## Outcome Domain:

Cognitive Activity Limitations

### Domain Description and Relevance in TBI:

“Cognitive activity measures describe the impact of neuropsychological impairments on cognitively loaded real-world tasks such as instrumental activities of daily living, functional communication, and health and safety-related behaviors.” – Wilde et al. 2010

Table CDE Classification by Type of TBI Study and Relevant Population for Recommended Cognitive Activity Limitations Outcome Measures.

| Outcome Measure Name | Relevant TBI Population | Acute Hospitalized | Moderate/ Severe Rehabilitation | Concussion/ Mild TBI | Epidemiology |
| --- | --- | --- | --- | --- | --- |
| Functional Independence Measure - Cognition Subscale (Cog-FIM) | Adult TBI | Basic | Basic | Supplemental | Supplemental |
| Brief Test of Adult Cognition by Telephone | Adult TBI | Supplemental | Supplemental | Supplemental | Supplemental |

### References

Wilde EA, Whiteneck GG, Bogner J, Bushnik T, Cifu DX, Dikmen S, French L, Giacino JT, Hart T, Malec JF, Millis SR, Novack TA, Sherer M, Tulsky DS, Vanderploeg RD, von Steinbuechel N. Recommendations for the use of common outcome measures in traumatic brain injury research. Arch Phys Med Rehabil. 2010 Nov;91(11):1650-1660.e17. [DOI: 10.1016/j.apmr.2010.06.033]

## Functional Independence Measure - Cognition Subscale (Cog-FIM)

### DESCRIPTION

The FIM(TM) is an 18-item ordinal scale, used with all diagnoses within a rehabilitation population. The FIM(TM) measures degree of independence in activities of self-care, sphincter control, transfers, locomotion, communication, and cognition. FIM(TM) scores range from 1 (total or >75% assistance) to 7 (complete independence).

### PERMISSIBLE VALUES

Total score range= 18-126. Five item Cognitive subscore ranges from 5-35. Scores may be used raw or converted to interval scores.

### PROCEDURES

May be completed by rehabilitation clinicians as an observational scale, or by trained paraprofessionals or family members. May be administered by trained interviewers as a self report or proxy report instrument, in person or by phone. FIM(TM) certification is available and required to officially utilize the tool. A detailed manual guides scoring, based on operationally-defined functional abilities. Administration time is 10-20 minutes.

### COMMENTS

Most appropriate for Severe and Moderate Disability levels of GOSE; ceiling effects limit utility in Good Recovery. Not sufficiently sensitive for mild TBI.

### RATIONALE

The most widely accepted functional assessment measure in use in the rehabilitation community, FIM(TM) is most useful for assessment of progress during inpatient rehabilitation. Its metric properties have been reported extensively and include high precision, convergent and discriminant validity, and good interrater agreement across flexible modes of administration.

### REFERENCES

Granger CV. The emerging science of functional assessment: our tool for outcomes analysis. Arch Phys Med Rehabil 1998;79(3):235-240.

## Brief Test of Adult Cognition by Telephone (BTACT)

### DESCRIPTION

This is a battery of measures developed by Margie Lachman, PhD of Brandeis University. The battery, which takes about 20 minutes to administer, includes measures of episodic memory, working memory, reasoning, executive functions, and speed of information processing. The BTACT was collected as a part of the MIDUS-II (Mid-Life in the United States) study, yielding a normative sample of 7,000 community dwellers aged 32-84.

### PERMISSIBLE VALUES

Scoring instructions for each test section available in BTACT Test Battery Manual and standard scores are available

### PROCEDURE

Trained examiners administer the BTACT by telephone. The test can be completed in 15-20 minutes.

### COMMENTS

For use in adult populations

### RATIONALE

The measures included capture important cognitive constructs. The Working Group’s major reason for recommending this battery is that it was developed for telephone administration and has a large norming sample. This battery has not been validated for use with TBI or other neurologic conditions. The BTCT is currently being piloted by the TBI Model System for potential inclusion in the follow-up exams.

### REFERENCES

Lachman, M. E., & Tun, P. A. (2008). Cognitive testing in large-scale surveys: Assessment by telephone. In D. Alwin & S. Hofer (Eds.), Handbook on cognitive aging: interdisciplinary perspectives (pp. 506–523). New York, NY: Sage.

Tun, P. A., & Lachman, M. E. (2005). The Brief Test of Adult Cognition by Telephone (BTACT). Technical report, Brandeis University.

Tun, P. A., & Lachman, M. (2006). Telephone assessment of cognitive function in adulthood: The Brief Test of Adult Cognition by Telephone. Age and Ageing, 35, 629–632. doi:10.1093/ageing/afl095