ORGANIZATION NEWS

Highlights From the Rehabilitation Measures Database

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Measurement Characteristics and Clinical Utility of the Disorders of Consciousness Scale Among Individuals With Brain Injury

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The Disorders of Consciousness Scale (DOCS) is a bedside assessment of neurobehavioral function (NBF) for individuals with disordered consciousness following a brain injury. The DOCS is different from other bedside assessments of NBF because it captures the person's best response to sensory stimuli. The current version, the DOCS-25, evaluates 4 sensory domains: auditory-language, somatosensory, visual, and gustation and olfaction.

Rasch analysis improved the scale's precision by selecting items that best reflect the domain of NBF. The hierarchy of the items makes clinical sense and is consistent across sex, injury type, veteran status, and days from onset of injury based on a sample of traumatic and non-traumatic brain injuries.[1] The ordinal raw score scale was transformed to a linear scale ranging from 0-100 units. The scale demonstrates excellent internal consistency, construct validity, predictive validity, and adequate concurrent validity with the Glasgow Coma Scale and the Coma/Near Coma Scale.[1-3]

The DOCS-25 is the first NBF assessment for disorders of consciousness to provide indices of responsiveness; essential information for therapists to interpret meaningful change and understand how the selected treatment is impacting patient recovery.[4] The DOCS has been shown to be useful in practice for examining response to treatment and alerting practitioners to evaluate the possibility of secondary medical complications based on subtle declines from the DOCS measure.[2,3,5] In sum, the reliability, validity, and responsiveness of the DOCS-25 supports clinical use in persons with a severe brain injury.

This abbreviated summary provides a review of the psychometric properties of the DOCS in people with brain injury. A full review of the DOCS and reviews of over 425 other instruments for patients with various health conditions can be found at: www.sralab.org/Rehabilitation-Measures.

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This instrument summary is designed to facilitate the selection of outcome measures by clinicians. The information contained in this summary represents a sample of the peer-reviewed research available at the time of this summary's publication. The information contained in this summary does not constitute an endorsement of this instrument for clinical practice or research applications. The views expressed are those of the summary authors and do not represent those of authors' employers, instrument owner(s), the *Archives of Physical Medicine and Rehabilitation*, the Rehabilitation Measures Database or the United States Department of Health and Human Services. The information contained in this summary has not been reviewed externally.

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Rehabilitation Measures

Measure Name: Disorders of Consciousness Scale- 25 Items

Summary Authors: Weaver, J., Elgin, E., Jones, A., Guernon, A., Cogan, A., Mallinson, T., Bender Pape, T. & Ehrlich-Jones, L.

Acronym:	Population Reviewed:	Items:	Admin Time:	Score (Min/Max):
DOCS-25	Brain Injury	25	40-60 min	Raw Score Range: 0-50; Transformed Measure Score: 0-100

Purpose:

The DOCS-25 is a clinical assessment tool that was developed to detect subtle changes in observable indicators of neurobehavioral functioning during recovery of consciousness following a severe traumatic brain injury.[5]

DOCS-25 has four subscales: gustation/olfaction; somatosensory, auditory language, and visual.

Training Required:

Allied health professionals can reliably administer the DOCS after training. Additional details are available online.

Reliability:

- *Excellent* inter-rater reliability for the total raw score and for each subscale. Total raw score ICC=0.90, Gustation/olfaction ICC=0.84, Somatosensory ICC=0.91, Auditory language ICC=0.78, Visual ICC=0.91.[1]
- *Excellent* internal consistency: Person separation reliability=0.91, Separation Index=3.22, Cronbach's Alpha=0.86.[1]

Administration and Scoring Instructions:

- The best behavioral response to each test item is rated on a scale of:
  - 0 (No Response)
  - 1 (Generalized Response)
  - 2 (Localized Response)
- Each stimulus item is applied for 5 seconds and the raters then observe the patient for 10-15 seconds
- A wait period of at least 30 seconds is required between testing items
- Each stimulus item may be administered as many times as needed and the rater should score the best response

Required Equipment:

We recommend creating a DOCS testing kit. Items to include are listed online.

Validity:

- *Excellent construct* validity as demonstrated by the 25 items fitting the Rasch measurement model and indicating representation of the same construct. (Eigenvalue: 3.2, Unexplained variance in the first contrast: 8.5%).[1]
- *Adequate concurrent* validity using total DOCS-25 measures to Glasgow Coma Scale (ρ=0.55, CI: 0.39 to 0.70) and Coma Near Coma scale (ρ=-0.50, CI; -0.87 to -0.13).[1]

Responsiveness:

Effect Size[4]
- All participants (n=92) = 0.45
- Improvers (n=57) = 0.45
- Non-Improvers (n=35) = 0.58

Standardized Response Mean[4]
- All participants (n=92) = 0.43
- Improvers (n=57) = 1.3
- Non-improvers (n=35) = 1.3

Considerations:

The DOCS-25 should be repeated over time to compare to baseline assessment.[2,3]

MCID:

Anchor-based MCID[4]
- 8.6 units based on 2-point change on GCS

Distribution-based MCID[4]
- 0.20 SD: 2.6 units
- 0.33 SD: 4.4 units
- 0.50 SD: 6.6 units

Abbreviations:

ES: Effect Size
ICC: Intraclass correlation
MCID: Minimal Clinically Important Difference
MDC₉₅: Minimal Detectable Change with 95% Confidence Interval
SD: Standard Deviation

MDC:

MDC₉₅[4]
- All participants (n=92): 5.6 units
- Improvers (n=57): 5.5 units
- Non-improvers (n=57): 5.3 units

Cut-off Criteria:

	r	ICC
Excellent	$\geq .6$	$\geq .75$
Adequate	.31-.59	.40 -.74
Poor	$\leq .3$	$< .4$