

ADULT POLYTRAUMA PATIENT

MODULE: Intensive Care Medicine / Trauma

TARGET: ALL ANAESTHETISTS, INTENSIVISTS & ED PHYSICIANS

BACKGROUND:

Anaesthetists form an integral part of the trauma team, and must have the skills to perform primary surveys and lead the trauma team in addition to airway management. Difficult airways are more common in trauma patients.

This scenario presents three separate challenges which are (in order of management during the scenario):

1. Management of tension pneumothorax
 - in which a part task chest drain trainer could also be used in scenario.
2. Management of concealed major haemorrhage
 - which is poorly responsive to fluid resuscitation will require surgical management.
3. Airway management in the C-Spine immobilised patient.

RELEVANT AREAS OF THE ANAESTHETIC CURRICULUM

IG_BS_07 AM_BS_04	Demonstrates effective pre-oxygenation, including correct use of the mask, head position and clear explanation to the patient.
IG_BS_08	In respect of Intravenous induction: <ul style="list-style-type: none"> • Makes necessary explanation to the patient • Demonstrates satisfactory practice in preparing drugs for the induction of anaesthesia • Demonstrates proper technique in injecting drugs at induction of anaesthesia • Manages the cardiovascular and respiratory changes associated with induction of general anaesthesia.
IG_BS_10 AM_BS_05	In respect of airway management: <ul style="list-style-type: none"> • Demonstrates optimal patient position for airway management. • Manages airway with mask and oral/nasopharyngeal airways • Demonstrates hand ventilation with bag and mask • Able to insert and confirm placement of a Laryngeal Mask Airway • Demonstrates correct head positioning, direct laryngoscopy and successful nasal/oral intubation technique(s) and confirms correct tracheal placement. • Demonstrates appropriate use of bougies. • Demonstrates correct securing and protection of LMAs/tracheal tubes during movement, positioning and transfer.
CI_BK_02	Unexpected fall in SpO ₂ with or without cyanosis
CI_BK_08	Unexpected hypotension
CI_BK_20	Pneumothorax and tension pneumothorax
4.3	Administers blood and blood products safely
4.4	Uses fluids and vasoactive / inotropic drugs to support the circulation
5.2	Performs emergency airway management
CI_BS_01	Demonstrates good non-technical skills such as: [effective communication, team-working, leadership, decision-making
CI_BS_02	Demonstrates the ability to recognise a deteriorating situation early through careful monitoring
CI_BS_05	Demonstrates ability to recognise when a crisis is occurring
CI_BS_06	Demonstrates how to obtain the attention of others and obtain appropriate help when a crisis is occurring
MT_BS_01	Demonstrates how to perform the Primary Survey in a trauma patient
MT_BS_02	Demonstrates correct emergency airway management in a trauma patient including those with actual or potential cervical spine damage [S]
MT_BS_03	Demonstrates how to manage a tension pneumothorax
MT_BS_06	Demonstrates the initial resuscitation of patients with trauma and preparation for further interventions including emergency surgery
CI_IS_01	Demonstrates leadership in the resuscitation room/simulation when practicing response protocols with other healthcare professionals
CI_IS_02	Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals
GU_IS_03	Demonstrates the ability to manage the effects of sudden major blood loss effectively
RC_IS_05	Demonstrates leadership during resuscitation, including supporting less experienced members of the team
MT_IS_04	Demonstrates safe perioperative anaesthetic management of patients with multiple injuries requiring early surgery, including the management of major blood loss and associated coagulopathy hypothermia and acidosis.
1.5	Assess and provides initial management of the trauma patient
6.5	Manages the pre- and post-operative care of the trauma patient under supervision
MT_HS_01	Demonstrates the ability to lead a multi-disciplinary trauma team, co-ordinating and delivering the early hospital care of all types of complex multiply injured patients including the primary survey, resuscitation and secondary survey, plus appropriate HDU/ICU admission.

MT_HS_02	Demonstrates the ability to lead and/or deliver the safe perioperative anaesthetic care to all multiply injured patients including HDU/ICM admission if required for continued care
MT_HS_05	Demonstrates good communication skills with all members of the trauma team when leading the clinical care of the multiply injured patient and seeks prompt and active advice from specialties not involved in the initial resuscitation, when needed.

INFORMATION FOR FACULTY

LEARNING OBJECTIVES:

- Initial, structured assessment of the trauma patient.
- Recognition and management of tension pneumothorax
- Recognition and management of unrevealed major haemorrhage

SCENE INFORMATION:

- Location: Resuscitation Room

ED is extremely busy. They are short-staffed and have asked the ICU / Anaesthetic team to manage this patient who has presented with a low GCS following a head injury. Both the junior and senior anaesthetic trainees commence this scenario together

EQUIPMENT & CONSUMABLES

- Mannequin: On ED trolley, with full O2 cylinder
Collar, blocks and tape on
Pelvic stabilizer T-POD (if available)
Right leg splint (if available)
- Stocked airway trolley
- Portable monitor
- Portable ventilator
- Infusion pump(s)
- Syringes, IV fluid and giving sets
- Simulated units of O ve- and X-matched blood
- Part task chest drain trainer (optional)

PERSONS REQUIRED

Anaesthetic Junior Trainee
 Anaesthetic Senior Trainee
 Anaesthetic assistant
 ED Resus nurse
 Paramedic for initial handover (Optional)
 Foundation/ED Trainee (Optional)
 Outreach nurse (Optional)

PARTICIPANT BRIEFING: (TO BE READ ALOUD TO PARTICIPANT)

Handover from Paramedic or ED Nurse (ATMIST style):

This is a 24 year old woman. 45 minutes ago she was struck by a car when crossing a road. The driver was speeding at around 40-50mph according to witnesses. She bullseyed the windscreen and was thrown around 20 feet. Her obvious injuries were a head injury, bruising down the right side of her chest and abdomen and an obviously fractured right femur. Witnesses reported that she lost consciousness briefly but came around fully within a minute or so. When the ambulance arrived on scene she was maintaining her own airway, had breath sounds which were slightly reduced on the right side with sats of 95% on air. She was tachycardic at 110bpm, with BP 110/70 with a tender abdomen. A T-POD and right femoral splint have been applied. Her GCS was 14 out of 15 (E3V5M6) on initial assessment but has fallen to 13/15 (E3V4M6). The accident occurred about 25 minutes ago.

‘VOICE OF MANIKIN’ BRIEFING:

Initial confused speech with no memory of the accident, but enough to provide basic medical history of no medical problems and no allergies. Finding it difficult to breathe. Fairly rapidly her speech stops and she starts to moan with single words occasionally only.

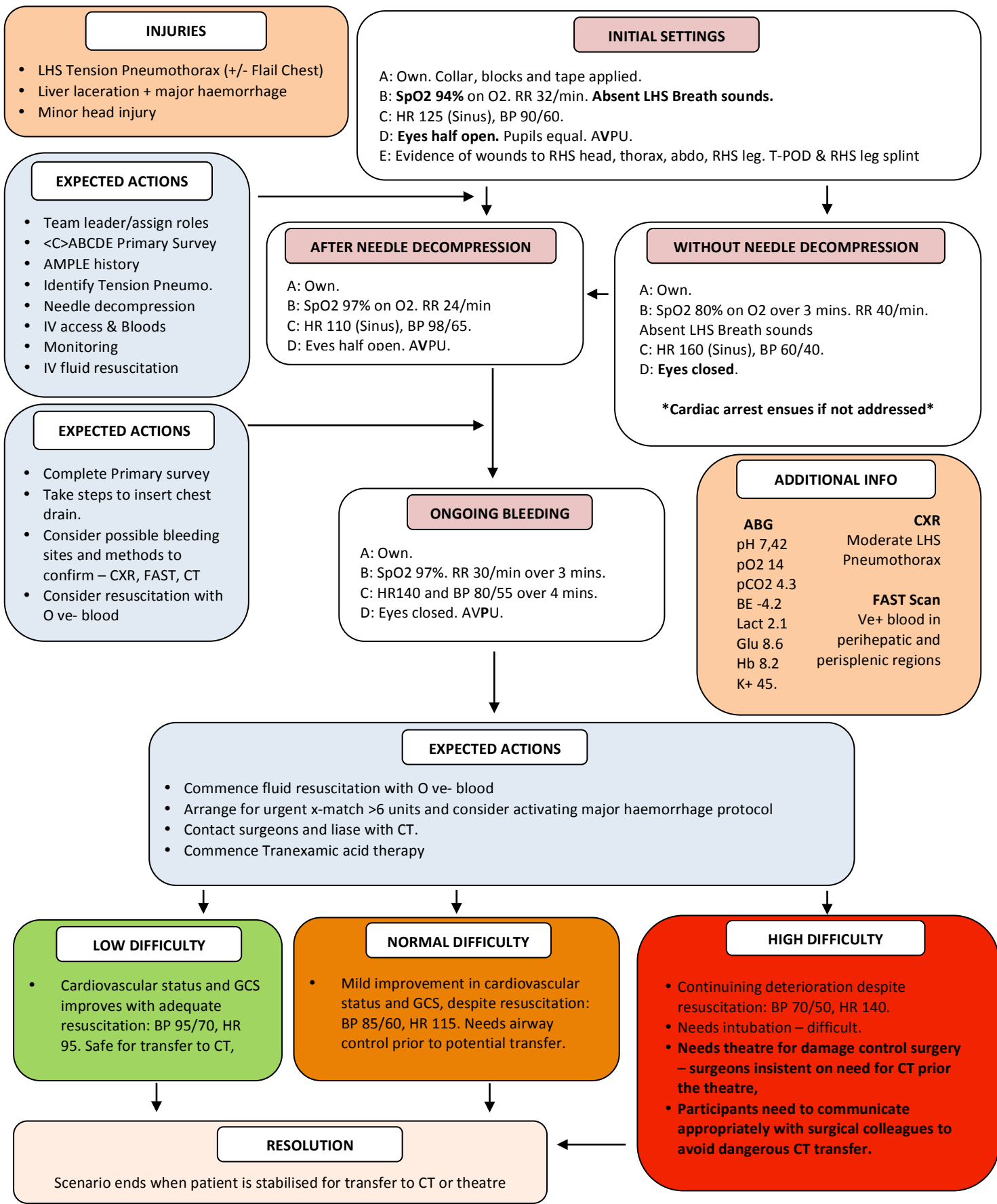
‘VOICE OF TELEPHONE HELP BRIEFING’:

There will be delay before help arrives. If surgeons called, advise is to perform CT prior to going to theatre.

ADDITIONAL INFORMATION

RADIOMETER ABL 9000 SERIES				
ABL900 ED			00:00:00	08-01-2013
PATIENT REPORT	Syringe	S195uL	Sample#	90.....
Patient ID				
Patient First Name	Unknown			
Patient Last Name	Female			
Date of Birth				
Sample type	Arterial			
Fi O ₂	1.0			
Department	ED			
Operator				
Blood Gas Values				
pH	7.42			[7.340 - 7.450]
pCO ₂	4.3	kPa		[4.70 - 6.00]
pO ₂	14	kPa		[10.0 - 13.3]
pO ₂ (A-a)e		kPa		
Oximetry Values				
ctHb	8.2	g/dL		[12.0 - 16.0]
sO ₂	94	%		[95.0 - 98.0]
fO ₂ Hb		%		[94.0 - 99.0]
fCOHb				[-]
fHHb		%		[-]
fmetHb		%		[0.02 - 0.06]
Hctc	0.32	%		
Electrolyte Values				
cK+	4.5	mmol/L		[3.0 - 5.0]
cNa+	137	mmol/L		[136 - 146]
cCa ²⁺	1.16	mmeq/L		[1.15 - 1.29]
cCl-	98	mmol/L		[98 - 106]
Metabolite Values				
cGlu	8.6	mmol/L		[3.5 - 10.0]
cLac	2.1	mmol/L		[0.5 - 1.6]
Acid Base Status				
cBase(Ecf)c	-4.2	mmol/L		
cHCO ³⁻ (P,st)c	18	mmol/L		

CONDUCT OF SCENARIO



DEBRIEFING

POINTS FOR FURTHER DISCUSSION:

Technical:

- Initial Assessment of the trauma patient
- Airway management in the brain-injured patient
- Management of major haemorrhage secondary to trauma
- Management of the tension pneumothorax
 - Part-task training: Insertion of a chest drain

Non-technical:

- Based on established non-technical frameworks e.g. ANTS, NOTECHS etc

DEBRIEFING RESOURCES

1. American College of Surgeons, (2008), Advanced Trauma Life Support Course Provider Manual, 8th Edition.
2. NCEPOD Report. Trauma Who Cares? <http://www.ncepod.org.uk/2007b.htm>
3. <http://www.trauma.org/archive/index.html>
4. <http://www.east.org/resources/treatment-guidelines>
5. The CRASH-2 Collaborators. Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): a randomised, placebo-controlled trial. Lancet 2010; 376: 23–32.
6. The CRASH-2 collaborators. The importance of early treatment with tranexamic acid in bleeding trauma patients: an exploratory analysis of the CRASH-2 randomised controlled trial. Lancet published online March 24th 2011; <http://download.thelancet.com/flatcontentassets/pdfs/S014067361160278X.pdf>

INFORMATION FOR PARTICIPANTS

KEY POINTS:

- Initial assessment and management of the trauma patient.
- Recognition and management of tension pneumothorax.
- Recognition and management of unrevealed major haemorrhage.

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PARTICIPANT REFLECTION:

What have you learnt from this experience? (Please try to list 3 things)

How will your practice now change?

What other actions will you now take to meet any identified learning needs?

PARTICIPANT FEEDBACK

Date of training session:.....

Profession and grade:.....

What role(s) did you play in the scenario? (Please tick)

Primary/Initial Participant	<input type="checkbox"/>
Secondary Participant (e.g. 'Call for Help' responder)	<input type="checkbox"/>
Other health care professional (e.g. nurse/ODP)	<input type="checkbox"/>
Other role (please specify):	<input type="checkbox"/>
Observer	<input type="checkbox"/>

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I found this scenario useful					
I understand more about the scenario subject					
I have more confidence to deal with this scenario					
The material covered was relevant to me					

Please write down one thing you have learned today, and that you will use in your clinical practice.

How could this scenario be improved for future participants?
 (This is especially important if you have ticked anything in the disagree/strongly disagree box)

FACULTY DEBRIEF – TO BE COMPLETED BY FACULTY TEAM

What went particularly well during this scenario?

What did not go well, or as well as planned?

Why didn't it go well?

How could the scenario be improved for future participants?