**Appendix**

**New Mexico Assessment of Pediatric Traumatic Brain Injury (NewMAP TBI) Administration Manual**

NewMAP TBI is a semi-structured interview for TBI history focused on pediatric populations. The NewMAP TBI should be completed by a trained technician/clinician in conjunction with both the child and their parent/guardian. The first step involves a general query about injuries to the head or neck that may have resulted in a TBI. Step 1 therefore only includes a very basic narrative of events surrounding the injury. Step 2 determines whether loss of consciousness (LOC), post-traumatic amnesia (PTA), retrograde amnesia (RGA), alterations of mental status and post-concussion symptoms (PCS) occurred, as well as their respective durations. Based on the provided information, the trained technician determines whether the injury meets minimal criteria for retrospectively diagnosing a TBI, as well as the severity of the TBI. If a TBI is diagnosed, then the child and the parent/guardian are also asked to complete the Post-Concussion Symptom Inventory (PCSI; Sady, Vaughan, & Gioia, 2014) to more fully document symptom presentation.

**Ages:** 8-18 years

**Time:** 5-10 minutes to administer per injury; 2 minutes to score

**Discontinuation:** The NewMAP TBI is discontinued if there are no reported injuries to the head or neck.

A second discontinue occurs at Question 14 for each injury instance if the trained technician determines that the minimal criteria for a TBI have not been met.

**Step 1:**

A general introduction to the questionnaire is given by reading aloud the instructions in Step 1 to the participant. Injuries are recorded in Step 1 starting with the most recent injury, and recording all of the previous injuries working backwards in time.

*Discontinue:* No injuries are reported. Do not proceed to Step 2.

**Step 2:**

For this section, the administrator first records the injury details, reported age at injury, and other temporal events (e.g., time of year). Start with the most recent head injury and use injury specific prompts obtained in Step 1 to orient the child and guardian/parent (e.g., “Let’s talk about the time you hit your head playing football”). Encourage the participants to provide as much information as possible about their head injury. Query participants until they can give their best approximate duration for the amount of time experienced for the different TBI characteristics (LOC, PTA, RGA, etc.; see below). Include other injury factors (second-hand report from individuals at the scene) as necessary to produce more reliable information. Record the exact self-reported duration of the event in the most appropriate unit, and work with the child/parent to convert this amount into a discrete category. All questions should be read aloud to the participant verbatim unless prefixed by ‘Admin Prompt’. The Admin Prompt is an injury specific phrase that the administrator will use to orient the parent and child.

It is sometimes challenging for children and their parents to differentiate PTA from confusion, RGA from PTA, etc. It is therefore recommended to use injury specific prompts to obtain more accurate information about the duration of individual TBI characteristics. Below please find recommended example prompts for completing individual questions.

*Q6 LOC:* Query the participant to provide their best estimate by using injury-specific prompts such as: Has anyone told you that you were unconscious or knocked out after you were tackled in football (i.e., the injury specific prompt)? What did they tell you?

*Q7 PTA:* Query the participant to provide their best estimate by using injury-specific prompts such as: What is your first clear memory after you were tackled in the football game (i.e., the injury specific prompt)? When did you start to have consistent memories after the injury? Also use consecutive temporal queries such as: Do you remember being at the scene of the car accident? Do you remember first responders at the scene? Do you remember the ambulance ride to the hospital? Being at the hospital?

*Q8 RGA:* Query the participant to provide their best estimate by using injury-specific prompts such as: What is your first clear memory before you were tackled in the football game (i.e., the injury specific prompt)? Do you remember being at practice/playing a game? In the example of a motor vehicle crash, do you remember being in the car?

*Q13b:* Please refer to Table 1 (Classification of Sports According to Contact; Rice, 2008) for the level of contact.

*Q14***:** If the injury does not meet the criteria for an mTBI (refer to question 14 for the criteria), the questions (15-end) are skipped.

**PCSI Section:** The “How much of a problem” questions are directly derived from the PCSI (Sady et al., 2014). Additional questions are then asked to determine if the symptoms resolved and in what timeframe (unit = days).

Asterisks are used to highlight the conditional statements:  
\* Only completed if participants respond “yes” to previous symptom (e.g., headache, nausea)   
\*\* Only completed if participants respond “yes” to previous question (e.g., did the symptom eventually go away?)

**Scoring:** Symptom burden is calculated by summing the total symptom score recorded on the PCSI. Number of symptoms is the sum of positive endorsements.

**Electronic Version:** Available upon request.

**Participant’s Name/ Identifier: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Administrator Initials:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**New Mexico Assessment of Pediatric TBI (NewMAP TBI)**

**Interview Form**

**Step 1**

I would like to ask you some questions about any times in the past that you may have injured your head or your neck. For example, think about any injuries to your head or neck that were caused by things like a bike accident, a skating accident, a car accident, a sports accident, a time when you may have fallen, or a time when you were struck by someone else in the head or the neck. These are only some examples of things that cause injuries to your head and neck.

I want you to take a minute to carefully think about any previous injuries that you have had to your head or neck, and the age at which the injury occurred. Do you remember ever having any accidents where you injured your head or neck?

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| --- |
| Beginning with the most recent injury and working backward in time (i.e., from most recent to most distant injury), please record each of the injuries. |
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| --- | --- |
| Was there an injury? | YES (Proceed to Step 2) NO (Assessment Complete) |

**Step 2:** The following asks questions about each of the injuries you reported (see manual for example Admin Prompts).

**Injury #:** \_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 1) What happened during (*Admin Prompt: Add injury-specific prompts here)*? | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2) Year that the injury occurred | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3) Season that the injury took place | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spring | | | Summer | | | | | | | | | | | | | Autumn | | | | | | | | | | | | | | Winter | | | | | | | |
| 4) Was the injury witnessed? | | | | | | YES NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5) How old were you? | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6) Were you knocked out after the injury? Did anyone tell you that you were unconscious *(Admin Prompt: Add injury-specific prompts here)*? | | | | | | | | | | | | | | | | | | | | | | | | | YES (Complete 6a-c)  NO (Proceed to 6c) | | | | | | | | | | | | |
| 6a) How long were you knocked out for? What is your best guess of the exact amount of time? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | |
| 6b) Please specify units: | | | | | | | | Seconds | | | | | | | | | | | | Minutes | | | | | | | | | | | | | Hours | | | | |
| 6c) Administrator Only: Specific Loss of Consciousness Category | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| None | <1 minute | 1 to 5 minutes | | | | | | | | | | | >5 to 30 minutes | | | | | | | | | | | | | >30 minutes to 24 hours | | | | | | | | | >24 hours | | |
| 7) Do you remember what happened immediately AFTER *(Admin Prompt: Add injury-specific prompts here)*? What is the first clear thing you remember after *(Admin Prompt: Add injury-specific prompt here)*? | | | | | | | | | | | | | | | | | | | | | | | | | | | NO (Complete 7a-c)  YES (Proceed to 7c) | | | | | | | | | | |
| 7a) Approximately how much time passed before you started to remember things again? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | |
| 7b) Please specify units: | | | | | | | | Seconds | | | | | | | | | | | | Minutes | | | | | | | | | | | | | Hours | | | | |
| 7c) Administrator Only: Specific Post-Traumatic Amnesia Category | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| None | 1 second to <5 minutes | | | | | | 5 minutes to <1 hour | | | | | | | | | | | 1 hour to 24 hours | | | | | | | | | | >24 hours to 7 days | | | | | | | | | >7 days |
| 8) Do you remember what happened immediately BEFORE *(Admin Prompt: Add injury-specific prompt here)*? What is the last thing you remember before *(Admin Prompt: Add injury-specific prompt here)*? | | | | | | | | | | | | | | | | | | | | | | | | | | | NO (Complete 8a-c)  YES (Proceed to 8c) | | | | | | | | | | |
| 8a) How much time did you lose memory for? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | |
| 8b) Please specify units: | | | | | | | | Seconds | | | | | | | | | | | | Minutes | | | | | | | | | | | | | Hours | | | | |
| 8c) Administrator Only: Specific Retrograde Amnesia Category | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| None | 1 second to <5 minutes | | | | | | 5 minutes to <1 hour | | | | | | | | | | | 1 hour to 24 hours | | | | | | | | | | >24 hours to 7 days | | | | | | | | | >7 days |
| 9) Were you dazed or disoriented after the injury? | | | | | | | | | | | | | | | | | | | YES (Complete 9a-c) NO (Proceed to 9c) | | | | | | | | | | | | | | | | | | |
| 9a) Approximately how much time were you dazed or disoriented? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | |
| 9b) Please specify units: | | | | | | | | Seconds | | | | | | | | | | | | Minutes | | | | | | | | | | | | | Hours | | | | |
| 9c) Administrator Only: Specific Altered Consciousness Category | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| None | 1 second to <5 minutes | | | | | | | | | | | 5 minutes to <1 hour | | | | | | | | | | | | 1 hour to 24 hours | | | | | | | | | | | | >24 hours | |
| 10) Did you experience any other symptoms during this injury? | | | | | | | | | | | | | | | | | | | | YES NO | | | | | | | | | | | | | | | | | |
| 11) Did you seek medical attention for this event? | | | | | | | | | | | | | | | | | | | | YES (Complete 11a) NO (Proceed to 12) | | | | | | | | | | | | | | | | | |
| 11a) Were you diagnosed as having experienced a head injury by a medical professional for this event? | | | | | | | | | | | | | | | | | | | | YES NO | | | | | | | | | | | | | | | | | |
| 12) What was the mechanism of injury? | | | | | | | | | | Struck by an object | | | | | | | | | | | | Fall | | | | | | | | | | Struck by a person | | | | | |
| Motor vehicle collision | | | | | | | | | | | Assault | | | | | | | | | | Bicycle-related | | | | | | | | | | Other | | | | | | |
| 13) Was the injury sport and recreation-related? | | | | | | | | | | | | | | | YES (Complete 13a and 13b) NO (Proceed to 14) | | | | | | | | | | | | | | | | | | | | | | |
| 13a) Which sport or recreational activity? | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |
| 13b) Administrator Only: Refer to Administration Manual for categories regarding level of contact | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contact Limited Contact Noncontact Undetermined | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14) Administrator Only: Does this injury meet minimum criteria for mTBI? (Positive endorsement for any of the following 1) LOC OR 2) PTA OR 3) RGA OR 4) alteration in mental status (i.e., being dazed, disoriented or confused) OR 5) at least two of the following symptoms occurring within the first 24 hours of the injury: headache, nausea, vomiting, dizziness, balance problems, fatigue, trouble sleeping, drowsiness, sensitivity to light or noise, blurred vision, difficulty remembering or difficulty concentrating) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| YES (Proceed to 15 and complete PCSI) | | | | | | | | | | | | | | | | NO (Proceed to Next Injury Sheet) | | | | | | | | | | | | | | | | | | | | | |
| 15) Were you using alcohol or other substances at time of injury? | | | | | | | | | | | | | | | | | | | | YES (Complete 15a and 15b)  NO (Proceed to PCSI) | | | | | | | | | | | | | | | | | |
| 15a) What substance were you using at time of injury? | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | |
| 15b) How much (include units)? | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | |
| **Post-Concussion Symptom Inventory (PCSI; Sady et al., 2014)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| How much of a problem was each of the following for you after the injury?  *0-Not a problem, 1, 2, 3-Moderate problem, 4, 5, 6-Severe problem* | | | | | | | | | | | | | | | | | | | | | | | \*Did the symptom eventually go away after the injury? | | | | | | \*\*How many days (total number) did the symptom last after the injury? | | | | | | | | |
| Headache | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Nausea | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Balance Problems | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Dizziness | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Fatigue | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Sleeping more than usual | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Drowsiness | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Sensitivity to light | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Sensitivity to noise | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Irritability | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Sadness | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Nervousness | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Feeling more emotional | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Feeling slowed down | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Feeling mentally “foggy” | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Difficulty concentrating | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Difficulty remembering | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Visual problems (double vision, blurring) | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Get confused with directions or tasks | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Move in a clumsy manner | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| Answer questions more slowly than usual | | | | 0 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | | | YES NO | | | | | |  | | | | | | | | |
| *\* Only ask if participant endorses anything greater than 0 on symptom severity question*  *\*\* Only ask if participant answers “YES” to whether symptom eventually went away* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

References

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