APLS: Trauma Scenario 7

This is a Teaching Scenario. Some flexibility in how it progresses is possible according to individual learner needs.

History {initial candidate briefing prior to arrival of child}

An 8 year old boy attempted to ride his pushbike at speed down his sloping front yard and out through the gate. He miscalculated and slammed into the gatepost. The gate has torn a large wound in his thigh. He was thought to be briefly unconscious at the scene. Ambulance officers noted a deformed left thigh with a laceration and a large amount of blood on the ground. They have applied a pressure dressing. At the scene he was complaining of severe leg pain.
Estimated weight 25 kg

Initial impression {provide information as candidate assesses child and applies monitoring}

HR 125, BP 112/73, RR 25, SpO_2 91% in air. He is groaning and complaining of pain in his left leg and left side of his chest. He is bleeding a small amount from his nose. There is a blood stained dressing on the left thigh. A cervical collar is in place.

Clinical Course {to be given to candidate as they progress}

There is progressive increase in his heart rate to 140 (with good volume pulses), RR to 35 and BP to 115/75. His SpO_2 falls to 91% in oxygen and he has chest tenderness and decreased air entry on the left. On CXR he has a moderate left pneumothorax that will need to be drained. After 2 x 10 ml/kg boluses of warmed crystalloid/blood, his heart rate decreases to 130 and then returns to normal after analgesia and drainage of the pneumothorax.

INSTRUCTORS INFORMATION

Key Treatment Points ☑

<C>	Assess for and control external bleeding	
Airway & C-spine	Establish airway patency	
	Protect cervical spine	
	High flow O2 via face mask commenced early Titrate O2 therapy to SpO2 94-98% when stable	
Breathing	CXR and drainage of the left pneumothorax	
Circulation	Early IV access with 2 wide-bore cannula	
	Fluid boluses 10 mls/kg x 2 of warmed crystalloid/blood	
Specific Therapy	Arrange for X-ray of femur Analgesia and antibiotics Trauma +/- Retrieval service & Orthopaedic consult	
Diagnosis Left pneumothorax. Hypovolemic shock. Compound fracture left shaft of femur, minor head injury		

Learning objectives

At the end of this session participants should be able to:

- Apply the structured approach to assessment, management and diagnosis of blunt trauma, chest injury and shock
- Recall and apply the management of hypovolemic shock in their own practice
- Recall and apply the management of chest injuries including pneumothorax in their own practice

APLS: Trauma Scenario 8

This is a Teaching Scenario. Some flexibility in how it progresses is possible according to individual learner needs.

History {initial candidate briefing prior to arrival of child}

A 6 year old boy ran out into the road and fell beneath the wheels of a truck which dragged him 6 metres before stopping. He has been on the scene for 30 minutes before he could be extricated. There is a major degloving injury of the right thigh with fractures of the right ankle and foot.
Estimated weight 20 kg.

Initial impression {provide information as candidate assesses child and applies monitoring}

In severe pain, RR 60 with shallow respirations. SpO_2 92% in air. HR 160, CRT 6. Pale and agitated. No analgesia has been given. Cervical collar is in place.

Clinical Course {to be given to candidate as they progress}

Airway patent but SpO_2 92% on room air and he is too distressed to allow a face mask to give O_2. He remains tachycardic with a BP 91/59. Perfusion remains very poor until he receives 2 x boluses of 10 ml/kg warmed crystalloid/blood then one bolus of 10 ml/kg blood or FFPs as well as TXA. Upper abdomen and pelvis are tender to palpate and have multiple abrasions. Right thigh is swollen and contused with palpable crepitus. There is an open fracture of right tibia/fibula with some venous ooze.

INSTRUCTORS INFORMATION

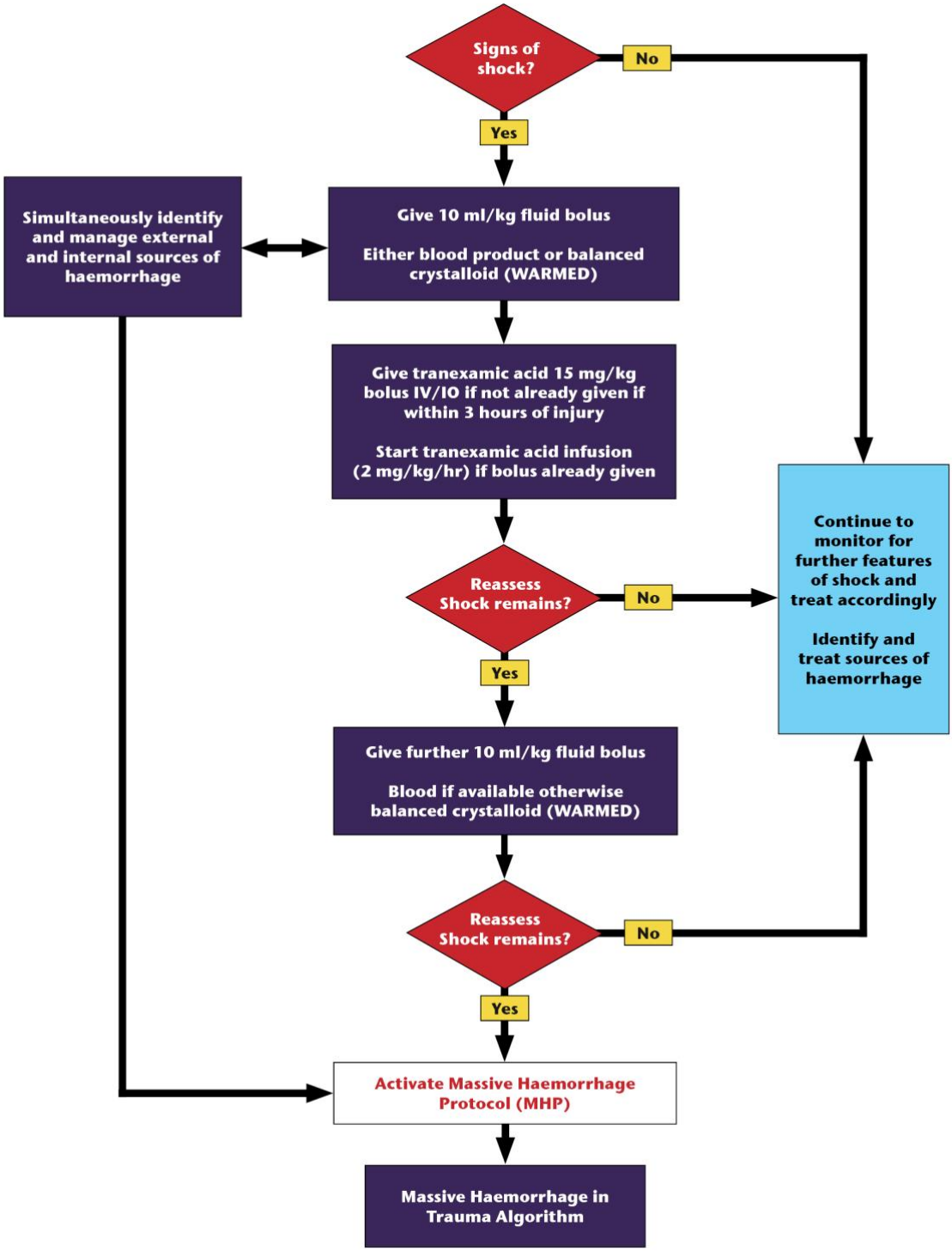
Key Treatment Points ☑

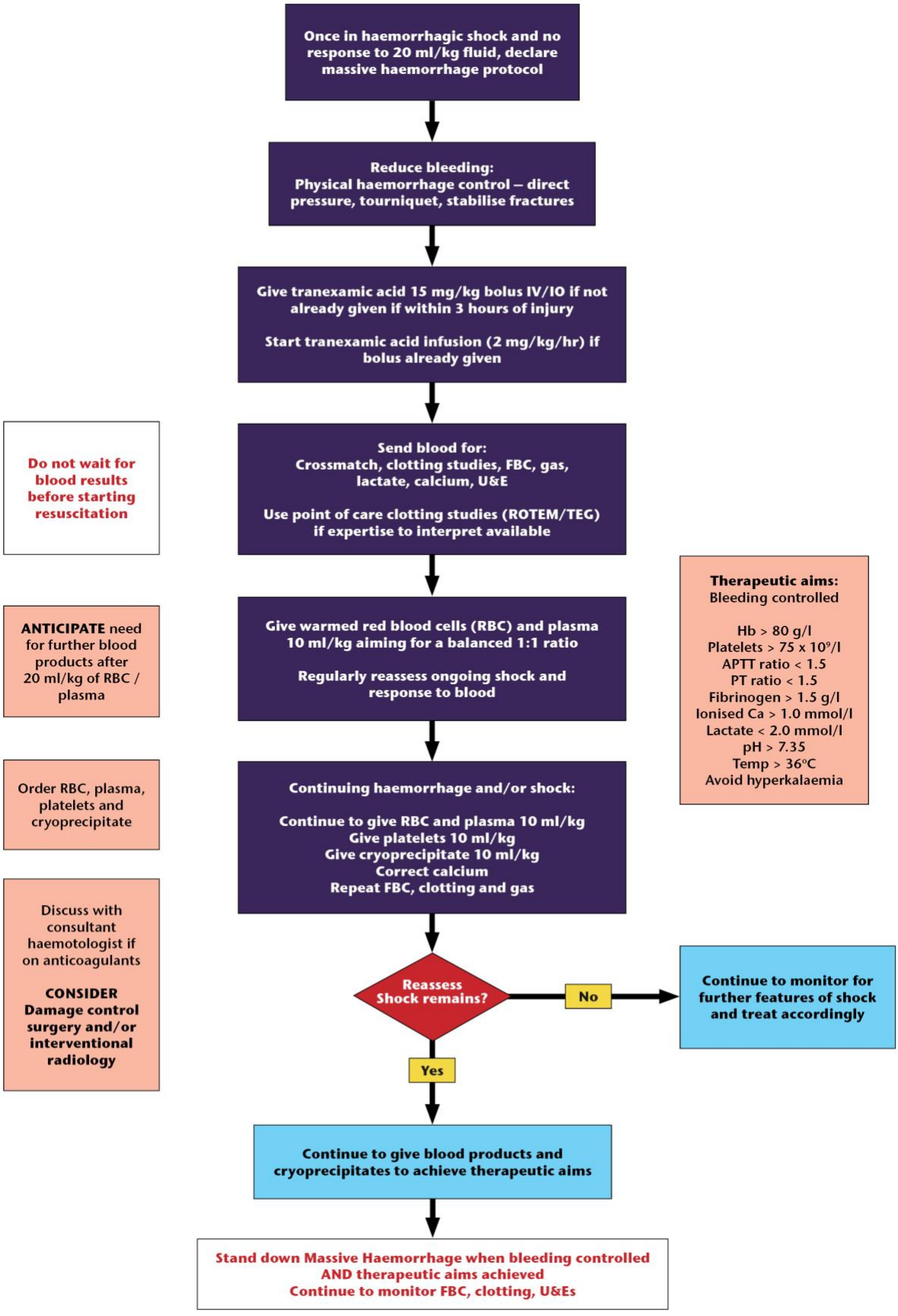
<C>	Assess for and control external bleeding	
Airway & C-spine	Ensure airway patency	
Breathing	Protect cervical spine	
	High flow O2 via face mask commenced early Titrate O2 therapy to SpO2 94-98% when stable	
Circulation	Early IV access with 2 wide-bore cannula	
	Blood for cross-match etc	
	Fluid bolus 10 mls/kg x 2 warmed crystalloid/blood, TXA	
	Massive transfusion protocol	
General Therapy	Analgesia	
	Arrange for urgent surgical review ICU / Retrieval service / Orthopaedic consultation	
	Pelvic binder, pelvic XR	
Diagnosis: Haemorrhagic shock from liver laceration and pelvic fracture. There is a 50% degloving injury of the right thigh with a compound fracture of the right distal tibia and fibula		

Learning objectives

At the end of this session participants should be able to:

- Apply the structured approach to assessment, management and diagnosis of blunt trauma and shock
- Recall and apply the management of massive transfusion in their own practice
- Recall and apply the management of hypovolemic shock in their own practice




Once in haemorrhagic shock and no response to 20 ml/kg fluid, declare massive haemorrhage protocol
Reduce bleeding:
Physical haemorrhage control – direct pressure, tourniquet, stabilise fractures
Give tranexamic acid 15 mg/kg bolus IV/IO if not already given if within 3 hours of injury
Start tranexamic acid infusion (2 mg/kg/hr) if bolus already given
Send blood for:
Crossmatch, clotting studies, FBC, gas, lactate, calcium, U&E
Use point of care clotting studies (ROTEM/TEG) if expertise to interpret available
Do not wait for blood results before starting resuscitation
Give warmed red blood cells (RBC) and plasma 10 ml/kg aiming for a balanced 1:1 ratio
Regularly reassess ongoing shock and response to blood
ANTICIPATE need for further blood products after 20 ml/kg of RBC / plasma
Therapeutic aims:
Bleeding controlled
Hb > 80 g/l
Platelets > 75 x 10⁹/l
APTT ratio < 1.5
PT ratio < 1.5
Fibrinogen > 1.5 g/l
Ionised Ca > 1.0 mmol/l
Lactate < 2.0 mmol/l
pH > 7.35
Temp > 36°C
Avoid hyperkalaemia
Continuing haemorrhage and/or shock:
Continue to give RBC and plasma 10 ml/kg
Give platelets 10 ml/kg
Give cryoprecipitate 10 ml/kg
Correct calcium
Repeat FBC, clotting and gas
Order RBC, plasma, platelets and cryoprecipitate
Reassess
Shock remains?
No
Continue to monitor for further features of shock and treat accordingly
Yes
Discuss with consultant haemotologist if on anticoagulants
CONSIDER
Damage control surgery and/or interventional radiology
Continue to give blood products and cryoprecipitates to achieve therapeutic aims
Stand down Massive Haemorrhage when bleeding controlled
AND therapeutic aims achieved
Continue to monitor FBC, clotting, U&Es