Guide to CENC Lifetime Concussion and TBI Mapping Interview Toolkit for external use

Background and Overview:

A multilayered structured interview was developed for the Chronic Effects of Neurotrauma Consortium (CENC) to standardize the process of collecting and classifying self-report information on every potential concussive event (PCE) throughout lifetime.[1] It consists of a 'mapping' interview that systematically identifies all events during lifetime that may have resulted in a TBI. Each event is further queried with either in-depth TBI diagnostic interview or brief description of the event followed by several TBI screening questions. The process utilizes the four components that are briefly described below. Downloadable pdfs of the external version of the toolkit are publicly available for either clinical or research use at: https://www.cencstudy.org/index.php/knowledge-translation-center/assessment-tools/

Components and Description:

- Potential Concussive Event (PCE) Mapping Interview Form
  - Purpose: Identify every PCE during lifetime
  - Basis: The PCE mapping interview is based on the OSU TBI-ID interview[2] and modified for CENC.
  - 'Internal' CENC version: Developed for and used by the CENC multicenter longitudinal study, the internal version separates military combat deployment from non-deployment portions of life. During the interview, every PCE that gets identified undergoes further interrogation, via either the comprehensive VCU-rDCI (see below) or the screening items in the PCE Mapping Tables (see below).
  - 'External' version: The two parts of the internal version were merged into a scaled down version for external use ('external' version) which retains blast exposure questions and is appropriate for either military or civilian populations. For civilians, the military focused items have short lead in questions that will bypass them, so added time is trivial.
- The PCE Mapping Tables and PCE cue cards
  - Purpose: Ideally, every event found during PCE mapping interview would undergo the comprehensive VCU-rCDI (see below), however if a very high number of events get identified, the toolkit allows for collection of screening information consisting of OSU TBI-ID items.
  - PCE Mapping Tables: The PCE Mapping Interview Form contains a set of tables. These PCE Mapping Tables are for recording screening information on events identified during the interview that may not undergo comprehensive interrogation with the VCU-rCDI (see below).
  - PCE cue cards: The cue cards are scripts for the interviewer to use to gather this screening information that is recorded into the PCE Mapping Tables
- VCU retrospective Concussion Diagnostic Interview (VCU-rCDI)
  - Original Instrument: This structured interview was developed to standardize data collection while minimizing interviewer bias with respect to determining the TBI diagnosis for a PCE.[3] It contains an open-ended description followed by structured questioning of early symptoms and signs, with an emphasis on those pertinent to TBI diagnostic criteria. The original version contains, for research purposes, some extraneous questions on the characteristics of the setting if blast-related.
  - Adaptation: For CENC, this original version was termed the blast version, and a 'general' version was created by removing the blast specific questions for more streamlined collection of non-blast PCEs. The 'external' version is nearly identical to the CENC general VCU-rCDI with the exception of the diagnosis rating section being modified to accommodate moderate or severe TBI ratings (CENC is restricted by eligibility criteria to mild TBI or TBI negative controls).

- VCU rCDI diagnostic algorithms:
  - What it is: In CENC, the item responses from the structured interview are input into a decision-tree algorithm that generates a provisional TBI diagnosis. This algorithm was created from the development and validation work of the VCU rCDI and serves standardize the diagnosis of TBI into one of three classifications (Not TBI, mild TBI without posttraumatic amnesia (PTA), versus mild TBI with PTA), while removing rater bias.
  - Caveats for use: The algorithm, like any interview-based diagnosis of TBI, is not full-proof. In CENC, 2-3% of the algorithm diagnoses are overridden by the investigators due to compelling information in the free-text portion of the interview, medical record documentation, and/or follow-on free-form probing interview. Some common scenarios that confound the algorithm include: syncope event, asleep at time of event, intoxicated at time of event. The algorithm is also not intended to separate mild from moderate or severe TBI, which requires subject matter expert review and interpretation of the interview data along with other available data. Therefore, in external use this diagnostic algorithm should serve as a guide only.

References:

1. Walker WC (Study Chairman),Carne W, Franke LM, Nolen T, Dikmen SD, Cifu DX (CENC PI), Wilson K, Belanger HG, Williams R. The Chronic Effects of Neurotrauma Consortium (CENC) Multi-Center Observational Study: Description of study and characteristics of early participants. Brain Injury 2016; 30:1469-1480.
2. Corrigan JD, Bogner J. Initial reliability and validity of the Ohio State University TBI Identification Method. J Head Trauma Rehabil 2007; 22:318-29.
3. Walker WC, Cifu DX, Hudak A, Goldberg G, Kunz RD, Sima A. Structured interview for mild traumatic brain injury after military blast: inter-rater agreement and development of a diagnostic algorithm. J Neurotrauma 2015;32(7):464-73.