Supplementary Materials

Appendix S1: TBI treatment and management questionnaire

TBI multiple choice questions for reference. Correct answer in bold.

1. If a TBI patient is confused on admission, the initial nursing triage within the **first 5 minutes** should include:
A. Lab test for CBC
B. Lab test for blood glucose
C. Consider placement of cervical collar
D. Lab test for blood glucose and consider placement of cervical collar

2. A complete set of vital signs (temperature, pulse, respiratory rate, blood pressure and pulse oxygen level) should be obtained for:
A. Severe head injury patients only
B. Moderate and severe head injury patients only
C. Mild and moderate head injury patients only
D. Mild and severe head injury patients only
E. All head injury patients

3. Moderate traumatic brain injury is defined by a Glasgow Coma Score (GCS) of:
A. 3-8
B. 6-9
C. 9-13
D. 13-14

4. For patients with **MILD** traumatic brain injury, vital signs and GCS should be reassessed every:
A. 30 minutes
B. 1 hour
C. 2 hours
D. 6 hours
E. Vital signs and Glasgow Coma Score do not need to be reassessed

5. A large bore IV should be inserted for all TBI patients with:
A. Moderate head injury
B. Low blood pressure
C. Severe head injury
D. Seizure
E. Any of the above

6. Oxygen should be given to all TBI patients with:
A. Severe head injury
B. Sp02 < 90%
C. Sp02 < 94%
D. Sp02 < 84%
E. All TBI patients regardless of their severity or their oxygen saturation

7. Fluids should be given to all TBI patients with:
A. Severe head injury
B. A systolic blood pressure < 80 mm Hg
C. A systolic blood pressure < 100 mm Hg
D. A systolic blood pressure < 120 mm Hg
E. All TBI patients regardless of their severity or blood pressure

8. Intracranial pressure should **FIRST** be decreased in moderate and severe traumatic brain injury patients by:
A. Administering diuretics

B. Lowering the head of the bed 30 degrees (Trendelenberg position)
C. Raising the head of the bed 30 degrees
D. Administering phenytoin

9. Intubation should be attempted for all brain injury patients with:
A. Hypoxia
B. Low blood pressure
C. Seizure with or after injury
D. Severe traumatic brain injury
E. Severe traumatic brain injury only when they are not maintaining their airway

10. A patient with a **MILD** head injury who has had a GCS of less than 15 for at least _____ after injury should get a CT scan.
A. 1 hour
B. 2 hours
C. 6 hours
D. 8 hours

11. Sedation and pain control may be helpful for moderate and severe brain injury patients because they can:
A. Decrease the risk of seizure
B. Increase blood oxygen levels
C. Decrease intracranial pressure
D. Increase respiration rate

12. Admit patients to the Intensive Care Unit who:
A. have hypoxia not responding to oxygen therapy
B. have low blood pressure not responding to fluid treatment
C. have mild TBI
D. have severe TBI
E. Consider ICU for A, B and D

13. Maintaining cervical immobilization in moderate and severe brain injury patients is important because it:
A. Helps decrease intracranial pressure
B. Prevents potential further injury to the spinal cord
C. Helps maintain the patient's airway

14. The primary survey of a brain injury patient should include all of the below **EXCEPT:**
A. Auscultation of the chest
B. Assessment for spinal injury
C. A chest radiograph
D. Airway assessment
E. Assessment of pupil movement and size

15. If a patient opens his eyes in response to pain only, speaks with words that do not make sense to together, and can move his body to follow commands, his Glasgow Coma Score is:
A. 11
B. 3
C. 7
D. 14

16. Pulse, Sp02 and blood pressure should be assessed in **MODERATE** and **SEVERE** brain injury patients every:
A. 5 minutes
B. 30 minutes
C. 1 hour
D. 2 hours

17. All of the below indicate that a **MILD** head injury patient should definitely get a CT scan **EXCEPT**:
A. Vomiting more than once
B. Loss of consciousness for less than 5 minutes

C. Loss of memory (amnesia) for hours before the event
D. Signs of depressed or basilar skull fracture
E. Focal neurologic deficit

18. A **MILD** head injury patient should be considered for a brain CT scan (not obligatory) if:
A. The patient is under the age of 18
B. The patient has a coagulation disorder
C. The patient has a low blood glucose
D. The patient is over the ager of 65
E. Both B and D

19. If a patient still has low blood pressure (hypotensive) after fluids (saline bolus repeated up to 2L total) have been given, the healthcare provider should consider:
A. Sedating the patient
B. Elevating the head of the bed 30 degrees
C. A blood transfusion
D. Giving oxygen
E. Administering phenytoin

20. The Glasgow Coma Score is based on all of the below **EXCEPT**:
A. Verbal response
B. Pupil size and movement
C. Motor response
D. Eye opening
E. Ability to follow commands

Appendix S2: Attitudes towards the provider's perceived competence and comfort with the treatment and management of TBI patients.

1. I feel comfortable managing patients with acute TBI

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

2. I am confident my decisions are medically appropriate when I am treating acute TBI patients

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

3. In the hospital, I have enough time to properly assess and treat acute TBI patients

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

4. I primarily rely on my own experience and training in deciding how to assess and treat acute TBI patients

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

5. I primarily rely on my supervisors in deciding how to assess and treat acute TBI patients

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

1	2	3	4	5

6. I know the medical literature and evidence base for TBI patient care

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

7. I have received adequate training to assess acute TBI patients

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

8. I have received adequate training to develop a treatment plan for TBI patients

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

9. I know the risk factors for a worse prognosis for TBI patients

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

10. I have seen data on the overall outcome/ prognosis for TBI patients

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

Table S1: Proportion of correct answers to knowledge questions pre- and post intervention, along with p-values from McNemar's chi-squared test. McNemar's test was not performed for questions that had 0 correct answers in either the pre- or post-intervention survey, nor for questions that were answered correctly at the exact same rate in the pre- and post-intervention survey

Question	**Pre-Intervention % Correct**	**Post-Intervention % Correct**	**McNemar's test *p*-value**
1 Elements of nursing triage	52%	76%	0.131
2 Vital signs obtained	95%	95%	NA
3 GCS category definition	**48%**	**90%**	**0.008****
4 Mild TBI reassessment timing	19%	29%	0.724
5 Large bore IV insertion	43%	48%	1.0
6 Oxygen administration	**19%**	**81%**	**0.002****
7 Fluid Administration	**5%**	**57%**	**0.003****
8 Intracranial pressure intervention	**33%**	**67%**	**0.046***

9 Intubation	62%	86%	0.182
10 CT scan for mild TBI GCS<15	0%	62%	NA
11 Sedation and pain control	48%	52%	1.0
12 ICU admission criteria	71%	90%	0.221
13 Cervical immobilization	67%	90%	0.182
14 Primary survey for brain injury	62%	67%	1.0
15 GCS calculation	**29%**	**76%**	**0.009****
16 Moderate and severe TBI reassessment timing	76%	76%	NA
17 Obligatory CT scan for mild TBI	10%	5%	1.0
18 Optional CT scan for mild TBI	38%	52%	0.505
19 Hypotension after fluids	29%	62%	0.07
20 Elements of GCS calculation	**57%**	**86%**	**0.041***

Table S2: Proportion of participants (n=21) answering "Agree" or "Strongly agree" to pre/post-intervention attitude questions.

Question	% answering "Agree or Strongly Agree" Pre-intervention	% answering "Agree or Strongly Agree" Post-intervention
Q1	91	95
Q2	91	100
Q3	68	64
Q4	68	86
Q5	59	55
Q6	68	73
Q7	48	73
Q8	45	64
Q9	77	100
Q10	59	82