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EMERGENCY First Aid

EMERGENCY First Aid

CONTENTS : CPR, AED and First Aid

Introduction to CPR and First Aid

What we will cover

A basic understanding of how the body works will help you identify potential problems, deal with developing emergencies, take appropriate action, and handle difficulties that may occur when carrying out CPR.

The human body is built on a skeleton of bones which gives it shape and support and helps protect the internal organs. Muscles that shorten and lengthen are connected to the bones to allow movement. Nerves from the brain travel through the spinal cord and outwards to all parts of the body carrying messages to enable movement. Other nerves travel back to the brain carrying various sensations such as touch, pain, joint position, sense, heat and cold, and movement. 'Voluntary movements' are ones we decide to make, such as walking. 'Involuntary movements' take place without our conscious control, and are the essential everyday movements that keep us alive, such as the pumping of the heart.

To move, we need energy. This comes from digested food that is broken down, absorbed into the blood, and distributed round the body ready to produce energy. Anything our body does not need becomes a waste product and is passed out in the urine or faeces, or exhaled from the lungs.

To release the energy from food, we need to get enough oxygen out of the air we breathe. When we fill our lungs with air, oxygen is taken up by the blood. This is what we mean by respiration. Anything that prevents us getting oxygen causes asphyxia.

Blood with oxygen in it is pumped away from the heart through arteries to all parts of the body. When the oxygen has been used, the blood goes back to the heart through the veins and then to the lungs, where it gets a new supply of oxygen. Moving the blood round the body through arteries and veins is called circulation. Everything that happens in our body depends on the oxygen carried in our blood. Without it, the body stops working.

The brain is the most sensitive part of our body and it must have oxygen. If the heart stops, no blood is pumped round the body, so no oxygen is carried to the brain. Within seconds, a casualty will start to lose consciousness and after a few minutes will die. Starting CPR (cardiopulmonary resuscitation – a combination of chest compressions and rescue breathing) as soon as possible after someone has stopped breathing and their heart has stopped is vital if their life is to be saved.

EMERGENCY First Aid

Cardiopulmonary Resuscitation (CPR)

1.0 INITIAL CARE AND TREATMENT

First aid is the initial care or treatment given to a person who becomes ill or injured. It is the application of acceptable lifesaving skills and first aid knowledge to care for the casualty until more qualified help arrives.

Your employer will know the most recent legislation governing the way we deal with children and vulnerable adults, and should make you fully aware of what is expected of you.

Legislation with regard to first aid qualifications is contained within the Health and Safety (First Aid) Regulations 1981 and Approved Code of Practice L74 (amended October 2013).

1.1 PRIORITIES OF CARDIOPULMONARY RESUSCITATION AND FIRST AID

When giving first aid, the aims are to:

- **Preserve life**
- **Alleviate suffering**
- **Prevent the situation getting worse**
- **Promote casualty recovery**

1.2 PRIORITIES OF CASUALTY MANAGEMENT

In the workplace the way an emergency is managed will be set out in your emergency procedures. However, when faced with any resuscitation emergency there are priorities that apply wherever you are.

Always check safety for you, the casualty and any bystanders prior to approaching the casualty.

- **A**irway: make sure that the casualty's airway is open
- **B**reathing: look, listen, feel for breathing
- **C**irculation: start chest compressions

Priorities when treating a casualty:
Life-threatening emergencies must be managed first and must take priority over all other injuries. In general the priority is:

- Emergency CPR
- Management of choking
- Control of life-threatening bleeding
- Care of the unconscious breathing casualty
- Treatment for shock
- Medical attention

Although it is unusual for a First Aider to be faced with severe bleeding, there are occasions when the rate of blood loss is so significant that you must attempt to stop the bleeding before resuscitation can be effective.

1.3 CHAIN OF SURVIVAL

The key stages in the life support sequence can be described as the Chain of Survival:

Early recognition: Call for help and alert the emergency services (particularly an ambulance) as soon as possible in order to get professional help on its way.

Early cardiopulmonary resuscitation (CPR): Those who are present when a casualty has a cardiac arrest (heart stops beating) should start CPR as soon as possible.

Early defibrillation: This is a technique of applying a controlled electric shock across the chest to re-start the heart. Defibrillators are carried by all emergency ambulances in the UK and, increasingly, are being provided in more public areas.

Post-resuscitation care: This includes various medical and paramedical procedures such as injecting drugs into a vein or using specialised artificial ventilation equipment.

1.4 TURNING A CASUALTY ONTO THE BACK

It is important to know how to turn a casualty onto their back as there may be situations when you will need to turn a casualty, such as when you may need to perform CPR.

- Kneel by the casualty's side and turn his head to face away from you
- Place the arm nearest to you above his head
- With one hand grasp the casualty's far shoulder, and with your other hand clamp his wrist to his hip
- With a steady pull, roll the casualty over against your thighs
- Lower the casualty gently to the ground on his back, supporting his head and shoulders as you do so
- Place the casualty's extended arm by his side

It is important to turn the casualty over carefully but as quickly as possible.

Cardiopulmonary Resuscitation (CPR)

1.5 MANAGING REGURGITATION OF STOMACH CONTENTS

Regurgitation of stomach contents commonly occurs during or immediately following successful resuscitation. The danger is that this material will enter the air passages and lungs, not only interfering with breathing, but subsequently causing a particularly severe form of pneumonia.

If a casualty is deemed to have drowned, water is usually swallowed during drowning, a casualty frequently regurgitates fluid during the rescue process, particularly during attempts at resuscitation. Immediate action is essential:

- Turn the casualty away from you. Keep him on his side and use your elbow and forearm to prevent him from toppling onto his front
- Ensure the head is turned towards the floor and the casualty's mouth is open and at the lowest point, thus allowing stomach contents to drain away
- Clear any residual debris from the mouth with your fingers and immediately turn him onto his back, re-establish an airway, and continue CPR

1.6 RECOVERY POSITION

An unconscious casualty whose airway is clear, and who you are sure is breathing normally, should be turned into the recovery position (unless the casualty is suffering from suspected spinal injuries). This prevents the tongue falling back to block the airway, and reduces the risk of regurgitated stomach contents blocking the airway. It is important to ensure breathing really is normal and not a return of agonal gasps.

- Remove the casualty's glasses if worn
- Kneel beside the casualty and make sure that both his legs are straight, with feet together
- Place the arm nearest to you out at right angles to his body, elbow bent with the hand palm-up *(Picture 1)*
- Bring the far arm across the chest, and hold the back of the hand against the casualty's cheek nearest to you *(Picture 1)*
- With your other hand, grasp the far leg just above the knee and pull it up, keeping the foot on the ground *(Picture 2)*
- Keeping his hand pressed against his cheek, pull on the far leg to roll the casualty towards you on to his side
- Adjust the upper leg so that both the hip and knee are bent at right angles
- Tilt the head back to make sure that the airway remains open *(Picture 3)*
- If necessary, adjust the hand under the cheek to keep the head tilted and facing downwards to allow liquid material to drain from the mouth
- Check breathing regularly

Be prepared to restart CPR immediately if the casualty deteriorates and stops breathing normally

If the casualty has to be kept in the recovery position for more than 30 minutes, he should be turned to the opposite side to avoid prolonged pressure on the casualty's lower arm.

1.7 ASPHYXIA

Asphyxia (suffocation) is a condition arising when the body is deprived of oxygen. Causes include:

- The tongue blocking the airway of an unconscious casualty
- A foreign object stuck in the throat
- Strangulation
- The mouth and nose being accidentally or deliberately covered (suffocation)
- Drowning

1.8 CARDIAC ARREST

The term cardiac arrest means that the heart has stopped pumping blood around the body. The heart may have stopped beating altogether (asystole) or may be twitching in a completely irregular and ineffective way (ventricular fibrillation). In either case, there is no circulation of blood.

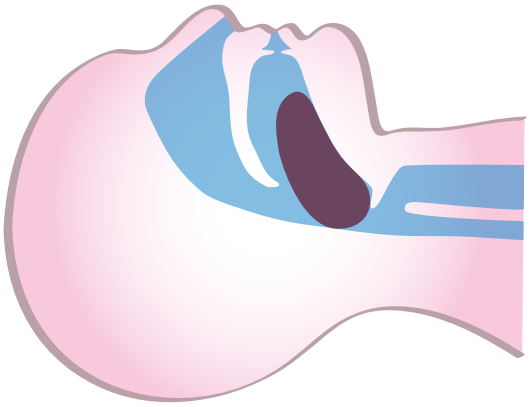
Cardiac arrest may be due to a lack of oxygen resulting from asphyxia. More commonly, it occurs because of direct damage to the heart through injury, coronary thrombosis (a heart attack), electric shock, or some other medical condition. Within seconds the casualty will lose consciousness and, if the heart is not restarted, will die within a few minutes. Urgent action is needed if the casualty is to survive.

Immediately following cardiac arrest blood flow to the brain is reduced to virtually zero, which may cause seizure like episodes that may be confused with epilepsy. You should be suspicious of cardiac arrest in any casualty presenting with seizures, and **you must assess the casualty for normal breathing once the seizures have ended**.

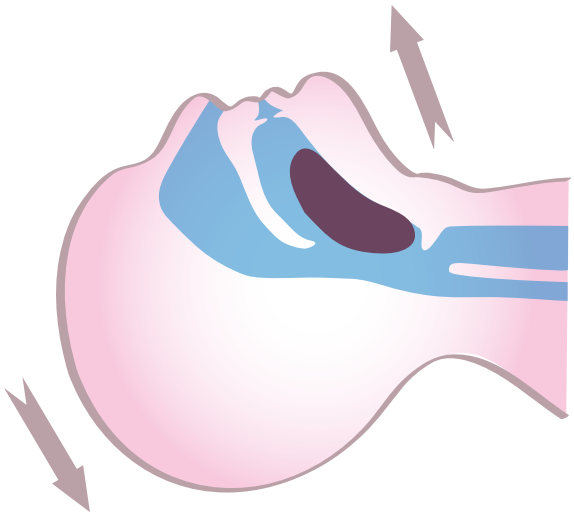
Cardiopulmonary resuscitation (CPR) will buy time until more advanced medical assistance arrives.

1.9 PRINCIPLES OF AIRWAY MANAGEMENT

The principles of airway management are shown simply in the diagrams below:



1. Casualty airway without head tilt and chin lift



2. By applying head tilt and chin lift this will lift the tongue and open the airway, as shown right

Cardiopulmonary Resuscitation (CPR)

1.10 SEQUENCE OF CPR - ADULT

1. Make sure the casualty, any bystanders, and you are safe.

2. Check the casualty and see if he responds:

- Gently shake his shoulders and ask loudly, "Are you alright?"

3A. If the casualty responds:

- Leave the casualty in the position in which you find him provided there is no further danger
- Try to find out what is wrong with him and get help if needed
- Reassess the casualty regularly

3B. If the casualty does not respond:

- Turn the casualty onto his back, then open the airway using head tilt and chin lift
  - Place your hand on his forehead and gently tilt the head back
  - With your fingertips under the point of the casualty's chin, lift the chin to open the airway

4. Keeping the airway open, look, listen and feel for normal breathing for no more than 10 seconds:

- **Look** for chest movement
- **Listen** at the casualty's mouth for breath sounds
- **Feel** for air on your cheek

In the first few minutes after cardiac arrest a casualty may be barely breathing or taking infrequent, slow, noisy gasps (snoring sound). This is often termed as agonal gasps and **must not be confused with normal breathing**. Agonal gasps are an indication to **start CPR immediately**.

If you have any doubt whether breathing is normal **start CPR immediately.**

5. If the casualty is not breathing normally:
Call an ambulance (999)

- Ask a helper to call; otherwise call 999 yourself, staying with the casualty if possible
- Activate the speaker function on the phone to aid communication with the ambulance service
- Send someone to get an AED if one is available; do not leave the casualty to get one yourself unless it is in the immediate vicinity
- Start CPR

The initial assessment (danger; response; airway; breathing; 999) should be carried out in rapid succession, to ensure that CPR is started and an AED is available as soon as possible.

Start chest compressions as follows:

- Kneel by the side of the casualty
- Place the heel of one hand in the centre of the casualty's chest (which is the lower half of the sternum (breastbone))
- Place the heel of your other hand on top of the first hand
- Interlock the fingers of your hands and ensure that pressure is not applied over the casualty's ribs.
- Keep your arms straight
- Do not apply any pressure over the upper abdomen or the bottom end of the bony sternum (breastbone)
- Position your shoulders vertically above the casualty's chest and press down on the sternum to a depth of 5-6cm
- After each compression, release all the pressure on the chest without losing contact between your hands and the sternum.
- Repeat at a rate of 100-120 times a minute (up to two compressions a second)
- Compression and release should take an equal amount of time

6A. Give rescue breaths:
After 30 compressions open the airway again using head tilt and chin lift and give 2 rescue breaths.

- Pinch the soft part of the nose closed, using the index finger and thumb of your hand on the forehead
- Allow the mouth to open, but maintain chin lift
- Take a normal breath and place your lips around his mouth, making sure that you have a good seal
- Blow steadily into the mouth while watching for the chest to rise, taking about 1 second as in normal breathing; this is an effective rescue breath
- Maintaining head tilt and chin lift, take your mouth away from the casualty and watch for the chest to fall as air comes out
- Take another normal breath and blow into the casualty's mouth once more to achieve a total of two effective rescue breaths. Do not interrupt compressions by more than 10 seconds to deliver two breaths.
- If the initial breath of each sequence of two does not make the chest rise as in normal breathing, then before your next attempt:
    - Check the casualty's mouth and remove any visible obstruction
    - Recheck that there is adequate head tilt and chin lift
    - Do not attempt more than two breaths each time before returning to chest compressions
- Then return your hands without delay to the correct position on the sternum and give a further 30 chest compressions

Cardiopulmonary Resuscitation (CPR)

Continue with chest compressions and rescue breaths in a ratio of 30:2

6B. If an AED arrives
Switch the AED on and use following the guidance in the AED section.

7. Continue CPR:
Do not interrupt resuscitation until:

- A health professional tells you to stop
- You become exhausted
- The casualty is definitely waking up, moving, opening eyes and breathing normally

It is rare for CPR alone to restart the heart. Unless you are certain the person has recovered continue CPR.

7A. If you are sure the casualty is breathing normally:

- Turn him into the recovery position
- Ensure the EAP has been implemented and help from the ambulance service has been summoned.
- Only leave the casualty yourself if there is no other way of obtaining help
- Continue to assess for normal breathing. If in any doubt, start CPR

Chest-compression-only CPR:

- If you are not able to give rescue breaths, perhaps as a result of severe facial injury to the casualty, give chest compressions only
- If chest compressions only are given, these should be continuous at a rate of **100–120** per minute

1.11 CHILD AND INFANT (BABY) CPR

An 'infant' is defined, for the purposes of resuscitation, as in the first year of life.

A 'child' is considered to be from the first year of life to the age of puberty. It is neither appropriate nor necessary to establish onset of puberty formally. If the rescuer believes the casualty to be a child, the child guidelines should be followed.

When carrying out resuscitation of infants or children, the techniques of rescue breathing and chest compressions are similar to those for an adult, modified to allow for the difference in size and maturity of the casualty.

It is rare for an infant's or a child's heart to stop unexpectedly (cardiac arrest). Problems with the airway and breathing are far more common and, if not treated rapidly and correctly, may lead to cardiac arrest due to lack of oxygen in the blood. As heart attacks, a major cause of cardiac arrest in adults, are so rare in infants and children particular attention must be given to obtain a clear airway in any infant or child whose heart has stopped or who has stopped breathing. This may include action to relieve choking.

In infants and children breathing may become obstructed or stop because of:

- Inhalation of stomach contents, regurgitation of food, or a foreign body such as a small toy or peanut
- Submersion in water (drowning)
- Infection of the throat (croup) or lungs (pneumonia)
- Injuries to the head, neck or chest

Many children do not receive resuscitation because potential First Aiders fear causing harm. This fear is unfounded. The adult sequence may be used for children and infants, but the chest should be compressed by one third of its depth.

You may well be faced with the need to carry out CPR on an infant or child. The following modifications to the adult sequence of CPR will make it even more suitable for use in children, who are more likely to suffer from a breathing problem (including suffocation) than a heart attack:

- Having asked someone to call an ambulance and fetch an AED give **5** initial breaths before starting chest compressions
- Compress the chest by one-third of its depth
    - Use two fingers for an infant under one year
    - Use one or two hands for a child over one year as needed to achieve an adequate depth of compression

- It is rare for chest compressions to injure a child's or infant's chest
- If you are on your own, perform CPR for approximately one minute before going for help

Cardiopulmonary Resuscitation (CPR)

1.12 MORE THAN ONE RESCUER AND CPR

It is important for trained First Aiders to work in teams. Chest compressions, in particular, are very tiring and when more than one First Aider is present at a resuscitation attempt they should perform CPR in turn, changing over about every two minutes to prevent fatigue. Ensure the minimum of delay during the changeovers. This applies for all types of casualty, adult, child and infant.

1.13 CPR FLOW CHART

CPR Flow Chart for Adult, Child and Infant casualties

- Unresponsive and not breathing normally
- Call 999 and ask for an ambulance
- If drowning, child or infant give 5 rescue breaths
- 30 Chest compressions
- 2 Rescue breaths
- Continue CPR 30:2
- As soon as AED arrives switch it on and follow instructions

1.14 CPR USING A POCKET MASK

The risk of transfer of infection from casualty to you (or you to casualty) is very low. However, it is highly recommended that where possible a barrier device is used when giving rescue breaths. The most effective barrier device is the pocket mask with a one-way valve to prevent the casualty's exhaled air being inhaled by the rescuer.

Masks are reusable but must be thoroughly cleaned after use. One-way valves must be discarded after use on a casualty.

1.15 PROBLEMS WITH CPR

The following points highlight instances where you might encounter problems with CPR:

1.15.1 Tracheostomies

Very rarely, a rescuer may be faced with having to resuscitate a person who has undergone an operation for the removal of the voice box (laryngectomy). This will leave an opening to the windpipe (stoma) in the front of the neck, this is called a tracheostomy.

To carry out rescue breathing:

- Remove stoma cover – do not remove any tube that is in place
- Wipe any mucus from the stoma or tube
- Close the casualty's nose and mouth
- Place your mouth around the opening in the neck
- Blow in through the stoma, watching the chest rise and fall as in the mouth-to-mouth technique

1.15.2 Regurgitation of Stomach Contents

See paragraph 1.5 Managing Regurgitation of Stomach Contents

1.15.3 Air in Stomach

If head tilt and chin lift are not adequate to produce a clear airway, extra force will be needed during rescue breathing to blow air past the obstruction. This may drive air down into the stomach. As the stomach distends (a swelling appears in the abdomen below the left lower ribs), it interferes with the downward movement of the diaphragm and further interferes with air entering the lungs. There is also an increased risk that the casualty may regurgitate stomach contents.

If distension of the stomach is seen:

- Attempt to improve the casualty's airway by increasing head tilt and chin lift if possible
- Do not apply pressure over the stomach as this is very likely to induce regurgitation of stomach contents
- Provided a clear airway is maintained, the air in the stomach is likely to escape gradually

1.15.4 Broken Ribs

During chest compressions one or more ribs may be heard to break. In elderly people or those with particularly rigid chests, this may be unavoidable. It is far more likely to occur if the hands are incorrectly placed on the sternum with pressure no longer being applied directly downwards. If a rib does break, no action should or can be taken during resuscitation, which should continue uninterrupted. After recovery, the casualty may be expected to be in some pain.

1.15.5 Chest Does Not Rise

As previously noted, if the initial breath of each sequence of two does not make the chest rise as in normal breathing, then, before your next attempt:

- Check the casualty's mouth and remove any visible obstruction
- Recheck that there is adequate head tilt and chin lift
- Do not attempt more than 2 breaths each time before returning to chest compressions

1.15.6 Fluid in the Airway

In some situations, massive amounts of foam caused by admixing moving air with water are seen coming out of the mouth of the casualty. Do not try and attempt to remove the foam as it will keep coming. Continue rescue breaths and compressions.

Cardiopulmonary Resuscitation (CPR)

1.16 MOUTH-TO-NOSE VENTILATION

Mouth-to-nose ventilation is an effective alternative to mouth-to-mouth ventilation. It may be considered if the casualty's mouth is seriously injured or cannot be opened, when giving rescue breaths to a casualty in the water, or where a mouth-to-mouth seal is difficult to achieve.

1.17 CHOKING

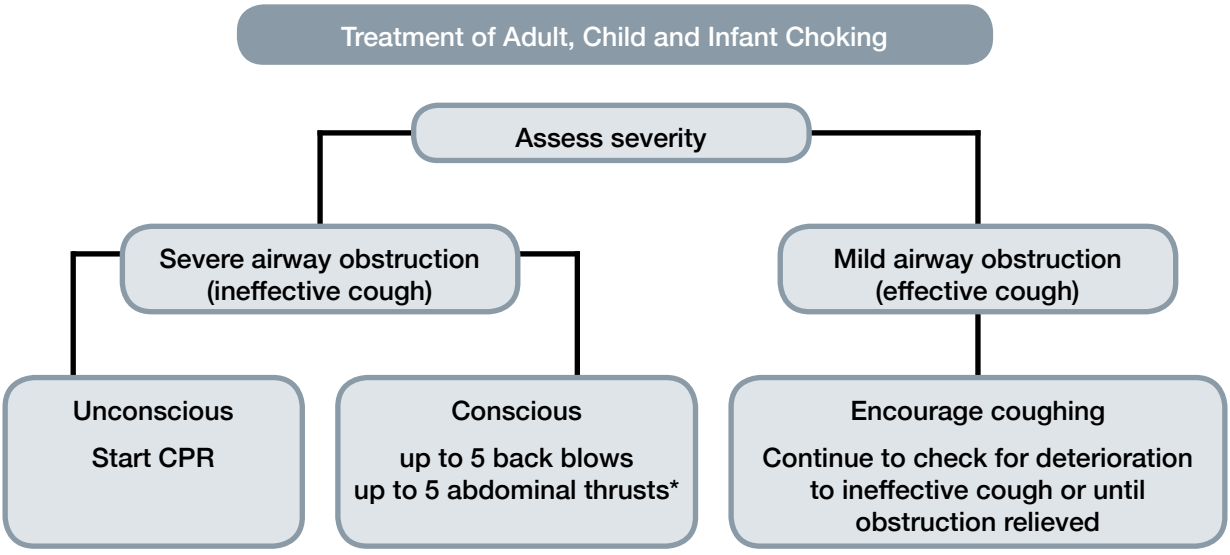
Choking occurs when a piece of food or other material is swallowed but goes down the trachea (windpipe) rather than the oesophagus (gullet). This results in blockage of the airway. If this blockage is only mild, the casualty will usually be able to dislodge it by coughing. However, if there is complete obstruction (severe obstruction) to the flow of air, coughing may not be possible. Unless help is given urgently the casualty will suffocate, become unconscious and may die.

Even a small piece of food may cause serious obstruction because its presence can lead to muscle spasm in the region of the larynx (voice box).

1.17.1 Symptoms and Signs of Choking

- The casualty may have been seen to be eating
- A child may have been seen putting an object into its mouth
- A casualty who is choking often grips his throat with one or both hands
- With a **mild airway obstruction** the casualty will be able to speak, cough and breathe but will be distressed.
- If the airway is **completely obstructed** (severe obstruction), the casualty will be unable to speak, have a weakening cough, will be struggling or unable to breathe. His face may become blue and congested with the veins standing out in the neck
- The casualty may become unconscious

1.17.2 Choking Flow Chart



*Abdominal thrusts are dangerous in infants, instead give 5 chest thrusts

1.17.3 Treatment for an Adult

If the casualty is breathing, encourage coughing but do nothing else. If the casualty shows signs of becoming weak or stops breathing or coughing, remove any obvious debris or loose false teeth from the mouth and give up to **5 back blows**:

- Stand to the side and slightly behind him
- Support his chest with one hand and lean him well forwards so that when the obstruction is dislodged it comes out of the mouth rather than going further down the airway
- **Give up to 5** sharp blows between the shoulder blades with the heel of your hand. The obstruction should be dislodged and fly out of the mouth
- The aim is to relieve the obstruction with each blow rather than necessarily to give all 5

If back blows fail, try giving up to **5 abdominal thrusts**. This forces air out of the windpipe by a sudden inward and upward movement of the diaphragm.

- Stand behind the casualty and put both arms round the upper part of his abdomen
- Make sure the casualty is bending well forwards so that when the obstruction is dislodged it comes out of the mouth rather than going further down the airway
- Clench your fist and place it between the umbilicus (navel) and the bottom end of the sternum (breastbone). Grasp this hand with your other hand
- Pull sharply inwards and upwards. The obstruction should be dislodged and fly out of the mouth

If the obstruction is still not relieved, continue alternating 5 back blows with 5 abdominal thrusts.

Abdominal thrusts can cause serious internal injuries and all casualties receiving abdominal thrusts should be examined for injury by a doctor.

Loss of consciousness

Loss of consciousness may result in relaxation of the muscles around the throat and allow air to pass down into the lungs. If at any time the choking casualty loses consciousness or falls to the ground, follow the sequence of CPR below. In summary:

- Support the casualty to the ground to prevent any injury
- Ensure that an ambulance has been called
- Begin CPR.

Cardiopulmonary Resuscitation (CPR)

1.17.4 Treatment for Infants and Children

The same principles of management of choking apply to infants and children. You may find that it is easier to support an infant on your knee when giving back blows. It is important that the head is lower than the chest to make sure that the dislodged object comes out of the mouth.

In the case of infants, **it is dangerous to give abdominal thrusts**. Instead, if 5 back blows fail to relieve the obstruction, give up to 5 chest thrusts. These are similar to chest compressions and are applied to the same place on the sternum (breastbone).

The difference is that each thrust is sharper and more vigorous and each aims to relieve the obstruction rather than all 5 having to be given. It is important that the infant is on his back on a firm surface (which could be your thigh) and that the head is lower than the chest.

If the obstruction is not expelled and the casualty is still conscious, repeat the sequence of back blows and chest or abdominal thrusts.

Call again for help if this is still not available but do not leave the casualty at this stage. If the child or infant is or becomes unconscious, begin CPR.

1.17.5 Obese or Pregnant Casualties

Chest thrusts may be used instead of abdominal thrusts for obese casualties if the First Aider is unable to encircle the casualty's abdomen. For choking casualties in the late stages of pregnancy, the First Aider should use chest thrusts instead of abdominal thrusts.

REVISION : Cardiopulmonary Resuscitation (CPR)

1. What does ABC stand for?

2. What are the priorities when treating a casualty?

   i) _____

   ii) _____

   iii) _____

   iv) _____

   v) _____

   vi) _____

3. What is the chain of survival?

4. What does a head tilt and chin lift achieve?

5. Why is it important that treatment for a casualty, who is regurgitating stomach contents, is carried out quickly?

6. Why should you place an unconscious casualty, who you are sure is breathing normally, in the recovery position?

7. What is cardiac arrest?

8. When giving CPR, if the initial breath does not make the chest rise what should you do?

EMERGENCY First Aid

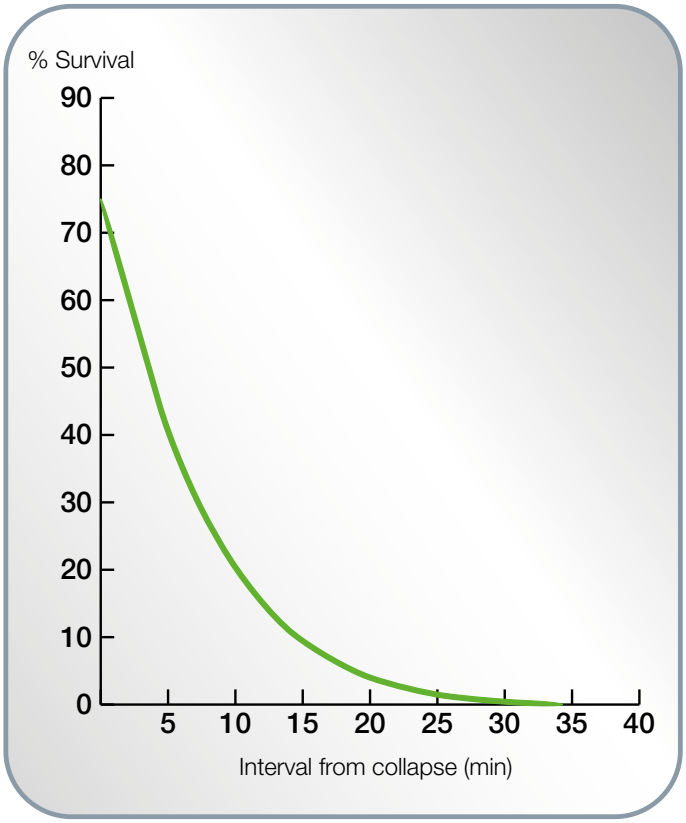
Automated External Defibrillation (AED)

What we will cover

The majority of cardiac arrests are due, at least initially, to an abnormal, fast, irregular beat of the heart known as ventricular fibrillation (VF), and electrical defibrillation is well established as the only effective treatment. Automated external defibrillators (AEDs) are devices that deliver the necessary controlled electric shocks to terminate VF. They analyse the victim's heart rhythm and determine if it is 'shockable' (i.e. VF) or 'non-shockable' (i.e. normal rhythm or one that will not respond to defibrillation).

The delay from collapse to delivery of the first shock is the single most important determinant of survival. If defibrillation is delivered promptly, survival rates as high as 75% have been reported. The chance of successful defibrillation declines at a rate of more than 10% with each minute of delay before a defibrillator is used. CPR will help to maintain a shockable rhythm but is not a definitive treatment.

Having an AED within a facility, and a trained team to respond, helps to keep the time taken to treat a casualty to a minimum. Due to the cost effectiveness of AEDs (including their maintenance) many facilities now have AEDs on site.



All AEDs use voice prompts to guide First Aiders, and are suitable for use by lay people or healthcare providers. The majority are semi-automatic and prompt the operator to deliver the shock by pressing a button. A fully-automatic AED will deliver a shock with no further intervention from the operator if it detects that the heart rhythm is shockable.

2.0 GUIDELINES FOR USE OF AN AED

If an AED is not immediately available, CPR should be started at once and continued until an AED is brought to the scene. If an AED is immediately available it should be used without delay.

1. As soon as the AED arrives:

- If more than one First Aider is present, start or continue CPR whilst the AED is switched on
- If you are alone, stop CPR and switch on the AED
- Follow the voice and/or visual prompts
- Attach the electrode pads to the casualty's bare chest
- Ensure that nobody touches the casualty while the AED is analysing the rhythm

2A. If a shock is indicated:

- Ensure that nobody touches the casualty
- Push the shock button as directed
- (Fully-automatic AEDs will deliver the shock automatically)
- Immediately resume CPR, beginning with chest compressions, as guided by the voice prompts
- Minimise, as far as possible, any interruptions in chest compression

2B. If no shock is indicated:

- Immediately resume CPR using a ratio of 30 compressions to 2 rescue breaths
- Continue as directed by the voice/visual prompts

3. Continue to follow the AED prompts until:

- A health professional tells you to stop
- You become exhausted
- The casualty is definitely waking up, moving, opening eyes and breathing normally

Automated External Defibrillation (AED)

2.1 PLACEMENT OF AED PADS

The casualty's chest must be sufficiently exposed to enable correct electrode pad placement. Chest hair will prevent the pads adhering to the skin and will interfere with electrical contact. Shave the chest only if the hair is excessive, and even then spend as little time as possible on this. Do not delay defibrillation if a razor is not immediately available.

Although most AED pads carry a picture of where they should be placed, it does not matter if their positions are reversed. It is important to remember that if an 'error' is made, the pads should not be removed and replaced as this wastes time and they may not stick adequately when re-attached.

If the chest is wet, quickly wipe it dry before attaching the AED pads.

Some casualties may have a heart pacemaker, which is usually visible just below the left collar bone and unlikely to interfere with placing the pads. If, rarely, one is on the right-hand side, place the AED pads just beside or just below it.

Remove any metal jewellery that might come into contact with the AED pads. Pads should be kept clear of irremovable jewellery, including that used with body piercing.

Remove any plasters or other material attached to the casualty's skin to ensure good AED pad contact. Some casualty's may have medication 'patches' on their chest wall. These must be removed as they can cause sparking or burns during defibrillation.

2.2 USING AN AED IN A WET ENVIRONMENT

As long as no-one is touching the casualty when a shock is delivered, there is no danger to the First Aider or casualty, even if the casualty is lying on a wet surface. If the casualty is wet, there is likely to be a problem getting the AED pads to stick unless the chest is dried.

AEDs carry an 'immersion protection (IP) rating' related to their suitability to be used in a wet environment. Your operator will have checked that the AED is suitable for use in your specific environment.

2.3 SAFETY AND USE OF OXYGEN

If the casualty is being given oxygen via a face mask, remove the mask and place it at least one metre away from the casualty before delivering a shock to avoid the risk of explosion, but do not let this delay giving the shock.

2.4 MINIMISING INTERRUPTIONS IN CHEST COMPRESSIONS

It is very important to avoid interruption to CPR as much as possible, particularly chest compressions, whilst using an AED. When two First Aiders are present, the one operating the AED should put on the electrodes while the other continues CPR. The AED operator should deliver a shock as soon as the AED advises, making sure that no one is in contact with the casualty.

2.5 INFANTS AND CHILDREN

Standard adult AED pads are suitable for use in children older than eight years. Special paediatric pads that reduce the current delivered during defibrillation should be used in infants and children if they are available. If not, the AED should be used as it is.

In the unlikely event that the casualty is so small that adult pads cannot be placed in the standard chest positions without touching each other, one pad should be placed on the upper part of the front of the chest, and one in the corresponding position on the back.

2.6 SAFETY ISSUES WHEN USING AN AED

Do not touch the casualty during analysis, charging or the delivery of a shock as this may cause movements that interfere with the AED's ability to recognise the heart rhythm.

During rhythm analysis and before delivery of a shock, shout 'stand clear' and check visually that no one, including bystanders, touches the casualty.

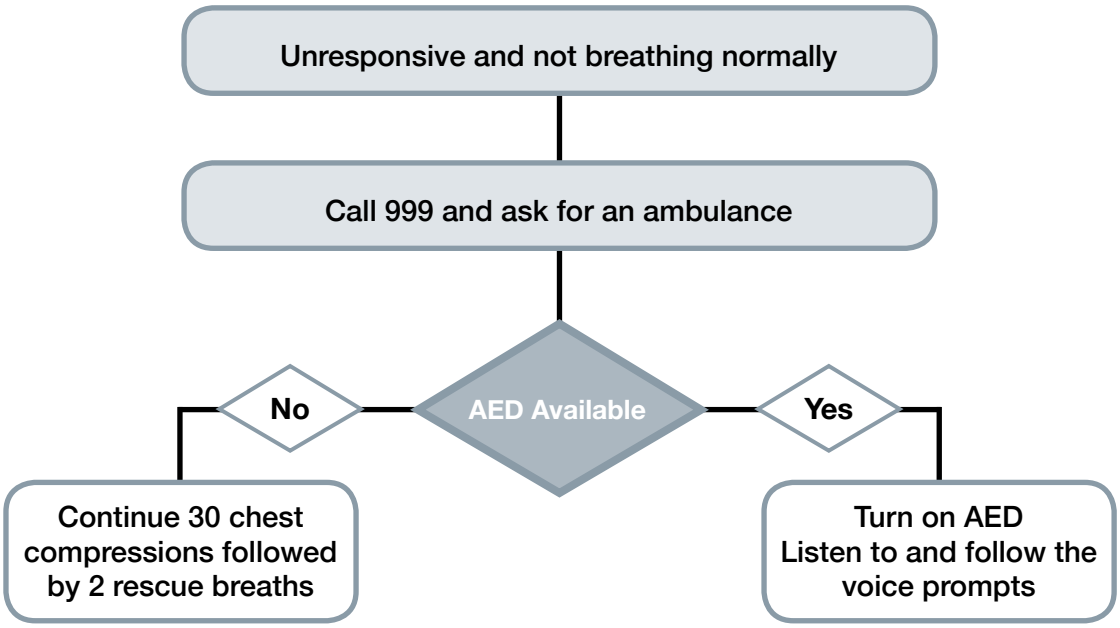
It is possible and safe to use an AED on a casualty with a suspected spinal injury.

2.7 WHAT TO STORE WITH THE AED

- Small towel or face flannel
- Razor
- Pocket Mask
- Protective Gloves
- Spare battery

Automated External Defibrillation (AED)

2.8 AED FLOW CHART



REVISION : Automated External Defibrillation (AED)

1. What does an AED do?

2. What are the benefits of an AED?

3. When the AED analyses the heart what is it looking for?

4. Why might you need a towel when using an AED?

5. When would you turn the AED off?

6. Can you use an AED on a casualty with a suspected spinal injury?

7. What equipment should you keep with an AED?

3.0 FIRST AID SUPPLIES AND TRAINING

	What your employer will have set out	What your role is

First-aid supplies and training	Your employer will have developed a procedure for First Aid arrangements at your facility. They are required to:
	• Make adequate first aid provision for employees
	• Provide first aid training for an appropriate number of employees, as determined by the outcome of a risk assessment
	• Inform employees of the arrangements made, including the location of first aid equipment, facilities and personnel
	• Take account of the presence of non-employees, if appropriate, customers.
	Your workplace procedures will include:
	• First Aiders & training
	  ○ Who is the duty First Aider
	  ○ Contact systems
	  ○ Records of training
	• Equipment
	  ○ Location
	  ○ Checking
	  ○ Stock control and ordering
	• Eye wash stations
	  ○ Location
	• Sharps kit
	  ○ Location
	  ○ Use – safety procedures
	  ○ Disposal
	• Body fluid kit
	  ○ How to use
	  ○ Contents
	  ○ Safety
	  ○ location
	  ○ Disposal
	• Links with emergency services
	• Location of accident forms and reporting
	  ○ Who completes and how to complete
	  ○ Location of forms
	  ○ Recording of accident location
	  ○ Importance of accurate information
	  ○ How forms may be used for potential defence of claims
		In the workplace you may be called upon to administer first aid to a customer or a colleague.
		
		It is essential that you strictly follow your training.
		
		If you use the first aid kit, it is essential that you inform the designated officer what you have used, and therefore what needs to be replaced in the first aid box.
		
		You must always use any protective equipment made available when administering first aid and follow the procedures set out, in particular with regard to the use of sharps or issues of contamination.
		
		All accidents/incidents must be recorded and this will, as a minimum, include:
		• What happened?
		• Where did it happen?
		• When did it happen?
		• What was the casualty doing at the time of the accident/incident?
		• How did it happen?
		• Details of the injured person
		• What was the injury?
		• What first aid was administered?
		• Who administered the first aid?
		• What happened next? e.g. did the casualty attend hospital?
		
		It is essential that you record this information accurately.

3.1 CONTENTS OF A FIRST AID BOX

First Aid kits will vary and should be based on an assessment of hazards within the workplace, to ensure the kit meets the needs of each specific working environment. First Aid kits come in various sizes with different quantities of equipment for different number of employees within a workplace. Detailed below is example contents for a medium first aid kit:

Guidance leaflet	**1**
Contents list	**1**
Medium sterile dressing	**2**
Large sterile dressing	**6**
Triangular bandage	**3**
Safety pins	**12**
Eye pad sterile dressing	**3**
Sterile adhesive dressings (plasters)	**60**
Alcohol-free moist cleaning wipes	**30**
Adhesive tape	**1**
Nitrile disposable gloves	**9 pairs**
Finger sterile dressing	**3**
Resuscitation face shield including one-way valve (pocket mask)	**1**
Foil blanket	**2**
Burn dressing	**2**
Shears suitable for cutting clothing, including leather	**1**
Conforming bandage	**2**

It is essential to restock the first aid box with any items that have been used to ensure it is ready for any future first aid use. Some items may also have an expiry date and need replacing such as burn dressings and bandages.

DO NOT LEAVE YOUR FELLOW TEAM MEMBERS SHORT OF EQUIPMENT IN AN EMERGENCY.

Apart from the contents detailed above first aid boxes should NOT contain:

- Pills
- Medicines
- Sprays
- Creams
- Sharp scissors
- Cotton wool
- Inhalers

3.2 HYGIENE PROCEDURES

Before assessing the condition of the casualty, there are a few things to be addressed. Your safety, the safety of other members of the team and your hygiene are essential requirements before you get involved in a first aid situation – no matter how minor the situation may seem.

When dealing with a casualty, wear protective gloves and an apron where possible to protect you and the casualty. Always wash your hands before and after dealing with a casualty, for your safety – and the casualty's. Make sure any exposed cuts or breaks in your own skin are covered with a waterproof dressing, especially on your arms and hands. Some people have an allergic reaction to the latex in many types of protective gloves. If you are prone to skin irritations, you should ask your employer to make latex free gloves available.

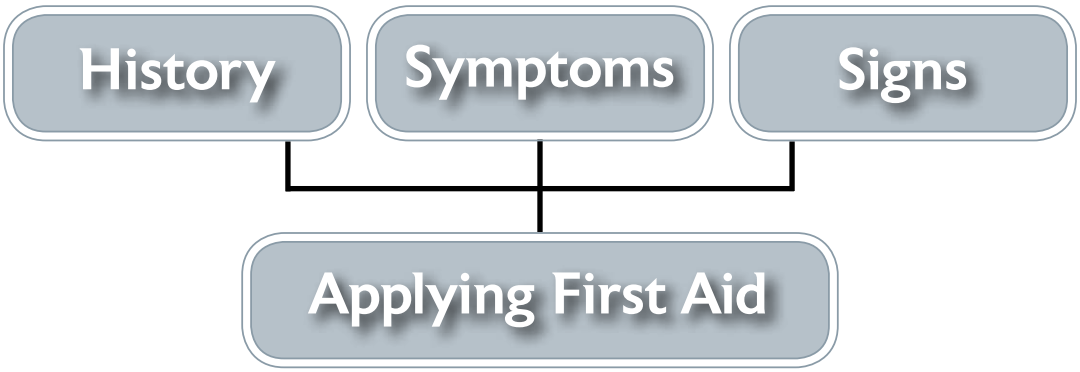
Avoid touching the wound or any part of a dressing which might be in contact with the wound, and do not talk, cough or sneeze close to a wound or dressing.

Your workplace will specify disinfection and cleaning procedures for bodily fluids and blood.

3.3 NEEDLES AND SHARPS

Needles and sharps are not normally part of First Aid kits; however, customers and employees may need to use them if they are required to self-administer medication in your workplace. In the case of treatment for anaphylaxis (if you are trained) you will need to dispose of the auto-injector using a needles and sharps container.

3.4 SCENE SURVEY - HISTORY, SYMPTOMS AND SIGNS - APPLYING FIRST AID (TREATMENT)



History
It is important to find out what happened leading up to the accident/incident. If casualties are conscious, they can give you the necessary information, but if they are unconscious ask witnesses or bystanders. Look at where the casualties are and check for medical factors such as previous medical history, medication, allergies or information on a Medic Alert bracelet. The position of surrounding equipment and the condition of the ground may give you more clues as to what might have happened.

Symptoms – *what the casualty tells you*
As an example they may describe stiffness, loss of feeling, tenderness, pain or temperature.

Signs – *something you can see, hear or feel*
A sign might be bruising, an obvious problem with a joint or limb, respiratory failure or bleeding; in other words, something that you can actually see.

Applying First Aid – *treatment*
Using symptoms, signs and history will help you to decide how best to apply first aid. Sometimes it might be immediately obvious that a particular injury has been sustained, but a secondary survey may still be necessary to make sure no other injuries have been sustained. In all situations remember the primary survey and the need to check that there is no danger to yourself and the casualty. Treat casualties with the most life threatening injuries first (see Priorities of Casualty Management page 4).

Unless otherwise stated in the first aid treatment information, it is important not to give a casualty food or drink as this may cause a delay in the ability for medical aid to be given by the emergency and medical services. Also do not allow the casualty to smoke.

Consent to give First Aid
Where possible, always ask the casualty's permission prior to administrating first aid. If a casualty does not allow you to touch them and they need emergency help you should call for emergency help 999/112.

Touching someone without their consent could be deemed as assault.

In situations where the casualty is unconscious you are not expected to obtain consent.

3.5 SEEKING EMERGENCY HELP

Regardless of how well someone seems to be recovering, do not hesitate to get emergency help by calling 999/112 if you are in any doubt at all about their condition or injury. Some workplaces may require you to dial a number to get an outside line or have a direct dial or phone to contact emergency services.

You will be asked to explain BRIEFLY what has happened, keep it concise and to the point. They will then continue to ask a series of questions to determine how serious the incident is, answer them very accurately.

Give as much information as possible to the emergency services who take over care of the casualty. This information is essential including location, incident details, number of casualties, and extent of injuries.

3.6 CASUALTY MANAGEMENT

We assess a casualty to find out how bad their injuries are, and to help us understand how they were caused. Assessing the casualty is divided into two parts:

- **Primary Survey**
- **Secondary Survey**

3.6.1 Primary Survey

The Primary Survey is concerned with assessing the casualty for life threatening injuries and taking immediate and appropriate action at each stage:

Danger - is there any danger to yourself or the casualty?
Response - does the casualty respond?
Airway - is the airway open and clear?
Breathing - is the casualty breathing normally?
Circulation - is there any severe bleeding?

If there are no life-threatening conditions, they are under control or none are present, move onto the secondary survey.

3.6.2 Secondary Survey

The Secondary Survey involves determining the background to an injury, assessing the mechanics of the injury, looking for signs, determining symptoms and conducting a thorough examination of the casualty.

This is covered in more detail in First Aid at Work.

3.7 UNCONSCIOUS CASUALTY

Loss of consciousness can be caused by:

- Reduced supply of blood to the brain for example, from a faint, suffocation, heart attack, stroke or shock
- Head injury
- Poisoning or drugs
- Effects of extremes of temperature
- Drowning or some other form of asphyxiation, for example a sweet blocking the airway
- Seizures, epilepsy or diabetes

Symptoms
As the casualty is unconscious, they will be unable to tell you any of their symptoms.

Signs
An altered level of consciousness can be anything from slight drowsiness or confusion to deep coma in which the casualty is totally unresponsive.

One of the easiest ways to decide whether or not someone is unconscious is to shake them very gently and talk to them. Ask if they are awake or if they can hear you, but be careful not to cause any unnecessary movement so any injury, particularly to their neck, is not made worse.

Treatment
The basic treatment is as follows:

- Complete primary survey and give CPR if required
- Treat any major bleeding and remove or treat any obvious, immediate cause of unconsciousness
- If they are unconscious due to an accident (not sudden collapse or drowning) or where there is the possibility of injuries, complete a secondary survey and treat any injuries
- Loosen the clothing at their neck, chest and waist
- Protect them from cold and wet conditions
- Place the unconscious casualty in the recovery position if you are sure they are breathing normally (unless the casualty is suffering from suspected spinal injuries)
- Continue to monitor the casualty's conscious state and recheck breathing
- Record any changes in condition at least every 10 minutes and pass on the information to the paramedics when they take control of the situation

If consciousness returns, reassure them but don't give them anything to eat or drink.

3.8 HEART ATTACK

A heart attack occurs if there is some interruption in the blood supply to the heart itself such as a blood vessel becoming blocked resulting in the heart muscle being starved of oxygen.

Symptoms

- Dizziness, nausea
- Severe crushing or tightening sensation/pain in chest
- Tingling sensation/pain in left arm, may spread to jaw or other areas
- May be confused with feeling of indigestion
- Rapid, weak or irregular pulse
- Feeling of impending doom
- Anxiety

Signs

- Pale grey skin
- Coughing
- Blue tinge to skin and lips
- Sweaty skin
- Casualty may find breathing difficult
- Clutching chest
- Sudden collapse

Treatment

- Call 999/112 for emergency help
- Assist the casualty to sit in a comfortable position (half sitting)
- Loosen tight clothing around the neck and waist
- Ask the casualty if they have any medical conditions or medication and if so, advise them to use as prescribed (casualty may say they suffer from angina)
- Reassure the casualty
- If possible, remove any causes of stress or anxiety
- Monitor the casualty
- Be prepared to perform CPR if the casualty stops breathing

Explain that slowly chewing one standard aspirin tablet (300mg) is beneficial. If the casualty wants to take aspirin, get the tablets for them if available (ask the casualty if they are allergic to aspirin).

First Aid at Work does not advise giving tablets or medicines to treat illness. The only exception to this is where aspirin is used when giving first aid to a casualty with a suspected heart attack, in accordance with currently accepted first-aid practice. It is recommended that tablets and medicines should not be kept in the first aid box.

HSE First Aid at Work Regulations state:
*Some casualties may carry their own medication that has been prescribed by their doctor (e.g. an inhaler for asthma). If an individual needs to take their own prescribed medication, the first aider's role is generally limited to helping them do so and contacting the emergency services as appropriate.**

**Current HSE advice at time of print*

3.9 SHOCK

Shock is a failure of the circulation, which leads to an inadequate supply of blood to vital organs. So shock means there is not enough blood being pumped round the body and vital organs.

The medical definition of shock has very little to do with the way we tend to use the word in normal circumstances. Medically, it is a serious condition and needs urgent qualified medical attention.

The circulatory system can fail to maintain sufficient blood flow for a number of reasons, including:

- Low blood volume - normally due to bleeding (Hypovolemic shock)
- Loss of bodily fluids - for example due to severe vomiting, diarrhoea, burns, blood loss or severe dehydration (Hypovolemic shock)
- Low cardiac output - not enough blood being pumped round the body by the heart (Cardiogenic Shock)

When our circulation fails, essential parts of our body such as the brain, kidneys and heart don't get as much oxygen as they need and so they cannot function properly. In extreme cases, this can be fatal.

The body tries to compensate for the lack of circulating blood by:

- Drawing the remaining blood away from the skin and directing it to more important areas
- Increasing the rate of breathing to get as much oxygen as possible into the blood
- Speeding up the heart to circulate the blood more rapidly

Symptoms

- Dizziness
- Confusion
- Disorientation
- Nausea
- Thirst

Signs

The signs of shock result from lack of oxygen and the body's attempt to compensate for this.

- Pale, cold clammy skin
- Blueness of lips and extremities
- Weak rapid pulse
- Rapid, shallow breathing
- Unconsciousness

Treatment

- Assist the casualty to lie down, raise the casualty's legs where possible/injuries permit
- Loosen tight clothing around the neck, chest and waist
- Treat the cause of shock where possible
- Reassure the casualty
- Keep them warm to prevent heat loss
- Monitor the casualty
- Do not give them food or drink
- Call 999/112 for emergency help

3.10 DRESSINGS AND BANDAGES

A dressing is used to be placed on a wound to control bleeding, prevent infection and absorb any discharge. They should be sterile, absorbent and the gauze should be large enough to cover the skin beyond the wound. Bandages come in a range of sizes.

Triangular bandages are used to make a sling, hold other bandages in place, provide support and to restrict movement of or immobilise an injured limb.

Sticking plasters are small self-adhesive dressings that should always be individually wrapped and sealed.

Application

Always place dressings straight onto the wound. If bleeding is under control, clean the wound and surrounding skin first and then apply the dressing.

Once a dressing has been applied, particularly on upper limbs, check the circulation to make sure the dressing is not too tight.

Where there is a foreign body protruding from the wound, apply pressure with a dressing around the foreign body and not directly on top of it. NEVER remove anything that is sticking out of a wound.

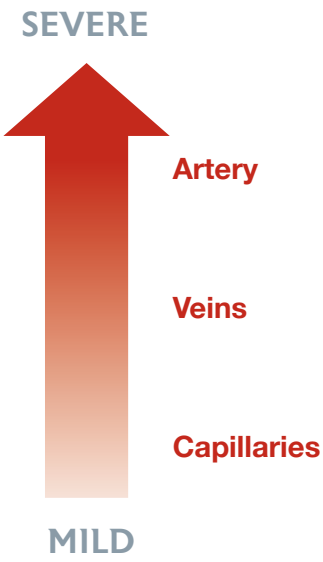
3.11 BLEEDING

Losing blood reduces the amount of oxygen that is carried to vital organs. Severe bleeding can cause shock and ultimately death. Bleeding can be external from a cut, or internal following a severe blow.

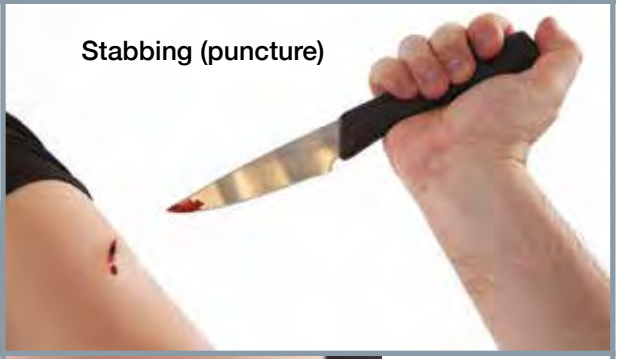
Bleeding can be from:

- Capillaries - the blood will trickle out, normally seen with grazes and small cuts
- Veins - the blood will ooze out
- Artery - the blood will spurt out, a severed artery can lead to significant and rapid blood loss leading to shock and death

Severity of bleeding



3.11.1 Types of Wound

Type of Wound and Appearance	
Bruise (contusion) 	Stabbing (puncture) 
Graze (abrasion) 	Gun shot (a small entry wound may be accompanied by a large exit wound) 
Tear or rip (laceration) 	Amputation 
Clean cut or slice (incision) 	

3.11.2 Minor Injuries

Minor injuries are common and require simple treatment.

Small cuts

Treatment:

- Irrigate thoroughly with clean water to remove any dirt
- Dry the wound with a sterile dressing and apply an adhesive plaster or sterile dressing

Grazes

Treatment:

- Irrigate thoroughly with clean water to remove any dirt and grit
- Dry the wound with a sterile dressing and apply an adhesive plaster or sterile dressing

Bruises

Treatment:

- To reduce swelling use a ice pack wrapped in a clean cloth (triangle bandage can be used)
- Apply ice pack to bruise for 10 minutes

3.11.3 External Bleeding

Symptoms

- Pain in the affected area
- Thirst
- Weak but rapid pulse

Signs

External bleeding is usually obvious but a quick examination of the whole casualty, including any necessary removal of clothing, helps to make sure no hidden bleeding is missed.

Treatment

A dressing should be large enough to cover the wound. A firmly applied dressing with direct pressure is sufficient to stem bleeding from the majority of minor wounds but should not restrict blood flow.

- Wear protective gloves
- Lay or sit the casualty down in a comfortable position
- Call 999/112 for emergency help in all but minor cases
- Examine the wound and check for foreign objects
- Apply direct pressure to the wound preferably using a sterile dressing. Or if no dressings are available then use your (or the casualty's) fingers or hand
- Treat the casualty for shock

If the bleeding does not stop, apply a second dressing on top of the first.

For severe bleeding, or bleeding that is not controlled by direct pressure, consider applying a haemostatic dressing, only if you have been trained in their use. If the bleeding remains severe, consider using a tourniquet, again **ONLY** if you have been trained in their safe use.

If there is an embedded object in the wound in addition to the above:

- Do not remove the object unless it is a splinter as this may cause further damage and may increase bleeding
- Build up sterile dressings around the embedded object to apply pressure to help reduce bleeding and support the object

3.11.4 Internal Bleeding

Signs and symptoms
Internal bleeding is harder to see.

Look out for:

- Skin becoming pale, cold and clammy
- Confusion or restlessness that may lead to a collapse and unconsciousness
- Bruising, and particularly pattern bruising, at the point of impact or swelling

Treatment

- If you suspect a casualty has suffered internal bleeding call 999/112 for emergency help
- Treat for shock

3.11.5 Varicose Vein Bleed

Veins in the legs have a one-way valve to make sure the blood going back to the heart only flows in one direction. If one of these valves fails, blood collects behind it and this is easily damaged by a knock against something such as a chair or a table leg. The blood may squirt and appear quite alarming.

Treatment

- Direct pressure should be applied for at least 10 minutes or until bleeding stops

3.11.6 Amputation

A limb that has been partially or completely severed from the body is called an amputation. It is essential to look after the amputated part carefully to improve the chances of it being re-attached in hospital.

Symptoms
As for bleeding

Signs
As for bleeding

Treatment
As for bleeding

For severe bleeding, or bleeding that is not controlled by direct pressure, consider applying a haemostatic dressing, only if you have been trained in their use. If the bleeding remains severe, consider using a tourniquet, again **ONLY** if you have been trained in their safe use.

Protect the amputated part by wrapping it in a plastic bag or cling film then with a soft cloth (a bandage will do) cover with ice or cold pack.

DO NOT LET THE AMPUTATED PART COME INTO CONTACT WITH ICE OR WATER

3.11.7 Bleeding from the Nose

Some people get nosebleeds quite often and it is more of a nuisance than a danger. Bleeding may also be caused by a bang on the nose or violent sneezing and some casualties lose a lot of blood. High blood pressure or anti clotting medication may also be a cause of a nose bleed.

If the blood is thin and watery and follows a head injury this could indicate a skull fracture and is potentially very serious.

Symptoms

- Pain if from an impact

If there is excessive blood loss:

- Dizziness
- Weakness
- Confusion
- Feeling faint

Signs

- Bleeding from the nose

Treatment

- Sit the casualty down with their head tilted forward
- Ask them to breathe through their mouth
- Apply pressure to the soft tissue on both sides of the nose just below the bridge - the casualty might be able to do this for themselves
- Ask the casualty to try not to speak, swallow, cough or sniff, as this could dislodge the newly formed blood clot
- Apply pressure for 10 minutes at a time
- If the bleeding is severe or lasts more than 30 minutes, call 999/112 for emergency help

3.12 SPLINTERS

Small objects that pierce the skin such as glass, wood (sometimes thorns from plants) or any small sharp object that has pierced the skin are called splinters. Where a splinter is of a small nature they can usually be removed using tweezers. If a splinter is difficult to remove, goes very deep or is of a large nature (see embedded object page 35) it should be left where it is with the casualty asked to seek medical help. As splinters are often dirty they can be a cause of infection where the skin is broken.

Symptoms

- Minor pain / irritation

Signs

- Visible splinter

Treatment

- Wear protective gloves
- Clean the area around the splinter
- Use tweezers to grab the splinter as close to the skin as possible to reduce the chance of it breaking
- Pull the splinter out in the same direction as it entered the skin
- Once the splinter has been removed, gently squeeze to allow the site to bleed slightly. This can help reduce the likelihood of infection by cleaning the wound.
- Cover with a dressing after cleaning and drying the wound

3.13 BURNS AND SCALDS

Examples of how burns can be caused:

- Dry heat (hot surface, fire, friction burns, sunburn)
- Wet heat (Steam, hot liquid)
- Chemical
- Electrical

Symptoms

- Pain in the area of the burn
- Serious burns may cause little pain because the whole thickness of the skin, including the nerves, has been destroyed
- Shock e.g. if a large area of the body has been burned, the loss of fluid leads to shock
- Breathing difficulties if the airway is affected

Signs

- Blistering
- Swelling
- Redness
- Clear fluid on affected area
- Signs of shock

Treatment

- Flood the affected area with cool running water for at least ten minutes*
- If clothing is stuck to the affected area, do not try to remove it as you could cause further damage
- Remove any rings, watches or jewellery carefully before the injured area starts to swell
- To prevent infection cover the burn with a non-adhesive, sterile dressing. Where available loosely applied cling film should be used
- Treat the casualty for shock

*beware of causing hypothermia when cooling large burns, especially in the young and elderly

- **Call 999/112 for emergency help if**:
  - the casualty is a child or elderly
  - it appears to be severe or you are unsure about the extent of a burn
  - chemical leak
  - the casualty has suffered an electrical burn

Apart from using an approved burn dressing taken from the first aid kit DO NOT use creams, oils or lotions on any part of the burn and under no circumstances should you burst blisters as this can cause infection.

3.13.1 Severity of Burns

When a casualty sustains a burn, skin is burnt. There are 3 layers of skin, outer layer, epidermis and the final layer containing nerves, fat tissue, muscles and blood vessels.

Burns are classified according to the depth of skin damage

Superficial
Outer layer of skin burnt.

The skin will appear red, tender and swelling may begin.

Partial thickness
Outer layer and epidermis burnt.

The skin will be red and raw with blisters appearing due to the fluid released from the damaged tissue below.

Full thickness
All layers of skin burnt. This could include nerves, fat tissue, muscles and blood vessels.

It may look charred or waxy. Pain may be absent if nerve endings have been involved.

Severe burns include some of the following:

- Depth of burn- A deep burn affecting all layers of skin
- Location of burn- A burn that cover the feet, hands, face, genitals or extends around a limb
- Size of burn- A burn that covers an area greater than the size of the casualty's palm of their hand
- Cause of burn- A burn from a chemical or electricity

3.13.2 Sunburn

Sunburn occurs when the skin burns and/or blisters from ultraviolet rays (sun/sun beds). When combined with windy conditions, can cause severe burns.

Symptoms

- Itching and tenderness of the skin
- Pain
- Dizzy
- Symptoms of shock

Signs

- Redness to skin
- Blisters
- Burns
- Wetness or sweat to skin

Treatment

- Move the casualty to shade
- Give sips of cold water
- Cool the burn with cool water
- Call 999/112 for emergency help if the burning is severe

3.14 ELECTRIC SHOCK

Dealing with electrical emergencies can be extremely dangerous and must be carried out in accordance with the written procedures set out in your workplace to ensure your safety.

Contact with electricity can result in:

- Unconsciousness
- Spasm of the respiratory muscles so that breathing stops
- Cardiac arrest (as the shock can interrupt the normal rhythm of the heart)
- Burns at entry and exit points

If the heart has been affected, symptoms and signs will be similar to those of a heart attack.

Symptoms

- Pain
- Symptoms of shock

Signs

- See casualty jolt/shake/jump
- Burns
- Signs of shock
- Unconsciousness
- Difficulty/no breathing

Treatment

- Isolate the power by turning off the mains supply, ideally at the consumer unit
- Do not touch the casualty with anything metal or wet until power is isolated

Once the electrical supply has been isolated:

- Call 999/112 for emergency help
- Complete a primary survey and if needed start CPR
- Treat burns
- Treat casualty for shock
- If the casualty is unconscious and you are sure they are breathing normally, place them in the recovery position and monitor breathing

3.15 FAINTING

Fainting is caused by a temporary reduction in the blood supply to the brain. It may begin with a feeling of dizziness and lead to collapse, and the most common causes are:

- Injury
- Illness
- Fatigue
- Long periods in a hot stuffy atmosphere
- Long periods of standing still

Symptoms

A casualty may feel or have the following prior to fainting:

- Nausea
- Blurred vision
- Stomach ache

Signs

- Casualty may yawn, sway and become unsteady
- Face may become pale
- Sweat may be visible on the face, neck and hands
- Brief unconsciousness
- Cold clammy skin
- Shallow breathing
- Slow, weak pulse

Treatment

When someone feels they are about to faint:

- Reassure them
- Advise them to breathe deeply but slowly
- Lay them down and raise their legs
- Loosen any tight clothing
- Where possible, ask bystanders to leave the area to help the casualty relax/remain calm
- When they recover give them sips of water

In a full faint:

- Lay the casualty down
- Raise the casualty's legs
- Check their airway and breathing is normal
- If the casualty does not come round quickly and your are sure they are breathing normally, place them in the recovery position and monitor breathing, call 999/112 for emergency help

3.16 SEIZURE AND EPILEPSY

Seizures occur when normal brain activity is suddenly disrupted. This can be caused by a number of different illnesses or injuries.

Some casualties may be diagnosed with epilepsy which is currently defined as a tendency to have recurrent seizures.

Some individuals that have been diagnosed may sense a seizure coming on.

3.16.1 Seizures (seizures are sometimes called a fit or convulsion)

Signs

- Casualty may collapse suddenly, breathe out and stiffen
- The muscles stiffen and back may arch
- Lips may go blue
- Limbs of the body may make sudden jerking movements
- Eyes may roll
- Teeth may clench (never put anything in the mouth) and saliva may drool from the mouth
- Breathing could be loud, like snoring
- Casualty may lose control of bladder or bowel

Treatment

- Objects which could cause injury should be removed
- Protect the head (put something soft underneath the head if the casualty is on a hard surface)
- Loosen any clothing around the casualty's neck that may restrict breathing
- Time the seizure to note exact time and duration

Once the seizure is over:

- The casualty should rest quietly until they are fully recovered
- The casualty may feel tired and fall into a deep sleep
- If you are sure the casualty is breathing normally place them into the recovery position and monitor breathing

Remember you should be suspicious of cardiac arrest in any casualty presenting with seizures, and you must assess the casualty for normal breathing once the seizures have ended

Call 999/112 for emergency help if:

- The seizure lasts longer than 5 minutes
- The casualty has had a second seizure
- The casualty has injured themselves
- This is the casualty's first ever seizure
- The casualty does not wake up after 10 minutes of recovery
- If the seizure is different or lasts longer than what is normal for the casualty
- You are unsure

3.16.2 Absence Seizures

Absence seizures appear as if the casualty is day dreaming and are common in children. This may last for just a few seconds and the casualty may often be unaware that it has happened.

Symptoms and signs

- Common signs are jerking and twitching
- Casualty plucking at their clothes
- Swallowing repeatedly
- Lip smacking
- Wandering around appearing dazed

Treatment

- Guide the casualty away from any danger
- Help the casualty to sit or lie down in a quiet place
- Reassure the casualty
- Stay with the casualty until they are fully alert

3.17 CHECKING PULSE TO MONITOR CASUALTY

Pulse Check

The pulse is a wave of pressure in the blood stream created by each heartbeat. The pulse gives three indications about how the heart is working:

- Rate (beats per minute)
- Strength (strong or weak)
- Rhythm (regular or irregular)

A normal heart rate for adults is 60-100 beats per minute (bpm) at rest, although this may be slower in very fit adults and more rapid in children.

Measuring Pulse Rate in Children and Adults

Radial (Wrist) Pulse

- Support the casualty's arm extended (straight), with the palm facing up
- Place the pads of two or three fingers below the wrist creases at the base of the casualty's thumb
- Locate the pulse, and count how many beats occur in one minute

Carotid (Neck) Pulse

- Place the pads of two fingers beneath the casualty's jaw between the large neck muscle and the windpipe
- Locate the pulse, and count how many occur in one minute

Measuring Pulse Rate in Infants

- Position the infant in a comfortable position
- Place the pads of two fingers on the inside of the casualty's upper arm
- Locate the pulse, and count how many occur in one minute

SAFETY NOTICE – Pulse checks should not be used as part of the CPR sequence as detailed within this manual.

Pulse checks may be used whilst monitoring a normal breathing casualty and to help determine appropriate first aid treatment.

3.18 MOVING AND HANDLING CASUALTIES

Never move an ill or injured person unless their life is in danger or there is some other very urgent need to move them. Leave them undisturbed, call for emergency help and give first aid on the spot. Moving a casualty increases the chance of making an injury worse or even causing another injury.

If, for example, the casualty is at risk of drowning, cold injury, poisonous gas or fire (remember not to put yourself at risk) you may have no choice but to move them as quickly and as carefully as possible.

How you move them depends on several factors:

- The kind of injury they have and how serious it is
- If they are conscious and able to walk
- If they are conscious but not able to walk
- If they are unconscious
- If you suspect a spinal injury

- The casualty's weight
- The number of team members or helpers available
- The distance to be covered e.g. to the first aid room

The only time you should ever move a seriously injured casualty on your own is if there is no one available to help and the danger is really serious. Always make sure that everyone involved, including the casualty whether you think they are conscious or not, knows exactly what is going to happen and what they must do. Always give clear instructions before each movement.

All lifting should be done by as many trained people as possible with only one person, usually the person at the heaviest part of the body, giving instructions. Where possible, use a stretcher or rescue board if you have to move a casualty any distance.

3.19 AFTER THE ACCIDENT/INCIDENT

It is important to:

Clean Up

- Mop up any spills of blood or other body fluids
- Disinfect with a specialised cleaning agent for body fluids
- Place any used dressings or contaminated material in a yellow clinical waste bag or bin

Fill Up

Remember to restock the first aid box and other equipment with any items that have been used to ensure it is ready for any future first aid use.

Write Up

All accidents/incidents in the workplace must be recorded. This may be in an accident book or accident report form.

Details in the record should include:

- Name, age and address of the casualty
- The date, time and location of the accident/incident
- Details of how the accident happened
- Details of the injuries sustained
- Name, age and position of the First Aider who treated the casualty

It is important that accidents are recorded so they can be investigated to prevent a recurrence and trends can be identified. These documents could be used for the purposes of insurance claims, or in extreme cases, in a court of law.

RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrence Regulations 1995) requires employers to report certain accidents to the Health and Safety Executive, these accidents include:

- Death
- Major injuries
- Dangerous occurrences
- Incidents resulting in a person being off work for more than seven days incapacitation (not counting the day on which the accident happened)
- Diseases
- A casualty is taken directly to hospital

Complete an accident report form at the facility where you are doing the course relating to a simulated minor accident.

REVISION : First Aid

1. What are the priorities of first aid?

2. What would you find in a first aid box?

3. What is the difference between a symptom and a sign?

4. What is the treatment for an unconscious casualty?

5. What treatment should you give to a casualty suffering a heart attack?

6. What is the treatment for shock?

7. What is the treatment for a bleed?

8. How would you treat someone suffering from a nose bleed?

9. What is the treatment for a burn?

10. What safety considerations must you consider if a casualty has an electrical burn?

11. How would you remove a splinter?

REVISION : First Aid

12. What action would you take if a casualty is choking?

13. How can you protect yourself and the casualty when providing first aid?

14. What could cause someone to faint?

15. How would you treat a casualty who is having an absence seizure?

Management of Anaphylaxis

3.20 ANAPHYLAXIS

This is a serious, potentially fatal condition caused by a severe allergic reaction. In allergic individuals, anaphylaxis can develop within a few seconds or minutes following contact with any substance that they are allergic to.

Triggers for Anaphylaxis:
A trigger is something that can cause an action or situation, in this case anaphylaxis:

- Foods - nuts, milk, fish, shellfish, egg
- Medicines - general anaesthetic, aspirin
- Insect stings - in particular wasps, bee stings
- Latex - types of rubber found in some rubber gloves

Symptoms and Signs

- Swollen tongue
- Hoarse voice
- Difficulty swallowing
- Difficult or noisy breathing
- Wheeze or persistence cough
- Abdominal pain, nausea and vomiting
- Anaphylactic shock

Other Symptoms
These symptoms can also occur on their own, without the more severe ones. Where that is the case, the reaction is likely to be less serious but you should watch carefully in case any of the more severe ones develop.

- Swelling of the hands, feet, face or skin (angioedema)
- Red itchy rash or raised areas of skin (hives or urticaria)
- Widespread flushing of the skin
- Anxiety/panic, feeling of terror

An allergic individual may be wearing a Medic Alert bracelet

Anaphylaxis can also cause life threatening problems to the casualty's airways, breathing and/or circulation:

- **Airways** - swelling of the lips, throat, tongue, stridor (a high-pitched wheezing sound)
- **Breathing** - breathing difficulties, wheezy sound, fatigue, confusion
- **Circulation** - the casualty's blood vessels may start to dilate which could cause them to become weak, floppy, faint, pale, clammy and drowsy

EMERGENCY First Aid

Management of Anaphylaxis

Treatment

- Ask the casualty if they have their auto injector* with them e.g. EpiPen®, Jext®, Emerade®
- The casualty should administer their own medication as prescribed, adults will generally self-medicate and the parent or guardian will most likely medicate a child.
- Call 999/112 for emergency help following the use of the first device, even if there is immediate improvement or if further devices are available. The emergency service operator must be told the person is suffering from anaphylaxis and needs to be attended by paramedics.
- If the casualty has difficulty breathing they may prefer to sit up which may make breathing easier
- If the casualty feels faint lay them down immediately and raise their legs
- If the casualty's condition deteriorates after making the initial 999 call, a second call to the emergency services should be made to ensure an ambulance has been dispatched.
- A second dose of medication should be administered if there is no improvement within 5-10 minutes or if symptoms return
- Monitor the casualty's breathing and prepare to give CPR if required
- An unconscious casualty who you are sure is breathing normally should be placed in the recovery position and breathing monitored

*an adrenaline auto-injector is an injection that is administered into the casualty's thigh (mid, upper, outer).

3.20.1 Using an Adrenaline Auto-Injector

Using an adrenaline auto-injector requires training, it is important someone who may have to administer the device has received training.

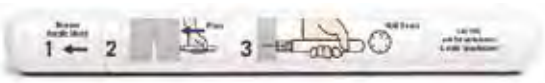
Adrenaline auto-injectors

An adrenaline auto-injector is a medical device designed to deliver a dose of adrenaline. They are like spring-loaded syringes with a needle to pierce the skin and ensure the medication going into a muscle.

Adrenaline auto-injectors are easy to use and are intended for self-administration by patients, or administration by someone who has received training.

In the UK there are 3 adrenaline auto-injectors for the treatment of anaphylaxis; Emerade®, EpiPen® & Jext®

Emerade®



EpiPen®

Jext® - 150 Micrograms (patients 15-30kg)

Jext® - 300 Micrograms (patients 30kg +)

Medication
It is important before administering medication that the following are checked:

- Is the medication correct for the casualty?
- Is it the correct dose? (adrenaline auto-injector will display the dosage)

Routine checking of medication is also important and would include:

- Is the medication prescribed to the person you are treating?
- Is it damaged?
- Is it in date?

Safe use of an Adrenaline auto-injector
All adrenaline auto injectors are very similar and are administered into the mid upper outer thigh. You do not need to remove any clothing; however, you do need to be aware of zips, buckles or anything that may be in the casualty's pocket.

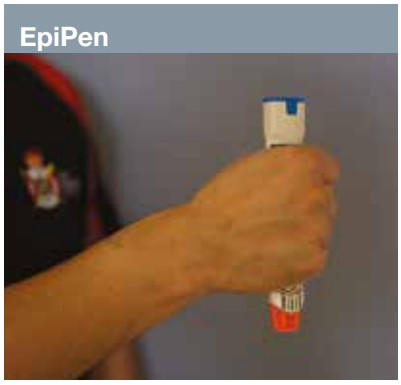
It is always important to check the instructions on the side of the casualty's device to ensure it is being administered correctly.

Before applications:

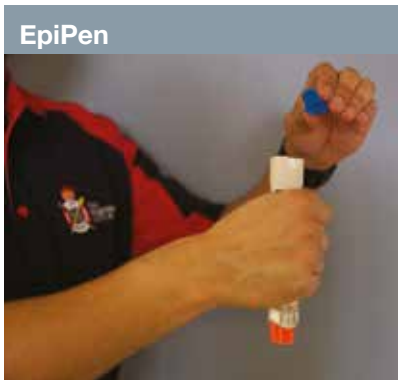
- Locate the medication
- Position the casualty (sat upright or lay down with their legs elevated)
- Check injection site (ensure there are no zips, buckles or anything that will get in the way)
- Follow the instructions on the adrenaline auto-injector

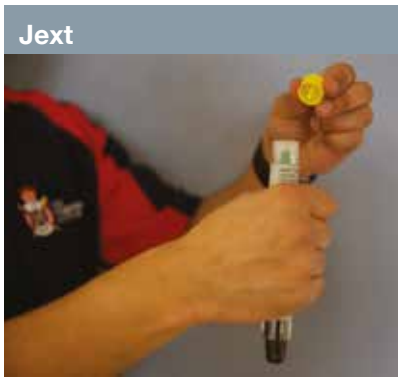
To use an auto-injector:

1. Hold in dominant hand



2. Prepare auto-injector





Remove blue safety cap

Remove yellow safety cap

Remove the needle shield

Management of Anaphylaxis

3. Administer auto-injector into MID UPPER OUTSIDE THIGH

EpiPen

Swing from 10 cms away and jab the tip into the thigh

Jext

Push the tip of the auto-injector into the thigh

Emerade

Press the tip of the auto-injector into the thigh

4. Hold the auto-injector in place for:

EpiPen - *3 seconds*

Jext - *10 seconds*

Emerade - *5 seconds*

5. Massage the injection site for 10 seconds

Jext

Emerade

6. Ensure 999/112 has been called

7. Reassure and monitor the casualty. Repeat dose can be administered 5 - 10 minutes later if there is no improvement or if the signs and symptoms return.

Ensure that auto-injector are disposed of in the correct way

3.20.2 Hand Over

When the health professional arrives, you must ensure you provide a detailed hand over.

What do you think this would include?

- Casualties name
- What happened
- What first aid was administered
- Have you used one or two auto injectors
- Has the casualty remained conscious throughout?

Glossary of Terms and Abbreviations

- **ABC** – Airway, Breathing and Circulation
- **ACoP** – Approved Code of Practice
- **AED** – Automated External Defibrillator
- **Asphyxia** – when the body cannot get enough oxygen
- **Cardiac Arrest** – when the heart stops pumping
- **Chain of Survival** – the key stages in the life support sequence
- **Child** – a child is defined for the purposes of resuscitation to be from the first year of life to puberty
- **Choking** – when a piece of food or other material is swallowed but goes down the trachea (windpipe)
- **Circulation** – blood being pumped around the body to the heart
- **CPR** – Cardiopulmonary Resuscitation
- **Fainting** – temporary reduction in the blood supply to the brain
- **Heart Attack** – interruption in the blood supply to the heart itself such as a blood vessel becoming blocked resulting in the heart muscle being starved of oxygen
- **Infant** – Is defined for the purposes of resuscitation, as in the first year of life
- **Primary Survey** – is the first step in assessing the casualty for life-threatening conditions and taking the appropriate action
- **Pulmonary** – anything relating to the lungs and how we breathe
- **Pulse** – a wave of pressure in the blood stream created by each heartbeat
- **Regulations** – The Health and Safety at Work Act makes provision to enable Regulations to be made, and enacted into law, and details what employers are required to do to manage Health and Safety. These Regulations directly impact on businesses and individuals
- **Regurgitation** – the return of partially digested food from the stomach to the mouth
- **Respiration** – breathing – getting air in and out of the lungs (process of inhaling and exhaling)
- **Resuscitation** – the act of attempting to revive a nearly dead or apparently dead casualty
- **Secondary Survey** – involves determining the background to an injury, assessing the mechanics of the injury, looking for signs and symptoms and conducting a thorough examination of the casualty

Glossary of Terms and Abbreviations - continued

- **Splinter** – small objects that pierce the skin
- **Seizure** – when normal brain activity is suddenly disrupted
- **Shock** – failure of the circulation, which leads to an inadequate supply of blood to the vital organs
- **Sign** – an obvious physical indication of injury which might be bruising, an obvious problem with a joint or limb, respiratory failure or bleeding, something you can actually see
- **Symptom** – a description that the casualty gives you, possibly stiffness, loss of feeling, tenderness, pain or temperature
- **Tracheostomy** – an opening to the windpipe (stoma) in the front of the neck
- **Sharps** – any object capable of cutting or piercing the skin such as needles

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