ED Tuesday SIM

A: 10 year old girl

T: 30 minutes ago

M: Fallen from mountain bike, going down the Ivybridge Beacon

I: Complaining of pain all over

S: Alert but has vomited twice

T: No treatment on the way, non-paramedic crew. 5 mins away.

Before the patient arrived:

Team assembled! The team leader established a team, asking each member what they were happy performing, someone for Airway, Primary Survey, CPR if required. Escalated to senior, when no one available, escalated to Paediatric Trauma Call.

On arrival:

Very short handover from the crew.
Commenced the primary survey, with findings below.

Catastrophic haemorrhage	Nil obvious		
Airway	Patent. Central trachea. MILS performed by paramedic.		
Breathing	Equal chest movements. Bruising L chest wall.		
	Left Lung	**Right lung**	
	Decreased AE Dull percussion	Normal	
Circulation	CRT 2 secs. Bilateral radial pulses.		
	Abdomen – soft. Handlebar mark L flank, tender.		
	Pelvis - normal		
	No long bone swelling or tenderness.		
Disability	GCS E3 V5 M6. PEARL. No racoon eyes or battle sign. L parietal region - obvious boggy swelling to head, 3cm.		
Exposure	Wet clothes. No other injuries found.		

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After the primary survey the patient began vomiting and became less responsive.
Repeated primary survey found a change… GCS E2 V4 M5 and dilated L pupil.
Recognition of the need for airway control, and another bleep to the Paediatric Anaesthetist.
At which point senior help arrived.
Neuroprotective measures started, and the WATCH sheet found – including planning for intubation, head tilt to 30 degrees, 3% hypertonic saline (3ml/kg), also asked for tranexamic acid (30mg/kg).
We ended the SIM at this point, applause all around.

Learning points:

1. Team talk at the beginning – when we know a paediatric trauma has been phoned through, it is good to establish a team and give specific roles to work within skill set. Also to ensure you put out an early Paediatric trauma call out, and we discussed the different levels of trauma calls – easier to step down a trauma call than escalate in a panic.

2. WATCH sheet - We then discussed ensuring the WATCH sheet is prepared, so you know the drug doses that will be required, and you don't need to worry about math during a stressful trauma.

3. Primary survey – quick, slick and loud! Ensure the team leader is hearing all of the findings. We discussed how it is slightly different in trauma. Overall all of the signs were found during the primary survey, but we discussed in more detail about:
   - **C** – Blood on the floor and four more – external haemorrhage, chest, abdomen, pelvis, long bones.
   - **GCS**: how to perform the painful stimuli – supraorbital pressure is best, and the hand should come above the clavicle and across the midline. The ran over the breakdown as below:

Adult Glasgow Coma Score	Score	Paediatric Coma Score	Score
Eye opening response		*Eye opening response*	
Spontaneously	4	Spontaneously	4
To verbal stimuli	3	To verbal stimuli	3
To pain	2	To pain	2
No response to pain	1	No response to pain	1
Best motor response		*Best motor response*	
Obeys verbal command	6	Spontaneous or obeys verbal command	6
Localises to pain	5	Localises to pain or withdraws to touch	5
Withdraws from pain	4	Withdraws from pain	4
Abnormal flexion to pain (decorticate)	3	Abnormal flexion to pain (decorticate)	3
Abnormal extension to pain (decerebrate)	2	Abnormal extension to pain (decerebrate)	2
No response to pain	1	No response to pain	1
Best verbal response		*Best verbal response*	
Orientated + converses	5	Alert, babbles, coos, words to usual ability	5
Disorientated + converses	4	Less than usual words, spontaneous rritable cry	4
Inappropriate words	3	Cries only to pain	3
Incomprehensible sounds	2	Moans to pain	2
No response to pain	1	No response to pain	1
Maximum score	15	*Maximum score*	15

4. Tranexamic acid – this was presumed to be a high impact trauma, with dangerous mechanism of injury. We had found signs that would make us concerned about bleeding – head, chest and abdominal areas – so TXA would be appropriate. Normally this may have been given by pre-hospital team. In this case it had not, so we discussed the need for this – TXA 30mg/kg IV.

5. Neuroprotective measures:
   - Airway control - intubation
   - Head tilt up 30 degrees
   - 3% hypertonic saline (3ml/kg)
   - Prevent hypotension
   - Ventilate to achieve pCO^2 4.0-4.5kPa

6. Patient trajectory – this is most likely a head injury that will need neurosurgical intervention We discussed that this will need discussion with Bristol, so considering allocating someone to have the discussion with Bristol early, if you have all the relevant information.

7. Imaging choices – we briefly discussed the imaging that would be required for this patient – we decided that given the 3 areas of concern – head, chest and abdominal injuries – at that a CT trauma scan would be appropriate.

8. Guidelines – it can be hard to remember all of the guidelines ever, especially in the stressful environment of a paediatric trauma! There are pre-printed guidelines for head injury and imaging choices in the Pufferfish – look for the big red folder.

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9. Use your team – MDT team of varied experience, lean on the experience and delegate tasks to all members, try to use closed loop communication.

Well done everyone, and thank you for all the MDT that came and were involved in the SIM!