why? (use code) _____
    table before sitting down Comments _____

19. Pull chair toward table _____ _____ if no, why? (use code) _____
    after sitting down Comments _____

20. Pick up a glass, bottle, _____ _____ if no, why? (use code) _____
    drinking cup, or can *(does not need* Comments _____
    to include drinking)

Codes for recording "no" responses:

1. "I used the unaffected arm entirely." (assign "0").

2. "Someone else did it for me." (assign "0").

3. "I never do that activity, with or without help from someone else because it is impossible." For example, combing hair for people

   who are bald. (assign "N/A" and drop from list of items).

4. "I sometimes do that activity, but did not have the opportunity since the last time I answered these questions." (carry-over last

   assigned number for that activity).

5. Non-dominant hand hemiparesis. (only applicable to #24; assign "N/A" and drop from list of items).

 UE MAL

UAB Training for CI Therapy

SID_____ Name _____ Date _____ Visit _____ Examiner _____

Amount Scale   How Well Scale

21. Brush your teeth   ____   ____   if no, why? (use code) _____
    (does not include preparation of toothbrush   Comments _____
    or brushing dentures unless the dentures are brushed
    while left in the mouth)

22. Put on makeup base,   ____   ____   if no, why? (use code) _____
    lotion, or shaving cream on face   Comments _____

23. Use a key to   ____   ____   if no, why? (use code) _____
    unlock a door   Comments _____

24. Write on paper   ____   ____   if no, why? (use code) _____
    (If hand used to write pre-stroke is more affected,   Comments _____
    score item; if non-writing hand pre-stroke is more affected,
    drop item and assign N/A)

25. Carry an object in   ____   ____   if no, why? (use code) _____
    your hand *(draping an item over the arm*   Comments _____
    is not acceptable)

26. Use a fork or   ____   ____   if no, why? (use code) _____
    spoon for eating *(refers to the action*   Comments _____
    of bringing food to the mouth with fork
    or spoon)
27. Comb your hair   ____   ____   if no, why? (use code) _____
                          Comments _____

28. Pick up a cup   ____   ____   if no, why? (use code) _____
    by a handle   Comments _____

29. Button a shirt   ____   ____   if no, why? (use code) _____
                          Comments _____

30. Eat half a sandwich   ____   ____   if no, why? (use code) _____
    or finger foods   Comments _____

Codes for recording "no" responses:

1. "I used the unaffected arm entirely." (assign "0").

2. "Someone else did it for me." (assign "0").

3. "I never do that activity, with or without help from someone else because it is impossible." For example, combing hair for people
   who are bald. (assign "N/A" and drop from list of items).

4. "I sometimes do that activity, but did not have the opportunity since the last time I answered these questions." (carry-over last
   assigned number for that activity).

5. Non-dominant hand hemiparesis. (only applicable to #24; assign "N/A" and drop from list of items).

14   UE MAL

Amount Scale (AS)

0 - Did not use my weaker arm (**not used**).

.5

1 - Occasionally used my weaker arm, but only very rarely **(very rarely).**

1.5

2 - Sometimes used my weaker arm but did the activity **most of the time** with my stronger arm **(rarely).**

2.5

3 - Used my weaker arm about half as much as before the stroke **(half pre-stroke).**

3.5

4 - Used my weaker arm almost as much as before the stroke **(3/4 pre-stroke).**

4.5

5 - Used my weaker arm as often as before the stroke **(same as pre-stroke).**

       UE MAL

How Well Scale (HW)

0 - The weaker arm was not used at all for that activity (**never**).

.5

1 - The weaker arm was moved during that activity but was not helpful (**very poor**).

1.5

2 - The weaker arm was of some use during that activity but needed some help from the stronger arm or moved very slowly or with difficulty (**poor**).

2.5

3 - The weaker arm was used for the purpose indicated but movements were slow or were made with only some effort (**fair**).

3.5

4 - The movements made by the weaker arm were almost normal, but were not quite as fast or accurate as normal (**almost normal**).

4.5

5 - The ability to use the weaker arm for that activity was as good as before the stroke (**normal**).

 UE MAL

Possible Reasons for Not Using the Weaker Arm
for the Activity:

Reason A. "I used the unaffected arm entirely."

Reason B. "Someone else did it for me.".

Reason C. "I never do that activity, with or without help from someone else because it is impossible." For example, combing hair for people who are bald.

Reason D. "I sometimes do that activity, but did not have the opportunity since the last time I answered these questions."

Reason E. "That is an activity that I normally did only with my dominant hand before the stroke, and continue to do with my dominant hand now."

Additional Items for the MAL-45

- Removing bills from a wallet
- Taking individual coins out of a pocket or purse
- Removing keys out of a pocket or purse
- Using a zipper pull
- Pouring liquid from a bottle
- Buckling a belt
- Popping top of beverage can
- Removing top from a medicine bottle
- Keypad press
- Use of keyboard/computer
- Putting on or taking off watch band
- Putting on glasses
- Pumping a soap dispenser
- Swiping a credit card or a card for an ATM
- Adjusting a home or hotel air conditioner or heater