



Ymddiriedolaeth GIG
Gwasanaethau Ambiwilians Cymru
Welsh Ambulance Services
NHS Trust

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Welsh Ambulance Services NHS Trust

Community First Responder Initial Training
Day Four Lesson Plan

Tutor: Jon Johnston

Student Population:

Venue:

Session: Day four

Duration: 7.5 hours

Date: TBC

Time: TBC

Entry Behaviour: New entry volunteers

Equipment Required:

Laptop, training package, group work laminates, Manual handling equipment Responder bags and airway manikins

Paperwork required.

Sign off forms, online register to be completed.

Location Facilities Requirements

Risk assessed training environment.
Appropriate facilities to enable learning.
Facilitated by one instructor.

Risk Assessment: Low
COVID-19 Risk Assessment: Low

Session Aims: To increase confidence in your clinical scope of practice and your self-confidence to discharge duties on behalf of the Welsh Ambulance Service NHS Trust. Learning Outcomes: By the end of the day volunteers will be able to: • Demonstrate management of head and spinal injuries • Demonstrate management of chest injuries • Demonstrate management of a wound • Show the ability to manage catastrophic haemorrhage. • Demonstrate management of burns	Introduction: (Slide 1 – 3) Self Ground rules – Learner's agreement – Slide 2 - Trust Behaviours Learning outcome for session – Slide 4 Reference JRCALC
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Objective:	Tutor Activity – Focus	Student Activity - Strategy	Equipment
Welcome all students to the session.	Complete the course online register – Training Website	Provide names and WAST PIN.	Training Website Online Register
Slide 3 – Knowledge Check	Knowledge check completion allocate around 15 mins -Go through assessments, how they work, what we are looking for, and when they will be. Explain the reassessment process. -Knowledge checks. Explain when they will be, marking system and percentage of overall pass mark. -Complete knowledge check for induction, multiple choice	Look, listen, ask questions.	Power Point, V1.
Slide 4-6 – Learning outcomes	Learning Outcomes and reference materials Learning Outcomes: By the end of the day volunteers will be able to: • Demonstrate understanding several medical emergencies. • Be able identify several medical emergencies from presenting signs and symptoms. • Demonstrate the effective management of several medical emergencies.	Look, listen, ask questions, Demonstrate.	Power Point, V1.
Slide 7 - 9 – What trauma is?	• This patient has a catastrophic haemorrhage from bilateral lower limb amputations. • Notice there is no evidence of treatment from any bi-standers yet. • This photo must have been taken moments after injury. Three people were killed, hundreds injured with 17 who lost limbs.	Look, listen, ask questions, Demonstrate	Power Point, V1.

	• Boston Marathon bombing in 2013. • Two homemade pressure cooker bombs detonated 14 seconds and 210 yards apart. Trauma sounds a very exciting topic • However, the majority of calls CFRs may respond to would be domestic elderly fallers.		
Slide 10- Mechanism of injury	• Referred to as MOI • Centre is a bilateral amputation above the knees with improvised tourniquets. • Image in the centre is from US Military in 1990s. • Simply what happened to cause the injuries sustained.	Look, listen, ask questions.	Power Point, V1.
Slide 11 Trauma Kit	• Airway kit is equally as important during trauma. • O2 is advised in all major trauma. • Dressing bag and internal pouch for tourniquet	Look, listen, ask questions Demonstration.	Power Point, V1.
Slide 12-14 – Assessment	• Your own safety is paramount including PPE. • Safety of casualty. Safety of bystanders. Safety of other responders. • Consider how injuries were caused prior to rushing in. • Is the environment going to change (eg tides, exits). • How many casualties can you see? • Do you need extra resources before getting bogged down in treatment. Get the call in early! Seconds matter. • Q: What tools do you have to deal with this in the kit?	Look, listen, ask questions.	Power Point, V1.

	- Improvisation demonstrated from other items (triangular bandage, belt, tie)		
Slide 15-19 – Haemostatic escalator.	- This is the Haemostatic escalator. - Steps taken to stop the flow of blood in the blood vessels - Elevation is not appropriate in all areas – if direct pressure fails then pack wound. - A sufficient quantity of gauze can be packed into the wound creating 'mechanical pressure' to the injured vessels and provides a structure for clotting to adhere to. Group Task - Apply to a limb of the person next to you. Ask them first! - Don't tighten too much on yourself but see how quickly it slows and stops blood flow to your hand or foot. - Olaes® is a modular Bandage is the newest generation of trauma bandage. 3 metres of gauze, a removable occlusive plastic sheet for OPEN CHEST INJURIES - pressure bar that can also act as an eye cup. - Velcro strips prevent elastic roll from accidentally unravelling and secure when complete. - TraumaFix - highly absorbent dressing pad and pressure bandage. - It allows direct pressure to be applied quickly and maintained easily, secured instantly with velcro. - Ambulance dressings are simply not substantial enough to cope with the bleed and applying enough pressure with a conforming bandage will be virtually impossible.	Look, listen, ask questions.	Power Point, V1.

	- Multiple major bleed injuries can be stemmed quickly, allowing the casualty to be moved easily. - The dressing is a significant advance in trauma treatment.		
Slide 20 – c-spine	- This is manual in-line stabilisation of the head and neck. - Easy to adopt but you may have to hold the head for a while until help arrived.	Look, listen, ask questions.	Power Point, V1.
Slide 21 - Airway	- Airway comes second to Cat' Haem' - Building on your previous training assure airway in managed. - Consider MOI and think if there might be a C-Spine injury? - Protect it by using a jaw thrust.	Look, listen, ask questions.	Power Point, V1.
Slide 22-25 – Breathing and Chest injury	- Listen for different sounds. - Gurgling or bubbling may be fluid in the back of the. - Use suction if needed. - O2 is advised in trauma straight away regardless of any other factor. With a trauma patient it is always good to expose the chest. - Is there an equal rise and fall of the chest. - Is there an adequate respiratory rate? - If below 10 or above 30 they need help so assist with ventilations. Chest injuries account for 25% of all deaths from traumatic injury. - Open chest wounds occur when an object (knife, shrapnel or bullet) penetrates the chest wall.	Look, listen, ask questions.	Power Point, V1.

	- Fractured ribs may break through the skin to cause an open chest injury. - Open chest injury is also known as a sucking chest wound. - Seal open chest wound with a dressing and tape on only 3 sides – to allow air to escape. - Always difficult to estimate blood loss. - Difficult to assess especially if on grass or carpet. - As mentioned always check <i>blood on the floor and for more</i> for any missed injuries - Examples of different wound types you may see. - All names appear on next click. – Group work – interactive.		
Slide 26-28 – Bleeding and wounds	- Always difficult to estimate blood loss. - Difficult to assess especially if on grass or carpet. - As mentioned always check <i>blood on the floor and for more</i> for any missed injuries - Examples of different wound types you may see. - All names appear on next click. – Group work – interactive.	Look, listen, ask questions.	Power Point, V1.
Slide 29 – 30 Q&A	Q&A and break 20 minutes	Refreshments	
Slide 31 – Disability assessment	- Check for any potentially disabling factors. - Mostly this looking at the patients consciousness. - Taken from Resus Council UK Guidelines	Look, listen, ask questions.	Power Point, V1.
Slide 31-38 – Traumatic injuries	- Head injury - Common causes include RTCs (inc. cyclists or persons ejection from vehicle). - Impact to the head, falls from height and sport related injuries. - The worst outcomes are associated with penetrating head injuries, non-accidental injury in children under 5's. - Even if there is no clear wound, there may be a traumatic brain injury from the impact of injury. - Head injuries are commonly associated to alcohol (whether falls, fights or bar room projectiles). FIRST IMAGE - Fractured skull and life changing injuries after being attached with a golf club.	Look, listen, ask questions.	Power Point, V1.

		• SECOND IMAGE - A vascular part of the body and will bleed a lot. • Head injury can result in a reduced level of consciousness and a change to AVPU. • NOF Symptoms of a NOF after a fall may include: pain and not being able to stand or put weight on the leg. • A patient lying flat may not be able to lift (lateral leg raise) move or rotate the leg. • Often this injury is visible by noticing one leg appearing shorter than the other and rotated outwards. • Femur A femoral fracture is a bone fracture that involves the femur. These are typically sustained in high-impact trauma. • Common in RTCs due to large amount of force needed to break the bone. • Often seen in RTCs and pedestrian v cars due to the height of car bonnet. • Tib/Fib These fractures are most common in athletes. • Especially runners or non-athletes who suddenly increase their activity level. • Many factors appear to contribute to the development of these fractures including changes in athletic training, specific anatomic features, decreased bone density, and diseases. • More than 20,000 cases per year in UK. • Caused by high energy trauma. • Especially in horse riders who fall/jump off. • Trauma from a variety of forces – a direct blow, axial loading, angular forces, torque, or combination. •	
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Slide 39 – 43 – Analgesia	• 0-10 pain scale. “Zero no pain, 10 worst pain in the world” • Smiley/Lego heads for use with paediatric or those who cannot verbally communicate. • Subjective pain scale describing mild, moderate and severe pain. • Abbey Pain Scale is designed for patients who cannot verbalise or communicate (eg dementia) • Can be used with any patient to document sign and descriptors of pain. • Consider pain relief for mild to moderate pain. For severe pain update CCC. • • SOCRATES – a good tool to use if patient is verbal. • Used to ask patient questions to define a describe site and type of the pain. • Top to toe survey – does just that. • Look for any missed injuries, deformities or discomfort. • Check pockets for phone and ICE number, their wallet for ID and wrists and neck for medi-alerts. • Carry out a full set of observations. • Record Observations and findings on patient clinical record (or ePCR on tablet) • • For administration to adults only. • As per JRCALC 2022 guidelines. • This is NOT you analgesia training package, this is for awareness. • Further training package will be delivered. • • Meth-oxy-flur-ane is sold under the brand name Pentrox.	Look, listen, ask questions.	Power Point, V1.
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	• Rapid onset of pain relief is of a wears off quickly • Widley used by Australian and New Zealand emergency services since 1970s. • 2020 trials in Wales trials were held and is now within the scope of practice of WAST CFR. • A portable, disposable, single-use inhaler device, along with a single 3ml brown glass vial. • The charcoal filter on top is to catch any dispensed fumes. • Not to be used in a confined space otherwise you will also feel the effects! • Relief begins 6–8 breaths and continues for several minutes after stopping. • Lasts approx. 30min • Alternative to Entonox as its smaller, lighter, safer to transport and not contraindicated with chest injuries.		
Slide 45 – 49 – Exposure	• Use your trauma shears. • Expose and examine limbs (within reason) to uncover wounds, deformity or other injuries. • Be mindful of the patients dignity in public space as well as their own home. • Consider the environment you are in – safety, changing environmental factors, exits and crowds. • Exposure to wind, rain, sun causing heat and cold injury. • Taken from Resus Council UK Guidelines. Hypothermia • Often caused by exposure to cold weather or immersion in cold water. • Icons show signs and symptoms of hypothermia, with LOC being a later stage. • Normal body temperature is around 36.5-37C.	Look, listen, ask questions.	Power Point, V1.

		• When body temperature drops, the heart, nervous system and other organs don't function properly. • Warm the patient and monitor changes in temperature. • British Red Cross are the experts in crisis and humanitarian relief who promote the use of a cuppa tea if feasible! • Left untreated, hypothermia can lead to complete failure of your heart and respiratory system and eventually to death. Burns • Simply this is damage to the layers of skin, usually caused by heat but can also include electrical or chemical burns. • An estimated 250,000 burn injuries result in 175,000 visits to A&E annually. • CFRs will not attend house fires however be aware of smoke inhalation. • Signs of this include soot in and around mouth and nostrils including possible airway burns – give O2. Treatment of burns is COOL, COOL, COOL and COOL some more. • Running tepid water. • Rule of 9's – patients palm of hand approx. accounts for 9% of the patients body surface area when working out coverage. • Mersey Burns is a free app to download on iOS and Android. It works out the burn % easily. • The skin is a barrier and so its thermoregulatory function is lost, even on a warm day. • Consider the risk of Hypothermia risk, especially in extensive burns on a small child. • Consider analgesia for extensive burns. • Paediatrics • Trauma is the leading cause of death and disability in children <1 yr of age.	
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	• In the UK >80% of injuries are caused by blunt trauma. • Head injury is present in the majority of cases and accounts for 75% of deaths. • Most seriously injured children have multiple injuries, so do a good top-to-toe survey. • Elderly • Also known as silver trauma. • Older people are more vulnerable and likely to falls. • Most have long-term health condition. • Falls are a common, but often overlooked, cause of injury. • Around 1 in 3 adults over 65 and half of people over 80 will have at least one fall a year. • CFR attend a lot of calls but rest assured, most falls do not result in serious injury. • Note previous training with iStumble.		
Slide 50 – 52 – Group Discussion	• Group work • Either split into groups and discuss / discuss as a cohort. • Next image shows a patient on the floor undergoing basic treatment. • How many aspects of this module can you see going on? • Feedback and describe the significance of each. Image one In order of importance... 1. Danger – PPE (Q: WHAT DOES PPE STAND FOR?) 2. Response – AVPU checking response to painful stimuli – squeeze of the trapezius muscle. (Q: AVPU STANDS FOR?) 3. Cat Haem – notice the CAT BLEED, it's literally a puddle of blood on the floor.	Look, listen, ask questions. – Group Discussion	Power Point, V1.

	4. Airway - Checked and suction used to clear the airway. 5. Breathing – Oxygen administered (Q: WHAT IS THE FLOW RATE?) 6. Circulation – Radial pulse check (Q: WHERE ELSE COULD YOU CHECK?) 7. Circulation (AGAIN) – checking blood on the floor and four more – is this a secondary bleed?) 8. Disability - Not MILS but is holding the head, possible checking for head injury or pupil response (Q: WHAT IS PEaRL?) 9. Expose/Env/Exposure – Foil blanket put on. 10. Secondary Survey – Full set of obs (SPO2 probe) (Q: WHAT DOES THE SATS PROBE TELL US?) 11. Record Observations and findings on PCR (Q: WHAT DOES PCR STAND FOR?) Image two WHAT WOULD YOU EXPECT AND WHAT WOULD YOU DO FOR THE FOLLOWING: Image 1 – Typical Dad move - trying to light the BBQ in his garden with petrol. Once ignited there was been flashback and he has suffered burns to his right hand, arm and across his chest with minor burns on his neck. Image 2 – Called to a scrap yard, for a man unconscious on the group. When you get there the owner tells you a gas bottle exploded and parts hit his staff member who fell back from the blast. Image 3 – Le n rushing to a meeting with his colleague Sarah. Neither noticed the wet floor sign that cleaner Sue had just put out after mopping the floor. Len slipped, hyper-extended his knee and fell backwards landing on his wrist and hitting his head. There was a	
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	brief moment of LOC so Sarah who knows first aid told Len not to move so called 999. Image 4 – 16 year old apprentice fell back from the ladder, falling to the ground. He landed on both feet, didn't bend his knees, twisted his right knee. From this position, he fell back in a lot of pain and landed on brick.		
Slide 44 – Wellbeing checklist – close	✓ Complete wellbeing checklist	Look, listen, ask questions.	Power Point, V1.



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Welcome / Croeso

Community First Responder Initial Training

Trauma

Day Four

Trauma Management

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1



Housekeeping

- Welcome
- Introductions
- Fire exits/tests
- Breaks
- Mobiles
- WAST behaviours
- Order of the day

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2



Knowledge Check – Day 3

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Day 4 - Trauma

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4



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- House keeping
- Knowledge Check
- Presentation
- Familiarisation
- Visual/practical scenarios

Introduction

WARNING
The following slides
contain graphic images

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5



Learning Outcomes

By the end of this session the Community First Responder should be able to:

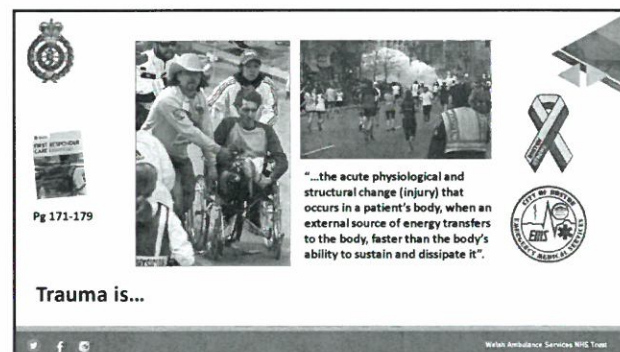
1. Demonstrate management of head and spinal injuries
2. Demonstrate management of chest injuries
3. Demonstrate management of a wound
4. Show the ability to manage catastrophic haemorrhage
5. Demonstrate management of burns

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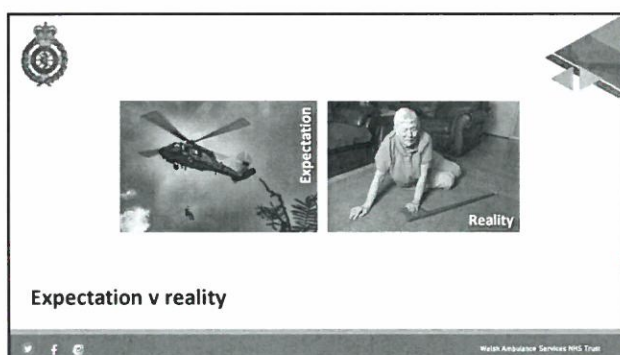
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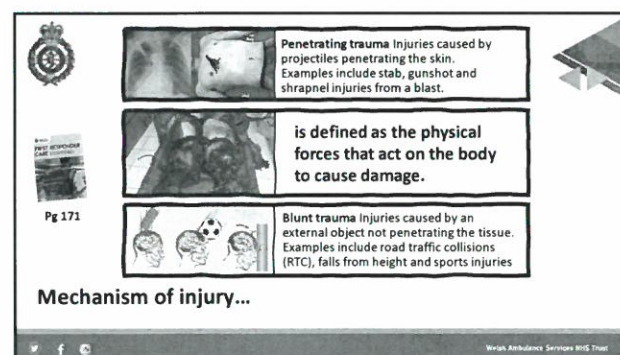
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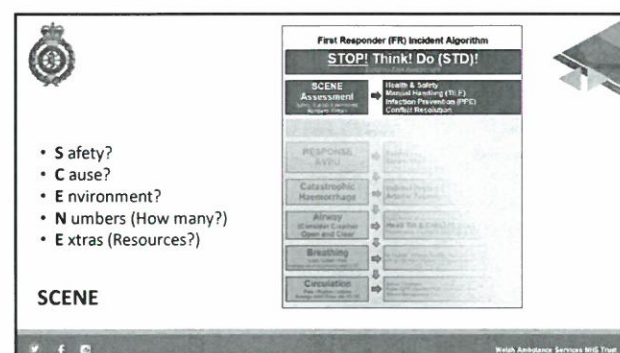
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10



11



12

First Responder (FR) Incident Algorithm
STOP! Think!

SCENE Assessment
 • Is the patient Alert, awake and responding normally?
 • Are they responding to Verbal stimuli?
 • Do they only respond to Pain stimulus?
 • Are they clearly Unresponsive?
 • Is there any new Confusion?

Response AVPU
 • Catastrophic Haemorrhage
 • Airway
 • Breathing
 • Circulation

Any First Responder Action
 • Response to Verbal
 • Response to Pain
 • Response to No Response
 • Catastrophic Haemorrhage

Response

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13

First Responder (FR) Incident Algorithm
STOP! Think!

SCENE Assessment
 • Any major bleed or massive haemorrhage you suspect may cause death within a matter of minutes if left untreated.
 • All uncontrolled bleeding is eventually Catastrophic.
 • Requires immediate intervention.

Response AVPU
 • Catastrophic Haemorrhage
 • Airway
 • Breathing
 • Circulation

Any First Responder Action
 • Response to Verbal
 • Response to Pain
 • Response to No Response
 • Catastrophic Haemorrhage

Cat' Haem'

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14

Haemostatic Escalator

Tourniquet
Limb positioning, traction & splints
Wound packing/haemostatic agents
Direct pressure/elevation of limb

Cat' Haem'

1. If you suspect catastrophic haemorrhage you are likely to ascend the escalator **rapidly**
 2. If a 'Cat Haem' involves a **link**, a tourniquet should be applied immediately, leaving a gap of at least 5cm between tourniquet and injury.
 3. If bleeding is not controlled adequately, a second tourniquet should be applied **above and close** to the first and **over a single bone** (E.g. Humerus or Femur).
 4. If bleeding continues, **pack and dress** the wound, then apply firm **direct pressure**.

Do NOT use a tourniquet in areas such as head, neck or torso. In these areas bleeding should be controlled using wound dressings and firm direct pressure.

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15

C.A.T.

Time label
 Windlass Rod
 Securing buckle
 Windlass Holder

Pg 175-176

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16

Familiarisation

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17

Haemostatic Escalator

Tourniquet
Limb positioning, traction & splints
Wound packing/haemostatic agents
Direct pressure/elevation of limb

Non-catastrophic haemorrhage

Move up the haemostatic escalator
 • Consider elevation (if practicable) if injury is below knee or elbow
 • Applying a second dressing over the first with direct pressure, if bleeding continues
 • If bleeding continues, treat as catastrophic haemorrhage event
 • For limb injuries this means applying a tourniquet above injury

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18



Olaes Modular Bandage
The newest generation of trauma bandage. Packed with features such as 3 metres of gauze, removable occlusive plastic and a pressure bar.

TraumaFix
This dressing offers a substantial, highly absorbent dressing pad, capable of absorbing over ten times its own weight in fluid. A pressure bandage allows direct pressure to be applied quickly and maintained easily, this is secured instantly with a Velcro style fastening.

Dressings

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19



First Responder (FR) Incident Algorithm

STOP

SCENE Assessment

RESPONSE AVPU

Catastrophic Haemorrhage

Airway (Consider C-spine, Open and Clear)

Breathing

Circulation

Airway

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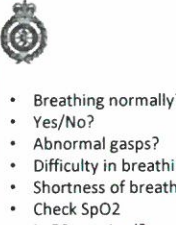
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C-spine Injury ?

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21



First Responder (FR) Incident Algorithm

STOP

SCENE Assessment

RESPONSE AVPU

Catastrophic Haemorrhage

Airway (Consider C-spine, Open and Clear)

Breathing

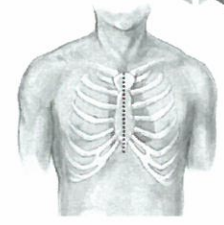
Circulation

Breathing

- Breathing normally?
- Yes/No?
- Abnormal gasps?
- Difficulty in breathing?
- Shortness of breath?
- Check SpO2
- Is O2 required?

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1. Look at the **rise and fall** of the chest looking for movement and symmetry

2. Listen for **breath sounds**, gurgling or stridor

3. Feel for any **expiration**

- What is the breathing rate?
- Are there agonal gasps?
- Expose the chest to examine for wounds

Breathing Assessment

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23



- Allow the patient to adopt a position that they find most comfortable to breathe.
- For an open chest wound, seal open chest wound (3 sides only) with a non-occlusive dressing. If multiple wounds, assure only one 3-sided dressing per lung.
- Administer oxygen and aim for 94-98% SpO2

Management of an open chest injury

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24

First Responder (FR) Incident Algorithm

- Signs of life
- Colour/palour
- Check pulse
- Check CRT if pulse present
- **If a pulse is fast and weak, suspect a leak**
- Reassess treatment of any catastrophic bleeds

Circulation

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25

Bleeding

Arterial bleeding
Spurting bright red blood is potentially life-threatening so plug all the holes.

External bleeding
Visible and should be detected during your primary and/or secondary survey.

Estimating blood loss
Very difficult but remember to check for signs of **shock** which may give an indication of amount of blood lost.

Internal bleeding
Concealed within the body and hard to detect check the chest, abdomen, pelvis and long bones.

Pg 174-177

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26

Wounds

Contusion Puncture Incision Abrasion Laceration Gun Shot Burn

Pg 176-177

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27

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28

Break Time

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29

Disability

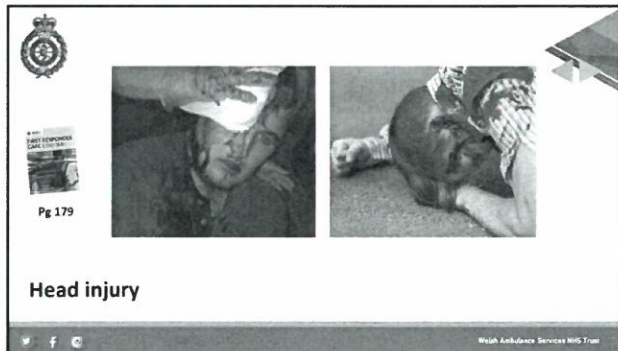
- **AVPU** - a rapid initial assessment of the patient's consciousness level.
- **GCS** - use the Glasgow Coma Scale score for a more in-depth consciousness level.
- **PEaRL** - Examine the pupils and their response. Look for their size, equality and reaction to light.
- Look for any sign of a **head injury**.
- **Measure the BM** to exclude/explain any reduced or altered level of consciousness, as well as hypoglycaemia.
- Check for any other potentially **disabling injuries**.

Pg 146

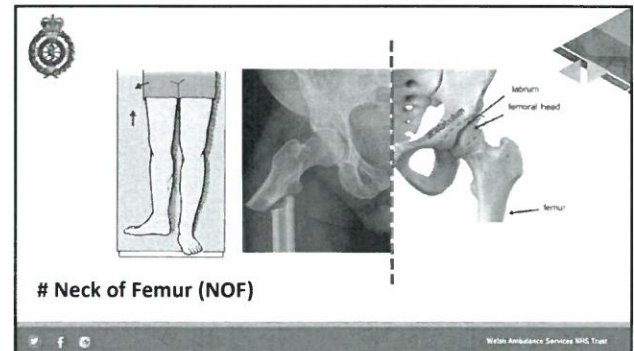
Resuscitation Council UK

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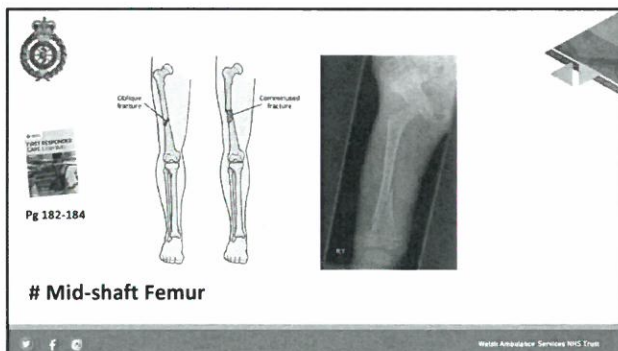
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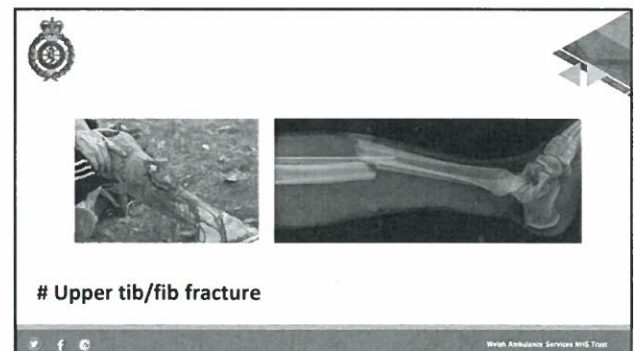
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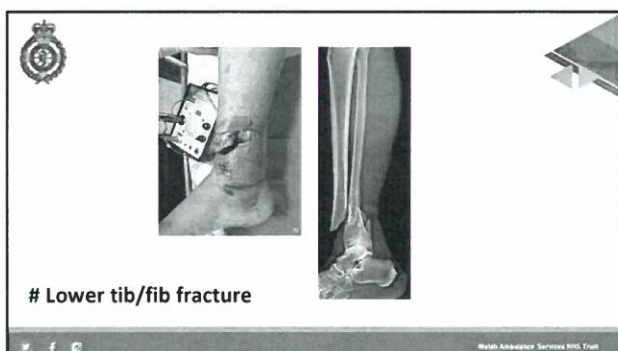
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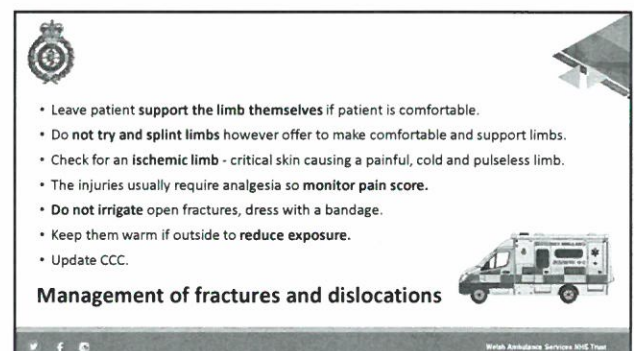
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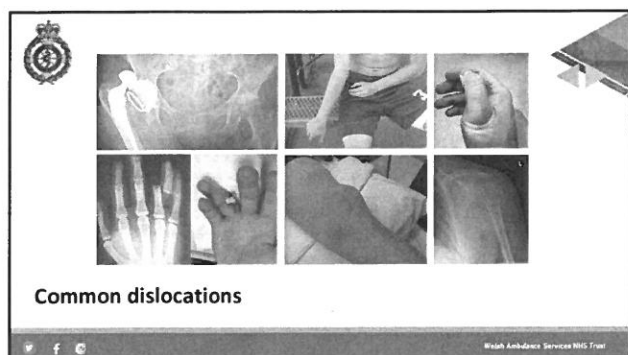
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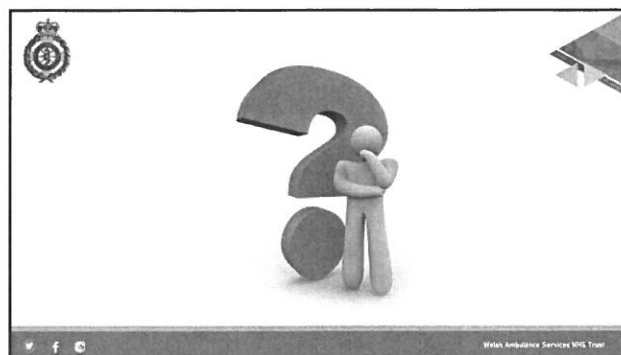
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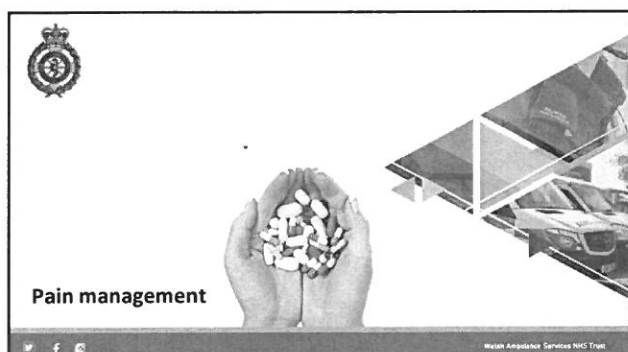
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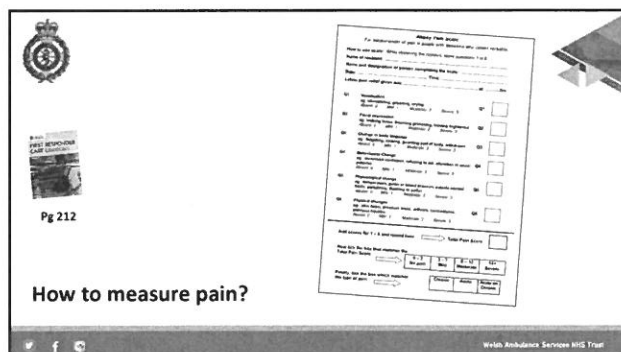
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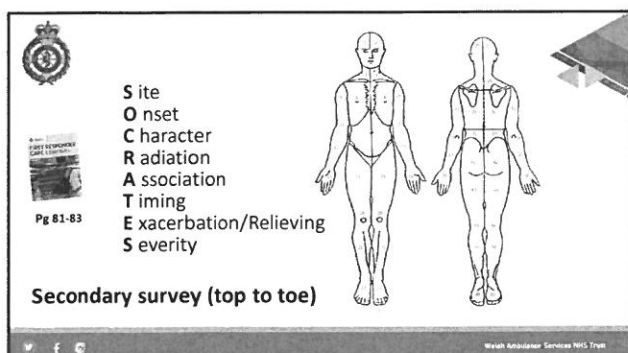
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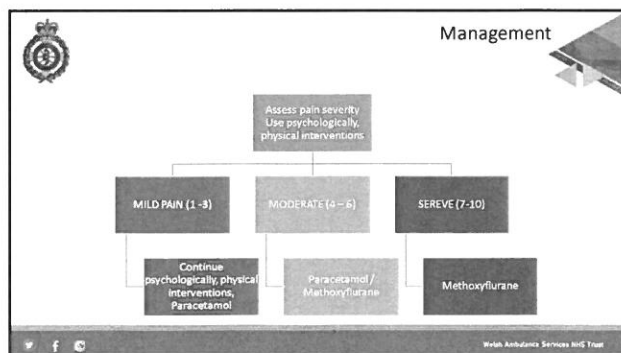
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40



41



42



Paracetamol
SOLING CAPSULETS
Efficient Pain Relief

- Analgesic (pain reliver) and antipyretic (temperature reducing).
- For **mild to moderate pain** or high temperature with discomfort.
- Not to be given if known **allergy** and always check when paracetamol was **last given** (not within 4 hours).
- Be aware of other paracetamol-containing products.

Mild to moderate pain

ADULT ONLY

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43



Penthrax

- An inhaled analgesic designed for self administration in a handheld device.
- Aka Meth-oxy-flur-ane or the 'Green Whistle'
- For **moderate to severe pain** in conscious adult patients with trauma.
- **Not to be given** if known allergy, liver damage, kidney disease, reduced LOC, heart problems or respiratory depression.
- **Be aware** of repeat dosages over last 7 days

Moderate to severe pain

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44





Exposure

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45



Uncontrollable shivering, Pallid, cold skin, Loss of Consciousness, Clumsiness, Nausea, Drowsiness, Confusion, Slurred Speech

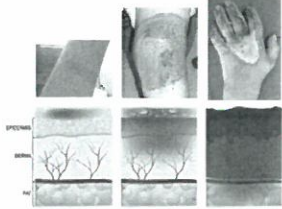
- Drop in body temperature below 35C.
- Provide shelter/move patients indoors.
- Remove wet clothing and wrap in a blanket.
- Give a warm cuppa and a biscuit if they're fully awake.
- Reassure them until backup arrives.

Hypothermia

British Red Cross

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46



Burns

First degree (Superficial)
affects the first layer of skin appearing red and raised.

Second Degree (Partial thickness)
Appears red, blistered with possible swelling and pain.

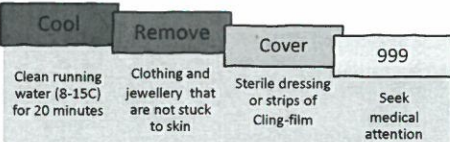
Third Degree (Full thickness)
Appears white or charred, can damage tendons, muscle and bone. There is no pain as nerve endings are destroyed.

First-degree burn, Second-degree burn, Third-degree burn

Pg 184-189

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47



Management of burns

Cool: Clean running water (8-15C) for 20 minutes

Remove: Clothing and jewellery that are not stuck to skin

Cover: Sterile dressing or strips of Cling-film

999: Seek medical attention

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48



- Elderly are more vulnerable and likely to falls
- The ageing process leads to increased risk
- Balance problems and muscle weakness
- Vision loss
- Long-term health conditions such as:
 - hypotension (low BP) causing dizziness
 - osteoporosis and arthritis



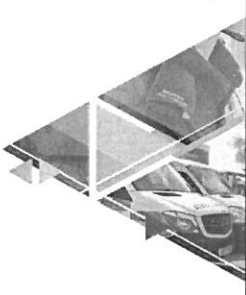
Special Circumstances - Elderly

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49

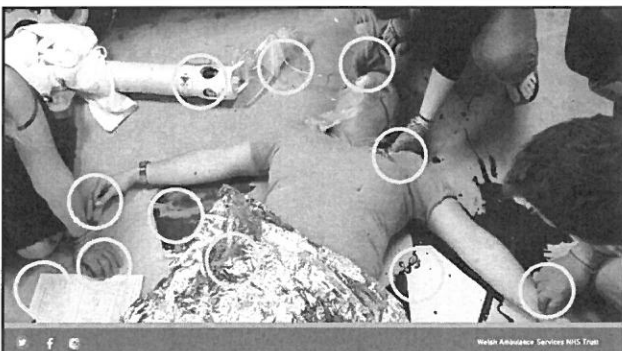



Group discussion



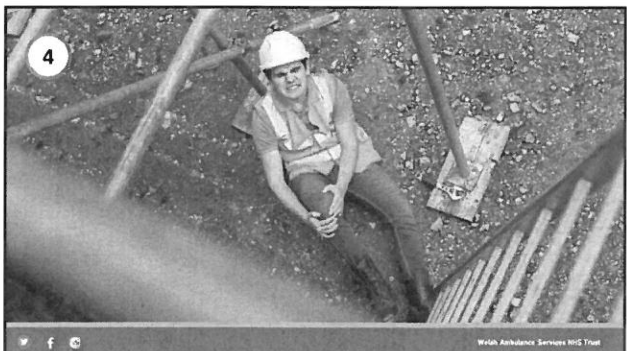
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50



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51



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52



Group Work

Trauma Scenario



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53



**At the end of session:
A wellbeing checklist**

- ✓ Reflect on what went well today.
- ✓ Recognise what was difficult.
- ✓ Check in with the colleagues around you.
- ✓ Reflect for a moment on the difference you made to people and be proud.
- ✓ Are you ok? Use support scale below if you're not.
- ✓ Go home: **rest, restore** and do something you enjoy!



**Diolch
Thank You**



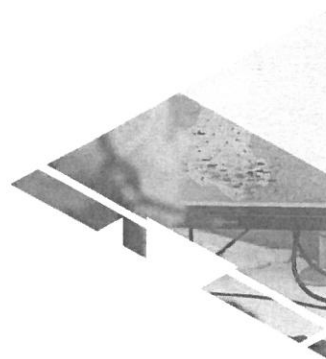
• Feeling a bit down? Talk to a colleague
 • Finding things difficult? Talk to the management team
 • Need Professional advice? Call Wellbeing Support Service 0800 322 4700
 • Don't know what to do? Call the Samaritans
www.welshambulance.nhs.uk

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54

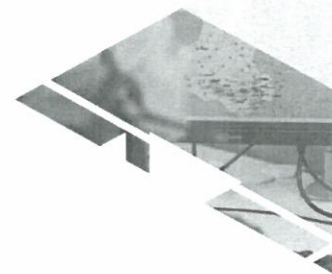


55



Day 4 – Trauma

Time	Session	Activity	Equipment
0845-0900	Welcome and refreshments	Welcome	Refreshments Name labels & pens Teas and coffees Milk
0900-0915	Introduction (2 slides)	Introductions Housekeeping Learning outcomes Pre-learning knowledge check test	Note pads and pens Desks Chairs Paperwork- signoffs Knowledge checks
0915-0935	Introduction to trauma (5 slides)	What is trauma, MOI and traumatic injuries?	Presentation Projector & HDMI Extension cable Laptop Chairs
0935-0945	Brief table-top demonstration (1 slide)	Revise and refresh what may be needed for DRCABCDE (adjuncts, obs, trauma kit).	Response bags
0945-1015	CFR Incident Algorithm with demo (15 slides)	Take through stages of the DRCABCDE approach to trauma: • Cat Haem <u>with familiarisation</u> • Airway with C-Spine considerations • Breathing assessment and open chest injury • Bleeding and wounds	Tourniquets Olaes bandage TraumaFix
1015-1025	Disability including head injury (2 slides)	How to assess a patient's consciousness level. Including GCS and PEaRL	Laptop Projector Projector screen Algorithm handouts GCS laminate Pen torch
1025-1035	Tea break	Students can ask questions over a refreshment	Teas and coffees Milk Biscuits



1035-1045	Secondary survey (5 slides)	Discuss the importance of a top-to-toe survey. Talk through SOCRATES.	Laptop Projector Projector screen Algorithm handouts
1045-1050	Management of fractures (2 slides)	Examples of potential fractures locations and dislocations	Presentation slides Laptop Projector Projector screen
1050-1105	Pain management (4 slides)	How to measure and document pain. What CFR analgesia is available?	Laminates of pain score Penthrox training device Paracetamol box
1105-1115	Environment including heat and cold injuries (4 slides)	Discuss how to exposure and examine a patient. Awareness of environment and exposure Hypothermia Burns and their management	Blanket Blizzard blanket Foil blanket
1115-1120	Special circumstances – Paediatrics/Elderly (1 slide)	How paediatric trauma patients differ	Presentation slides Laptop Projector Projector screen
1120-1125	Group discussion (1 slide)	Spot the treatment and processes in order of priority (eg DRCABCDE) on the image.	Presentation slides Laptop Projector Projector screen Notepad and pen
1125-1130	Tea break	Students can ask questions over a refreshment	Teas and coffees Milk Biscuits
1130-1155	Group work (4 slides)	X4 images Describe your approach to your scenario. Group can discuss how they would manage and treat this patient.	Presentation slides Laptop Projector Projector screen Algorithm handouts
1150-1230	Practical scenario	Opportunity for candidates to practice their skills of identifying and treating cat haem and trauma related injuries.	Response bags x 4 Volunteer role player or training mannequins/limb CasSim (optional)



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Trainers Notes for the Module 7 – Trauma

These trainer notes are to accompany a lesson plan and presentation slides, as part of the WAST community First Responder (CFR) 5-day course commencing in January 2023.

Content is in line with current JRCALC 2022 Guidelines and Resuscitation Guidelines with reference taken from Pre-Hospital Trauma Life Support (9th Edition) and the First Responder Clinical Skills publication, which is classed as core learning material for the CFR scope of practice.

Viewers of the presentation should be prewarned of the graphic images used in the interest of training and education. Images used are staged or from battlefield or terrorist scenarios. This is to prepare them for potential real-life incidents they may be faced with.

Instructor Knowledge

This module is to be delivered by WAST CFR Trainers with an understanding of the CFR scope of practice and learning objectives. It can be delivered by other EMTs or Paramedics when assisting WAST CFR Trainers when under direct observation or instruction from WAST CFR Trainers, depending on the EMT/Paramedics experience and knowledge of the subject and CFR scheme.

Equipment Required

- Audio and visual equipment is required for the presentation. Speakers are optional, dependent on videos. This should include projector, extension cable, laptop and access to presentation slides via Teams/OneDrive or directly from laptop or USB.
- Responder bags are required for the familiarisation, practise and scenario phases. This is for access to airway management equipment, oxygen therapy and major haemorrhage control supplies.
- Casualty Simulation consumables are encouraged to provide a more realistic scenario. However dependent on time and location, this is not necessary.
- Copies of a publications such as First Responder Care Essentials may be required for further reading.

Module Structure

- **Presentation** – The classroom module is delivered mostly via presentation slides, with a number of opportunities for practical familiarisation with both individual or group working. Scenarios allow for confirmation of understanding and can be carried out outside of the classroom or venue (weather permitting) to suit the trainer and audience. Drawing on personal injury or previous experience is welcome via discussion topics.
- **Practical Session** – During the presentation, there are opportunities to get hands on with equipment within the responder bag and learn how they should be used. Following explanation and application, the trainer can confirm correct use and placement of CATs as well as bandages. These will be used in the correct sequence of treatment (i.e. DRCABCDE) and will demonstrate their understanding of the subject.
- **Multiple Choice Questionnaire (MCQ)** – To add a layer of complexity and to confirm candidate learning in another format, a MCQ is available. This is only another tool to confirm



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learning and not a pass or fail. This is dependent on timings and will differ from the individual knowledge check.

- **Visual Scenario** – This can be carried out as an individual effort, team exercise or group discussion. Time is allocated to create a plan towards assessment, management and treatment of what scenario the images show. This can be carried out as small group activity, as individual or together as a cohort becoming a group discussion.
- **Practical Scenario** – To conclude the module and to confirm understanding of the subject, the trainer can deliver a trauma related scenario. This can be done in a group, small teams or as an individual, depending on allocation, resources, live patients and location. Casualty simulation (CasSim) items are encouraged to provide a more realistic scenario for candidates however a role play patient from the cohort will suffice. By adopting a final confirmation scenario, this will allow confirmation of practical ability to follow the pre-taught teaching of carrying out a primary and secondary survey of a trauma patient. This would include clinical skills such as airway management, treatment options, communication and teamwork.

Key Learning Objectives (KLOs) – these are listed below

1. Understand management of head and spinal injuries.
2. Understand management of chest injuries.
3. Understand management of abdominal injuries
4. Understand wound management.
5. Be able to manage wounds
6. Understand management of haemorrhage
7. Understand management of burns

7.1 Introduction

- This will enforce current WAST values and standards, which should be reflected in the learning environment.
- A brief introduction is given to the day including delivery from presentation slides with hands-on opportunities.
- Overall assessment is based on visual scenarios requiring individual or team feedback leading to a discussion to confirm understanding of subject.
- Practical scenario will confirm basic knowledge and understanding of patient assessment, which has been taught earlier in the course focussing on correct identification of a catastrophic haemorrhage along with further treatment and aftercare.
- A warning prior to seeing any graphic images is advised, especially due to the nature of the module.
- References to further reading given.
- Opportunity to download free pre-hospital applications
- *Definition of trauma is...* accompanied by image from Boston bombing in 2013. Will return to an image of the same patient, prior to evacuation to Boston EMS, later in presentation.

7.2 Assessment of trauma



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This follows the same approach for any patient, as previously taught earlier in the course.

This approach is adopted all over the world by emergency and pre-hospital care providers at all clinical grades. *You are no different so be sure to follow this for any assessment.*

- Emphasis should be put on 'SCENE' mnemonic use, including any danger to casualty, responder or public. Emphasis should be put on verbalising this throughout any assessment.
- Other than Cat Haem - airway takes priority. Life over limb. The *importance of airway management in trauma*, with consideration for any cervical spine injuries associated with falls from height, sport, high impact collisions and from conflict. Combat-related spinal injuries have been reported since the Egyptian era (REF).
- Approximately 8.7% of all new cases of spinal injuries in the US are related to sports activities (REF).
- Responsiveness level including AVPU(C) and reference given to GCS.
- Breathing Assessment
- Circulation Emphasis on why stopping any major bleeding should take precedence over circulation (compressions).
- "Blood on the floor and 4 more" - explain the 4 main regions to check for signs of internal bruising with be covered later.

7.3 Mechanism of injury

- Defined as "the physical forces that act on the body to cause damage." (REF REQUIRED).
- How the body tolerates this external energy *depends on: tissues involved; age and health of the person; duration of the energy being transferred.*
- Graphic image used showing US Army surgeon during the 1991 Gulf War, treating a double amputation patient
- Ask *how this could have been caused?* More than likely an improvised explosive device (IED) intended to do such damage.
- Discuss *what treatment has been applied?* Notice the improvised tourniquet. Tourniquet used today not developed until approx. 2010.
- Blunt trauma is caused by external object which does not penetrate the skin. Examples of mechanisms that cause blunt trauma can include road traffic collision (RTC) - vehicle v pedestrian, a fall from height, sports injuries and blast injury (although can also cause penetration trauma)
- Penetrating trauma are injuries caused by projectiles which penetrate the skin. Examples of this type of trauma can include stab, gunshot and blast injuries (shrapnel).
- *Forces of impact depending on the method of travel and the motion of which the human body is forced or sent.* Impact can travel through the skeleton. Image shows RTC sudden force on occupant first being thrown forward causing impact on steering wheel or windscreen, then head injury from being thrown back. Always look for the bullseye on the wind screen. Furthermore – get a history or understanding of what happened. Eg spinal injury caused from jumping onto a hard surface without bending legs to take impact letting the force travel up.

7.4 Anatomy and Physiology

- *Very much like a car mechanic, you need understand what's inside before you can understand what the problem is. Imagine trying to understand a problem without opening up the bonnet of your car!*



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Next 12 slides should enforce your previous understanding of the human body and its systems.

- The skin is the largest organ in the body. Average surface area of 2m^2 - weighing around 5 kg. Two main layers include the *dermis & epidermis*. Wounds vary massively in severity & *basic treatment is key*.
- Discuss main regions of the body. Good for describing where injuries are/were, including stab wounds, bruising etc. *"My patient has multiple stab wounds to the abdominal and pelvic regions!"*.
- Skeletal system. No requirement to discuss the make up of bone or degenerate bone diseases here as is mentioned in special circumstances. Identify *long bones* and flat bones on the diagram. Also highlight the *axial (or central) skeleton (highlighted in blue)* and the *appendicular skeleton*. Bones get old, they can bend, they can break but with enough force they can shatter. *A break or a fracture is written as # on patient documentation*.
- Neck of Femur (*aka the NOF or patient has a NOF*). Describe anatomy of image. Notice the shortening and rotation caused.
- Mid shaft of femur
- X2 images showing an upper then a lower tib/fib fracture. Discomfort and pain associated from any break however open fractures have a higher risk of infection. Also longer bones can cause internal bleeding from surrounding blood vessels.
- Blood vessels - Remember from GCSE biology... the circulatory system comprises of arteries, veins and capillaries. Explain in brief what each one is made of and what it carries.
- Bleeding – encourage candidates to explain each picture as verbal confirmation they can recognise each type of bleeding.
- Wounds - encourage candidates to explain what may have caused them. (REF First Responder, Care Essentials, Chapter 16, p. 176 & 177).
- Shock – is defined as... *"a life-threatening manifestation of circulatory failure. Circulatory shock leads to cellular and tissue hypoxia resulting in cellular death and dysfunction of vital organs."* (REF) inevitably causing loss of consciousness, comma then death.
- The main recognisable symptom of shock from Trauma is blood loss. The recognisable observation of blood loss is low blood pressure. Other symptoms include rapid, shallow breathing; cold, clammy skin; rapid, weak pulse; dizziness, fainting, or weakness. *This is all caused by the body trying to perfuse tissues more – pumping blood faster (what's left of it) and trying to get more oxygen in quickly.*

7.5 Treatment

- *The Big 'C'* - known as major bleeding, catastrophic bleeding, major haemorrhage or in the US massive haemorrhage. It all means the same thing. Usually, an arterial bleed that if left untreated could cause unconsciousness and death within minutes.
- All uncontrolled bleeding is eventually Catastrophic. *Always remember the basics - the 3 P's of First Aid, most likely taught on every first aid course ever delivered... preserve Life, prevent worsening, promote recover.*
- Let's return to our friend from earlier - the patient at the Boston bombings (GRAPHIC WARNING). *As you can see...* (describe image).
- Bleeding assessment - Internal bleeding: concealed within the body cavities or along long bones. These are hard to detect at an early stage. Bruising is a sign that happens over hours.



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External bleeding is visible and should be detected instantly if catastrophic but during your primary and/or secondary survey if not.

- As covered earlier - arterial bleed is higher pressure, pulsing/spurting and bright red in colour (Why?). A Venous bleed is of lower pressure, constant flow and darker red (Why?) Capillary bleed is very low pressure, blood oozes out. Estimating blood loss is very difficult, remember to check for signs of shock which may give an indication of blood loss. Remember, *"If a pulse is fast and weak, suspect a leak!"*
- Management of Cat Haem – follow algorithm.
- Haemorrhage control methods – describe each
- **DEMO** - Tourniquet aka Combat Application Tourniquet (CAT). A tried and tested method that has been around for centuries but only since the Afghanistan conflict that it was *developed by the military and made it's way into civilian pre-hospital care, shark bite kits in Australia and forestry and tree surgery kits.*
- Improvisation methods – reference to direct and indirect pressure (pressure points)
- Management of non-cat haem. Such as...? Basic treatment methods to follow (REF *Further reading: First Responder, Care Essentials Chapter 16, p174 & 175*).
- **DEMO** - Trauma Fix and Olaes Modular bandage both in the CFR kit.

7.6 Injuries

- **Head Injury** - Manage CABCDE. Consider c-spine control with airway management and apply jaw thrust. *From a head injury, a patient could suffer a traumatic brain injury (TBI) include Road Traffic Collisions (RTC), direct blow to the head, fall from height and sporting activities.*
- CFRs will not be dispatched to RTCs however you may happen across one or be sent to a patient *'not-breathing on the pavement' or 'cardiac arrest on sports field'.* Both could be associated to a TBI.
- Worst outcomes for head injury are associated with penetrating head injuries, non-accidental injury in children under 5, pedestrians and pedal cyclists (due to being thrown and surrounded by hard surfaces) and similarly ejection from a vehicle.
- *What are the most common signs and symptoms of a head injury?* (see slide)
- **Spinal Injury** – (REF First Responder, Care Essentials, Chapter 16, p.180) More specifically spinal cord injuries (SCI) are rare, with around 1000 new cases per year. *In adult major trauma, 10% will have a spinal fracture/dislocation, but less than 2% will have a SCI. Falls are the most common cause of SCI.*
- *What are the most common risk factors?* These include being male due to higher risk taking, being under 45 years of age, having a LOC, accompanying chest injury from a range of dangerous mechanism including falling greater than 2m, sports injury and RTCs [REF].
- *Signs & Symptoms of a spinal injury may include...?*
- The spinal column explained with levels of paralysis, which could be *permanent or temporary depending on the injury, any intervention and rehabilitation.*
- Managing a Spinal Injury – Approach in the usual DRCABCDE approach. If complaining of pain, weakness, or numbness following trauma to the head of neck along with any other signs & symptoms previously mentioned, *apply manual in-line stabilisation (MILS). Apply a jaw thrust if airway becomes compromised.* Keep the patient as warm as possible as they may not be able to shiver. This is discussed further in 'The Big E'.
- *The more hands the better with a potential spinal injury so stay around to assist the crew.*



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- **Chest Injuries** – Account for 25-50% of all trauma. A contributing factor to half of the deaths through injury. Major causes are RTCs, industrial accidents and sporting injuries.
- *The most common problem associated with severe thoracic injury is hypoxia – Why?* Due to the combination of bones, muscles and organs easily damaged in such a large surface area. These are vital for effective respiration and oxygenation.
- **Pneumothorax** - This can be a complete lung collapse or a collapse of only a portion of the lung. Can be caused by blunt or penetrating trauma to the chest wall. This can also be caused by certain medical procedures, or damage from underlying lung disease. It may also occur from prolonged coughing or for no obvious reason but it doesn't help to be tall! *Three types of Pneumothoraxes are Closed, Open and Tension* (Explain each via diagram).
- *Signs and Symptoms include* pleuritic chest pain (sharp pain, increased with breathing) air hunger, signs of respiratory distress or failure, rapid breathing (Tachypnoea), rapid pulse (tachycardia), unexplained reduced or falling oxygen saturation levels, agitation, tracheal deviation (*NB not in that order*)
- **Tension Pneumothorax** – This is where the pneumothorax becomes a life-threatening condition where *the continuous entrance and entrapment of air into the pleural space or cavity compressing the lungs and heart.*
- **Haemothorax** - Can be caused by blunt or penetrating trauma to the chest wall, but blood forms up inbetween the lung and the chest wall instead of air. *The continuous build-up of blood* in the pleural space or cavity compresses the lungs and heart.
- **Pneumothorax v Haemothorax** – *Sounds complicated but does anyone know what this is?* Just a combination of air and blood.
- **Flail Chest** – An acute chest injury caused by direct trauma to the ribcage. It's a life-threatening medical condition where the *injured segment of the rib cage breaks becomes detached from the rest of the chest wall. Can cause a Pneumothorax, Haemothorax or both.*
- **Treatment of Chest Wall Injuries** – Assure to allow the patient to adopt a position that they find most comfortable to breathe. *Seal open chest wound* (taped on only on 3 sides to act as a valve) with a non-occlusive dressing. If multiple wounds, *assure only one 3-sided dressing per lung.*
- **Fractures and dislocations** - A fracture is a break or multiple breaks in a bone. When a fractured bone breaks through the skin it becomes an open fracture. *Can anyone name any other types of fractures? Here are the definitions of the 6 other types of fractures.* Both are extremely painful. Reassure the patient. Keep them comfortable. Give analgesia if you are allowed or under advice from a higher clinical grade. Assure they get oxygen if significant trauma. Keep warm.
- Splinting is a technique that can be adopted to relieve pain and avoid further injury (REF).
- **Burns** - A burn is an injury caused by energy transfer to the bodies tissues, causing tissue damage (necrosis) and the associated inflammatory reaction. *Burn categories include: Chemical; Cold; Electrical; Friction; Radiation; Thermal.*
- It is estimated there are 250,000 burn injuries resulting in 175,000 visits to the A&Es annually in the UK. Burns most commonly occur in the home. *Causes include hot drinks, boiling kettles, commonly when spilt – often involving children. Petrol ignition – often involving adults. Bathing and radiators – often involving the elderly.*



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Total burn surface area (TBSA)

Also explain the rule of 9's principle. Also utilise the Mersey Burns app, previously downloaded by candidates. A first degree burn shows reddening and swelling of the skin. *Second degree burn or partial thickness* appears red, blistered with possible swelling and pain. *Third Degree burn or full thickness* appears white or charred, can damage tendons, muscle and bone. Not as server pain as imagined as nerve endings are destroyed.

- **Types of Burns** – demonstrate the damage and thickness of the burn on the tissue from diagram.
- **Burns Pneumonic** – Used to document or *explain burns* (as diagram shows)
- *Time critical features include* any major CABCADE problems, burns to the airway, history of hot air or gas inhalation, respiratory distress, evidence of burns encircling the neck, torso or limb, significant facial burns, burns more than 15% in adults or 10% in children. Lastly burns in the presence of other major injuries.
- Urgently update CCC if you identify any of these clinical features.
- **Smoke inhalation** – is responsible for 80-90% of fire related fatalities. *Signs of inhalation injury include:* Burns to the face, neck or upper torso. Singed nasal hair. Soot in sputum or oropharynx. Dyspnoea, hoarseness, cough or stridor. Cyanosis or altered level of consciousness. *Remember Carbon Monoxide* poisoning would show false oxygen saturation readings (usually 100% SpO₂).
- **Management** - *Firstly stop the burning process. Cool. Avoid risk of Hypothermia.*

7.7 The Big “E”

- **Expose** – Why is it imperative to conduct a thorough secondary survey? What would you be looking for?
- **Environment** – How may the environment affect the patients condition?
- **Exposure** – What could you do to protect the patients condition from deteriorating, especially if outside.
- **Hypothermia** – Causes and signs to look out for in a patient exposed to the cold.
- During hypothermia the duration of hypoxia is a critical factor in determining the victim's outcome. Therefore, *oxygenation, ventilation and perfusion should be restored as rapidly* as possible. Immediate resuscitation at the scene is essential for survival and neurological recovery after a drowning or submersion which would cause hypothermia.
- **Lethal Triad of Polytrauma** – This is a medical term describing the *combination of hypothermia, build up of toxins and acid in the body, and the bloods ability to clot* (clotting factor). This combination is commonly seen in patients who have sustained severe traumatic injuries.
- **Heat injuries** – the difference between heat exhaustion and heat stroke.

7.8 Trauma kit

- What kit and equipment could we use for any trauma patient. What do we have at our disposal?

Take simple steps.

- **Management & Treatment of a trauma patient** - What can you see being done for this patient, that is part of the treatment process, all included in the CFR scope of practice.



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7.9 Understanding Pain

- **Pain** - *How can we measure or monitor pain?* Wong-Baker score. Smiley faces score. Pain Score 0-10. Facial expressions, activity, guarding, groaning as well as many other non-verbal descriptors and body language.
 - **Paracetamol** – Easily bought over the counter and taken by most people without any problems. Very few side effects in the correct dosage and interval. For adults, it can be taken to treat aches and pains as well as being an anti-pyrexia. Can be the start of an analgesic regime for mild to moderate pain, stepping up if needed.
 - **Penthrox** – Brand name for the drug Meth-oxy-flu-rane. Self-administered through a green-whistle-like device, it's an inhaled medication primarily used to reduce pain following trauma. Onset of pain relief is rapid and of a short duration. Now part of the CFR analgesic regime for moderate pain relief. Only recommended in those who have a normal level of consciousness and stable blood pressure and heart rate. Further online-training package required.
-
- 7.10 Special Circumstances – Elderly
 - Paediatrics
 - Traumatic Arrest

Assessment

MCQ/Knowledge Check

Visual Scenario

This can be delivered as an exercise where time is allocated to create an assessment, management and treatment plan for each scenario and patient. This can be carried out as small group activity, as individual or together as a cohort becoming a group discussion.

“You are on shift with a CFR colleague and are called to this scenario. What would you look out for, what might you find and what would you do to treat this patient?”

Scene 1 - Burns victim – Pouring petrol on a BBQ with flashback

Scene 2 - Fragmentation victim – Explosion from gas canister. Shrapnel and blast injuries.

Scene 3 - Wet floor victim – Fall backwards onto hard surface, head injury reduced GCS.

Scene 4 - Building Site – Fall from ladder (own height)

Time allocated will vary on how in depth the trainers want feedback to be. Findings and clinical observations can be created to suit the groups understanding of the subject by the trainer. Correct answers will follow the DRCABCDE approach with a secondary survey explanation of what treatment will be given. The group should conclude with an ATMIST handover.



Final Scenario(s)



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To conclude the module and to confirm understanding of the subject, the trainer can deliver a trauma related scenario. This can be done in a group, small teams or as an individual, depending on allocation, resources, live patients and location.

CasSim items are encouraged to provide a more realistic scenario for candidates.

Candidates will be reminded simply to follow the DRCABCDE approach. There is no pass or fail to this scenario other than treating any catastrophic haemorrhage found, provide high flow oxygen, dress wounds, keep warm and provide a handover.

It is advised the trainer/assistant to wear a TRAINER high visibility jacket for assurance to passers by that this is a scenario. The trainer is also advised to alert any staff in the vicinity to avoid unnecessary panic or 999 calls.

