TRAUMA SIMULATION 2

Simulation focus – Limb injury (Splinting & tourniquet – demo/discussion)

Expected outcomes

Team Leader - Perform initial ABCDE assessment, direct team and lead care.

Team/More experienced candidate - Recognise limb threatening injuries. Recognise long bone fracture as a source of major haemorrhage.

Assessment

This simulation allows for demonstration and discussion of splints/tourniquets.

History

Emergency staff

Pre-alert from a non-paramedic crew about a 7-year-old Toni who has been run over by a lorry and has a major injury to the left leg. They think it has been injured by both the front and back wheels. There is a lot of blood on scene. They are extremely distressed so being brought as quickly as possible.

Ward staff

You are called to Resus as part of the Paediatric Trauma Team for a 7-year-old Toni who has been run over by a lorry and has a major injury to the left leg. They think it has been injured by both the front and back wheels. There is a lot of blood on scene. They are extremely distressed so being brought as quickly as possible.

Immediately apparent

Please ensure the prompt card with global overview is placed on the manikin for the start of the sim.

As you approach the child they are screaming in pain with a deformed left leg and a rapidly bleeding wounded foot.

Clinical course *(to be given as the simulation progresses)*

Assess	Features	Action	Key treatment points
<c>	There was a lot of blood on the scene and there is rapid bleeding from the dorsum of the foot.	Assess Recognise ongoing haemorrhage	**Manages catastrophic haem appropriately** **Activate Major Haemorrhage Protocol**
A	Patent, screaming	Assess patency	**MILS**
B	Rapid breathing **RR 42/min, SpO_2 99%** on air Equal rise and fall, good air entry No sign of chest injury	Assess with examination and observations	**Try and apply high-flow Oxygen** – they will refuse
C	Looks pale, peripheries a little cold **HR 158/min, BP 88/50mmHg, CRT 3-4 sec** Major injury to left foot: 4th and 5th toes removed along with part of foot. Skin above this has been degloved and there is rapid bleeding from the dorsum of the foot.	Assess circulation with examination and observations Recognise signs of haemorrhagic shock Bloods – inc cross match and VBG	**Immediate IV/IO access** Bloods Pelvic binder **Recognise potential active bleed in the thigh** ask for a splint and tourniquet Activate Major Haemorrhage Protocol (if not done earlier)

	Distal thigh is deformed, significantly swollen and bruised There is no abdominal or pelvic injury		
D	Fully alert but in extreme pain and distress, difficult to formally assess **GCS 14** (E4M5V5) Glycemie **91 mg/dl (5/mmol/L)**	Assess consciousness level. Blood sugar	**Blood sugar**
E	In agony, inconsolable **Temp 36.1°C**	Acknowledge extent of pain and injury	Consider need for sedation or RSI

Reassessment

As candidate starts their reassessment the child has become markedly pale and they're feeling colder.
If the patient has not been sedated or intubated then they are less responsive.

Assess	Features	Action	Key treatment points
A	Patent	Assess patency	
B	**RR 46/min** **SpO_2 95%** with a poor trace Chest examination remains unremarkable	Assess breathing and observations. SpO_2 improve to 99%, trace remains poor.	**Considers trying oxygen administration**
C	Cold and pale, thready radial pulse **HR 150/min, BP 78/59mmHg, CRT 4 sec** Direct pressure or tourniquet stops the bleeding from foot. Thigh swelling has grown larger.	Assess circulation and recognise change worsening shock	**Bolus of Packed RBCs** – will improve observations Organise further investigation and surgical review
D	If sedation or RSI given then report consciousness to appropriate level Otherwise now drowsy: **GCS 12** (E3M5V4)	Assess conscious level	
E	Now bleeding has stopped can appreciate traumatic amputation, degloving injury and open fracture of foot	Recognise limb threatening injury	Organise surgical review
NB	• **Prompt candidate to address pain and distress if they do not.** • **If they choose RSI or sedation facilitate this within the simulation and continue with appropriate changes. Focus should remain on managing the limb injuries.** • **Options for analgesia, sedation and RSI can be discussed in the Learning Conversation.**		

Debrief

Using the learning conversation, discuss the technical and non-technical elements of the simulation.

Assessment

This station makes up part of the continuous assessment process, therefore candidates need to know whether they are meeting the standard.

At the end give the opportunity for candidates to ask questions, answer these and then summarise the key points.

Props to print and laminate

Trauma 2 - Globaal overzicht (te plaatsen op de oefenpop)

Het kind gilt van de pijn.

Het linkerbeen staat in een rare stand, de linkervoet vertoont een ernstige bloeding.

Trauma 2 - Resultaten:

Veneus bloedgas

pH	7.31
pCO_2	31 mmHg (4.2kPa)
pO_2	41 mmHg (5.5 kPa)
HCO_3^-	21.2 mmol/L
BE	-4.8 mmol/L
Lactaat	4.9 mmol/L

Glucose 91 mg/dl (5 mmol/L

Faculty helper information – Trauma 2

When candidate requests information regarding observations please give the following in "real-time" (e.g. wait for blood pressure to cycle, saturation trace to be achieved). If key treatment points are not undertaken consider a "prompt" that would be visible in a child.

Assess	Observation	Example prompt
<c>	There was a lot of blood on the scene and there is rapid bleeding from the dorsum of the foot.	"There is a lot of blood on the child's clothes" "You need to have a look at this foot now"
A	Patent, screaming	Opportunity to reinforce level of pain. "Do we need to protect the spine?"
B	Rapid breathing,**RR 42/min, SpO_2 99%** on air Equal rise and fall, good air entry No sign of chest injury	
C	Looks pale, peripheries a little cold **HR 158/min, BP 88/50mmHg, CRT 3-4 sec** Major injury to left foot: 4^{th} and 5^{th} toes removed along with part of foot. Skin above this has been degloved and there is rapid bleeding from the dorsum of the foot Distal thigh is deformed, significantly swollen and bruised There is no abdominal or pelvic injury	"The child's hands feel cold and the monitor is alarming" "Do they need a pelvic binder on?"
D	Fully alert but in extreme pain and distress, difficult to formally assess **GCS 14** (E4M5V5) **Glycemie 91 mg/dL (5 mmol/L)**	
E	In agony, inconsolable **Temp 36.1°C**	If not recognised ask for some help with all of the blood coming out.

Reassessment

Assess	Observation	Example prompt
A	Patent	
B	**RR 46/min** **SpO_2 95%** with a poor trace Chest examination remains unremarkable	If not considered (and appropriate) suggest she now will tolerate an oxygen mask.
C	Cold and pale, thready radial pulse **HR 150/min, BP 78/59mmHg, CRT 4sec** Direct pressure or tourniquet stops the bleeding from foot. Thigh swelling has grown larger.	If not recognised prompt that the patient's colour looks worse and the monitor is alarming.
D	If sedation or RSI given then report consciousness to appropriate level Otherwise now drowsy: **GCS 12** (E3M5V4)	
E	Now bleeding has stopped can appreciate traumatic amputation, degloving injury and open fracture of foot	

Algorithms:

Massive haemorrhage in trauma (vb. UZA)