

PLS Scenarios

Scenarios in PLS

Purpose: To allow the candidates to apply what they have learnt in PLS to consolidate the knowledge in a practical environment. This is not tested and they are not given a lot of practical time but if done carefully it can be a valuable education tool for the candidates.

- Assessment of ABC in seriously ill and injured children
- Immediate basic management of deviations from ABC
- Paediatric BLS and ALS pathways
- Basic trauma assessment and resuscitation not focussing on specific trauma management

Principles

- Adapt the scenario to be appropriate to the candidate's area of work– eg if a medical imaging RN then pretend the bronchiolitis child has been brought around for X-ray and then deteriorated.
- Still give prep time to allow them to focus their thoughts and provide calculations sheets
- Focus on the skills they have learnt and give any other algorithms or specific drug support needed as prompts.

SCENARIO CASE PI-1

History *{initial candidate briefing prior to arrival of child}*

An eight year old girl, who has been previously well is coming in with a 3 hour history of respiratory distress.
Guide weight 24kg

Initial Impression *{to tell candidate as child arrives}*

She is having difficulty breathing and you can hear an audible wheeze. She is trying to remove the oxygen mask and is very agitated.

RR 40, she has recession and tug
HR 170, CRT 2 sec. SpO₂ 93%

She has had eczema in the past and both her older brothers have asthma. She has been coughing at night for 2 weeks.

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

There is no improvement after her first dose of salbutamol and she vomits a dose of oral prednisolone. There is increasing severity of respiratory distress unless further salbutamol is given and help is sought.

Other treatment: further salbutamol, IV access and consider IV therapy.

INSTRUCTORS INFORMATION

Key Points

Airway	Assess	
Breathing	Assess	
	High flow O2 via face mask commenced early	
Circulation	Assess	
	IV access	
Specific Therapy	Salbutamol, nebulised or via MDI with spacer x 3	
	Ipratropium, nebulised or via MDI with spacer.	
	Oral prednisolone	
	Consider IV therapy	
	Allow patient to sit up, reassure	



Diagnosis: Acute severe asthma - first attack

SCENARIO CASE PI-2

History *{initial candidate briefing prior to arrival of child}*

A three year old child with a known peanut allergy is coming in after eating a chocolate bar at a party. She has developed a wide spread urticarial rash.
Guide weight 14kg

Initial Impression *{to tell candidate as child arrives}*

She has swollen eyes and lips and a wide spread urticarial rash. She has normal observations on route.

RR 28, no added respiratory sounds. HR 120, good volume, BP 100/65

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

After a few minutes her breathing increases to 40/min, she has marked inspiratory stridor and expiratory wheeze, pulse rate rises to 190/min, she looks pale, BP 100/65.

Anaphylaxis algorithm available at this point.

Both airway obstruction and tachycardia resolve after the administration of intramuscular adrenaline.

INSTRUCTORS INFORMATION

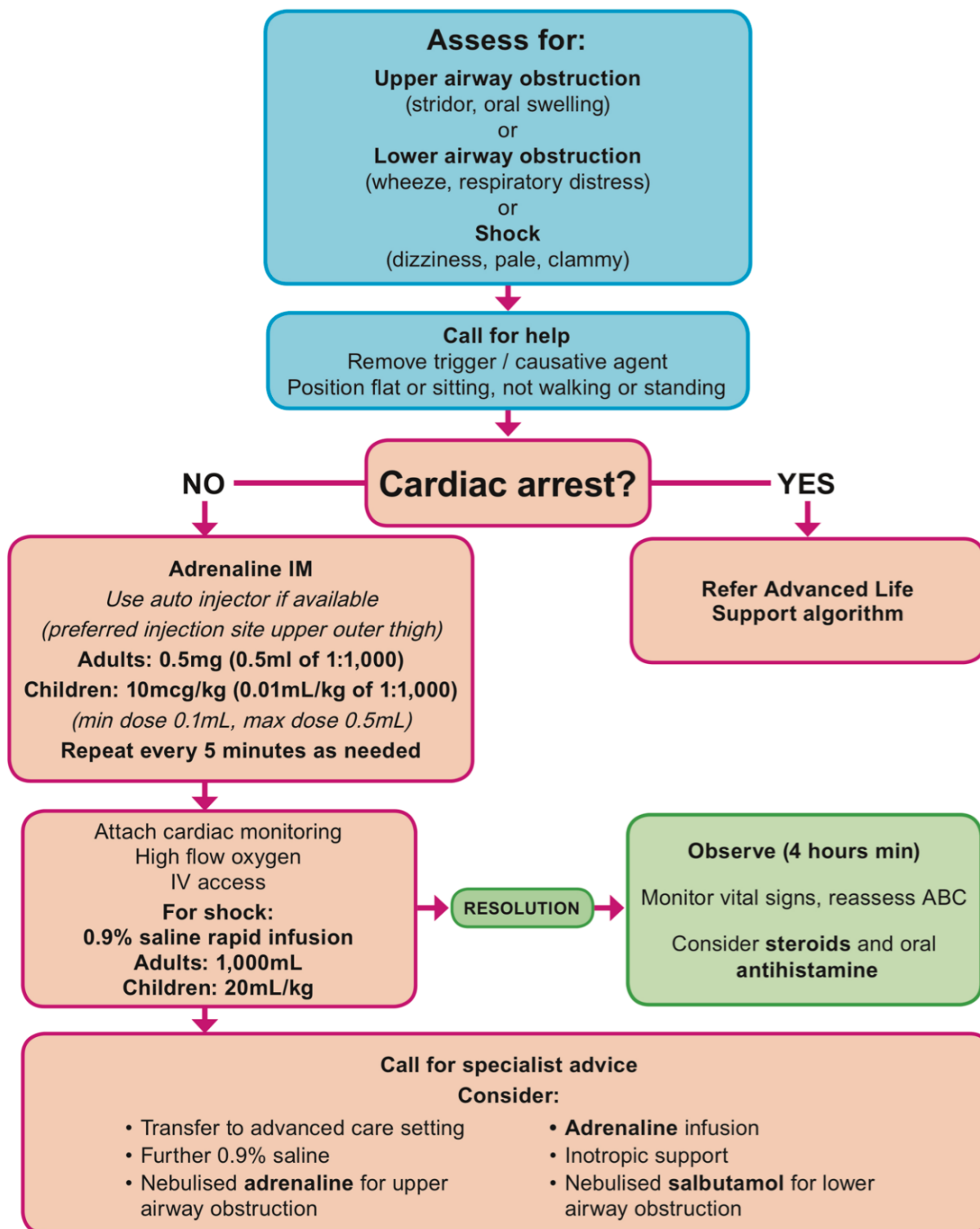
Key Points



Airway	Assess - Establish airway patency	
Breathing	Assess	
	High flow O2 via face mask commenced early	
Circulation	Assess	
	IV access	
Specific Therapy	Intramuscular adrenaline 10mcg/kg (140mcg) or 150 micrograms EpiPen	

Diagnosis: Anaphylaxis

Anaphylaxis



January 2019



APLS Guidelines: drugs in anaphylaxis

Drugs in anaphylaxis	Dosage by age			
	Less than 6 months	6 months to 6 years	6–12 years	More than 12 years
Adrenaline IM – pre-hospital practitioners	150 micrograms (0.15 ml of 1:1000)		300 micrograms (0.3 ml of 1:1000)	500 micrograms (0.5 ml of 1:1000)
Adrenaline IM – in-hospital practitioners	10 micrograms / kg 0.1 ml/kg of 1:10,000 (infants and young children) OR 0.01 ml/kg of 1:1000 (older children) ¹			
Adrenaline IV	Titrate 1 microgram / kg*			
Crystalloid	20 ml/kg			
Hydrocortisone (IM or slow IV)	25 mg	50 mg	100 mg	200 mg

* 1 microgram / kg given over 1 minute (range 30 seconds to 10 minutes), e.g. according to local protocol, one of these adrenaline doses can be diluted in saline to a volume of 10 ml, giving a solution of 1 mcg/kg/ml.

¹The strength of IM adrenaline is not intended to be prescriptive, 1:1000 or 1:10,000 could be used depending on what is practicable. The problem with sticking solely to 1:1000 is that when used in infants and small children, you are then drawing up very small volumes.

<https://www.allergy.org.au/hp/anaphylaxis/how-to-give-epipen>

EpiPen 300 mcg adrenaline use in children >20 kg

EpiPen Jr 150 mcg adrenaline use in children <20 kg

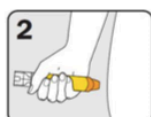


How to give EpiPen®

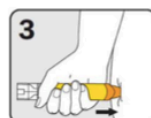
adrenaline (epinephrine) autoinjectors



1. Form fist around EpiPen® and PULL OFF BLUE SAFETY RELEASE



2. Hold leg still and PLACE ORANGE END against outer mid-thigh (with or without clothing)



3. PUSH DOWN HARD until a click is heard or felt and hold for 3 seconds REMOVE EpiPen®

SCENARIO CASE PI-3

History *{initial candidate briefing prior to arrival of child}*

A four-month-old baby is coming into hospital by ambulance with a history of rapid breathing and fever.
Guide weight 6 kg.

Initial Impression *{to tell candidate as child arrives}*

He has been hot and restless, has vomited twice and passed two loose stools. Now he is refusing to take a bottle and appears pale and listless.

RR 65/min, HR 180/min, CRT 6 seconds. He has pale, mottled peripheries and is uninterested in his surroundings.

His temperature is 39°C, peripheral pulses are present but low volume.
BP 61/42. Glucose stick test, if candidate requests it is 1.8 mmol/L.

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

The baby's condition improves after a total of 40 mls/kg of N.Saline have been given. Then heart rate falls, BP rises, and peripheral colour returns. If oxygen is not administered this improvement does not occur.
If a glucose stick test is not requested by the candidate you may choose to make the child fit because of hypoglycaemia to highlight the omission.
If antibiotics are suggested, suggest use of antibiotic guidelines and if wanting to give glucose supply dose.

INSTRUCTORS INFORMATION

Key Points

		<input checked="" type="checkbox"/>
Airway	Assess - Establish airway patency	
Breathing	Assess	
	High flow O2 via face mask commenced early	
Circulation	Assess	
	IV/IO access	
	Fluid boluses	
Specific Therapy	Consider sepsis as cause and give IV/IO antibiotics	
	Treat hypoglycaemia 10% Dextrose 2mL/kg + infusion	

Diagnosis: Septicaemia

SCENARIO CASE PI-4

History *{initial candidate briefing prior to arrival of child}*

A 15-year-old boy is coming in with a history of difficulty breathing. Has a past history of type 1 diabetes and asthma.
Guide weight 40kg

Initial Impression *{to tell candidate as child arrives}*

Recent diagnosis with diabetes, listless for a few days and been like this since this morning. He is very drowsy.

RR 30, deep and laboured, chest is clear.

HR 120. BP 91/59. CRT 4 sec.

Responding to voice but drowsy. Pale, mucous membranes very dry.

He appears severely dehydrated. Blood sugar is 48 mmol/L or HIGH on glucometer,

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

There is some improvement with the initial fluid bolus – treats shock but still appears dehydrated. If the BSL is not requested or fluids not given patient progresses into deeper coma.

There is a continued gradual improvement once replacement fluid and insulin are started. These doses should be supplied if suggested.

Emphasise slow rehydration after initial resuscitation bolus if fluids are requested to be given too rapidly.

INSTRUCTORS INFORMATION

Key Points

Airway	Assess - Establish airway patency	<input checked="" type="checkbox"/>
Breathing	Assess	
	High flow O2 via face mask commenced early	
Circulation	Assess	
	IV access	
	Blood for glucose U&E and VBG	
	Calculate deficit, begin replacement with N saline bolus 20ml/kg then replace over 48hours	
Specific Therapy	Insulin IV 0.05-0.1 u/kg/hr	

Diagnosis: Diabetic Ketoacidosis

SCENARIO CASE PI-5

History *{initial candidate briefing prior to arrival of child}*

A 10-month-old girl is coming into the Emergency Department with a 12-hour history of vomiting and diarrhoea.

Guide weight 9 kg

Initial Impression *{to tell candidate as child arrives}*

Looks really mottled and unwell, sunken eyes, panting respirations

RR 36, HR 130, BP 79/51, afebrile, CRT 4 seconds.

Appears pale and hypotonic. Chest clear, no accessory muscle use.

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

The child continues to have vomiting and profuse watery diarrhoea. Following 20 ml/kg of normal saline the pulse rate comes down to 115 per minute and the child appears more alert. The child is started on maintenance fluids but an hour later when she is about to go to the ward and following further vomiting and profuse diarrhoea, she again has a pulse rate of 140 and is pale and lethargic. A further fluid bolus corrects this.

Could consider hypoglycaemia to be added to this scenario if candidate is performing well or if BSL not requested could make the child seize to prompt this and emphasise this point.

INSTRUCTORS INFORMATION

Key Treatment Points

Airway	Assess - Establish airway patency	<input checked="" type="checkbox"/>
	Assess	
Breathing	High flow O2 via face mask commenced early	
Circulation	Assess	
	IV/IO access	
	Fluid bolus x 2	
General Therapy	Maintenance fluids	
	Could consider dextrose 10% 2ml/kg for hypoglycaemia	

Diagnosis: Gastroenteritis

SCENARIO CASE PI-6

History *{initial candidate briefing prior to arrival of child}*

A previously well four-year-old child coming via ambulance following a 15 minute generalised convulsion. He has received a single dose of IM midazolam prior to transfer with cessation of the seizure.
Guide weight 16kg

Initial Impression *{to tell candidate as child arrives}*

He is very drowsy on arrival and is snoring lying on his back. This will resolve if put on recovery position or if jaw thrust performed. Attempts at an oropharyngeal airway causes gagging. Nasopharyngeal airway is tolerated.

RR 30/min, Temp 39.7, HR 160, CRT 1 second. P on AVPU scale

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

A further generalised seizure results in apnoea and bradycardia HR 80 and SpO₂ 87%. He is unresponsive during seizure.

If the airway is opened, protected and ventilatory support given the bradycardia improves and stabilises – if not done proceed to asystole pathway.

If further midazolam given (IV, IM, intranasal or buccal) seizure to cease. BSL should be requested and prompted BSL 8.0 mmol/L.

APLS Seizure protocol should be available – suggest write doses on the sheet or facilitator to supply doses.

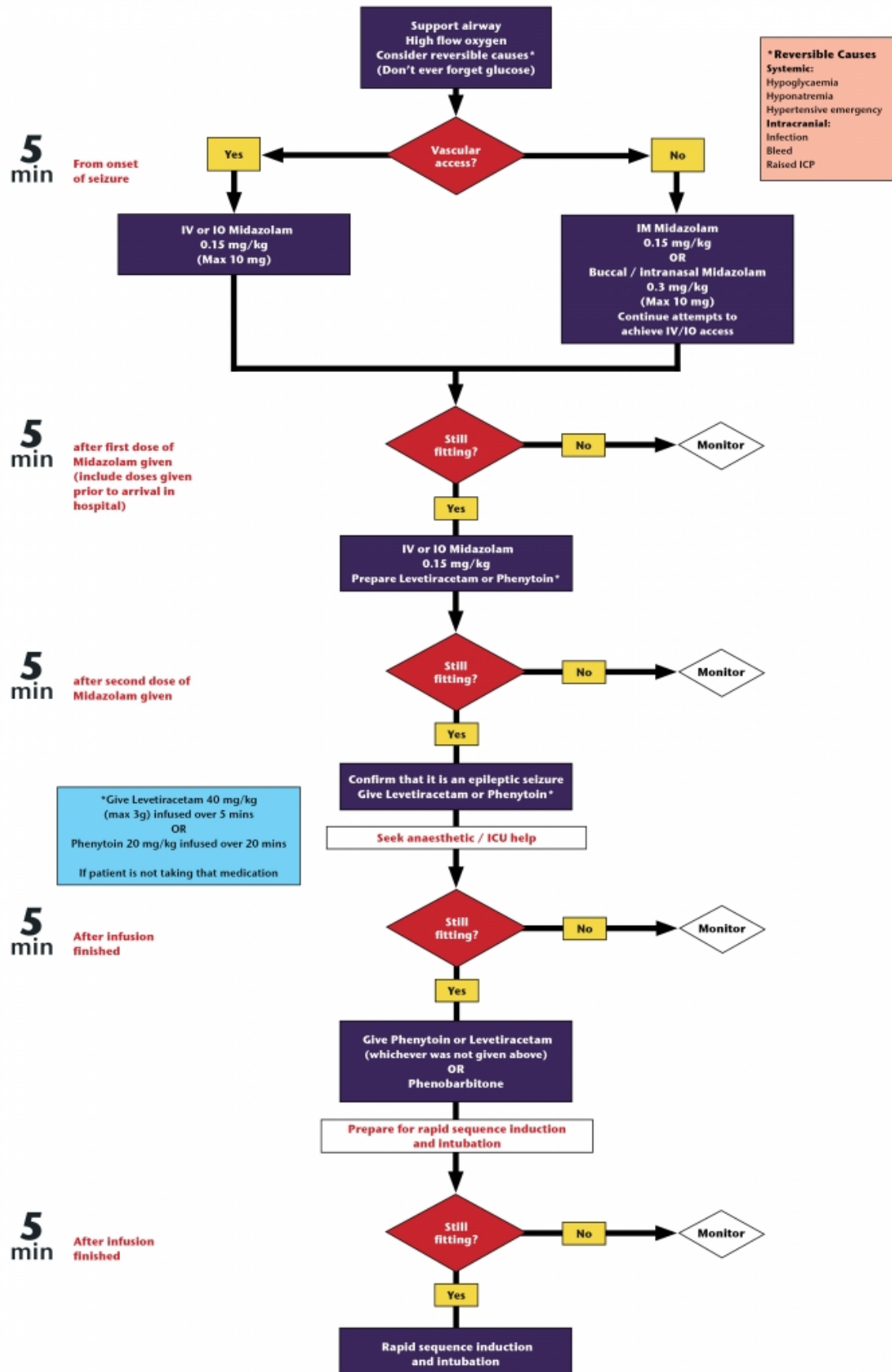
INSTRUCTORS INFORMATION

Key Points

Airway	Assess - Establish airway patency	<input checked="" type="checkbox"/>
	Recovery position to relieve obstructed airway or manual positioning.	
Breathing	Assess	
	High flow O ₂ via face mask commenced early	
	Bag valve mask ventilation with added O ₂	
Circulation	Assess	
	IV/IO access	
Specific Therapy	Status epilepticus protocol	
	Blood sugar check	

Diagnosis: Prolonged febrile convulsion

Status epilepticus management



SCENARIO CASE PI-7

History *{initial candidate briefing prior to arrival of child}*

A 15-month old boy is coming in with respiratory difficulty.
Guide weight 12kg

Initial Impression *{to tell candidate as child arrives}*

He was witnessed to choke on a small toy by his parents. He developed respiratory difficulty and was brought to hospital. He has been previously well.

On arrival, he wants to sit up and is coughing excessively and effectively.

RR 25/min but coughing +++. You can hear a soft stridor.
HR 130/min. SpO₂ 90%. Afebrile.

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

Initially he should be left to continue to cough and experienced help should be sought.

His oxygen saturation drops and respiratory effort increases with ineffective coughing.

The candidate should perform back blows and chest thrusts.

The child then becomes unconscious. Airway opening, rescue breaths and CPR should be commenced at which time a FB is dislodged and the child improves.

Choking child algorithm could be available.

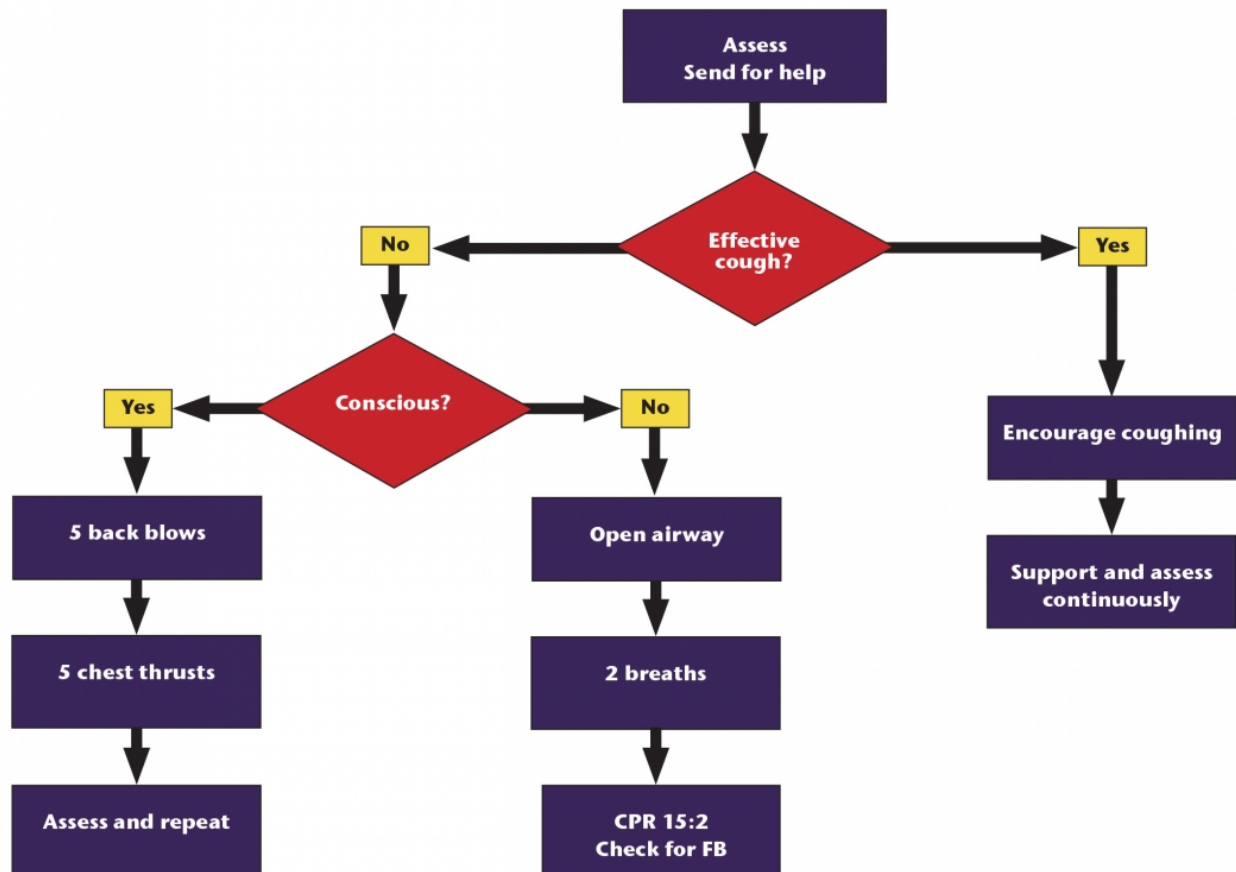
INSTRUCTORS INFORMATION

Key Points

		<input checked="" type="checkbox"/>
Airway	Assess - Airway opening manoeuvres	
	Suction	
	Oro-pharyngeal airway	
Breathing	Assess	
	High flow O ₂ via face mask commenced early	
	Bag-mask ventilate	
Circulation	External chest compression	
	IV access	
Specific Therapy	Back blows, chest thrusts, re-examine airway between cycles of CPR	

Diagnosis: Acute airway obstruction from an inhaled hook off a toy truck.

The choking child



SCENARIO CASE PI-11

History *{initial candidate briefing prior to arrival of child}*

A five-year-old boy is coming into the ED with vomiting and fever.
Guide weight 18kg.

Initial Impression *{to tell candidate as child arrives}*

He is drowsy and feels very hot. He has been very reluctant to walk today

RR 25/min, SpO2 98%, HR 95/min, CRT 2 seconds, BP 112/73.
T 40.7°C. Initially responds only to voice.

He had been complaining of headache.
Exposure reveals some petechiae on his abdomen and lower limbs.
BSL 2.0

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

His conscious level deteriorates and he develops septic shock.
HR 130, BP 85/55, CRT 4 secs.
He requires airway support and continuous reassessment of ABCD. If airway is not maintained and breathing, circulation managed then go on to PEA.
IV antibiotics should be given and assistance given with dosing.
BSL should be checked

INSTRUCTORS INFORMATION

Key Points

		<input checked="" type="checkbox"/>
Airway	Assess - Establish airway patency	
	Insert oropharyngeal airway	
Breathing	Assess	
	High flow O2 via face mask commenced early	
Circulation	Assess	
	IV access and 20ml /kg fluid bolus	
Disability	Dextrose 10% 2ml/kg	
	Head in-line and raised 20°	
Specific Therapy	IV cefotaxime / ceftriaxone	

Diagnosis; Acute meningococcal meningitis.

SCENARIO CASE PI8 SURGICAL

History *{Initial candidate briefing prior to arrival of child}*

Zumanako is a 5yr old boy who underwent a tonsillectomy five days ago. This afternoon he has been playing on the trampoline and has spat out some fresh blood. Mum was worried and is driving him to the hospital. Guide Weight 20 kg.

Initial Impression *{to tell candidate as child arrives}*

Child is breathing spontaneously, sitting up but appears a little pale. He has some blood stains on the front of his shirt.
RR 30, SpO2 98% in RA, HR 100, CRT 3 seconds, BP 82/53.

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

He becomes increasingly quiet and then vomits heavily blood stained fluid. He becomes tachycardic, hypotensive with prolonged CRT. He complains of being dizzy and wanting to lie down. If early treatments are not provided, he has further vomiting that is heavily blood stained. There is some improvement if ice is placed on the back of the neck and consideration of tranexamic acid or co-phenylcaine administration. If simple treatments are delayed then IV fluids will need to be provided and early blood transfusion.

INSTRUCTORS INFORMATION

Key Treatment Points

Airway	Assess airway – provide suction if required. No bleeding visible	
Breathing	Assess O2 via mask or Nasal Prongs commenced early	
Circulation	Early IV access IV Crystalloid bolus 10 ml/kg, consider repeating Consider early blood 10ml/kg O neg	
General Therapy	Consider Co-phenylcaine spray to throat Consider Ice pack to back of neck Consider Tranexamic acid either topically to tonsil bed or systemically Consider Adrenaline topically on a swab stick to tonsil bed ENT consult and urgent theatre	

Diagnosis: Post tonsillectomy bleed

SCENARIO CASE PC-1

History *{initial candidate briefing prior to arrival of child}*

The ambulance is coming in with a 6-week-old baby with bronchiolitis who has had a 30 sec apnoea at the GP surgery.
Guide weight 5 kg

Initial Impression *{to tell candidate as child arrives}*

The infant looks pink on arrival but is breathing rapidly with excessive nasal secretions and head bobbing.

RR 65, SpO₂ 92%, HR 160/min.

Mum says unwell for a few days with runny nose and reduced feeding but increased work of breathing today. Otherwise well baby.

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

Infant develops apnoea with cyanosis and bradycardia with suctioning. The infant remains bradycardic <60 and then proceeds to asystole until satisfactory ventilation with oxygen, chest compressions and one cycle of the asystole protocol (i.e. one dose of adrenaline) has been completed. A sinus rhythm with good output then develops. Spontaneous respiratory effort resumes soon afterwards.

INSTRUCTORS INFORMATION

Key Points



Airway	Assess - Establish airway patency	
	Suction	
Breathing	Assess	
	Nasal prongs or high flow oxygen via FM	
	Bag and mask ventilation with added O ₂	
Circulation	Asystole protocol	
	IV/IO Access	
General Therapy	Uninterrupted BLS	

Diagnosis:

Asystole. Apnoeic attack followed by cardiac arrest secondary to vagal stimulation during suction

SCENARIO CASE PC-2

History *{initial candidate briefing prior to arrival of child}*

An 18-month-old girl is being brought in by ambulance with BLS in progress.
Guide weight 11kg

Initial Impression *{to tell candidate as child arrives}*

The child is pulseless and apnoeic. CPR is in progress and was commenced by bystanders 10 mins earlier. She was found lying face down in the neighbours outdoor swimming pool on a cold winter's day. Her mother states that she had been missing for 10 minutes.

Cardiac rhythm on monitor is VF. She is very cold to touch (30.5 deg, tympanic – provide when requested)

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

The child remains in ventricular fibrillation despite correct treatment protocols until she has been warmed up and her core temperature has reached 32 deg.

INSTRUCTORS INFORMATION

Key Points

		<input checked="" type="checkbox"/>
Airway	Assess and support airway – adjuncts and positioning	
Breathing	Assess	
	High flow O ₂ via face mask commenced early	
	Bag and mask ventilation with added O ₂	
Circulation	VF protocol – defibrillation, adrenaline, amiodarone	
	IV/IO access	
	H's and T's	
General Therapy	Uninterrupted BLS	
Specific Therapy	Resus until T>32°C, active rewarming	

Diagnosis: Ventricular fibrillation, hypothermia due to drowning

SCENARIO CASE PC-3

History *{initial candidate briefing prior to arrival of child}*

Ambulance call bringing in a 2-year-old with fever and altered level of consciousness.

Guide weight 13 kg

Initial Impression *{to tell candidate as child arrives}*

Child is grey, mottled and floppy, hot to touch, U on AVPU scale,

Monitor shows sinus rhythm but pulse oximeter not reading (no pulse).

Child apnoeic

As child is exposed a purpuric rash is evident on the limbs and trunk

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

The monitor shows a sinus rhythm but the child is unresponsive, apnoeic and pulseless

The child remains in PEA until oxygenation is established, the 2nd dose of adrenaline has been given and fluid therapy is underway.

T 39.1 deg.

INSTRUCTORS INFORMATION

Key Points

		<input checked="" type="checkbox"/>
Airway	Assess - Establish airway patency	
Breathing	Assess	
	Bag and mask ventilation with added O ₂	
Circulation	PEA protocol	
	IV/IO access	
	Fluid bolus	
General Therapy	Uninterrupted BLS	

Diagnosis: PEA. Circulatory collapse due to overwhelming sepsis

SCENARIO CASE PC-4

History {initial candidate briefing prior to arrival of child}

2-week-old infant presents with a short history of difficulty breathing. Triage notes infant to be cyanosed and unresponsive. Parents are with him.

Guide weight 4kg

Initial Impression {to tell candidate as child arrives}

Cyanosed and floppy in mum's arms. Has been wheezy for few days and off feeds and spells of cyanosis today.

No respiratory effort and asystole on monitor. Pulseless and apnoeic.

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

The infant remains in asystole until ventilation with oxygen and chest compressions are established and two doses of adrenaline have been given. A slow sinus rhythm rapidly becomes a sinus tachycardia with good output.

Reassessment of the infant at this stage finds wheezy respirations

INSTRUCTORS INFORMATION

Key Points

		<input checked="" type="checkbox"/>
Airway	Assess - Establish airway patency	
Breathing	Assess	
	Bag and mask ventilation with added O ₂ Spontaneous ventilations returns, high flow oxygen	
Circulation	Asystole protocol	
	IV/IO access	
General Therapy	Uninterrupted BLS	

Diagnosis: Asystole. Anoxia secondary to apnoea from bronchiolitis

SCENARIO CASE PC-5

History *{initial candidate briefing prior to arrival of child}*

Ambulance coming in with a 6 y.o who has collapsed having been found with an empty medication bottle.
Guide weight 25 kg

Initial Impression *{to tell candidate as child arrives}*

Floppy and mottled on arrival. Unresponsive
HR 120 on monitor but no oxygen saturation recordable.
Pulseless and apnoeic.

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

There is sinus rhythm on the monitor but the child is unresponsive and apnoeic. No pulse can be felt.
The child remains in PEA until oxygenation is established and adrenaline 10 microg/kg by 2 has been given.
With initial return of circulation HR is 80, BP 82/53, and slow spontaneous respiration requiring support.
Prompt candidate for the Hs and Ts to achieve the toxicology diagnosis and consideration of naloxone

INSTRUCTORS INFORMATION

Key Points

		<input checked="" type="checkbox"/>
Airway	Assess - Establish airway patency	
Breathing	Assess	
	High flow O2 via face mask commenced early	
	Bag and mask with added O ₂	
Circulation	PEA protocol	
	IV/IO access	
General Therapy	Uninterrupted BLS	
Specific Therapy	Once ROSC is obtained and child oxygenated adequately consider Naloxone	

Diagnosis: PEA, secondary to hypoxia from opioid poisoning

SCENARIO CASE PT-1

History *{initial candidate briefing prior to arrival of child}*

1 hour before admission a 9-month baby boy was in his baby walker and bumped into the stove. A pan of hot chip oil tipped over his head and down his right arm and leg. An ambulance was called. He has been wrapped in cold, wet towel and is 5 mins away.
Guide weight 8 kg

Initial Impression *{to tell candidate as child arrives}*

Infant is breathing spontaneously with some moaning and gurgling. No burns around the mouth or lips. Burns to right side of scalp, face, neck, right arm and right leg. The infant is very cold to the touch.
HR 140, BP 82/53, RR 35, SpO2 94%, CRT 4 seconds. Temp 34.2 deg.

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

The gurgling stops with chin lift but recurs if this is discontinued. Airway is maintained by basic airway manoeuvres +/- NPA. There is some improvement in circulation with a warmed fluid bolus of 10 ml/kg. Circulation improves further with rewarming i.e. drying, warm blankets and warmed fluid. If infant is left exposed, he becomes hypothermic and further shock ensues with asystole needing ALS pathway.

INSTRUCTORS INFORMATION

Key Treatment Points

			<input checked="" type="checkbox"/>
Airway & C-spine	Assess - Establish airway patency, basic airway manoeuvres, +/- NPA		
	Assess and consider c-spine (no need for collar)		
Breathing	Assess		
	High flow O2 via face mask commenced early		
Circulation	Early IV access with 2 wide-bore cannulae		
	IV Crystalloid bolus 10-20 ml/kg - warmed		
General Therapy	Active rewarming		
	Consider pain relief		

Diagnosis: 30% partial/full thickness burns. Hypothermic from excessive cooling

SCENARIO CASE PT-2

History *{initial candidate briefing prior to arrival of child}*

A 3-year-old girl was playing unsupervised in the garden at home. An old brick wall (1.5 metres high) collapsed on top of her. Ambulance is 5 mins away. Child is pale but awake.
Guide weight 14 kg

Initial Impression *{to tell candidate as child arrives}*

Child is awake but very quiet and complaining of abdominal pain. C spine immobilisation is in place. Pale and mottled. Bruising over abdomen only. No long bone injuries except left arm which looks deformed.
Obs - RR 35. HR 130. BP 70/46, CRT >6secs.

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

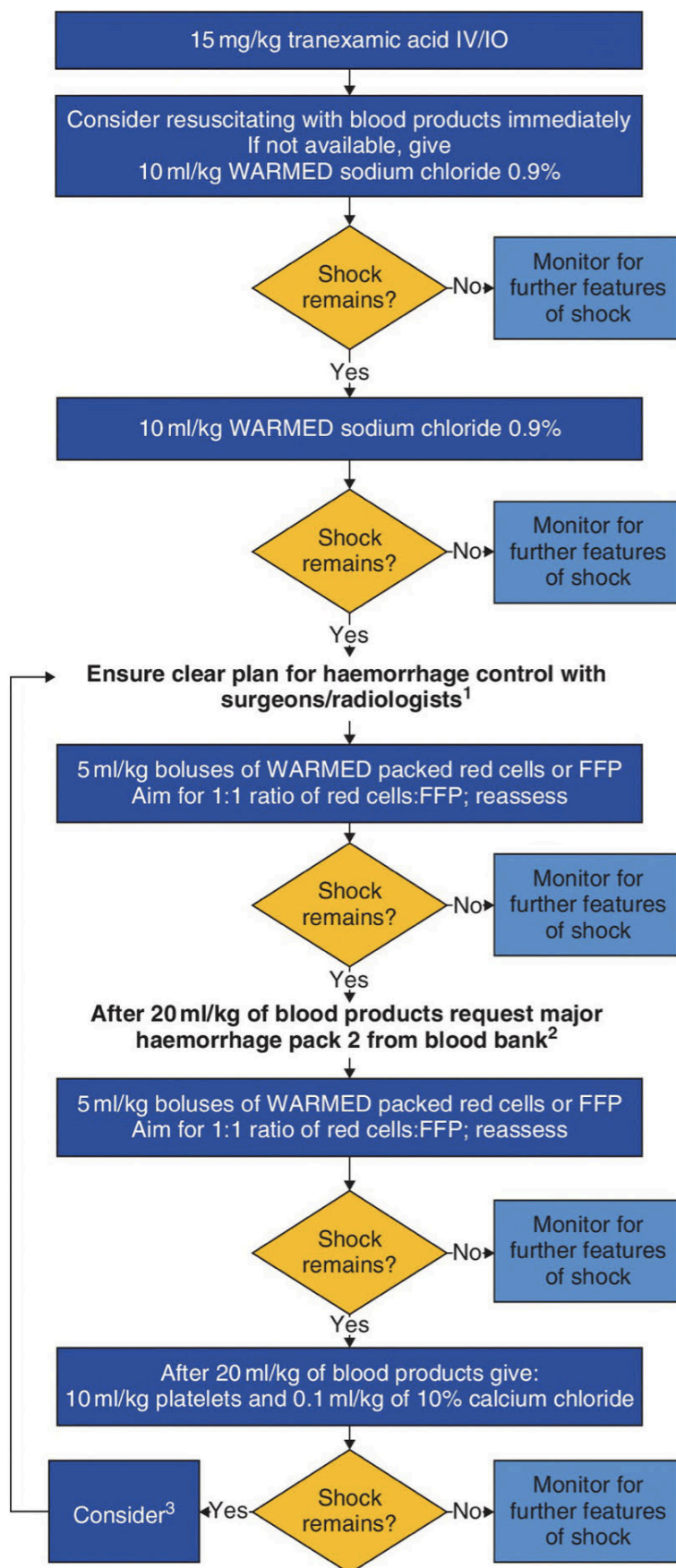
The child continues to deteriorate hemodynamically despite adequate oxygen and fluid therapy. There is some stabilisation with the blood transfusion. Urgent surgical consultation and theatre are necessary.

INSTRUCTORS INFORMATION

Key Treatment Points

		<input checked="" type="checkbox"/>
<C>	Assess for and control external bleeding	
Airway & C-spine	Establish airway patency	
	Protect cervical spine	
Breathing	Assess	
	High flow O2 via face mask commenced early	
Circulation	Assess	
	Early IV access with 2 wide-bore cannulae	
	Blood for cross-match etc	
	IV crystalloid bolus 10 ml/kg (warmed)	
	Early use of blood	
	Massive transfusion protocol, tranexamic acid	
Specific Therapy	Consult surgeon	
	Consider pain relief	
	Trauma imaging	

Diagnosis: Liver laceration with haemorrhagic shock. Fracture left radius and ulna



¹ Plan for haemorrhage control

- Monitor blood gases
- Keep ionised calcium level above 1 mmol/litre with 0.1 ml/kg of 10% calcium chloride
- Treat potassium level above 6 mmol/litre with bolus 0.1 units/kg insulin actrapid and 10 ml/kg 10% dextrose
- Monitor haemoglobin on blood gases, do not push higher than 12 g/dl
- Keep platelets above 100×10^9

Arrange anaesthetic assessment for intubation and ventilation

² Major haemorrhage pack

Major haemorrhage pack contains packed red cells, FFP and platelets

³ Consider

- Consider 10 ml/kg cryoprecipitate to keep fibrinogen at least 1 g/l
- Consider activated factor VII (Novoseven) after 2 cycles if continued bleeding
- Discuss with consultant haematologist

Platelet count needs to be $> 50 \times 10^9/l$ and fibrinogen at least 1 g/l

Figure 11.2 Blood and fluid therapy in severe uncontrolled haemorrhage after trauma.

SCENARIO CASE PT-3

History *{initial candidate briefing prior to arrival of child}*

A 2-year-old girl was playing in her front garden when her aunt backed out of the driveway and she was run over. Ambulance is 5 mins away. Child is intubated and ventilated.
Estimated weight 12 kg

Initial Impression *{to tell candidate as child arrives}*

Child is ventilated with good chest rise. Bruising on head minor and in a C-spine collar. Bruising and tyre marks over abdomen and pelvis. Left leg deformed and splinted by ambulance with a large bandage on left thigh. Obs - RR 30, HR 140, BP 70/46, SpO₂ 98%, CRT > 5 secs. U on AVPU.

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

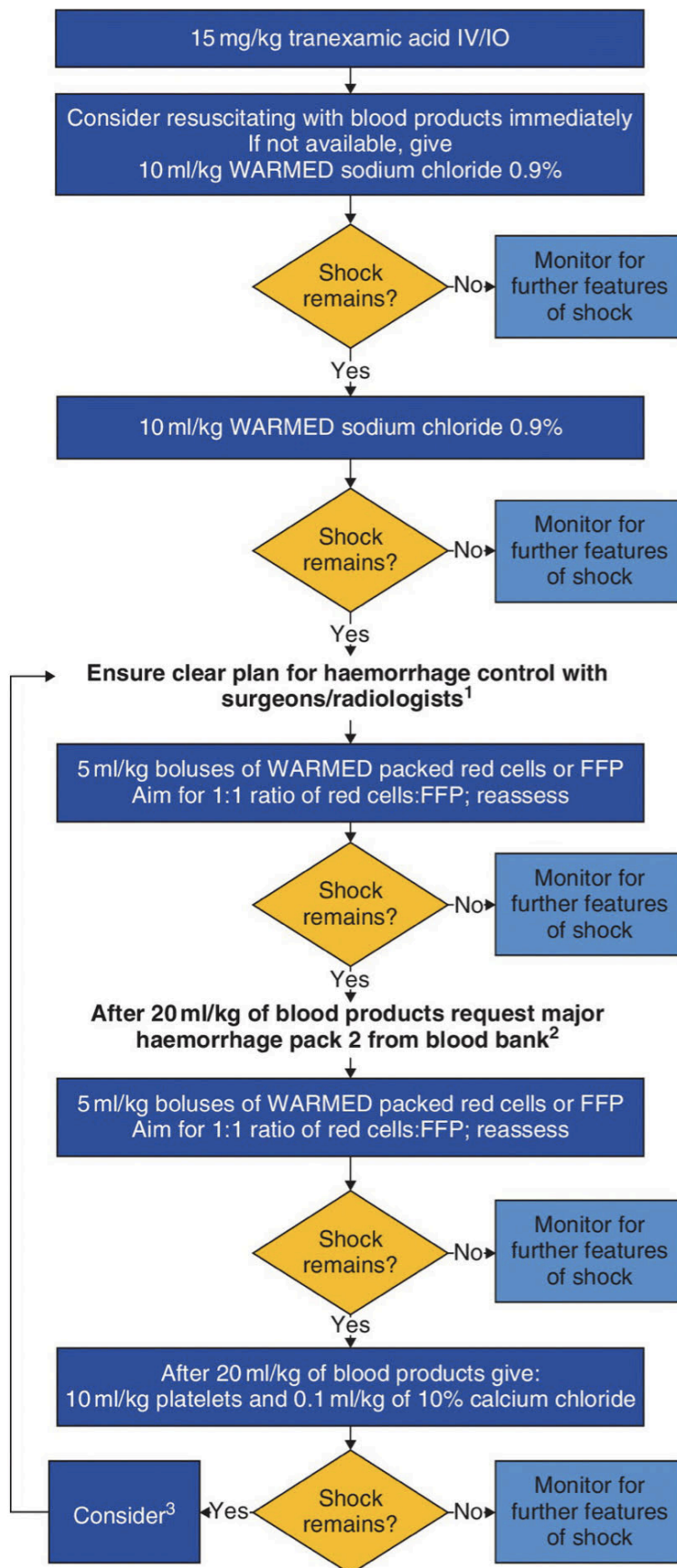
The child continues to deteriorate in shock despite adequate oxygen and fluid therapy. There is some stabilisation with the blood transfusion. Urgent surgical consultation and theatre are necessary. Splinting and external haemorrhage compression needed. (Try to de-emphasise the head injury as being less urgent. Do emphasise good control of vital signs as being cerebro-protective at this point.)

INSTRUCTORS INFORMATION

Key Treatment Points

		<input checked="" type="checkbox"/>
<C>	Assess for and control external bleeding	
	Assess for and control internal bleeding	
Airway & C-spine	Continue airway patency – protect ETT	
	Protect cervical spine	
Breathing	Assess	
	IPPV with high flow O ₂	
Circulation	Assess	
	Early extra IV access with wide-bore cannulae	
	Blood for cross-match etc	
	IV crystalloid bolus 10 ml/kg (warmed)	
	Early use of blood	
	Massive haemorrhage protocol, tranexamic acid	
	Splint limb and control haemorrhage	
Specific Therapy	Call surgeon	
	Consider pain relief and antibiotics	
	Trauma imaging	

Diagnosis: Hypovolemic shock. Splenic laceration. Fractured left femur, compound. Mild head injury.



¹ Plan for haemorrhage control

- Monitor blood gases
- Keep ionised calcium level above 1 mmol/litre with 0.1 ml/kg of 10% calcium chloride
- Treat potassium level above 6 mmol/litre with bolus 0.1 units/kg insulin actrapid and 10 ml/kg 10% dextrose
- Monitor haemoglobin on blood gases, do not push higher than 12 g/dl
- Keep platelets above 100×10^9

Arrange anaesthetic assessment for intubation and ventilation

² Major haemorrhage pack

Major haemorrhage pack contains packed red cells, FFP and platelets

³ Consider

- Consider 10 ml/kg cryoprecipitate to keep fibrinogen at least 1 g/l
- Consider activated factor VII (Novoseven) after 2 cycles if continued bleeding
- Discuss with consultant haematologist

Platelet count needs to be $> 50 \times 10^9/l$ and fibrinogen at least 1 g/l

Figure 11.2 Blood and fluid therapy in severe uncontrolled haemorrhage after trauma.

SCENARIO CASE PT-4

History *{initial candidate briefing prior to arrival of child}*

A 7-year-old girl was riding her bike home from school when she was hit by a car. The ambulance officers think she has a broken arm and are bringing her in for assessment. Ambulance is 5 mins away. Child is pale but awake.

Guide weight 22 kg

Initial Impression *{to tell candidate as child arrives}*

Child is awake in a C spine collar. Bruise on left head and helmet broken. Left wrist looks deformed and is bleeding through bandage. Right ankle looks deformed. Bruising on abdomen but non-tender.

Obs - RR 20, HR 130, BP 109/71, CRT <2 secs. A on AVPU.

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

The child is stable and vital signs normalise once long bones are splinted and analgesia is given. C spine immobilisation should continue until C spine is cleared. Neuro should continue to be assessed.

INSTRUCTORS INFORMATION

Key Treatment Points

		<input checked="" type="checkbox"/>
<C>	Assess for and control external bleeding	
Airway & C-spine	Assess airway	
	Protect cervical spine	
Breathing	Assess	
	High flow O2 via face mask commenced early	
Circulation	Assess	
	Early IV access with wide-bore cannulae	
	Blood for cross-match etc	
Specific Therapy	Pain relief	
	Splinting	
	Trauma imaging	

Diagnosis: Mild head injury. Fracture left radius/ulna and right tibia/fibula