Contents

Enhanced D13 Medical Training

D13 Enhanced Medical Training is the advanced level of the D13 Fundamental Training, the course contains more advance medical knowledge and treatment that enhanced officers may conduct.

D13 Enhanced Officers have a increased Scope of Practice and may conduct more advanced life saving procedures and recognize and treat illnesses and injuries on an advanced clinical level compared to the D13 Fundamental.

D13 Enhanced is the highest level of Medical Training an Authorised Firearms Officer may undergo and they are expected to keep the highest of standards when providing treatment of casualties.

This course is based on the standard set out by the College of Policing regarding the different Medical Training for Police Officers in the United Kingdom.

Please note that sharing this information with people who have not yet set the course will result in action being taken towards yourself.

Contents of Training - Contents

Contents of D13 Firearms Enhanced Training

- Contents of BELS Kit
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Kit - Contents

Every firearms car is equipped with the same Ballistic Emergency Life Saving kit

Triangular Bandages	Triangular bandages can be used as large dressings, as slings to support a limb, or to secure a dressing in place.	**Oropharyngeal's**	Conform to the tongue and displace it away from the posterior pharyngeal wall
Pressure Dressings	Bandage that's designed to apply pressure to a particular area of the body.	**Nasopharyngeal's**	Bypass upper airway obstruction at the level of the nose, nasopharynx or base of the tongue.
Military Dressings	Advanced fluid absorbency and protection.	**O2**	Oxygen Therapy
Tourniquets (CAT)	A tourniquet is a device that is used to apply pressure to a limb or extremity in order to stop the flow of blood	**O2 BVM**	Oxygen Bag-Valve-Mask ventilation.
Blast Dressings	quickly package traumatic amputations, burns and large pattern wounds with minimal effort	**Oximeter**	Measures SpO2
Chest Seals	Prevents air from entering the chest cavity.	**Lubricant**	Reduce friction between surfaces.
Gauze	Used for cleansing, packing, scrubbing, covering, and securing in a variety of wounds.	**Hand Sanitiser**	Sterilisation
Nitrile Gloves	Sterile use for any medical aid.	**Scissors**	To cut open clothing, vests and other materials.
Foil Blankets	Emergency blankets to provide warmth quickly.	**Eye Wash**	Removing particles, chemicals, or other substances from your eyes
Burns Dressings	Prevent infection.	**Suction Aspirator (Accuvac)**	Removing obstructions from the airway.
Pocket Mask	Alternative from mouth to mouth allowing germ and bacteria free.	**Assorted plasters and small bandages/dressings.**	Patches small wounds.

DR-C-ABC - Contents

- Danger -
  - Make sure you, the casualty and any bystanders are safe.
  - Don't put your own life at risk - one casualty is enough!
- Response -
  - Quickly check if the casualty is conscious. Gently shake or tap the shoulders and ask loudly "are you all right?"
  - Unconscious casualties take priority and need urgent treatment.
  - If an unconscious patient is on their back, the airway can be at risk.
- Catastrophic Bleeding -
  - Check for any major haemorrhage there is no point checking if the patient is breathing if they have no blood left in their body!
- Airway -
  - Identify and treat any life-threatening airway problems.
  - If the casualty is unconscious, tilt the head back to open the airway. *Beware of neck injury.*
  - When the airway is confirmed clear move onto breathing.
- Breathing -
  - Identify and treat any life-threatening breathing problems.
  - If the casualty is unconscious and not breathing normally, perform CPR.
  - When life-threatening breathing problems have been ruled out you can move onto circulation
- Circulation -
  - Identify and treat an life-threatening circulation problems.
  - When life-threatening circulation problems have been ruled out or treated, the primary survey is complete and you can now look for less serious problems using secondary survey (i.e. Broken Bones)

A rule of thumb when conducting primary surveys is that more often than not, a patient who is the quietest requires treatment first compared to the patient who is making a lot of noise. If a patient is screaming or making noise, we know they are conscious and breathing.

Scene Safety/Danger - Contents

As a first aider, it is your responsibility to secure the scene and make sure it is a safe area to do medical.

For example, if there is a shooter at large, it is your priority to make sure the scene is secure before starting any D13; if you don't, you will put yourself at risk of becoming a patient.

If you are in a big team and deem that medical care is needed as soon as possible, you can allow two members of the team to start medical care while the rest of the team clears and makes sure the scene is safe.

Of course, it all depends on how many AFO's you have at the time and how many you can reserve to perform medical, while the rest are making the scene safe.

At all times, your safety is the number one priority, and making sure you are safe to perform any type of medical procedure is crucial.

Understand Scene - Contents

- **What happened?**
- **Further Danger?** - Can it happen again? Is there risk of further injuries?
- **Can you cope?** - Do you need colleague, public or medical staff assistance?
- **Number of Casualties?** - How many are injured, can you categorise them into priority patients?
- **Emergency Services?** - Consider METHANE principles i.e Exact Location, further assistance?
- **Who needs help first?** - Assess ALL casualties using primary survey, if you have assistance then direct them on what to do and to who first. This can be just passing information to a medical professional.
- **Sterile environment** - If necessary, create a scene and request local units to assist with cordoning off areas of danger and to prevent public attention from becoming unmanageable. Create an easy access/egress route for other services.

Primary Survey - Continued - Contents

The body needs constant access to oxygen to survive.
The human brain cells begin to die if they are starved of oxygen for 3 to 4 minutes.
The priority of treatment is ensuring oxygen gets into the blood and that the blood has the ability to carry the oxygen to the brain.

Recognising life-threatening conditions

A condition is deemed life-threatening if it interferes with the supply of oxygen making its way around the vital organs of the body. If the body has a lack of oxygen, it is called **hypoxia**.

The human body's emergency response-
If the body detects low oxygen levels, a hormone called ADRENALINE is released, this -

- Diverts blood away from the skin and stomach
- Diverts blood towards the heart, lungs and brain
- Increases the heart rate
- Increase strength of heartbeat and blood pressure
- Opens the air passages in the lungs

Patient Assessment and Triage - Contents

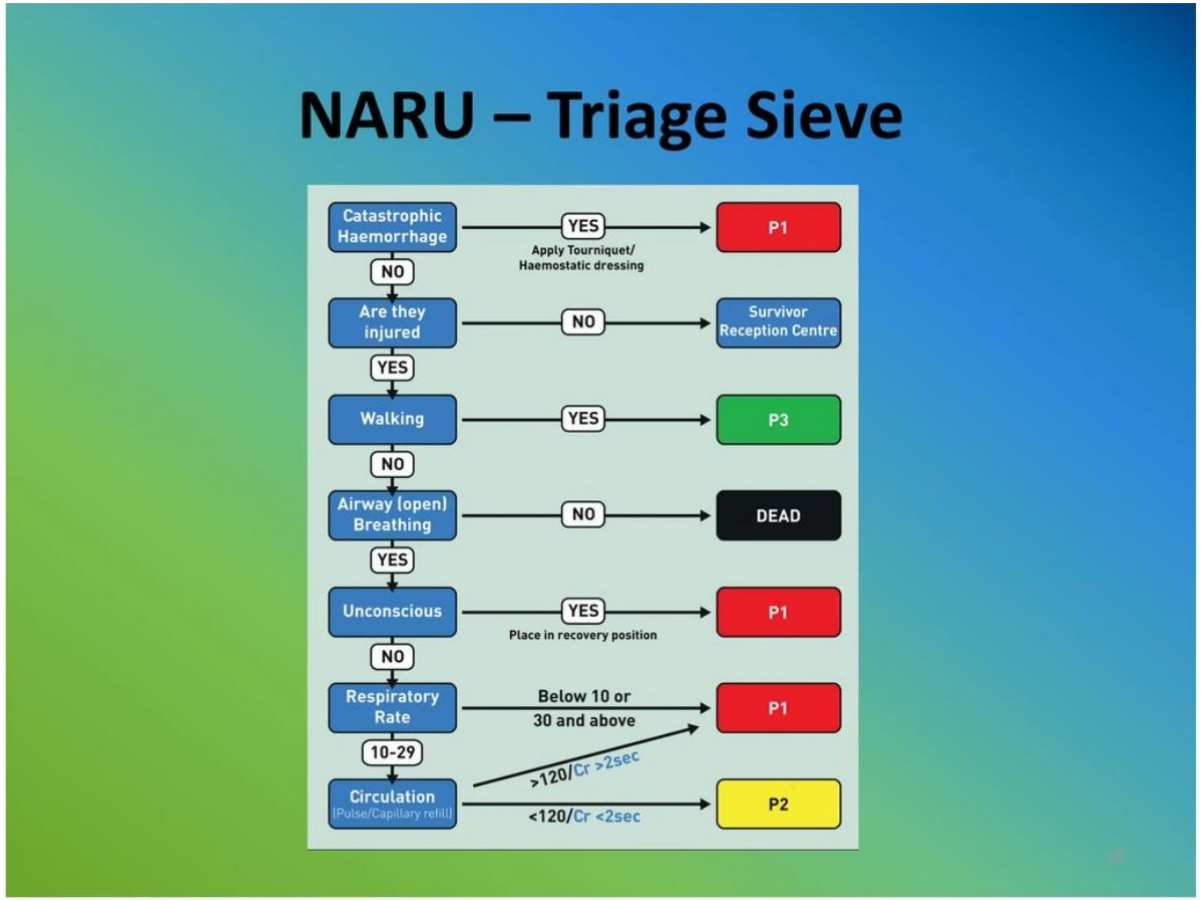
On the right-hand side is an image of a Ten Second Triage system utilised by the LAS, it allows us to categorise patients into priority categories.

P1 - UNCONSCIOUS NOT BREATHING

P2 - CONSCIOUS BUT HEAVILY INJURED

P3 - WALKING WOUNDED

When you have scene with loads of injured member and very limited medical trained staff you should refer to this template and start a triage to make sure the people that are in need of medical get it.



Basic Vitals - Contents

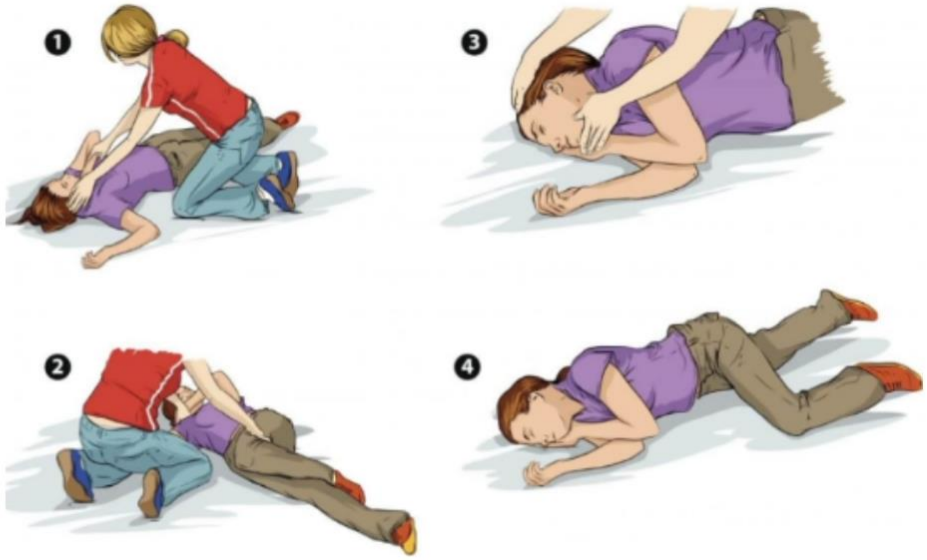
Basic Vital Signs

- Body Temperature
  - Natural body temperature is typically between 36.5 - 37.5 degrees celsius
    - Anything above the person may be hypErthermic
    - Anything below the person may be hypOthermic
  - To get a rough temperature you may use the back of your hand, does the person feel abnormally hot or cold?
- Pulse Rate
  - A healthy pulse ranges from 60 - 100 BPM
    - To test place 2 fingers firmly on the lower neck to locate the pulse, count for 15 seconds and multiply by 4
    - Alternatively use an oximeter
- Respiration Rate
  - A healthy respiration rate ranges from 12 to 16 breaths per minute
    - Measure by counting how many times the chest rises and falls over 60 seconds
- Blood Pressure
  - A normal blood pressure is considered to be 120/80
    - You will not have access to blood pressure cuffs, but it is worth knowing.
- Blood Oxygen Saturation (Sp02)
  - A healthy oxygen saturation level is 94% - 100%
    - You can measure this using an oximeter
      - If someone's oxygen levels are low you may administer oxygen through a mask

Recovery Position - Contents

When you come across an unconscious casualty which is breathing and show no other life threatening injuries but is presenting a risk to aspirate or is aspirating. You should place them in the recovery position to maintain a clear airway and prevent pulmonary aspiration.

Note:
If you suspect your casualty has a spinal or neck injury, **DO NOT PLACE** the casualty in the recovery position as that can increase the risk of spinal and neck injury worsening.



Abdominal Thrusts

Abdominal thrusts also known as the Heimlich Maneuver is a way to treat someone choking on a foreign object.

If you come across a casualty which is choking on a foreign object such as food you should perform the heimlich maneuver to remove the foreign object they are choking on.

Head Tilt/Chin Lift - Contents

When you come across and unconscious casualty which is breathing and show no other life threatening injuries or neck injuries, Performing the Head Tilt/ Chin Lift is an easy way of securing a casualty's airway and preventing the tongue from obstructing the airway.

Note
If the casualty is aspirating or at risk of aspirating they should be placed in the recovery position or advanced airway management should be considered to prevent the casualty aspirating any blood or vomit into their lungs and lower airway.

Monitor Breathing - Contents

Look, listen and feel for normal breathing. This should take a maximum of 10 seconds.
A casualty who is barely breathing, taking infrequent or slow and noisy/agonal breaths is not breathing normally. Immediately PREPARE to start CPR. A short episode of a seizure occurs when the heart stops. If this happens, check again for breathing and prepare to start CPR.

If the patient is breathing normally place them in the recovery position.
If breathing is absent or abnormal call for LAS and send for a defibrillator.
The normal respiratory rate for an adult at rest is 12 to 18 breaths per minute. A respiration rate under 12 or over 25 breaths per minute while resting may be a sign of an underlying health condition.

BVM - Bag Valve Mask - Contents

What is a BVM?

A BVM is a bag-valve-mask.

This basic airway management technique allows for oxygenation and ventilation of patients when SpO2 levels are low (Below 94%) or if the person requires assisted breathing due to not being able to breathe properly.

Bag-valve-mask (BVM) ventilation is the standard method for rapidly providing rescue ventilation to patients with apnea or severe ventilatory failure.

Please watch this video on how to use an BVM correctly:

https://youtu.be/rOZVljYnmxc?si=yrztpfQP2fGHOmWQ

When supplying O2 through the mask you should use the correct amount during the usage.

Please look at bottom of slide for correct amount of oxygen depending on the situation.

Make sure you allow the reservoir bag to completely fill before and between ventilations

You should administrator 12-15 litres per minutes if it is a traumatic/major injury

8-12 if oxygen levels are below 94% but the patient is in a healthy condition.

4-8 if the patient is struggling to breathe slighty. It is known as reassurance and general therapy.

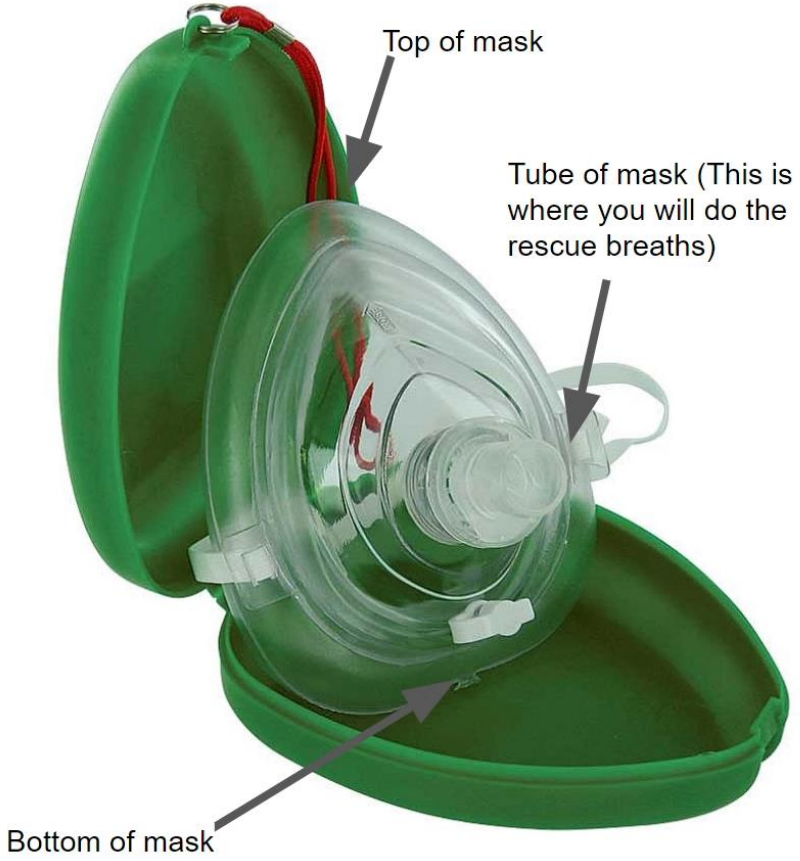
Pocket Mask - Contents

Pocket Masks are essential pieces of kit.

Theses are used when performing CPR. You place the mask over the mouth to protect yourself from any germs or diseases that the person may be carrying. In short terms it acts a filter to protect yourself.

How to use a pocket mask:

Step 1 is to remove the mask from the case. (As per MET policy you are to wear blue gloves when doing any medical)
Step 2: Place the mask on the patients face. Start with putting the flat bottom side of the mask in between the PTs chin and lower lip and while lowering the top of the mask over the nose of the person. (Of course make sure the tube bit is point towards you and not the PTs face)
Step 3: When you have to perform 2 rescue breaths you will make a tight seal around the tube and blow into the mask while looking for a chest raise. You will remove yourself fully from the mask to take a deep breathe again and then repeat the blow.



Nasopharyngeal Airway (NPA) - Contents

A Nasopharyngeal Airway is a type of artificial airway. An NPA is a flexible rubber tube which goes through the nose and ends at the base of the patient's tongue. NPA's are also a method to stop airway blockage. They are normally tried either before an OPA or in conjunction with an OPA. Unlike the OPA the NPA does need lubricating before insertion to avoid damage to the nose.

N.P.A.

Nasopharnygeal Airway

STAFFORDSHIRE UNIVERSITY

Key Points

Sizing (relative to patient size)
- average male = normally 7.0
- average female = normally 6.0

Lubrication - ensure gel does not go over open ends

Have suction ready in case of bleeding

Use safety pin or washer (if supplied)

Insert with bevel facing nasal septum
(rotate where appropriate)

Oropharyngeal Airways (OPA) - Contents

OPA's are typically used in situations where the patient is unconscious and their tongue is rolling back, as this blocks the airways. Securing the airways is one of the first things you should be looking at doing when arriving on scene. In some instances insertion of an OPA may not be possible due to a airway blockage that would need removing first. To insert an OPA you need to:

- Measure for correct size The OPA is sized by measuring from the center of the mouth to the angle of the jaw, or from the corner of the mouth to the earlobe.
- Open the mouth. The mouth is opened using the "crossed or scissors" finger technique.
- Insert the OPA without pushing the tongue back The OPA is inserted in the patient's mouth upside down so the tip of the OPA is facing the hard palate. As the airway is inserted it is rotated 180 degrees until the flange comes to rest on the soft palate. The OPA may be inserted with the pharyngeal curvature if a tongue blade is used to depress the tongue.

O.P.A.

Oropharnygeal Airway

Key Points

Sizing - angle of jaw to level of incisors

Check for foreign bodies prior to insertion - Suction if required

Invert - Insert - Rotate - Locate

Be aware of gag reflex
- remove immediately if reflex intact

iGEL - Contents

iGEL - This is used if a patient is in cardiac arrest and requires a large airway adjunct. It gives the patient less complications when carrying out resuscitation procedures and will massively assist LAS upon arrival. Can be used with a BAG/VALVE/MASK
(Patient unconscious, Cardiac Arrest)

- Ease and speed of insertion
- Reduced trauma
- Superior seal pressure
- Gastric access
- Integral bite block
- Non-inflatable cuff

Suction (ACCUVAC) - Contents

Suction Unit

If a casualty's upper airway is blocked by blood, puke, saliva or any other fluid it is important that fluid is removed to secure the casualties airway.

Enhanced D13 Officers carry with them a Mobile Suction Unit which can be utilized to suction out any fluids in the airway. When determining how long to suction you should asses how much fluid is obstructing the airways.

Suctioning is performed until the blockage is removed and airways are clear.

AED Usage - Contents

AUTOMATED EXTERNAL DEFIBRILLATOR

A life-saving technique everyone should know

Use an AED in a safe environment. Check the area for wet surfaces, metallic surfaces and flammable gases.

1

2 **Turn on the AED** and follow the voice prompt.

3 **Place the AED electrode pad** one at a time, firmly to the bare chest according to the diagram.

4 When the AED starts analysing heart rhythm, no one should touch the casualty. **Spread both arms out and shout "Stay Clear".**

Look around before/when pressing the shock button.

"Shock advised"
- Shout "Stay Clear"
- Ensures no one is touching the casualty before pressing the shock button.
- After shock is applied, resume chest compressions, and follow the AED prompts.

"No shock advised"
Resume chest compressions and follow the AED prompts.

Note: Don't worry. You can't accidentally shock a person, as the AED is programmed to shock only when needed.

STOP chest compressions when:
- AED analyses heart rhythm
- The casualty wakes up and/or regains normal breathing
- The paramedics take over

www.myheart.org.sg

Singapore Heart Foundation
Your Heart We Care

CPR - Contents

When a patient falls into cardiac arrest (Not conscious and not breathing), it is critical for practitioners to intervene and start high quality chest compressions - as per the Chain of Survival. Compressions should be in the middle of the chest and pressed down 5 to 6 cm with a rate of 100 - 120 beats per minute.

You should perform Basic Life Saving in the respect of:

- Continuous compressions
- Pumping a BVM for a rate of 10-12 pumps per minute
    - A BVM simulates a 1 second breathe

If there is no BVM setup please perform 30 chest compressions and then 2 rescue breaths and repeat.

You should stop chest compressions if:

- There is signs of life i.e Purposeful movement, making sounds, eye movement
- Obvious Death i.e Rigor Mortis (“stiffness of death”) when all muscles are stiff to the touch, Blue in colour (“Livor Mortis”), injuries incompatible with life (major trauma)
    - Both Rigor and Livor Mortis are both signs that the person may have been deceased for a long period of time
- Physical fatigue
- A more advanced practitioner instructs you to

Please watch 00:37 to 01:04 to learn how to perform CPR chest compressions

https://youtu.be/BQNNOh8c8ks?si=ubV_B9F52_JF19JS

ROSC - Contents

Return of Spontaneous Circulation

ROSC, Return of Spontaneous Circulation, is the resumption of sustained perfusing cardiac activity associated with significant respiratory effort after cardiac arrest. Signs of ROSC include:

- Moving
- Coughing
- Breathing
- Palpable Pulse
- Measurable Blood Pressure

The chain of survival is integral in ensuring return of spontaneous circulation.

Post Cardiac Arrest Syndrome. Patients who have experienced ROSC after cardiac arrest, regardless of the setting, have
a complex combination of pathophysiological processes that are described as post-cardiac arrest syndrome. Some examples to look out for include:

- Post arrest brain injury
- Post arrest myocardial dysfunction
- Systemic ischemia (Inadequate blood supply (circulation))
- Reperfusion response
- Persistent, acute, and chronic pathologies that may have participated in the cardiac arrest itself.

Circle of Life - Contents

The Circle of Life, or 'Pit Crew Model', is designed to bring efficiency, speed, structure and organisation with regards to regards to how the ambulance services manages out of hospital cardiac arrests.

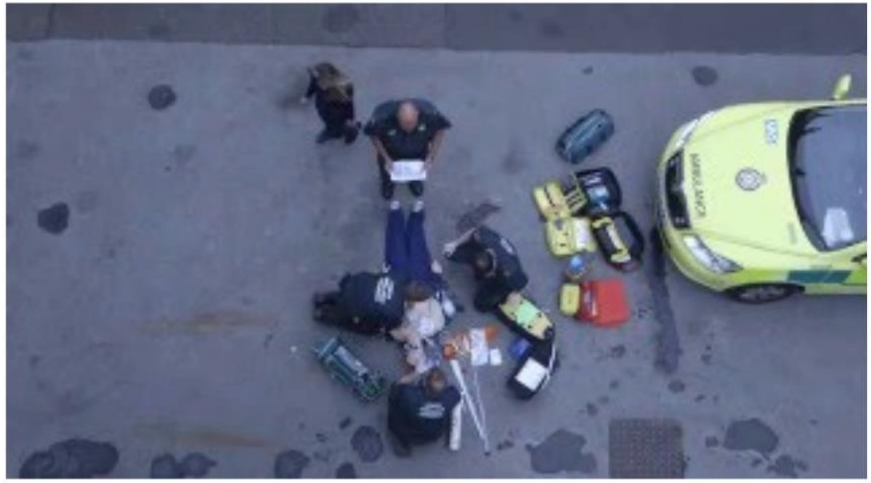
The model is designed by F1, with practitioners given specific working areas - ensuring that organisation and structure. It is therefore critical that the patient is accessible from 360 degrees. The positions are set out as:

- Position 1 (Head of Patient)
  - Initial Assessment
  - Commences CPR
  - Ventilates on/off cycle
  - Opens & mains airways
  - Two handed mask seal

- Position 2 (Right Side of PT)
  -Prepares advanced airways kit dump
  - Alternates chest compressions with bystander or position 3

- Position 3 (Left side of PT)
  - Operates AED
  - Alternates chest compressions

- Position 4 (Feet of PT)
  - Team Leader
  - Outside Circle
  - Provides direction
  - Assists where needed



ACVPU - Contents

The ACVPU scale is another easier way of determining a patient's level of consciousness and it stands for; Alert, Confusion,Voice, Pain, Unresponsive.

PT Handover and ATMIST - Contents

In order to ensure an accurate and complete handover to the ambulance services, the ASHICE mnemonic is standard;

- Age (If unsure estimate)
- Sex (At birth)
- History (How it happened)
- Injuries and treatment (Injuries sustained and anything you have done)
- Consciousness (using the AVPU scale)
- Extras (e.g. Medical Information)

A- Age
T- Time
M - Mechanism of Injury
I- Injuries sustained
S- Signs and Symptoms (Signs is something you see Symptoms is something a patients feels)
T- Treatment

SAMPLE - Secondary Survey - Contents

Secondary Survey (SAMPLE)

The secondary survey is completed by any clinician who is involved in treating the patient. The secondary survey allows clinicians to gather background information on their patient allowing for safer treatment and a faster diagnosis.

In the Secondary Survey its important that clinicians does a Head-To-Toe assessment of the casualty to assess for any other injuries missed during the Primary Survey

The Secondary Survey is easily remembered through the acronym **SAMPLE**:
Please note this is only used when PT is conscious and breathing.
S - Signs and Symptoms
A - Allergies
M - Medication
P - Past medical history
L- Last oral intake
E- Events of injury

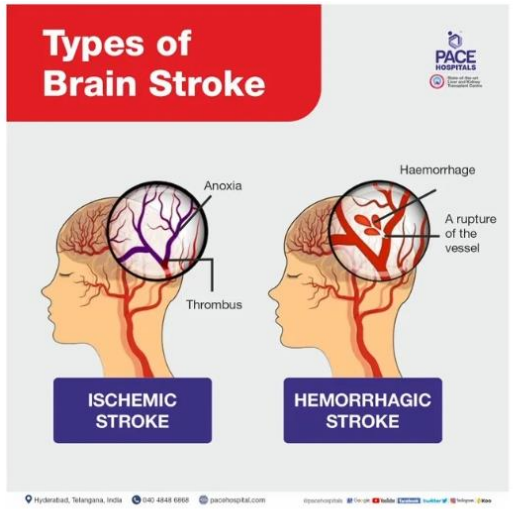
Stroke - Contents

Stroke signs & symptoms

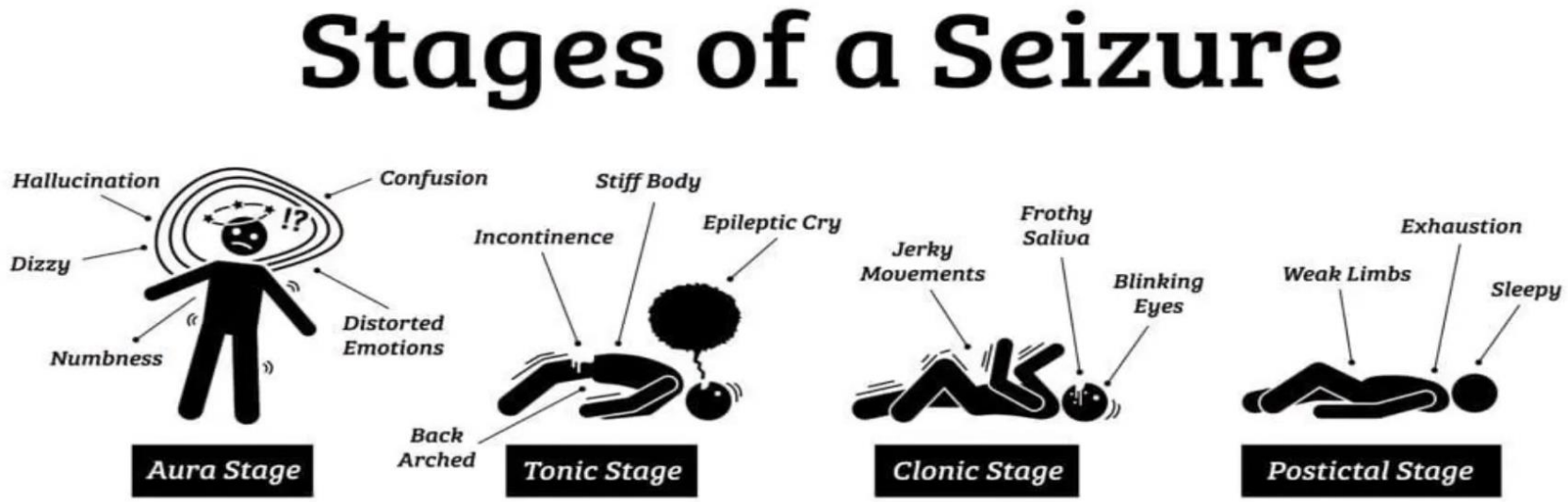
A stroke is when a bleed or blood clot located in the brain depriving it of oxygen which can lead to permanent damage such as loss of movement and difficulty speaking, therefore it is important to receive medical intervention as soon as possible to minimize the risk of permanent damage.

To recognize a stroke follow the steps lined up in FAST which is an easy way any clinician or member of the public can assess if a person is suffering from a stroke.

FAST Test
F - Facial Weakness and Droopiness (Ask the person to smile to assess if you see any droopiness in the face)
A - Arm or Leg weakness and dropiness (Ask the patient to hold their arms out and assess if one is weaker than the other)
S - Speech being slurred or the patient as difficulties speaking (Ask the patient a question and assess if the response is slurred or if the patient has difficulty speaking)
T - Time is off the essence when dealing with a Stroke, LAS should be contacted immediately if a stroke is suspected so the patient can receive medical intervention.



Fits/Seizure - Contents



T: Turn the Person on their side **R:** Remove objects/glasses & loosen tight clothing
U: Use something soft under their head **S:** Stay with the person **T:** Time the seizure

TRUST

Anaphylaxis - Contents

What is anaphylaxis?

Anaphylaxis is commonly known as anaphylactic shock which is a severe, potentially life-threatening allergic reaction that can develop rapidly.

Signs of anaphylaxis include:

Airways:

- Shortness of breath
- Breathing difficulties
- Being unable to swallow

Skin:

- Hives
- Redness
- Itchy rash
- Swelling

Stomach:

- Cramps
- Diarrhea
- Nausea and vomiting

Heart:

- Drop in blood pressure
- Increased heart rate
- Weak pulse
- Feeling faint

As an AFO there is not much that you can do on the roadside.

You provide oxygen treatment through the BVM.

You can keep an eye on the person making sure they remain comfortable and still conscious and breathing.

If they do fall unconscious and stop breathing you perform CPR until LAS arrive and advise you otherwise.

You can also use an EpiPen but only when the person has one in their possession with THEIR name on it which has been prescribed by a doctor. To use this follow the instructions on the side of the EpiPen. (You **CANNOT** use any other one that does not have the persons name on. Example, a bystander has one that offers to let you use. You kindly refuse as you can not be sure it is the right one prescribed for the person.) There is further information on the next slide.

Anaphylaxis EpiPen and Minor Bleeds - Contents

If a person who is in anaphylaxis shock is in a condition where they cannot self administer an epipen then an officer may administer it. This must be the casualty's own Epi pen which has been prescribed to them. A second epipen may be used if the first pen doesn't succeed, A second pen is used if there is no improvement or the casualty gets worse within 5-15 minutes. 2 Pens is the max dosage without medical approval.

Schedule 19 of Human Medicines Regulations 2012 allows officers and staff to administer adrenaline 1:1000 via an epipen auto injector in the case of anaphylactic shock

Minor bleeding:
The main issue when dealing with a minor bleed is infection control. Gloves should be worn and the casualty's wound cleaned with water or saline/eye cleaning fluid. A clean dressing or plaster should then be applied.
Remember nitrile gloves are to be used when cleaning around the wound. Any gloves etc which have been used to handle a casualty must be treated as clinical waste and dealt with accordingly.

Asthma/Hyperventilation - Contents

Asthma Attack

Asthma is a chronic lung disease which causes muscle tightening around the airway making it difficult to breath.

People suffering from Asthma generally have an inhaler prescribed to them by a physician which they can utilize when suffering from an Asthma attack

Symptoms that may occur during an asthma attack;

- Shortness of Breath
- Coughing
- Wheezing
- Chest Tightness

When coming across a patient suffering from an Asthma attack it's important to stay calm and assist the person getting their inhaler out, if the person does not carry an inhaler on them contact LAS and start to administer Oxygen to assist the patient with their breathing until LAS can arrive and provide treatment.

Hyperventilation

Hyperventilation - Fast/deep breathing, dizziness or faintness, cramps in hands and feet, tight chest, flushed skin, pins and needles, potentially unconsciousness up to 30 seconds. Treat by reassuring but firm, move to a quiet area and explain what's happening, coach their breathing, if prolonged attack call 999.

Unstable Blood Sugar - Contents

Low Blood Sugar

Low Blood sugar often affects patients with diabetes, low blood sugar can be dangerous if not treated properly.

The signs of Low Blood sugar also known as Hyp**O**glycemia:

- Sweating
- Palpitations
- Tiredness
- Concentration issues
- Aggressiveness
- Unconsciousness (With very low blood sugar)

If you suspect a patient is suffering from low blood sugar, offer them something quickly to eat or drink that contains sugar, such as a sandwich, bar or fizzy drink. This will lead to the blood sugar levels increasing fast and the person will feel better within minutes.

High Blood Sugar

High Blood sugar often affects patients with diabetes, high blood sugar is treated using Insulin which can either be administered by a pump or a injector which the patient carry on themselves. If you suspect a casualty is suffering from High Blood Sugar assist them with taking their insulin.

The signs of High Blood sugar also known as Hyp**E**rglycemia:

- Drowsiness
- Tiredness
- Increased thirst
- Increased Urine Production

Poisoning - Contents

Poisoning

When someone has ingested a poisonous or toxic substance or inhaled toxic fumes or substances its important for clinicians to take initial steps in treating the casualty. If a casualty is suspected to be poisoned request LAS immediately so proper intervention can be given to reverse the effects of the poison.

Symptoms of poisoning:

- Being sick/Dizziness
- Palpitations
- Difficulty breathing
- Seizures
- Unconsciousness

If the casualty is still conscious ask them to remain where they are if safe and wait for LAS, Treat any potential symptoms such as Breathing difficulties. Monitor the casualty until LAS arrives to begin treatment, try to ascertain what form of substance or toxin the casualty has ingested or inhaled and relay it back to LAS per Patient Handover.

If the casualty is unconscious or convulsing take appropriate actions in securing their airway and protecting the casualty for further injury.

If the casualty is suspected of inhaling a toxic substance, take appropriate actions as per DR<C>ABC and seek CBRN(e) before approaching the casualty.

Hypothermia - Contents

Hypothermia

Hypothermia is a condition of which the body's core temperature has been lowered due to prolonged exposure to cold elements. During hypothermia the body loses more of its heat than it can create and therefore leads to the temperature being lowered.

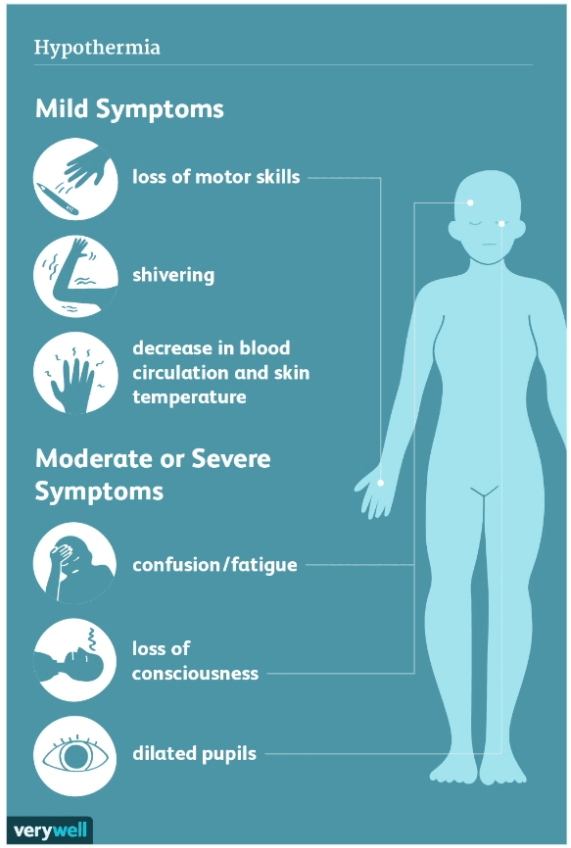
Hypothermia is a life threatening condition so it is important as clinicians to immediately treat a casualty suffering hypothermia to prevent injury or death.

If you come across a casualty and you suspect they might be suffering from Hypothermia look for these signs and symptoms:

- Shivering
- Exhaustion
- Fumbling hands
- Confusion and tiredness

As a Clinician it is important to prevent the casualties temperature dropping even more, if you encounter a casualty suffering from hypothermia move them into a building or place of shelter, remove any wet clothes and if possible give new warm clothes, put a Foil Blanket over the casualty to warm them up quickly.

If there is no shelter to place of warmth nearby, remove wet clothing and wrap them into a normal blanket and a foil blanket and try to keep the warm.



Heat Stroke - Contents

Heat stroke management

Heat stroke is caused by a number of different reasons such as external temperatures and physical exertion. During a heat stroke the body temperature rises rapidly and the body is unable to properly cool down.

Heatstroke can be life threatening due to the increased temperature in the body so its important for clinicians to treat and manage a casualty with a heat stroke.

Symptoms of a heat stroke:

- Confusion
- Very high body temperature
- Increased Sweating Seizures
- Unconsciousness

When treating a casualty with heat stroke remove any excess clothing such as a Jacket, Attempt to cool the casualty down by using cold packs or water, if they are hot outside move the casualty to cover or inside a cool building to provide shade. Make sure to hydrate the casualty by getting them to drink cool water.

Heat Exhaustion - Contents

Heat Exhaustion

Heat exhaustion is the bodies response to an extensive loss of water and salt and other electrolytes due to increased temperature in the body.

Heat Exhaustion can be dangerous due to the risk of dehydration so its important Clinicians takes the appropriate steps to treat and assist the casualty.

Symptoms of heat exhaustion:

- Headache
- Nausea
- Cramps in the Arms or Legs
- Dizziness
- Irritability
- Heavy sweating
- Increased Thirst

When treating a casualty with heat exhaustion remove any excess clothing such as a Jacket, Attempt to cool the casualty down by using cold packs or water, Get the casualty to hydrate to increase their fluid input.

Eye Injuries - Contents

Numerous factors can lead to ocular injuries. In the case of irritants, it is advisable to utilize eye wash for the purpose of irrigating the eye and eliminating foreign substances. Proper application involves flushing the eye thoroughly with eye wash, utilizing the entire contents of the bottle or continuing until the irritation subsides. Eye wash solutions typically consist of saline, complemented by additional cleansing agents. Additionally, eye wash can be employed to effectively flush out foreign objects from the eye.

Head Injuries - Contents

Head Injuries

Head injuries is a common form of injury after a fall or RTC, head injuries may be minor superficial ones or bleeding inside of the cranium. Head injuries can be incredibly dangerous and in some situations cause death or serious disability.

Superficial Head injuries such as a cut to the scalp tend to bleed a lot due to the amount of blood vessels located in the head, *follow normal wound management procedures when dealing with a superficial wound*.

Bleeding inside of the Head is dangerous as it could lead to permanent and irreversible damage. A brain bleed might result in change if the casualties level of consciousness changes and could cause temporary paralysis or confusion.

Whilst assessing a patient with a head injury, Assessing the patient's pupillary response and assess for abnormal pupils. Abnormal pupils can be a sign of an internal head injury.

- Blown pupils
- Miosis (Pinpoint pupils)
- Dilated pupils

Casualties suffering from head injuries require immediate advanced medical care and intervention and are prioritized so they can receive the necessary treatment to prevent permanent brain damage.

Spinal and Neck Injuries - Contents

Spinal & Neck Injuries

Spinal and Neck injuries may occur after a traumatic fall or a Roads Traffic Collision, Spinal and Neck injuries can result in partial or full body paralysis and with suspected spinal and neck injuries it's important clinicians take into consideration the risk of worsening the injury and inducing paralysis onto the causality if they are handled and moved incorrectly.

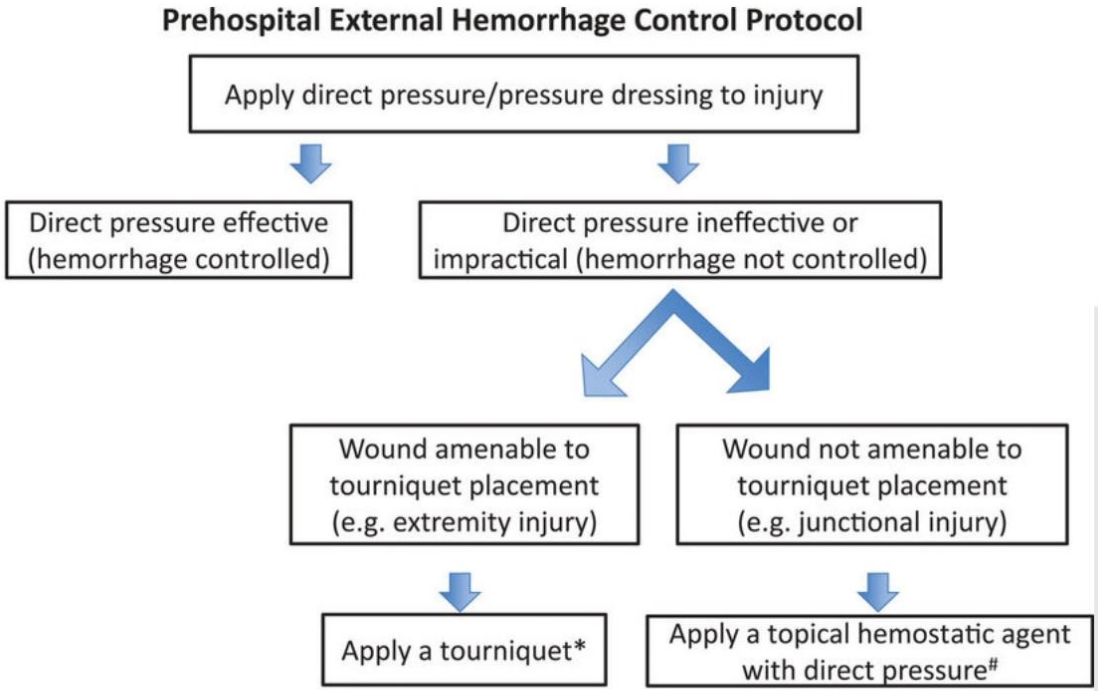
When encountering a casualty with a suspected spinal or neck injury it is important to immobilize the casualty as soon as possible and avoid any unnecessary movement.

- Secure the casualties neck
- Tell them to stay still and whilst talking to them in a relax and calm voice
- Do not move the casualty until LAS and LFB has arrived (Unless there is a direct threat to life)

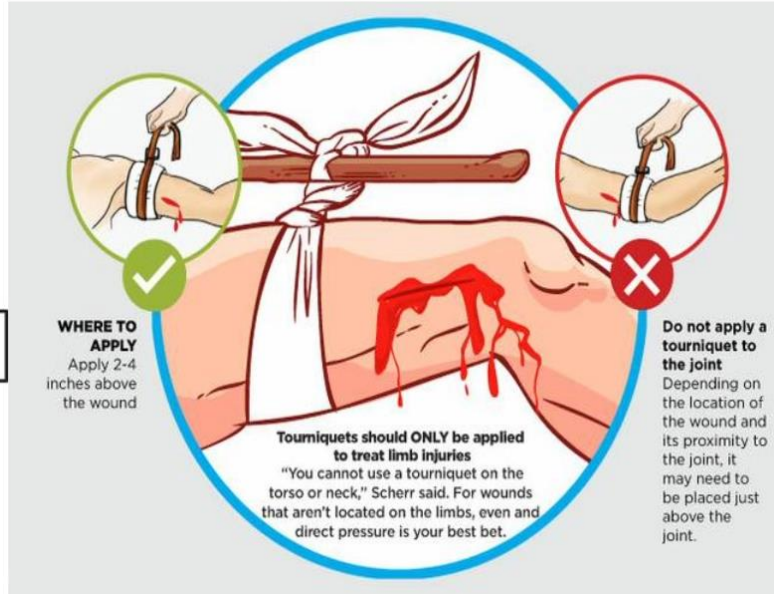
When performing your Secondary Survey check if the casualty has any sensation in their legs and feet, if sensation is absent it may indicate paralysis and damage to the spine and/or neck.

You could ask the casualty to wiggle their toes or move their feet slowly to determine if there is any major damage or injury to the central nervous system.

Hemorrhage Control - Contents



Packing a wound:
Use a military dressing to pack wound, ensure that the material is packed tightly to absorb as much blood as possible. Continue to apply pressure even when the wound is packed if possible.

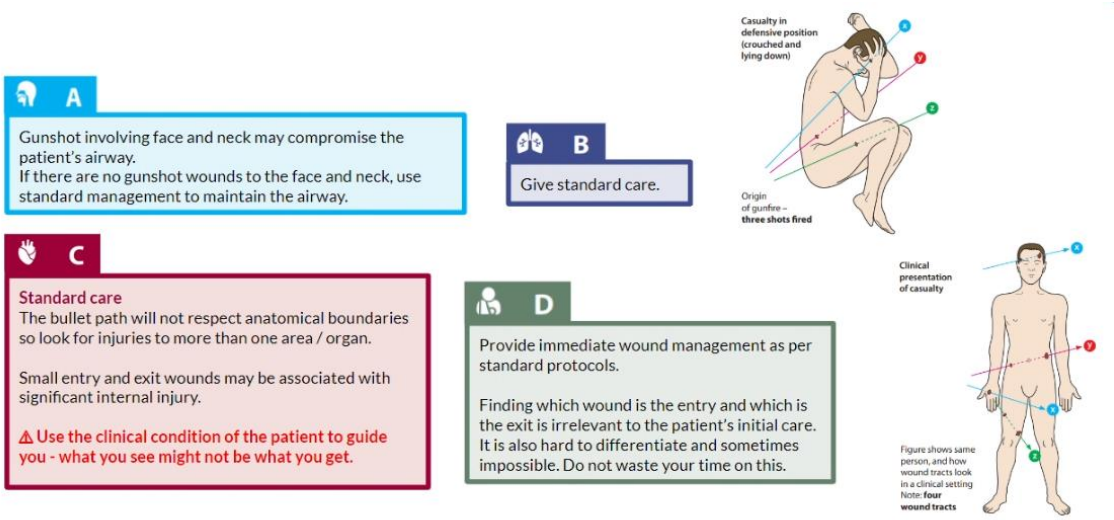


Tourniquets:
Always apply a tourniquet above the wound and never on a joint, i.e if the wound is below the elbow, apply the tourniquet above the elbow. A tourniquet can only be in place for 90 to 120 minutes before permanent damage may take effect.

Ballistic Injuries - Contents

Signs of Penetrating Ballistic injuries;

- Uneven rise and fall of the casualty's chest
- Difficulty and painful breathing, possibly rapid/shallow and uneven
- Blood bubbling out of wound
- Sound of air being sucked into chest as they breathe in
- Coughing up frothy blood



Crush Injuries - Contents

A

Standard care

B

Standard care

⚠ Ensure to auscultate at the earliest possible opportunity to identify any traumatic chest injury. Fractured ribs, pneumothorax and flail chest are all very common.

C

⚠ **Significant risk of:**

- → cardiovascular collapse on release from entrapment
- → internal bleeding from organ bruising / contusions
- → pelvic fracture with associated haemorrhage
- → rhabdomyolysis - breakdown of damaged skeletal tissue
- → Crush syndrome - sudden release of built up toxins into the bloodstream

⚠ Consider need for a pelvic binder

⚠ Consider need for fluid resuscitation to challenge crush syndrome

⚠ Do not apply a tourniquet to a crushed extremity unless there is catastrophic haemorrhage

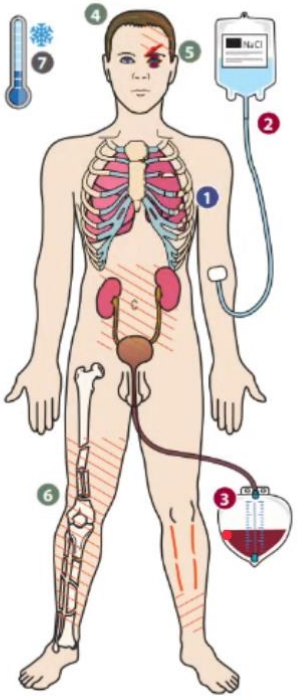
D

⚠ Cranial trauma is associated with a poor outcome

⚠ Penetrating eye injuries often go unnoticed

⚠ Multiple fractures are common

⚠ Risk of death due to crush syndrome



Blast Injuries - Contents

Catastrophic haemorrhage

- Traumatic amputation
- Decapitation / hemicorporectomy (ROLE)
- **Blast Thorax** - High risk of catastrophic large vessel and aortic disruption
- **Blast Lung** - early airway and breathing control and managed protective ventilations
- **Blast Abdomen** - risk of significant intra-abdominal bleeding even if abdominal wall is not breached
- **Blast Pelvis** - High mortality rate from exsanguination, especially if the sacroiliac joints are open for relevance of landmines and IEDs
- → apply pelvic binder

TXA will likely be indicated!

A

High suspicion of airway compromise / tracheal deviation if blast and casualty is in a confined space.
⚠ Rapid airway swelling and wheezing are signs of airway burns.

B

Rib fractures, pneumothorax, flail segment and lung contusions are commonly associated with a blast
⚠ Have a low threshold for chest decompression
⚠ Consider early airway management and manual vents

C

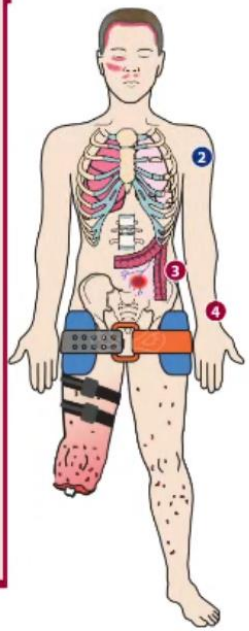
Neck
Penetrating neck injuries are common and often fatal

Chest
Large vessel / aortic injury
Cardiac tamponade

Abdomen
Blunt abdominal injury caused by secondary and tertiary blast mechanisms can cause significant bleeding and late bowel perforation, even if the abdominal wall is not breached.
⚠ Liver / splenic rupture

Pelvis
Significant bleeding can occur with open SI joints. Manage initially with pelvic binder. Further resuscitation and surgery may be required.

Traumatic amputation
Check tourniquet(s) have been applied.



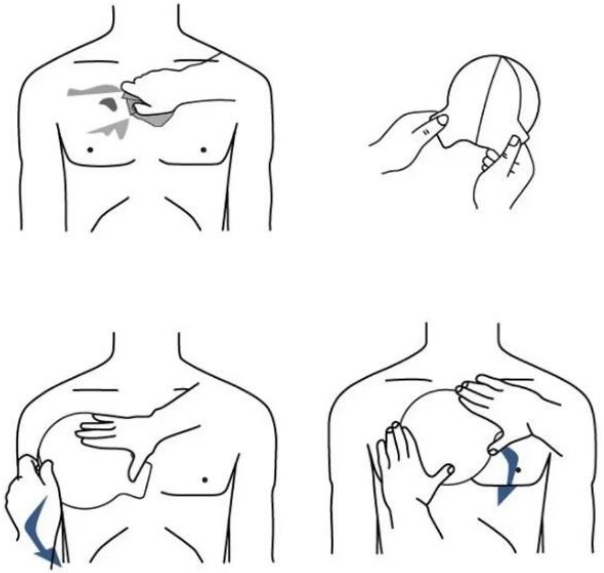
London FivePD

Chest Seals - Contents

Chest seals are medical devices used to treat open chest wounds, particularly those resulting from trauma or penetrating injuries. They are designed to create an airtight seal over the wound, preventing air from entering the chest cavity and allowing the lungs to expand properly.

How to use an chest seal:

1. Bare the patient's chest.
2. Wipe away blood and other fluids to identify the wound location.
3. Apply the chest seal
4. Assess the opposite side of the patient's chest, as well as the sides of the chest, for an exit wound.
5. If there is an exit wound, apply another chest seal.
6. Monitor the patient's breathing.

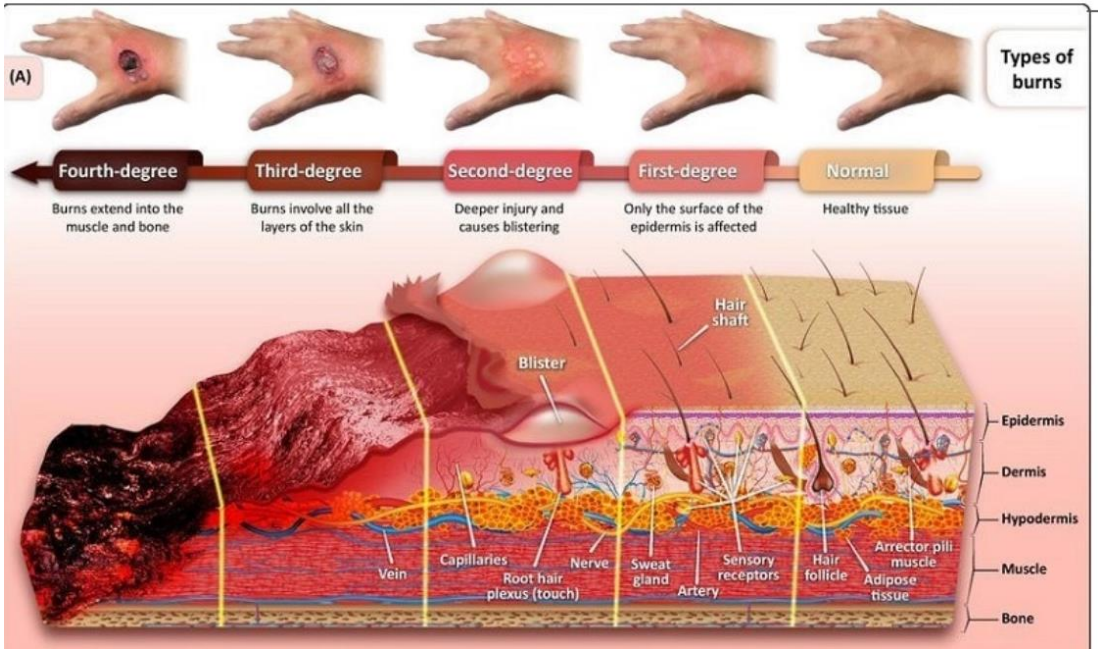


Burn Injuries - Contents

Burn injuries are injuries caused by burns located on the skin or tissue surrounding it, Burn injuries can be life threatening if not treated properly depending on the location and severity of the burn.

Burn injuries are classed as either First, Second, Third or Fourth Degree depending on its severity and damage:

First Degree - Damage to the Epidermis
Second Degree - Damage to the Epidermis and Dermis
Third Degree - Damage to the Epidermis, Dermis and Subcutis
Fourth Degree - Extends through the entire skin and underlying fat, tissue, muscle and bone. (Requires in hospital amputation)



Burn injuries are very painful depending on the location and severity, Burns located in the face and throat are life threatening and require immediate intervention. Fourth and Third degree burns are painless due to the extensive damage to the nerves.

When encountering a First Degree burn, cooling down the affected area is the normal steps of treatment, this will reduce the pain and redness of the area.

With more severe burns such as Second, Third and Fourth degree apply a Burn Dressing above the area effectively to reduce the risk of infection and the casualty needs to be taken to A&E. **With any degree of burns to the face or throat LAS are to be contacted.**

Sprains and Fractures - Contents

Managing a sprain:

A sprain is the result of the tearing of stretching of a ligament, sprains are most commonly located on wrists, ankle and can cause minor pain, sprains generally results in the area being swollen and painful when pressure is applied.

Treating a sprain is generally done by wrapping a bandage around the sprained area or icing it with something cold to reduce the pain and swelling.

Managing a fracture:

There is two types of fractures, compound fractures where the bone is penetrating the skin and closed fracture where the fractured bone is still located inside the body.

Treating a fracture is mainly done by splinting it if its located on a limb, you can use your bandages wrapped up to make an improvised splint (see next slide for example), splinting the bone is to prevent further movement and damage to be caused.

Compound fractures are secured and left as it is, apply carefully a dressing to stop any potential bleeding and call LAS.

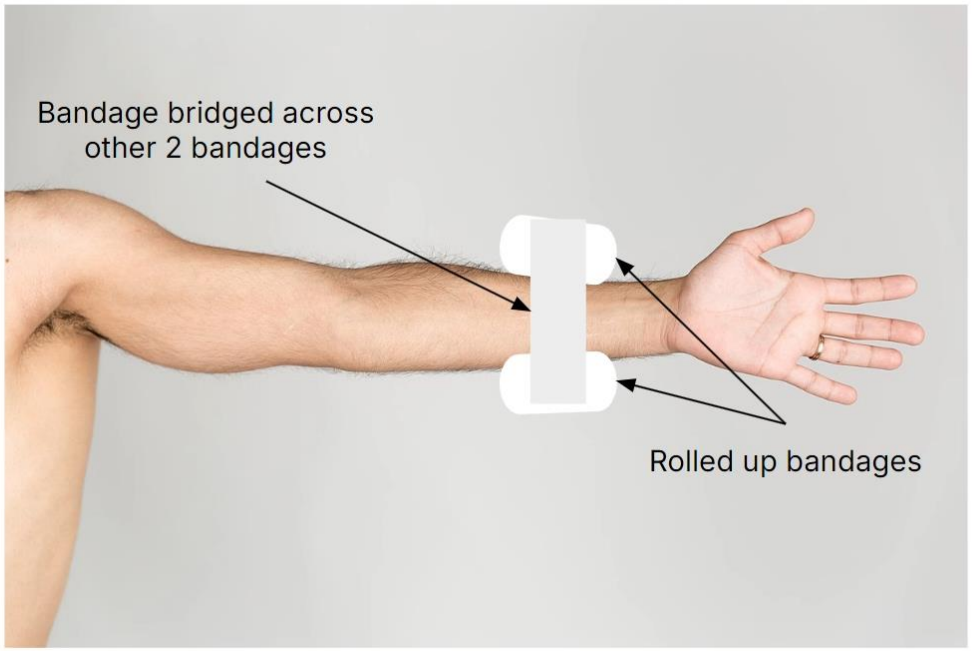
DO NOT ATTEMPT TO PUT THE BONE BACK INTO THE BODY OR REALIGN IT

Splinting - Contents

Compound Fracture Splinting:

To splint a compound fracture you should first

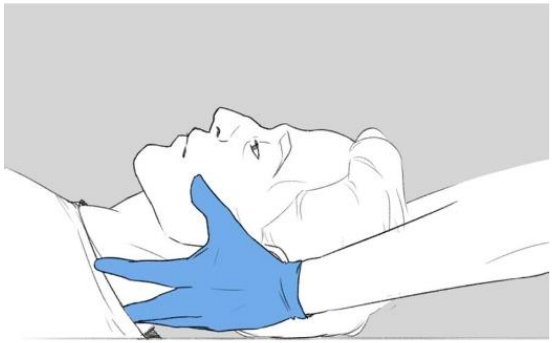
1. Place a rolled up bandage on either side on the fracture
2. Use a third bandage to wrap around the fracture and other bandages
    - You should avoid the bandages touching the bone
    - You should avoid moving the bone
    - DO NOT attempt to relocate the exposed bone



Safe Carrying and Moving - Contents

Before lifting a casualty you must consider:

- Weight of casualty
- How many people you need to lift
- Where they are being lifted to
- If all treatment is complete



When lifting a casualty you must:

- Have an equal amount of people on each side
- Ensure that the head is secure an immovable if applicable
- Give a clear count when to lift i.e “Ready, Brace, Lift” Please avoid using “1, 2 , 3 lift” as this may cause confusion

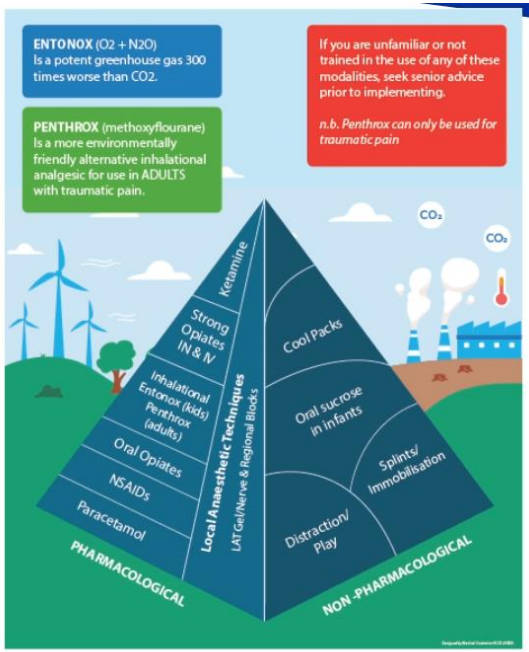
There may be a time where you need to secure someones head to limit movement due to a potential spinal injury, to do this:

- Ensure that their head is inline with their neck, when LAS arrive you may use dedicated equipment used to secure their head
    - You must NOT twist or move their neck as this may cause serious injury

Penthrox - Green Whistle - Contents

Penthrox

Penthrox (also known as the green whistle) is an inhaled vapour that is used for the relief of moderate to severe pain in conscious adults with acute trauma pain or burns.
Penthrox is a fluorinated anaesthetic.
However, it is used in significantly lower doses than required for a general anaesthetic, for the purpose of pain relief.
Penthrox delivers significant environmental benefit as compared to Entonox.



Penthrox is licensed for conscious adult patients (18 years and older) with moderate to severe pain caused by traumatic injuries such as:

- Fractures and/or dislocations
- Lacerations
- Burns
- Chest injuries & Abdominal injuries (pneumothorax is not a contraindication)

AND

- Painful procedures related to such injuries e.g. chest drains

Penthrox Dosage - Contents

Starting dose is one 3mL bottle Penthrox.

- Onset of pain relief is rapid and should occur within 6 to 10 inhalations (wait 10 minutes after starting to ensure adequate analgesic level achieved for procedure, even if inhalation not continuous).
- If stronger analgesia is required, patient can cover diluter hole on the AC chamber with finger during use.
- Continuous inhalation provides analgesia for 25 to 30 minutes.
- Intermittent inhalation provides analgesia for one hour.
- Patients should be encouraged to assess their own level of pain and titrate the amount of Penthrox inhaled for adequate pain control.

A second bottle (3 mL dose of Penthrox) can be given immediately, if needed. No further doses can be given.

Maximum doses:

6 mL (2 bottles) for a single episode.

6 mL in a 24-hour period and it should not be administered on consecutive days.

15 mL in a 7-day period.

Ensure the seal around mouthpiece is adequate to reduce entrainment of air and dilution of Penthrox and to avoid contamination of the environment with exhaled Penthrox.

Allow sufficient time for Penthrox to work (at least 10 minutes); this varies from patient to patient from 6 breaths up to a few minutes of inhalation. Patients may describe ‘seeing double’ as they approach an adequate level of analgesia.

Encourage the patient to take gentle first few breaths whilst they get used to the smell and taste. Then gradually deepen the breaths with or without the dilutor hole to attain sufficient analgesia

If the patient becomes uncomfortable, stop the procedure and deepen the analgesia by taking deep breaths with the diluter hole covered. Advise the patient to take a deep breath in, to hold in the lungs for a few seconds, and then exhale.

Patients can become disinhibited. They are often suggestible and will settle with reassurance and a calm environment. Maintain regular verbal contact with the patient.

Remove the inhaler from the patient’s mouth if they seem to be getting too sedated. They should recover rapidly.