

Syllabus	
Topic	Traumatic brain injury

You are called to resus in a district general hospital to see a 45 year old patient who has sustained a head injury following a fall from a ladder. The ED team think he requires intubation. They are awaiting the results of his CT head.

a)

List the indications for an immediate (within 1 hour) CT head? (4 marks)

1.
2.
3.
4.

b)

The CT head demonstrates an acute extradural haematoma. What are the indications for intubation? (5 marks)

1.
2.
3.
4.
5.

c)

To prevent further secondary traumatic brain injury what are the targets for the following parameters? (3 marks)

PaO₂ (kPa) PaCO₂(kPa) MAP.....(mmHg)

d)

Transfer has been arranged to the tertiary neurosurgical centre. What additional steps (other than maintaining above parameters) should be taken to prevent secondary brain injury during transfer? (6 marks)

1.
2.
3.
4.
5.
6.

e)

During the transfer you notice the right pupil becomes significantly dilated. How will you medically manage this? (2 marks)

1.
2.

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Q	Answer	Mark	Guidance
a)	<ul style="list-style-type: none"> • GCS<15 on arrival or GCS<13 after 2 hours. • Open or depressed skull fracture. • Signs of a basal skull fracture. • Post traumatic seizure. • Focal neurological deficit. • More than one episode of vomiting 	1 mark for each (Max. 4)	<p>Do not accept just “low GCS”</p> <p>Accept signs of basal skull fracture e.g. – battles sign, racoon eyes.</p> <p>No marks for indications for 8 hour CT head e.g. – LOC + warfarin.</p>
b)	<ul style="list-style-type: none"> • GCS=\leq 8 • Significantly falling GCS • Loss of laryngeal reflexes • PaO₂<13kPa on O₂. • PaCO₂ <4 or >6. • Bilateral mandibular fractures • Seizures • Copious bleeding into the mouth 	1 mark for each (Max. 5)	Do not accept low conscious level, hypoxia, hypercapnia – need specific values for mark.
c)	<ul style="list-style-type: none"> • PaO₂>11 • PaCO₂ 4.5-5.0 • MAP > 80 	1 1 1	<p>Accept PaO₂> (8-13) as guidelines differ.</p> <p>Accept MAP> (80-90) as guidelines differ.</p>
d)	<p>Keep patient head up.</p> <p>Ensure tube ties not too tight / tube taped.</p> <p>Adequate sedation/ analgesia.</p> <p>Treat seizures.</p> <p>Glucose 6-10 mmol/L</p> <p>Maintain normothermia / prevent hyperthermia.</p> <p>Urgent transfer to Neurosurgical Centre.</p>	1 mark for each (Max. 6)	
e)	<p>Hyperventilate to aim CO₂ 4.0-4.5 kPa</p> <p>Hypertonic saline / Mannitol</p>	1 1	Need specific CO ₂ value for mark

References:

- 1) Dinsmore J. Traumatic brain injury: an evidence-based review of management. CEACCP (2013) 13(6)189–195 <https://academic.oup.com/bjaed/article/13/6/189/246749>
- 2) AAGBI Safety Guideline. Inter-hospital transfer (2009)