



Brain Injury Screening Tool (BIST-2)

Update on changes from the original version

High risk screening item questions

Change: The clarifier from the description about the accident has been made into a separate item, 'Are there high-risk indicators such as suspicion of skull fracture, focal neurological deficit, high speed, focal blunt trauma or fall from height (e.g. >5 stairs).'

Rationale: This is a key referral indicator for hospital evaluation, however clinician feedback indicated that this information often became lost within the brackets. A question specifically asking about these factors provides a clearer referral criteria trigger.

Change: A question has been added about emotional and psychological trauma relating to the accident, 'Did the incident occur in traumatic circumstances which could result in emotional or psychological reactions (e.g., assault, domestic violence, fatalities in a car accident).'

Rationale: Evidence suggests that psychological trauma related to the incident such as intentional injury increases risk of prolonged symptoms. This was included as a separate item and if indicated may suggest a referral to a concussion service is warranted if the person has not recovered in 7-10 days.

Change: The question 'Have you been sick/vomited' has been changed to 'were you sick or did you vomit?'

Rationale: To simplify the question wording in response to patient feedback.

Change: The question 'Have you hit or head or had a concussion/brain injury before?' has been changed to 'have you had a concussion or brain injury before?'. Time since injury is now specifically asked.

Rationale: The term head injury was found to be too broad for this context as it includes lacerations, bruises and other injuries not specific to mTBI. Given more recent or unrecovered injuries are the trigger for this referral criteria, it was deemed that people would know if they had experienced a concussion of clinical significance in this instance. Clinicians also asked for a prompt to ask about time since injury or if injuries were not fully



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recovered to give them more information on this clinical indicator. Clinicians can describe what is meant by concussion or brain injury for the patient if they wish to.

Change: A question has been added 'Do you have a history or migraine (severe headache with vomiting or extreme sensitivity to light and sound)'.

Rationale: This is based on evidence that migraine is a predictor of prolonged symptoms and is an indicator for a referral to a concussion service if the person has not recovered in 7-10 days.

Symptom Items

Change: A additional item has been added to the vestibular cluster "I feel clumsy (bumping into things or dropping things more than usual)".

Rationale: Poor balance and coordination is an important indicator of mTBI and clinicians' feedback was that this scale needed to have an item of this nature added the previous 3 item scale to adequately capture the full range of potential vestibular clinical indicators.¹ An additional item is also likely to increase internal consistency of the sub-scale. A clarifier has been provided in brackets to enhance understanding if needed.

Change: 'I feel restless' changed to 'I just don't feel right'

Rationale: The item 'I feel restless' has not been found to be very specific to mTBI with high ratings given in both patients with mTBI and controls.² Clinicians also provided feedback that children rated this item highly as they reported always feeling restless unrelated to a mTBI. The item, 'I just don't feel right' was used as a replacement to capture those cases where people are affected but don't know how to describe it in response to patient feedback.

References

1. Theadom A, Hardaker N, Bray C, et al. The Brain Injury Screening Tool (BIST): Tool development, factor structure and validity. *PLoS One* 2021.
2. Laborey M, Masson F, Regis RG, Zongo D, Salmi L, Lagarde E. Specificity of postconcussion symptoms at 3 months after mild traumatic brain injury: results from a comparative cohort study. *Journal of Head Trauma and Rehabilitation* 2014; **29**(1): E28-E36.