“Diseases of the brain commonly produce changes in behavior, including impairment of cognitive abilities and production of neuropsychiatric symptoms. Knowledge of the presence and characteristics of these changes can aid in the evaluation, management, and longitudinal care of patients with neurologic and psychiatric diseases.” Adapted from: Neurology 1996;47:592-599.

“When procedures, definitions, and data elements are standardized... comparison and analysis are enabled, thus deepening our understanding and benefiting the validity of clinical results.” Adapted from ACC/AHA Committee on Data Standards.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Overview &amp; Beginning the Testing</td>
<td>4</td>
</tr>
<tr>
<td>MSPA Tools Settings and View Reports</td>
<td>5</td>
</tr>
<tr>
<td>Subscription Process</td>
<td>6</td>
</tr>
<tr>
<td>Testing the Patient</td>
<td>9</td>
</tr>
<tr>
<td>Locking Down the iPad Test</td>
<td>10</td>
</tr>
<tr>
<td>Integrating into Routine Care</td>
<td>11</td>
</tr>
<tr>
<td>Printing and Exporting Reports</td>
<td>12</td>
</tr>
<tr>
<td>MSPA Tools Reports, Interpretation &amp; Instrument Information</td>
<td>13</td>
</tr>
</tbody>
</table>

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MSPA Tools iPad Tablet App Manual, Version 1.0

MSPA Tools Introduction
The MSPA Tools iPad Tablet App is designed to Simplify, Standardize and Automate the Assessment of Patient and Caregiver Described Multiple Sclerosis Neuropsychological and Comorbid Issues. The Multiple Sclerosis Patient Assessment (MSPA) Toolset was developed with the clinician in MIND. The toolset contains valid and reliable assessment tools for Multiple Sclerosis patients.

The MSPA Tools Tablet App contains:
- MS Neuropsychological Questionnaire Patient (MSNQP) SF-15
- MS Neuropsychological Questionnaire Informant (MSNQI) SF-15
- MS Vocational Accommodations Survey (MSVAS)
- Modified Fatigue Impact Scale (MFIS)
- Center for Epidemiologic Studies Depression Scale (CESD)
- Medical Outcomes Survey (MOS) SF-36
- Patient Health Questionnaire  PHQ-9

Each Tool produces an auto-scored report. Collect important data in the waiting room or exam room auto-scored report. The MSPA Tools Assessment Platform was developed in consultation with Dr. Ralph Benedict the MSNQ and Vocational Accommodations Tools Author.

About the MS Neuropsychological Questionnaire (MSNQ)
Neuropsychological abnormalities are common in multiple sclerosis (MS), but unlike motor and sensory deficits, their measurement in the clinical setting can be difficult and expensive. Consequently, screening and assessment methods are not applied routinely, and in some settings not at all. The MSNQ was developed to be a reliable assessment of patient and informant perceptions of neuropsychological problems.

Why MSPA Tools and CNS Vital Signs Testing?
Cognitive impairment in multiple sclerosis (MS) is common, and is associated with lower health-related quality of life and higher unemployment rates. Accurate diagnosis of cognitive impairment requires performance-based neuropsychological assessment, which can be time-consuming and costly. Thus, brief and accurate cognitive tests to screen for or monitor neuropsychological status would allow clinicians to identify those patients with MS who require more detailed neuropsychological testing or attention to neurobehavioral signs.
Overview
Use your iPad to enhance MS patient care and improve practice efficiency and profitability! Just download MSPA Tools iPad App and administer one of the seven MS related PRO (Patient Reported Outcomes) and Medical and Health Rating Instruments. The MSPA Tools assessment platform supplements clinical evaluation and management activities by helping make sure important questions have been asked and by rating the severity of the illness or impairment. The use of these MS rating instruments can help formalize the assessment approach, helps ensure thoroughness, may clarify the presence or absence of disorders, generally provides an index of severity, and helps facilitate the determination of response to treatment and disease course over time.

Many of the MSPA Tools iPad App instruments can be used to collect important patient, informant or caregiver information to enhance care management or document quality e.g., PQRS.

Requirements:
MSPA Tools iPad App will work on any iPad with iOS 6 or greater installed as an operating system.

Purchase:
The MSPA Tools iPad App is available through iTunes App Store and can be downloaded directly to your iPad. Each iPad device will be granted unlimited use of the MSNQ Tools thru an annual subscription.

To Begin:
A: Just open the app, check subscription status, and select the appropriate instrument or test panel.

Test Panels can be easily configured by selecting B: SETTINGS > Test Availability and Configurations > Test Panels and Configurations > Select the + (plus) sign > Select Edit > Name your test panel > Select the new Test Panel > Select the + (plus) sign > Select the needed test(s) to populate the test panel.

C: To View Reports Select ‘View Report’ > Select the desired report.
The MSPA Tools SETTINGS menu can be accessed from the Settings Button (B from previous page).

The SETTINGS menu allows you to manage the application e.g., better configure to meet your clinic or practice needs.

Customize your app by:

1. Managing the ANNUAL SUBSCRIPTION.

2. Restrict ‘Subject’ (patient) identifier to only numeric identifiers (the default is alphanumeric ID).

3. Access the Test Availability and Configure Custom Test Panels can be easily configured by selecting Test Availability and Configurations > Test Panels and Configurations > Select the + (plus) sign > Select Edit > Name your test panel > Select the new Test Panel > Select the + (plus) sign > Select the needed test(s) to populate the test panel. Scale or size of the reading text.

4. Select the type of report and opt in for color reports if available.

5. Allows you to manage PASSWORD functions.

View Reports by:

6. To View a Report on the APP you can organize the results by Subject (PATIENT) ID or by Date. Then to access the report CLICK the appropriate SUBJECT / DATE line.
Testing a Patient: Starting a Test

To begin testing a patient ('A' on Page Five) Enter the Subject (PATIENT) Reference ID and CLICK the Test Button.

Enter Required & Optional Demographics:

7. **Required**: Check the ‘Patient ID’ for accuracy
8. **Optional**: Demographic data can also be collected. These fields can be used to collect outcomes / practice improvement / research data. It is important to develop a practice policy for data collection.

Confirm Test Settings:

9. **Confirm Patient ID**
10. **Confirm Test Selection**
11. Make a ad-hoc Test Selection using individual test selections ✔️
12. Read all the Instructions. Advance the test by CLICKING ‘Continue’.

13. Complete all data inserts using the iPad by tapping the correct answer. CLICK ‘Next’ to advance the test.
Testing a Patient: Taking the Test

14. Complete all data inserts using the iPad keyboard. CLICK ‘Next’ to advance the test.

15. The AUTOMATICALLY SCORED TESTING REPORT is generated for Interpretation and/or Integration into the patient record, as part of an integrated final report, and/or for use as a quality/outcome initiative e.g., PQRS.
Subscription Process

16. When beginning app use the Subscription Screen will appear and allow you purchase your annual subscription.

17. Once your subscription runs out you can go to the SETTINGS function and access the Subscription Process.
Testing a Patient: Locking Down the Test

To focus the patient on the test and block them from gaining access to the home screens and other apps, you can set up the GUIDED ACCESS functionality of the iPad. Below are the instructions from the iPad Manual:

**Guided Access**
Guided Access helps someone using iPad to stay focused on a task. Guided Access limits iPad to a single app, and lets you control which app features are available. Use Guided Access to:

- Temporarily restrict iPad to a particular app
- Disable areas of the screen that aren’t relevant to a task, or areas where an accidental gesture might cause a distraction
- Disable the iPad hardware buttons

**Use Guided Access.**
- Go to Settings > General > Accessibility > Guided Access, where you can:
  - Turn Guided Access on or off
  - Set a passcode that controls the use of Guided Access and prevents someone from leaving an active session
  - Set whether other accessibility shortcuts are available during a session

**Start a Guided Access session.**
- Open the app you want to run, then triple-click the Home button. Adjust settings for the session, then click Start.
- Disable app controls and areas of the app screen: Circle any part of the screen you want to disable. Use the handles to adjust the area.
- Enable the Sleep/Wake or Volume buttons: Tap Options below Hardware Buttons.
- Ignore all screen touches: Turn off Touch.
- Keep iPad from switching from portrait to landscape or from responding to any other motions: Turn off Motion.

**End a Guided Access session.** Triple-click the Home button and enter the Guided Access passcode.
Integrating Cognitive Function Screening and Assessment into the Routine Care of Multiple Sclerosis Patients

SUGGESTED MANAGEMENT PARADIGM

“At (MS Center), these assessment strategies were used to increase the number of patients who can be evaluated (Figure 1). Implementation of the MSNQ has alerted neurologists to the presence of possible NP impairment and depressive disorder. The MSNQ has been administered in the waiting rooms of our clinics by clerical staff, and it is rapidly interpreted by nurse or physician clinicians. Positive scores prompt further inquiry into cognitive and psychiatric symptoms, accomplished via in-depth interviewing of the patient, more comprehensive bedside mental status testing, or discussion with caregivers. Sometimes the positive screen has prompted NP testing referral. After administration of the MACFIMS, neuropsychologists are able to recommend other forms of medical and behavioral care and advise patients about compensatory strategies, disability, and so forth. Many of our patients are referred for speech or occupational therapy, or for psychiatric management. Using the MACFIMS and selected measures of psychopathology, neuropsychologists can see several patients in one session and more readily offer follow-up or counseling services.

The management strategy presented in should be viewed as heuristic rather than definite, but it does serve as a model for the management of NP impairments in MS.”

Figure 1

Adapted from: Benedict RHB. CNS Spectr. Vol 10, No. 5. 2005
Follow the instructions in your iPad Manual to set-up methods e.g., emailing for accessing report data. Report results are emailed in a PDF format and can be imported into the EMR.
MSQA Brief Interpretation: While performance based testing is most valid for predicting a patient’s capacity for ADLs and work, the patient’s perspective on their own functioning is nevertheless important for understanding quality of life and concerns about mental status. Comparing patient and informant MSQA scores can provide further context for interpreting patient neuropsychological complaints. Under-reporting cognitive problems relative to caregivers often suggests severe impairment or dementia, whereas the opposite pattern suggests exaggeration of problems secondary to depression.

A z-score less than 0 represents an element less than the mean.  
A z-score greater than 0 represents an element greater than the mean.  
A z-score equal to 0 represents an element equal to the mean.
Vocational Accommodation Survey Tool tracks work problems and Accommodations. MS is commonly diagnosed in the prime of career development, causing a high rate of unemployment. The Vocational Accommodation Survey Tool was designed to give clinicians and researchers a more granular and longitudinal view of job status and contributing factors that may raise the risk for job loss.

Vocational Tool Interpretation: These indicators reflect the quality and frequency of work problems and the use of accommodations as a result of MS disability. Patients with many problems may be at risk for losing their job, and as a result need further consultation regarding working with employers to obtain accommodations, or seeking disability benefits.
Modified Fatigue Impact Scale (MFIS)

Adapted from: http://www.nationalmssociety.org/For-Professionals/Researchers/Resources-for-Researchers/Clinical-Study-Measures/Modified-Fatigue-Impact-Scale-(MFIS)

Description
The MFIS is a modified form of the Fatigue Impact Scale (Fisk et al, 1994b) based on items derived from interviews with MS patients concerning how fatigue impacts their lives. This instrument provides an assessment of the effects of fatigue in terms of physical, cognitive, and psychosocial functioning. The full-length MFIS consists of 21 items while the abbreviated version has 5 items. The abbreviated version can be used if time is limited but the full-length version has the advantage of generating subscales. The MFIS is one of the components of the MSQLI.

Administration Method
The MFIS is a structured, self-report questionnaire that the patient can generally complete with little or no intervention from an interviewer. However, patients with visual or upper extremity impairments may need to have the MFIS administered as an interview. Interviewers should be trained in basic interviewing skills and in the use of this instrument.

Scoring
The total score for the MFIS is the sum of the scores for the 21 items. Individual subscale scores for physical, cognitive, and psychosocial functioning can also be generated by calculating the sum of specific sets of items.

General Comments
The MFIS is easy to administer and focuses on the ways in which MS-related fatigue affects everyday life. As such it has high face validity for patients. The availability of the three subscales, physical, cognitive, and psychosocial functioning, may be useful to investigators interested in testing hypotheses concerning these different areas of function. However, the three subscales tend to correlate highly with one another, which limits their usefulness to some extent.

Psychometric Properties
The full-length version of the MFIS has a Cronbach's alpha of .81 while the short form has an alpha of .80. The original version, the Fatigue Impact Scale, was sensitive in discriminating the effects of fatigue among MS from those of patients with chronic fatigue syndrome and essential hypertension. (Fisk et al, 1994a)
**MSPA Tools Instrument Information**

**Center for Epidemiologic Studies Depression Scale (CES-D), NIMH.**

**Description of Measure:** The Center for Epidemiological Studies-Depression (CES-D), originally published by Radloff in 1977, is a 20-item measure that asks caregivers to rate how often over the past week they experienced symptoms associated with depression, such as restless sleep, poor appetite, and feeling lonely. Response options range from 0 to 3 for each item (0 = Rarely or None of the Time, 1 = Some or Little of the Time, 2 = Moderately or Much of the time, 3 = Most or Almost All the Time). Scores range from 0 to 60, with high scores indicating greater depressive symptoms.

The CES-D also provides cutoff scores (e.g., 16 or greater) that aid in identifying individuals at risk for clinical depression, with good sensitivity and specificity and high internal consistency (Lewinsohn, Seeley, Roberts, & Allen, 1997). The CES-D has been used successfully across wide age ranges (Lewinsohn et al., 1997), is sensitive to differences between caregivers and non-caregivers (Pinquart & Sorensen, 2003), and is sensitive to changes in caregiver depressive symptoms after intervention (Pinquart & Sorensen, 2006). Although the CES-D has somewhat different factor structures across racial and ethnic groups, it can be used appropriately with diverse caregivers (Roth et al., 2008).

**References**


MSPA Tools Instrument Information

Medical Outcomes Survey (MOS) SF-36
Adapted from:  http://www.rand.org/health/surveys_tools/mos/mos_core_36item_scoring.html
http://www.rand.org/content/dam/rand/pubs/monograph_reports/2008/MR162.pdf

As part of the Medical Outcomes Study (MOS), a multi-year, multi-site study to explain variations in patient outcomes, RAND developed the 36-Item Short Form Health Survey (SF-36). SF-36 is a set of generic, coherent, and easily administered quality-of-life measures. These measures rely upon patient self-reporting and are now widely utilized by managed care organizations and by Medicare for routine monitoring and assessment of care outcomes in adult patients.

Medical Outcomes Study: 36-Item Short Form Survey Scoring Instructions
The RAND 36-Item Health Survey (Version 1.0) taps eight health concepts: physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to personal or emotional problems, emotional well-being, social functioning, energy/fatigue, and general health perceptions. It also includes a single item that provides an indication of perceived change in health. These 36 items, presented here, are identical to the MOS SF-36 described in Ware and Sherbourne (1992). They were adapted from longer instruments completed by patients participating in the Medical Outcomes Study (MOS), an observational study of variations in physician practice styles and patient outcomes in different systems of health care delivery (Hays & Shapiro, 1992; Stewart, Sherbourne, Hays, et al., 1992). A revised version of the RAND 36-Item Health Survey (Version 1.1) that differs slightly from Version 1.0 in terms of item wording is currently in development.

Scoring Rules for the RAND 36-Item Health Survey (Version 1.0)
Scoring the RAND 36-Item Health Survey is a two-step process. First, precoded numeric values are recoded per the scoring key given in Table 1. Note that all items are scored so that a high score defines a more favorable health state. In addition, each item is scored on a 0 to 100 range so that the lowest and highest possible scores are 0 and 100, respectively. Scores represent the percentage of total possible score achieved. In step 2, items in the same scale are averaged together to create the 8 scale scores. Table 2 lists the items averaged together to create each scale. Items that are left blank (missing data) are not taken into account when calculating the scale scores. Hence, scale scores represent the average for all items in the scale that the respondent answered.

Example: Items 20 and 32 are used to score the measure of social functioning. Each of the two items has 5 response choices. However, a high score (response choice 5) on item 20 indicates the presence of limitations in social functioning, while a high score (response choice 5) on item 32 indicates the absence of limitations in social functioning. To score both items in the same direction, Table 1 shows that responses 1 through 5 for item 20 should be recoded to values of 100, 75, 50, 25, and 0, respectively. Responses 1 through 5 for item 32 should be recoded to values of 0, 25, 50, 75, and 100, respectively. Table 2 shows that these two recoded items should be averaged together to form the social functioning scale. If the respondent is missing one of the two items, the person's score will be equal to that of the non-missing item.

References
MSPA Tools Instrument Information

Patient Health Questionnaire  PHQ-9
Adapted from:  http://www.phqscreeners.com/

SELECTED REFERENCES