



AUTOMATED EXTERNAL DEFIBRILLATOR STUDENT MANUAL

VERSION 8.2



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ProTrainings AED Course Manual

Welcome to your ProTrainings AED course. Basic Life Support courses can be taken as a classroom, blended or 100% online course. This manual goes with all of our AED and AED combines with BLS courses and gives supporting information to your course. There may be subjects covered in this manual that were not on your course but you may find them interesting. More information and access to free videos and materials is available at www.proaed.co.uk.

The classroom course must be conducted with a ProTrainings approved instructor. You can find approved instructors near you by searching on www.procourses.co.uk or by contacting us directly on support@protrainings.uk or 01206 805359.

This manual is designed to be used exclusively by students who have completed a ProTrainings First Aid Course or a course that has been certified by ProTrainings Europe Ltd. You can validate your certificate and receive a PDF version online from the bottom of www.probls.co.uk or any of our websites.

On completion of a classroom course you will receive a certificate and wallet-sized card from your instructor in the post. You can also download a certified CPD certificate from your free ProTrainings login area, as well as other downloads, reminders and weekly refreshers. If you do not have a login, email support@protrainings.uk.

Make sure you register online for the latest updates; these are automatic for online students. Your instructor should have registered you already and if you are doing an online course you will have already received your login details if you have this book. Online you will have access to videos and resources as well as being able to print your Certified CPD certificate and to create your free training portfolio record.

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Below are examples of the ProTrainings classroom certificate you will receive in the post after your course. Online course certificates are available online to print along with Certified CPD Statements.



Before we start

Before we start it is worth giving you the definitions of some of the terms used in first aid.

Good Samaritan Law - states that a person acting in good faith, rendering reasonable first aid will not be held accountable for damages to the person they are assisting, unless gross wilful misconduct is used. This law is not valid in some countries, for example the UK, but other laws are there to protect the first aider.

Consent - a patient allowing you to give first aid. This is gained by asking the patient if you can help them. You can also ask a parent or family member.

Informed Consent - you informing the patient of the consequences, followed by the patient giving you permission to give first aid.

Implied Consent - when a patient is unconscious, it is given that, if the person were conscious, they would request first aid.

Abandonment - initiating care and then stopping without ensuring that the person has the same level or higher care being rendered.

Negligence - when you have a duty to respond and you fail to provide care or you give inappropriate care, and your failure to provide care or inappropriate care causes injury or harm.

Universal Precautions - using gloves, masks, gowns, etc., for every patient every time, when there is a possibility of coming into contact with any bodily fluids

Clinical Death - the moment breathing and heartbeat stop. Typically, a person has a high likelihood of being revived without much cellular damage when clinically dead for approximately 0-6 minutes. Within 6-10 minutes brain cell damage is highly likely.

Biological Death - irreversible damage to brain cells and tissues. If a person has been clinically dead for 10 minutes or more, there will be irreversible cell damage. Resuscitation is unlikely but not impossible. With first aid we always assume there is a chance of survival and continue to give help.

Child – Aged one year old to 18.

Infant – From Birth to one year old.



First Aid in the Workplace

Many countries have specific rules and regulations for the provision of first aid in the workplace. In the UK, the Health and Safety Executive (HSE) lays down laws where employers have to provide adequate numbers of first aid trained staff, whether this is a one-day EFAW or a three-day FAW Course.

The HSE strongly recommends an annual refresher for first aid trained staff and this can be done using our online training course or as hands-on training with a certified instructor.

Other requirements in the UK workplace and other countries include the business' responsibility to keep a record of all accidents and illnesses involving treatment that occur in the workplace.

Under UK regulations, the completed pages of this accident book have to be removed and stored safely in accordance with the Data Protection Act.

There are additional laws that require the employer to report accidents to the HSE where the accident results in more than seven days' absence from work, death or serious injury, including near misses and industrial diseases.

Companies may also have their own in-house first aid records that a first aider in the workplace may need to complete.

Other duties of a first aider in the workplace may include re-stocking first aid kits, ensuring adequate provision of first aid kits and ensuring that any contaminated material is cleaned up and disposed of correctly following an accident at work.

Further information on Rules and Regulations in the workplace in the UK can be found on the HSE Website www.hse.gov.uk/firstaid.

Health and Safety (First Aid) Regulations (1981) - the main act that covers first aid in the workplace. This is worth having - you can get it from HMSO Books.

Management of the Health and Safety at Work Regulations 1999 - this ensures companies carry out risk assessments on all aspects of work carried out by their employees.

RIDDOR - Reporting of Injuries, Diseases and Dangerous Occurrences Regulations.

COSHH - Control of Substances Hazardous to Health (2002).

Social Security Administration Act 1992 - covers how companies report information on incidents.

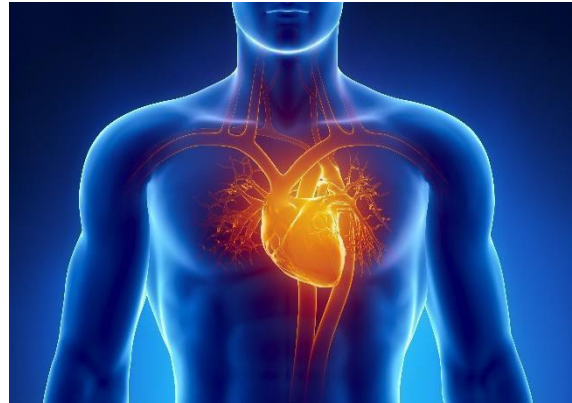
Health and Safety at Work Act 1974 - this requires businesses to make provisions available to ensure that they protect their staff against injury and disease. It covers companies' use of contractors and other people entering their premises.

Some important parts of the body

Heart

Consists of four chambers, about the size of your fist, located under the breastbone. The function of the heart is to pump blood to the brain, lungs and body.

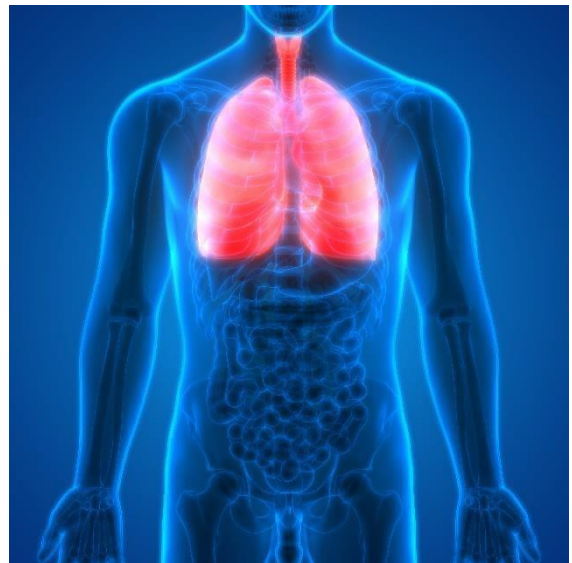
Your body has about 5.6 litres of blood, which circulates through the body three times every minute. The cardiovascular system comprises the heart, arteries, capillaries and veins.



Lungs

There are two lungs and their function are to take in oxygen and release carbon dioxide. Room air contains 21% oxygen. Our bodies use about 4-6%.

When we breathe out, we exhale carbon dioxide and about 16% oxygen.



Brain

Tells the rest of the body what to do and needs oxygen on a regular basis. Brain cells will begin to die in 4-6 minutes without oxygen.

The average human brain weighs 1.36 kilos (three pounds) and uses 20% of the body's oxygen.



Cells

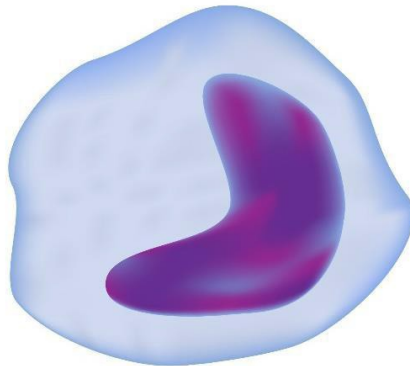
All cells of the body require oxygen continuously to carry out normal functions. Carbon dioxide is produced as a waste product and must be eliminated from the body through the lungs. Red blood cells transport oxygen to the tissue.



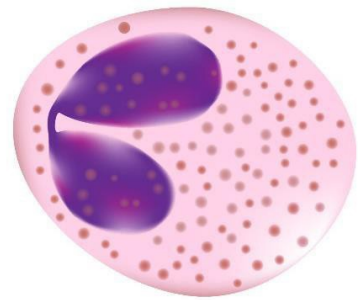
The Elements of Blood



Erythrocytes



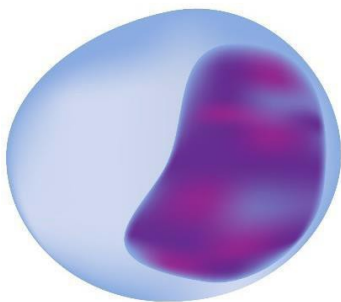
Monocyte



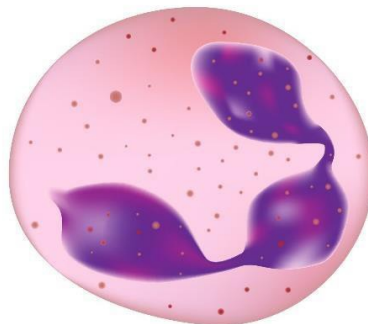
Eosinophil



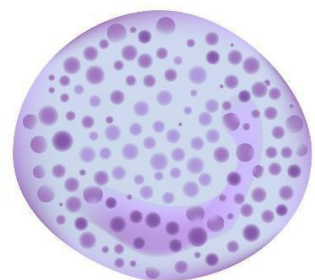
Platelets



Lymphocyte

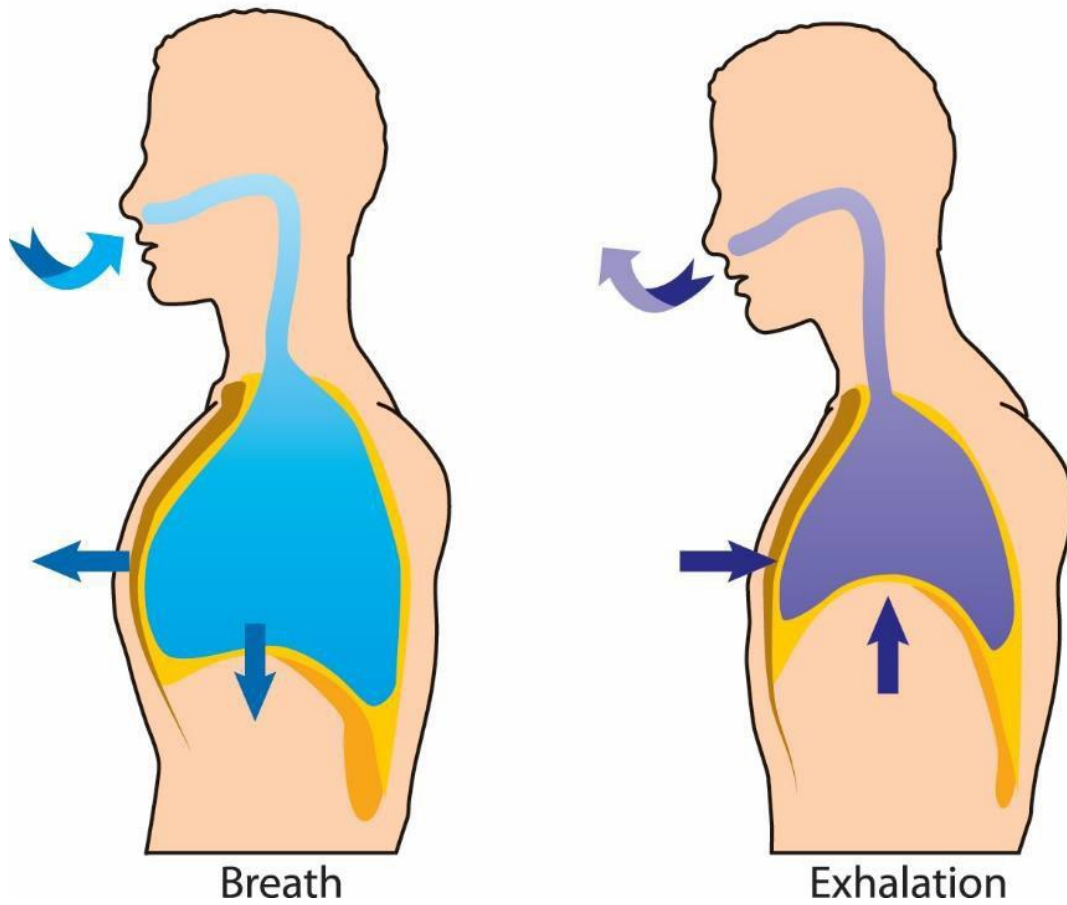


Neutrophil

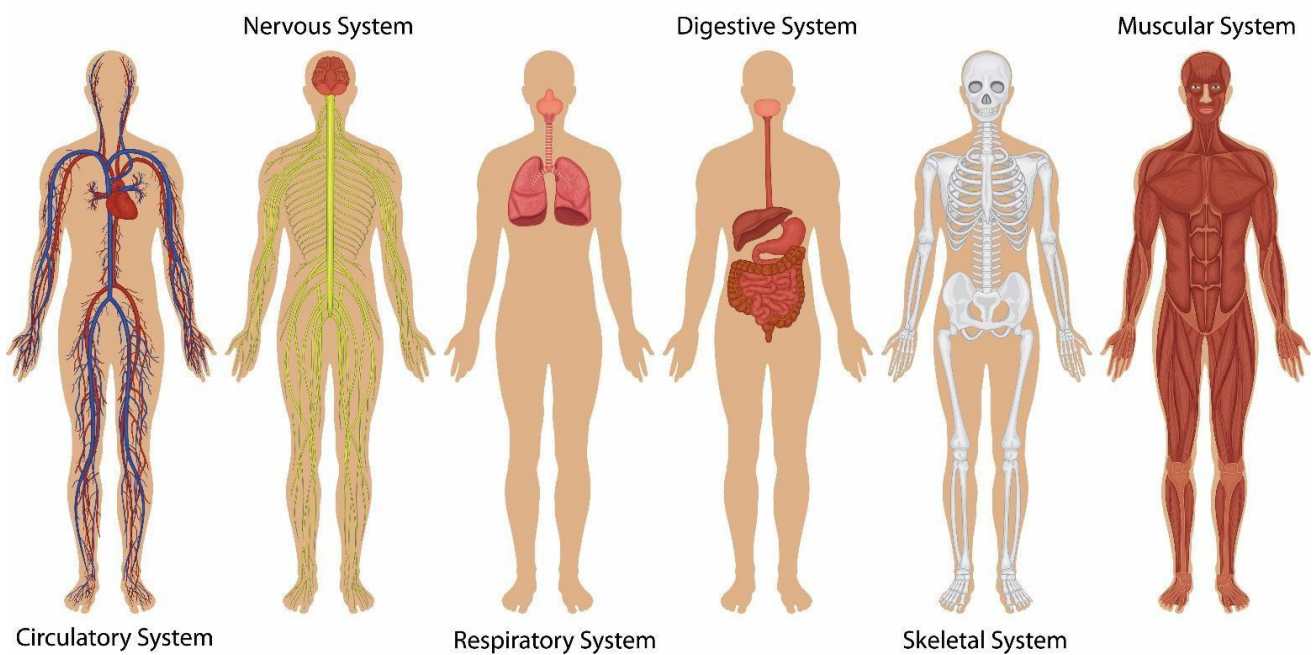


Basophil

The movements of the chest during breathing



Human Body Systems



The Fears of First Aid

We have found that when people attend a first aid course, they are often reluctant participants because they have fears and concerns about administering first aid. Addressing these fears and showing that they are easily resolved makes the rest of the lesson much easier to understand and enjoy.

Fear of being sued - this is the first fear people have about administering first aid. Many countries have a "Good Samaritan Act" or similar law that protects first aiders of all levels from unnecessary lawsuits. The key points to remember are to act within your training, ask permission to help, don't leave the patient unless you have to alert the EMS and act as a normal prudent person would do.

Fear of infection - from blood and other body fluids. People are generally reluctant of close contact with body fluids, as well being concerned about infections such as HIV and hepatitis. This is addressed by the effective use of barriers, which will be covered later on in the lesson.

Fear of doing something wrong - or simply not knowing what to do. The worst medical condition you have to deal with is when someone has no heartbeat and is not breathing. In this situation, the person is dead and you must remember that you cannot make a person any worse if they are dead. Any help you provide to that person can only increase their chance of survival. The worst-case scenario is that they will remain dead.

Fear of hurting the patient - CPR is a really basic skill. Medical research tells us that any form of oxygen circulation is the most important first step in providing life support. The real problem is not in doing CPR wrong, it is in not doing CPR at all. There are some instances where you could do harm, but we will cover these as the lesson continues. Generally speaking, first aid is about caring for the person and getting the Emergency Medical Services (EMS) there as quickly as possible, and in many cases, this may mean just sitting with, and providing comfort to, the patient.

Fear for your own safety - ironically, in real rescues this often is not an issue. In fact, in many cases people automatically enter scenes without adequate consideration for themselves. We will be looking at scene safety and how you can use three simple steps to ensure that you keep yourself safe in a later lesson.



Asking Permission to Help

One simple way of protecting yourself against the fear of possible legal action is to obtain the patient's permission by saying: "Hi, my name is Keith. I am a first aider. May I help you?".

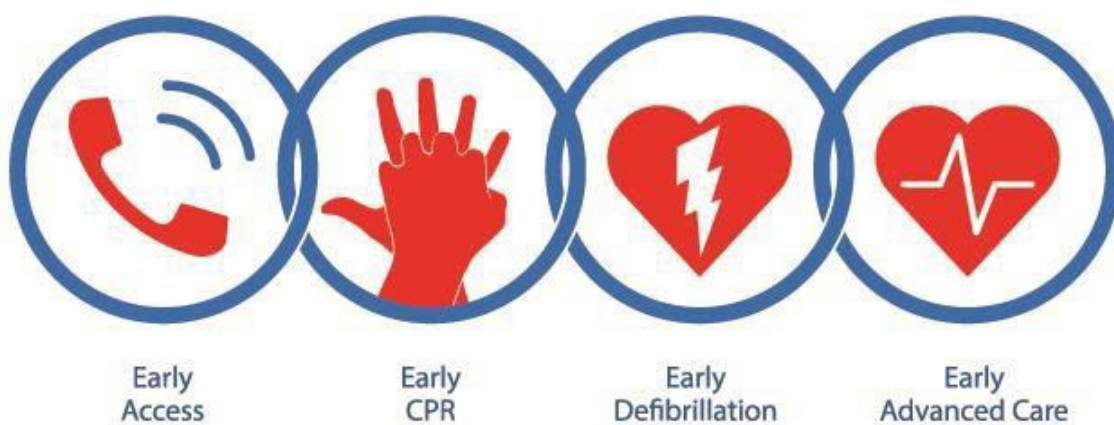
A conscious patient may answer verbally, by nodding or maybe offering up his injured limb to you. All of these can be taken as gaining the person's consent.

With an unconscious casualty, they cannot give you permission to help. However, consent can be assumed to have been given as the patient is likely to have asked for help if they were conscious. You should still ask the person and introduce yourself, but when they cannot answer you can still help. Keep talking the whole time you are helping, as the hearing is the last thing to go and the first to come back.

If someone refuses your help and you are not able to help them, you can still assist by calling the EMS, referring to bosses or family members and trying to reassure them.

As a first aider in the workplace, you may have a duty of care. In these cases, the casualty will usually have to come to you for your help.

Chain of Survival



The chain of survival concept is designed to show you your role in an emergency procedure. Following each link in the chain in the correct order can greatly increase the patient's chances of survival.

Remember the links in the chain are **Early Activation of the Emergency Services**, **Early CPR**, **Early Defibrillation** and **Early Advanced Life Support**. The first aider carries out the first two links and often the third AED link, but if help is not called for then the final link will not arrive.

Scene Safety

Make sure you keep yourself, bystanders and the patient safe when approaching the scene of an accident. Always remember to stop, think, then act. Check for anything that may be a danger, such as broken glass, body fluids, electricity, gas or traffic. Remember that scene safety is your primary concern.

Check the Scene

Key questions to ask:

- Is it safe for me to help?
- What happened?
- How many patients are there?
- Am I going to need to call EMS?
- Do I have any personal protective equipment on and ready to use?
- Is there an AED available?



Check the patient

If it is safe to help, check the patient.

Tap the patient and introduce yourself. If there is no response, activate EMS. To activate EMS, Call 999 or 112.

IF PATIENT NOT BREATHING AND YOU ARE ALONE, PHONE FIRST – Then start CPR, do not leave patient to go looking for an AED, the EMS will bring one.

IF PATIENT NOT BREATHING AND YOU ARE NOT ALONE - send someone to call the EMS and get the AED, make sure they know the location, what has happened and how many people are involved.

Tell them to come back to you and tell you what the EMS has advised.

When you call the EMS, they will be able to give you any advice and support that you need. Work out how to use speakerphone or hands free with your phone so you can deal with the patient while getting advice.



Dial 999 or 112

The ADCD's

The ABCD's concept is designed to give the first aider a guide to what to do first in a first aid emergency, and to show all the primary care and life-threatening conditions.

A - Airway - open the patient's airway by moving the tongue from the back of the throat, which often blocks breathing.

B - Breathing - check for breathing for up to 10 seconds.

C - Circulation - if they are not breathing, administer CPR.

D - Defibrillation - where there is no circulation, use defibrillation to administer an electric shock. This interrupts a cardiac arrest and should allow the heart to start again.

S - Serious bleeding, Shock and Spinal injury - once ABCD's are ok, we move on to these. All these will be covered in our course.

Before entering into a rescue scene, the rescuer should perform an initial assessment to ensure that the scene is safe. Next, personal protective equipment should be worn to protect the rescuer before beginning to help. If alone, the rescuer may need to put the patient in the recovery position, if they are breathing, while leaving to contact EMS. If the patient is not breathing, then perform CPR. The recovery position allows the patient to breathe easily, stay safe, and it takes away the risk of them choking if they vomit.

Barriers – Gloves and Face Shields

The fear of infection may deter some people from providing emergency first aid. Effective use of barriers, including gloves and face shields, protect both you and the patient from the risk of infection. There are special rules in some workplaces for the correct disposal of gloves and other infected materials, so it is best to check your local guidelines.

There are many types of face mask, such as pocket masks or key fob masks. They come in different packages but are all basically the same. The BSi HSE first aid kits in the work place now contain a face mask.

Always use a barrier when dealing with any first aid emergency



Putting Gloves On

Always use disposable gloves when providing first aid care. If you have a latex allergy, use a latex alternative such as nitrile or vinyl. Before providing care, make sure the gloves are not ripped or damaged. You may need to remove rings or other jewellery that may rip the gloves.

Remember to use skin-to-skin and glove-to-glove. Pinch the outside wrist of the other gloved hand. Pull the glove off, turning the glove inside-out as you remove it. Hold it in the gloved hand. Use the bare hand to reach inside the other glove at the wrist to turn it inside-out, trapping the other glove inside. Dispose of gloves properly. If you have done this correctly, the outside of either glove will never touch your exposed skin.

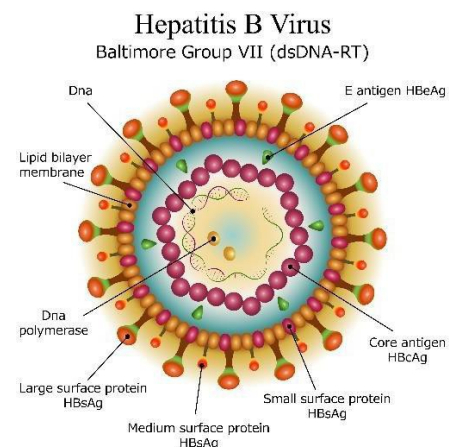
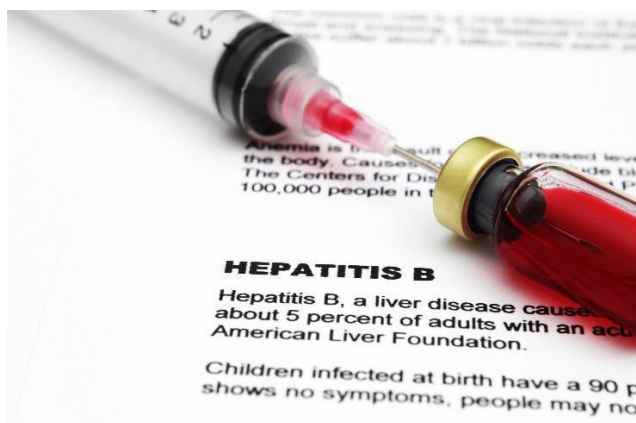


How Bloodborne Pathogens are Spread

Bloodborne pathogens can be spread in a number of ways:

- Sexual contact is the primary mode of transmission
- When a contaminated sharp object cuts or punctures the skin. Parenteral examples include: needle stick, illegal drug usage, cuts from broken glass, bites
- When an infected body fluid gets into an open cut or mucous membrane, for example inside eyes, mouth, ears or nose
- When a contaminated object touches inflamed skin, acne or skin abrasion

Intact skin is wonderfully created as our first defence against disease. Bloodborne pathogens cannot soak through normal, intact skin.



Recovery Position

Check that there are no injuries that could be made worse by moving the patient and place them carefully on their side using the recovery position. Monitor their vital signs and keep them warm and comfortable until the EMS arrive.

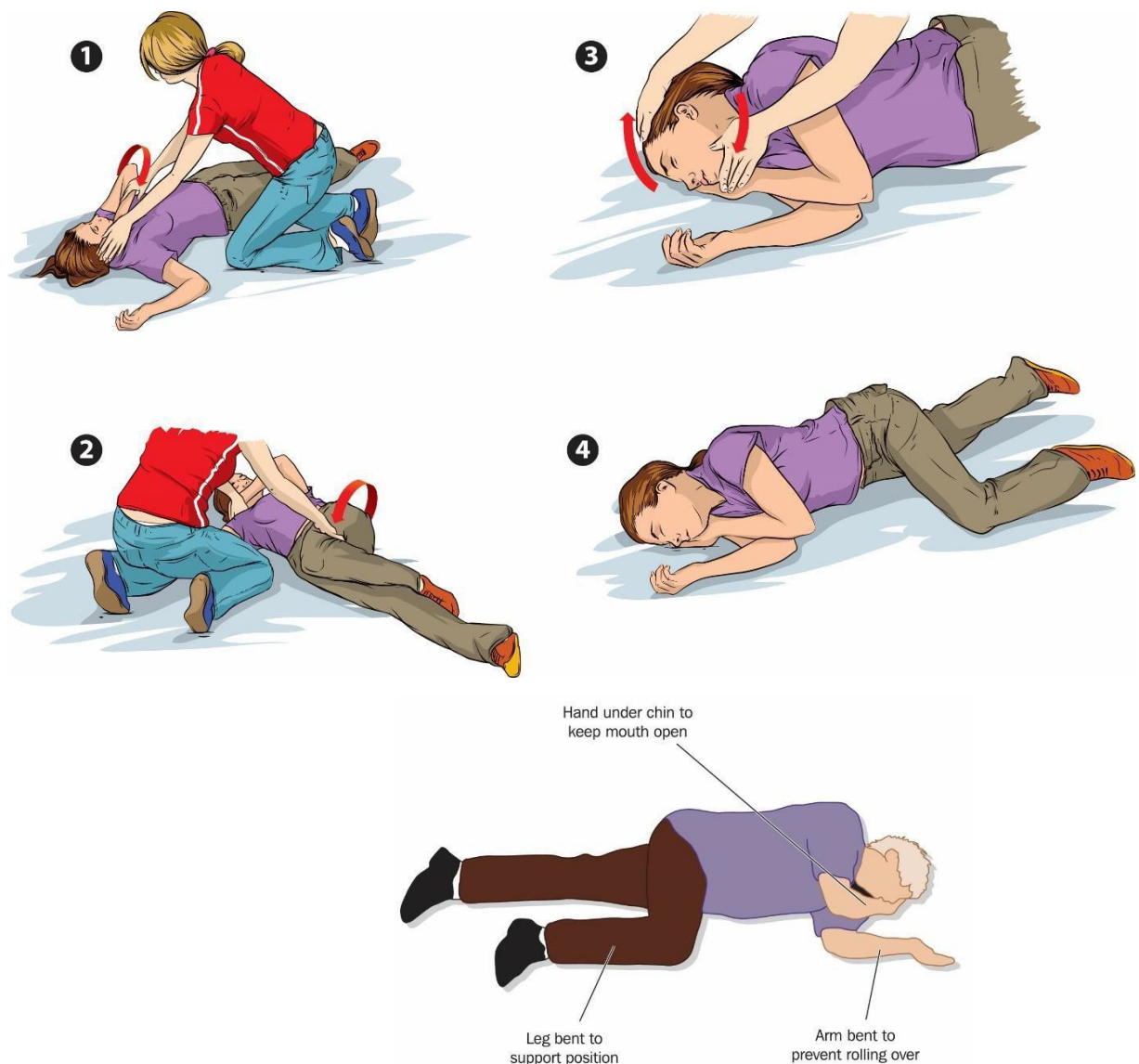
If you suspect spinal injury and the patient is in no immediate danger, do not move them. If you have to move them on to their side, as you have to leave them to get help or they start to vomit, then use the recovery position.

First aid is to prevent the patient getting worse and this can be done with some simple easy skills that will be learnt on the course.

P - Preserve Life

P - Prevent Deterioration - stop the situation getting worse

P - Promote Recovery



Heart Attacks

Heart attacks are caused by a blockage in the heart, starving it of blood and oxygen. The blockage can be in the form of narrowing, plaque, clots or a muscular spasm, and can be fatal. Heart attack is the most common form of death in the UK.

Sudden cardiac arrest is when the heart stops, but a heart attack is when the heart is in major trauma. It could stop at any time.

A big problem is that the patient often will not accept that they are having a heart attack and this delays the treatment.

Symptoms

- Crushing pain in the centre of the chest, with pain radiating between the abdomen and jaw, possibly down one arm
- Laboured breathing
- Rapid or irregular pulse
- Nausea/vomiting
- Pale, cold and clammy skin
- Grey/blue appearance
- Feeling of chronic indigestion

Treatment

- Calm the patient and place them in the "W" position, with head and legs raised
- Alert EMS
- Monitor the patient's ABCs
- Loosen clothing
- Be prepared to begin CPR if the patient's condition worsens

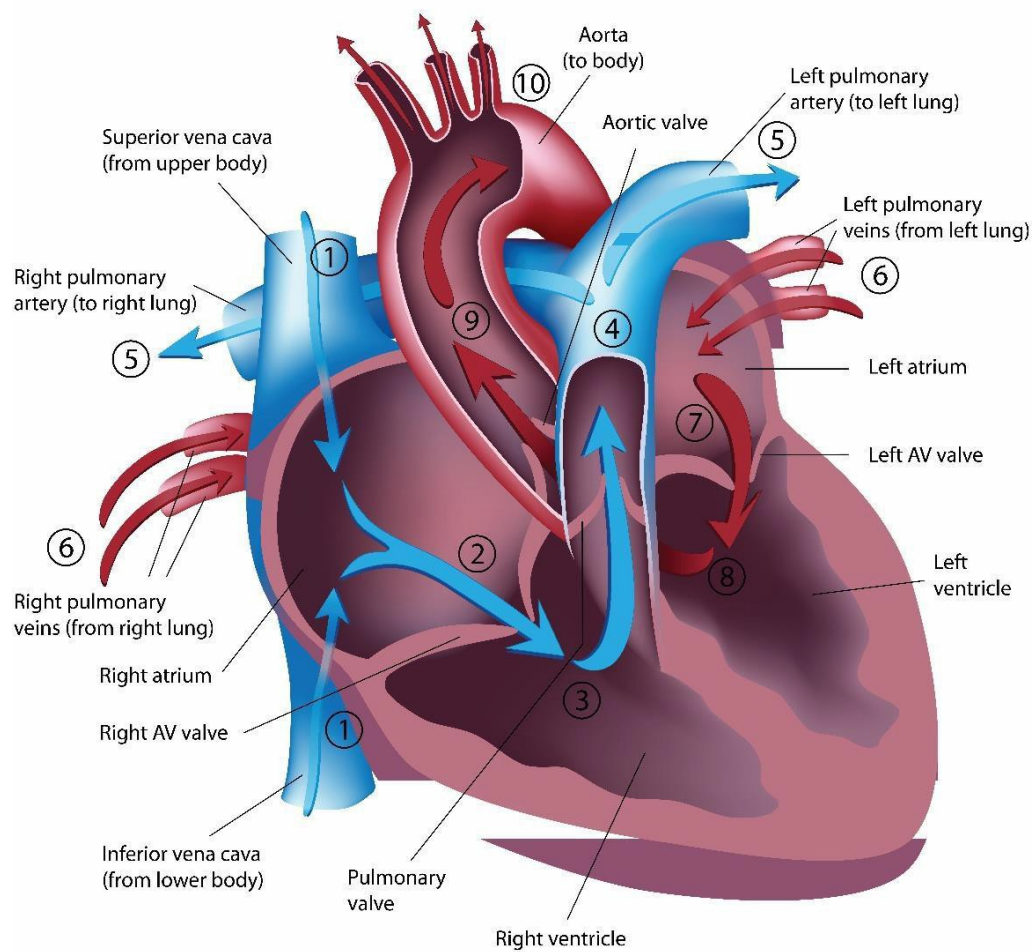
Aspirin

Give 300mg tablet to the patient for them to take. They must chew the tablet, not swallow it, as this helps the body to absorb it more quickly. The Aspod holds two Aspirin safely anywhere you go and is available from your ProTrainings dashboard.

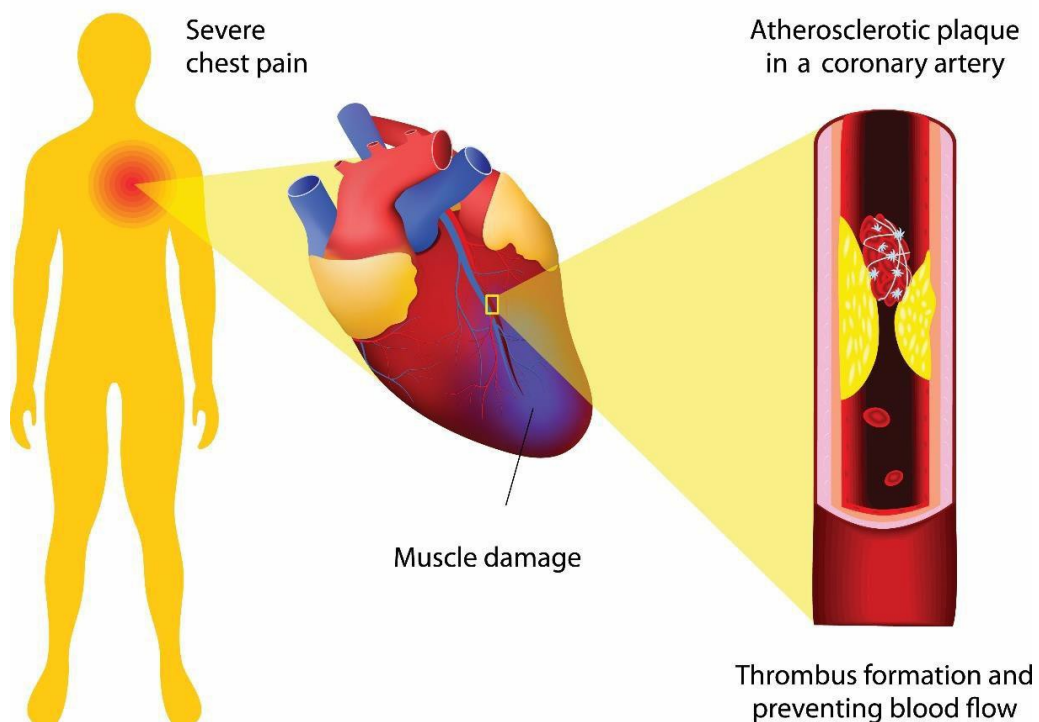


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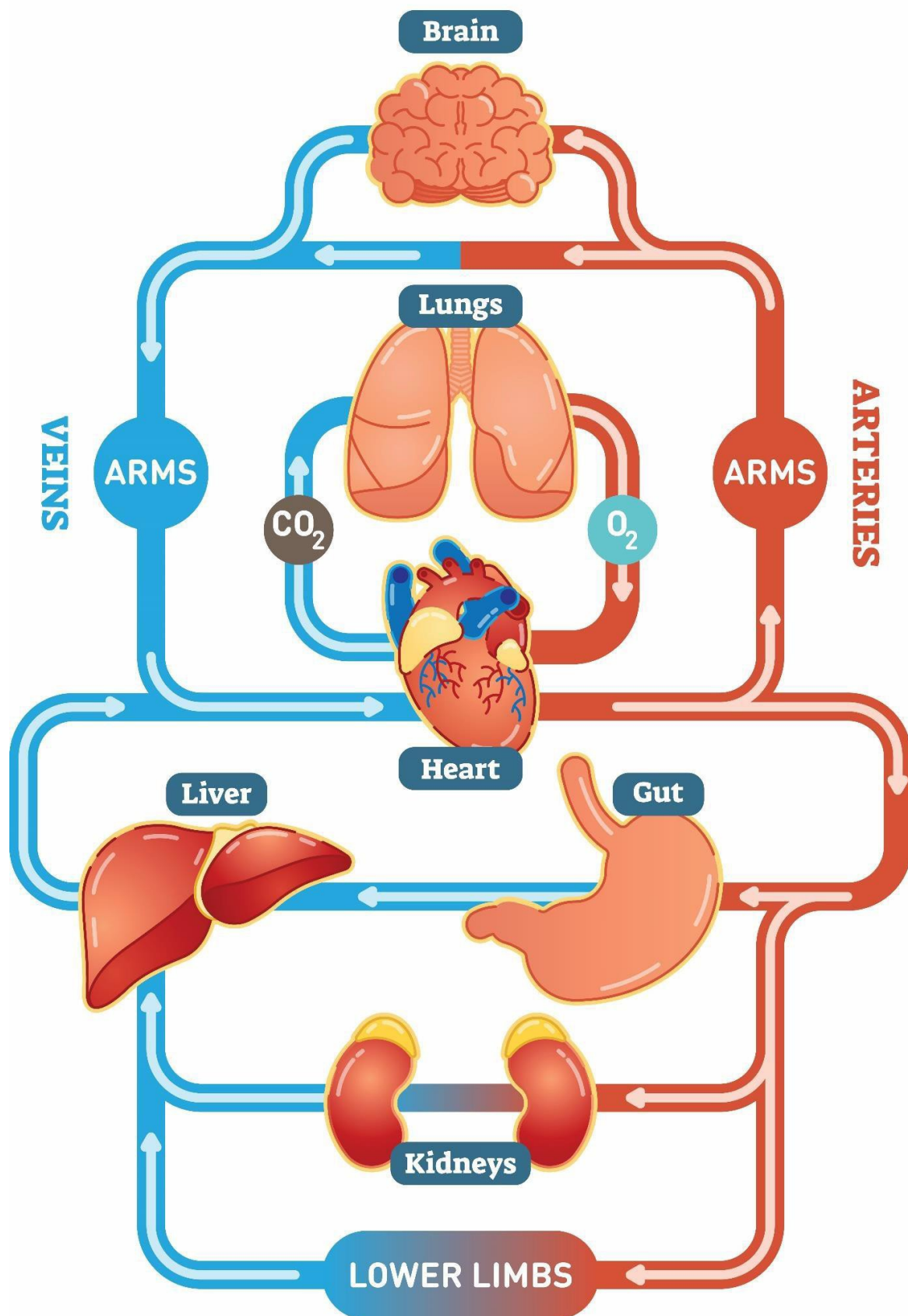
The pathway of blood flow through the heart



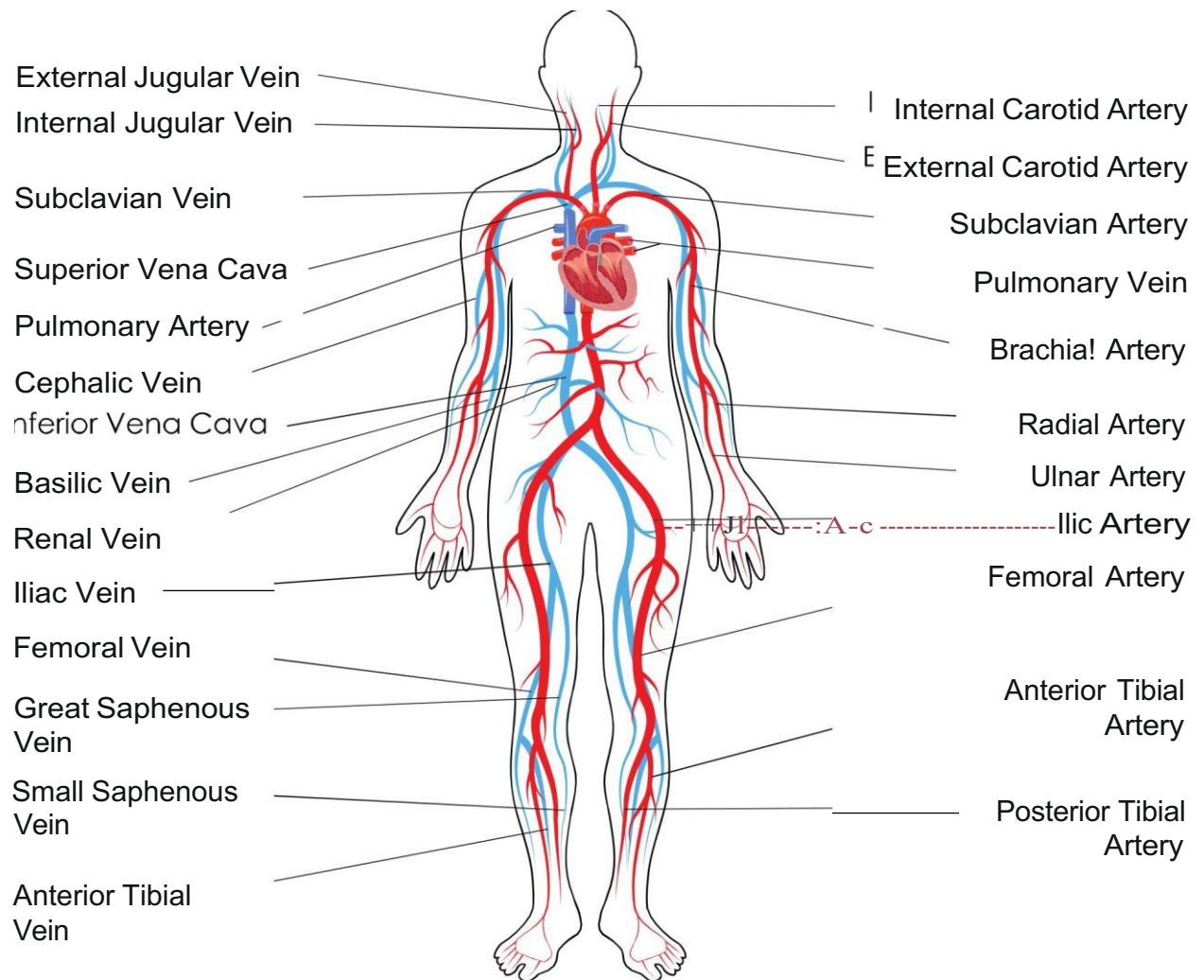
Heart Attack

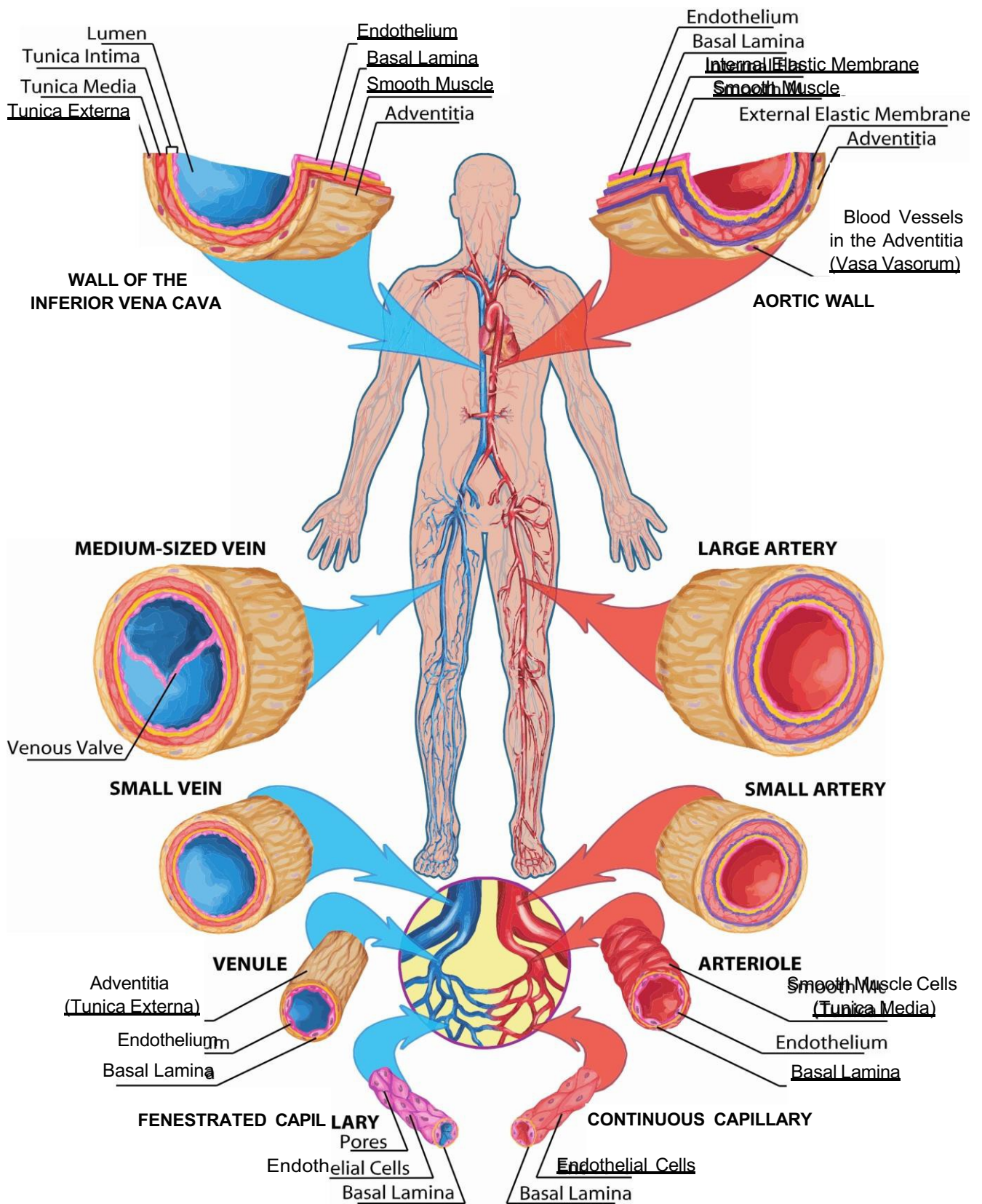


Human Circulatory System



Circulatory System





Angina (Adults only)

An Angina attack is not a heart attack, and Angina is usually controlled by drugs but can develop into a more serious condition. Angina is caused by a build-up of cholesterol plaque on the lining of the coronary artery or a collapsed arterial wall, which makes it hard for the blood to flow freely to the heart. An attack can often follow physical exertion or stress. Medication relaxes the walls of the blood vessels to allow blood to flow.



Symptoms

It will seem like a heart attack at first. Patient will experience sudden weakness, anxiety and fear, and there will be evidence of stress or physical activity.

Treatment

Position the patient in the same way as for heart attack patients. Locate and ensure they take their medication. Usually with medication and rest, the pain will ease. If it does not, or if this is their first attack, alert EMS.

Controllable Risk Factors

There are many things that can increase the risk of heart disease. Some of them are controllable and others not. Factors include: cigarette smoking, high blood pressure, obesity, lack of exercise, high blood cholesterol levels, uncontrolled diabetes, high fat diet and high stress levels.

Signs and Symptoms

- Chest discomfort
- Pressure, tightness that lasts longer than two minutes
- Nausea
- Sweating shortness of breath
- Denial
- Feeling of weakness

Uncontrollable Risk Factors

Race, heredity, sex and age.

Women present more with shortness of breath, extreme fatigue or flu like symptoms. About a third of women experience no chest pain.

Treatment

Recognise the signs of a heart attack and **activate EMS by calling 999 or 112.**

- If possible, place the patient in the "W" position with head and legs raised.
- Give nothing to eat or drink
- Keep the patient calm and quiet
- Prepare in case they go into cardiac arrest.

Child and Adult CPR

Adult CPR is performed once you have checked for patient responsiveness and checked for breathing for up to 10 seconds. If the patient is not breathing, activate EMS, perform 30 compressions at a rate of 100 to 120 compressions per minute at a depth of 5-6cm in the centre of the chest. Compressions should be the same speed on the push and the release and in a regular interval. Full recoil of the chest is vital to allow the heart to fill with blood.

These 30 compressions should be followed by two rescue breaths. Before carrying out the rescue breaths, make sure the airway is open by titling the head back, lifting the chin and squeezing the soft part of the nose. Then seal your mouth over the patient's and blow gently for about one second, you will see the chest rise. Breaths can be delivered as mouth to nose by sealing the mouth or mouth to tracheostomy if they have a Stoma in their neck.

Repeat the cycle until an AED or EMS arrives. Do not waste time between the compressions and the breaths. There should be only a 5-10 second break in giving the compressions with a maximum of 10 seconds to avoid delays in compressions. It is vital to keep the oxygen-rich blood pumping around the body, which is why compressions are so important.

CPR Handover to a Second Rescuer

Providing CPR can be exhausting and it may become less effective as you grow more tired. Where possible, it is best to share the work with another rescuer. It is not important if the other person is CPR trained as you can tell them what to do. The rescuer tells the other person what to do while he is doing the chest compressions and then while he does the breaths the second rescuer gets ready. On completion of the breaths, the second rescuer takes over.

It is a good idea to try to swap over every two minutes. If you become tired and no one is there, consider just doing chest compressions to have a rest from the breaths.

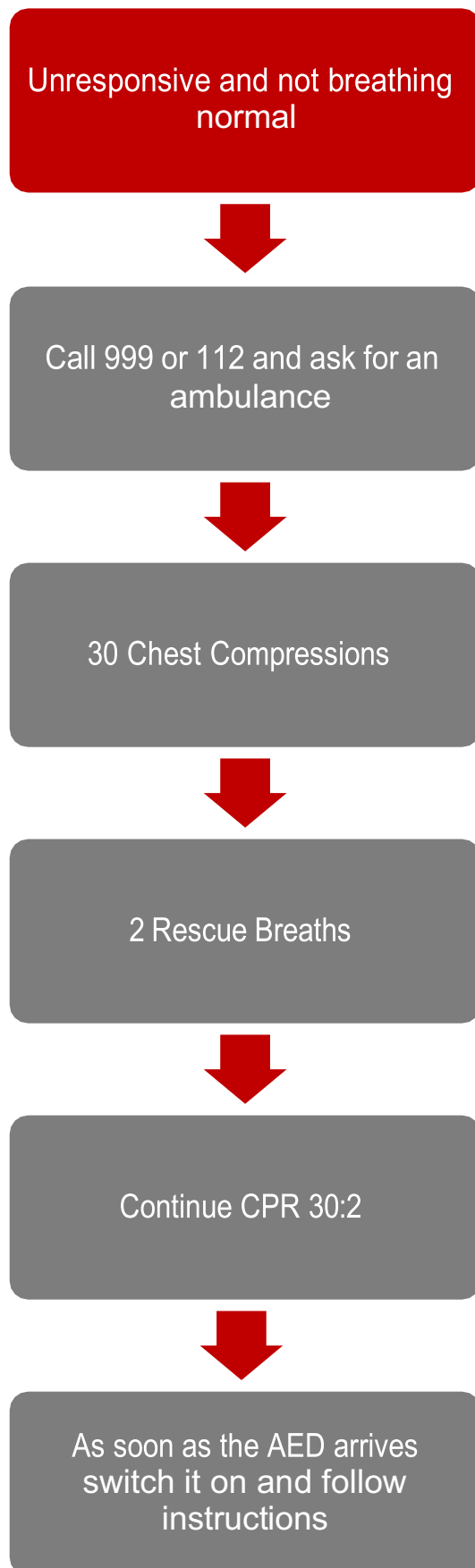
Hands-only CPR

Hands-only CPR helps encourage lay rescuers to get involved who may not otherwise help. Many people are reluctant to give the breaths and this is one reason why people do not perform CPR. With this new technique, blood is circulated around the body, oxygenating the body's tissues and organs.

The rescuer delivers 5-6cm deep compressions at a rate of 100 to 120 compressions per minute without the need to deliver rescue breaths. Hands-only CPR eliminates the fear of transmitting disease by removing the mouth-to-mouth component of CPR.

It is still advised that you hand over to a second rescuer every two minutes to ensure that the best possible compressions are given before the AED or EMS arrives.

CPR Flowchart – Adult



Child CPR – 1 to 18 Years Old

Child CPR is a very sensitive and worrying thing to think about, let alone to have to do. Children normally need CPR because of a respiratory problem rather than a cardiac (heart) condition, which is more common with adults. This is why we first give five rescue breaths and then 30 compressions, followed by two further breaths. You then repeat 30:2 until you are relieved, the EMS arrives, the child shows signs of recovery or you are too tired to continue.



When doing the breaths, cover your mouth over the child's and pinch the nose closed or use a face shield. You need to gently blow for about one second, you will see the chest rise.

To do the 30 compressions, place one hand in the centre of the chest and push down at least one-third of the depth of the chest at a rate of 100 to 120 compressions per minute. If you cannot do this then use both hands. One third is about 5cm on a child.

If possible, send a bystander to call the EMS immediately. If you are on your own, you should use the "call fast" approach and carry out one minute of CPR, then make the call yourself.

Infant CPR – Birth to One Year Old

Infant CPR is again a very sensitive and worrying thing to have to do. Infants, like children, would normally need CPR because of a respiratory problem. First give five rescue breaths and then 30 compressions, followed by two further breaths. You then repeat 30:2 until you are relieved, the EMS arrives, the infant shows signs of recovery or you are too tired to continue.

When doing the breaths, cover your mouth over the infant's mouth and nose or use a face shield. Blow gently for about one second, you will see the chest rise.

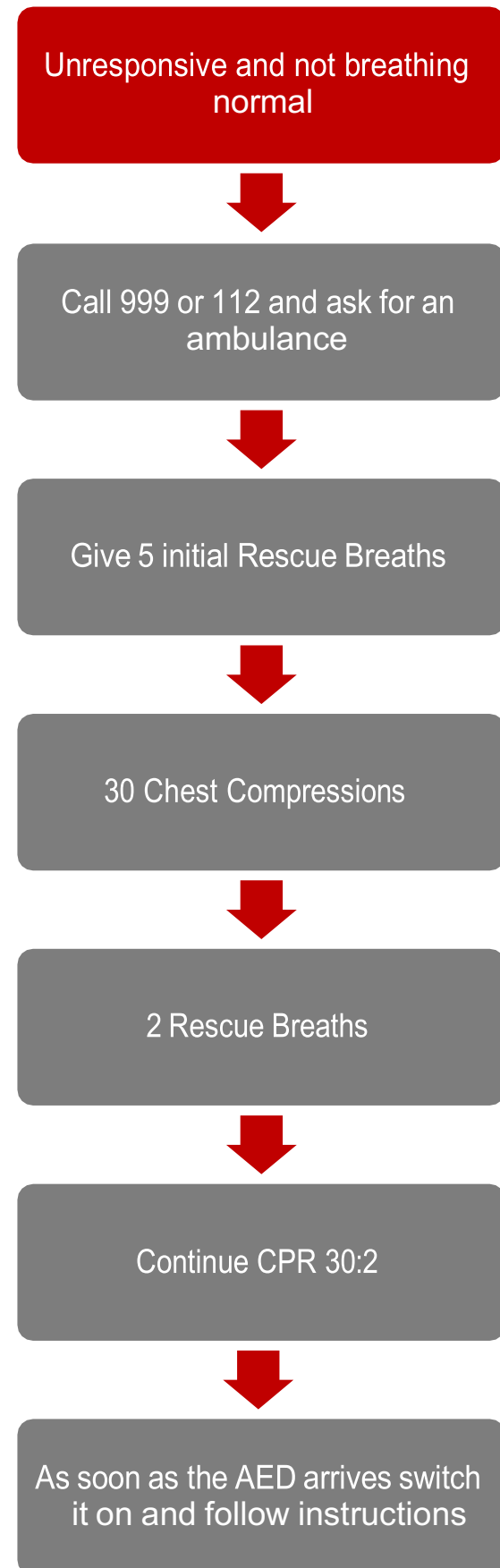
To do the compressions, place two fingers in the centre of the chest and push down at least one-third of the depth of the chest. Do 30 compressions at a rate of 100 to 120 compressions per minute. One third is about 4cm on an infant.



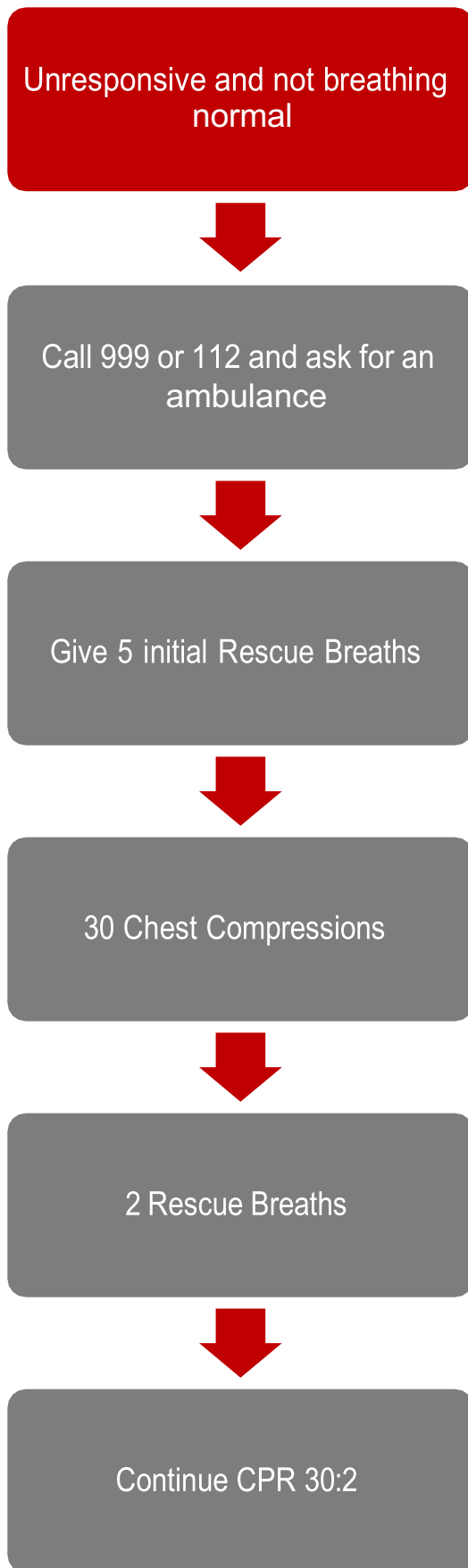
With an infant you may be able to carry him carefully to meet the paramedic while continuing CPR, although CPR is best done on a firm surface.

If there is a bystander, send them to call the EMS immediately. If you are on your own, you should use the "call fast" approach and carry out one minute of CPR, then make the call yourself.

CPR Flowchart – Child



CPR Flowchart – Infant



Drowning

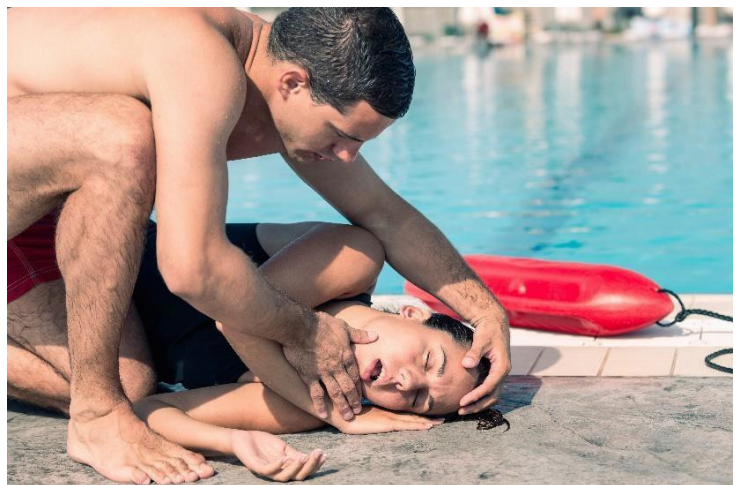
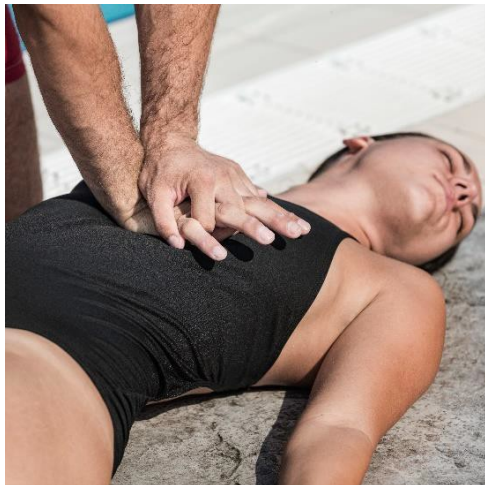
You do not inhale a lot of water in most cases of drowning. Any water consumed is generally swallowed and often vomited when resuscitation takes place.

Make sure the scene is safe. Use the "call fast" approach and do one minute of CPR before going for help if alone.

Give five rescue breaths before starting chest compressions. The reason for this is that the person is not breathing because of a respiratory problem rather than a cardiac problem.

CPR with a drowning case can be more successful than with a sudden cardiac arrest.

Secondary drowning is a problem that can occur hours after a drowning or a near drowning case, so professional medical advice should always be taken.



Cardiac Arrest Survival Rates

Some data on CPR has been released by Zoll Medical. When a cardiac arrest occurs, only half of victims will need a shock. The other half will require high-quality cardiopulmonary resuscitation (CPR). A general figure is that for every one-minute delay in the AED arriving, the patient's chance of survival drops by 10%. This figure is based on no one doing CPR.

If effective CPR is delivered, the chance of survival drops by just 3-4% per minute. To clarify these figures, it assumes that the person has 100% chance of survival at point of sudden cardiac arrest.

This evidence highlights that effective and prompt CPR is vital for the patient's chance of survival. As such, effective training in these skills is essential.



Why do we need AED Units and why are they important?

The CPR efforts of a first aider are the most important step in saving a patient's life. However, when traditional CPR does not succeed in keeping the patient alive, an AED unit will be of huge value to the first aider, while they wait for the EMS to arrive.

Early use of an AED unit saves lives as it interrupts the abnormal twitching of the heart (VF), often shocking the heartbeat back into a normal rhythm.

AED units are incredibly effective, and very easy to use as they have voice prompts to tell the first aider what to do and when. However, training first aiders in the use of AED units can significantly increase the chances of a patient's survival through confident and competent use of the equipment.

The only problem with AED units is that there are not enough of them. The cost of them often puts companies off buying them, but this is changing and more units are being placed where they are needed.

Survival rates of when the AED arrives

For about every one minute the AED unit takes to arrive, the patient's chance of survival drops by 10%. The target time is to get the AED unit to the patient within four minutes, but this is not always possible if there is not one on site.

It is vital to ask if there is an AED unit when you call for help, so that someone can look to see if there is one that could arrive sooner than the EMS.



Where can you find AED Units?

AED units can be found in many places, so you need to ask and be observant. Some workplaces have AED units and these will usually be in a central location. You will also find them in public places, such as airports, railway stations, doctors' surgeries, dentists, shopping centres or sports clubs.

When you are dealing with a cardiac arrest, as well as calling for help you need to ask if there is an AED unit, as someone may know where one is and time is critical.

Have a look around when you are out and about and you will be surprised how many AED units there are.



Universal AED Sign

There is a universal sign for an AED unit and it can be found anywhere there is an AED unit placed.

The sign may be placed on the AED box or above it, so it can easily be seen from a distance.

This sign is also used to direct you to the nearest AED unit.



Different types of AED



How to use an AED unit

AED units are very simple to use. It is important to remember that someone in cardiac arrest is clinically dead, so you need to act fast and you cannot do them harm.

- Decide to use the AED, trust your training
- Try and get someone to carry on CPR while you set the AED up; if not, act quickly to set the AED up without CPR
- Open the AED and turn it on. Some units automatically turn on when you open them or access the pads
- Follow the voice prompts
- Remove all clothing from chest
- You may need to shave the area where the pad will go to ensure that it sticks (most AED units will have a razor enclosed)
- Check and remove any jewellery from the neck area
- Remove any stick-on patches (e.g.: HRT or Nicotine)
- Remove the pads from the packaging
- Place one pad, according to the picture, on patient's right chest just below the collar bone and push on firmly
- Place the other pad, according to picture, on the side of the patient's left chest
- If you are using the one-piece Zoll pads, follow the instructions on them. They simply line up and are easy to put on and will line up perfectly
- If not already installed, plug in the pads to the AED unit
- Do not touch the patient. The AED will analyse the heart rhythm and then say shock advised or no shock advised
- If no shock advised, continue CPR
- If shock advised, push shock button and then continue CPR when prompted
- Carry out CPR until the AED tells you to stop while it analyses again
- If the patient starts breathing and shows signs of life, leave the pads on, just turn off the AED. This is just in case they arrest again, as it saves time and many units do not have spare pads
- Keep calm and listen to the unit. Some units will help you with the pace of the compressions and some tell you to do the breaths. The Zoll unit will tell you the pace and give you audio as well as visual data on how good the compressions are

To keep your skills fresh, it is best to practice and ensure that you are familiar with the AED unit you may have to use. You can get advice from the internet, the person who sold the unit, the manufacturer and other sources.

AED Maintenance

It is important to have a set schedule on the maintenance of an AED unit. You will need to follow the manufacturer's recommendations, as well as your in-house policy.

Maintenance involves visually checking the unit for damage or dirt, as well as checking the pads, battery and function of the unit.

AED units will usually have warning lights and sounds to say what is wrong. Checks on the unit should be recorded for future reference. If you need new pads and batteries, order these in time and check the date of the new ones to make sure they have the correct life.



AED use on children

We have looked at CPR and explained that CPR alone does not start the heart and that you need to use an AED. The AED can arrive from the EMS, community responder, the business, airports, etc. This is the third link in the chain of survival, and with a little training can be carried out by the first aider.

When using the AED unit on a child, you use it in the same way as for an adult, apart from the positioning of the pads. The pads must be placed on the chest and on the back, between the shoulder blades. You will need to remove the child's clothes to ensure the pads stick directly to the skin.

There are special child AED pads, but if these are not available use an adult set. AED units are not very successful on children as they rarely suffer from VF. The problem with using adult pads can be that the AED unit does not know that it is shocking a child and, therefore, uses the algorithm for adults and not a child.

There are no such things as infant pads.

AED Pads

Although there are many types of AED unit, the pads are all similar. They are self-adhesive gel pads that stick to the skin. Some are in cartridges and some in packs. You will need to check that the pads are in date and not damaged as, once opened or past their use-by date, the adhesive properties will decrease.

When you put the pads on, follow the instructions fully and make sure you put them on correctly. Once on, do not remove them, as they will not stick as well the second time.

Checking the pads will be part of the standard maintenance that you do on an AED unit.



AED Batteries

The batteries in AED units are mostly a solid disposable pack, apart from those used in the Zoll AED, which are 10 small batteries. AED units are all battery-powered and never mains or rechargeable. Battery life differs and they range from two to five years.

Make sure when you check an AED that the batteries are all ok. If there is a problem or they need replacing, the AED will tell you by a beep or a light. However, even when the unit says the batteries need replacing, you can still use the unit in an emergency.



Choking

Conscious Choking



Mild airway obstruction – they can still breathe.

Serious airway obstruction – no air can pass into or out of lungs, they cannot breathe.

Ask, "Are you choking?". If a person is unable to breathe or speak, treat the patient as below. If they can talk or cough, allow them to continue until they clear the obstruction or you feel you need to call the EMS

Treatment

Activate EMS.

For Adult and Child

Stand behind the victim with one foot in-between the victim's feet and your other foot behind you.

Perform five back slaps between the patient's shoulder blades. Place the flat side of your fist just above the patient's belly button. Grab the back of your fist with the other hand and pull inwards and upwards.

Continue back slaps and abdominal thrusts until the object is cleared or the patient becomes unconscious. In the event that the patient becomes unconscious, you would perform CPR.

Advise the patient to seek medical help afterwards, even if the object has been successfully cleared.



Infant

Administer five back blows and chest thrusts using your two fingers, until the obstruction is cleared or the patient becomes unconscious.



Unconscious Choking

This is where someone is:

- Unconscious
- No signs of life
- Absent breathing
- Patient may have collapsed after you have been performing back slaps and abdominal thrusts

Treatment

Activate EMS if you have not already done so. If you know the patient is not breathing, start CPR.

Give 30 chest compressions as per CPR, 100-120 compressions per minute, 5-6cm in depth.

Check the mouth for a foreign body. If something is visible, sweep it out with a finger.

Never do blind finger sweeps

Attempt two rescue breaths - if the first breath does not make the chest rise, reposition the head and re-attempt breaths. If the chest still does not rise, repeat the cycle of compressions, foreign body check and breathing attempts until the chest rises.

After rescue breaths make the chest rise, continue cycles of 30 compressions to two breaths until EMS personnel or another trained person takes over, signs of life are evident, the scene becomes unsafe, AED becomes available or you are too exhausted to continue.



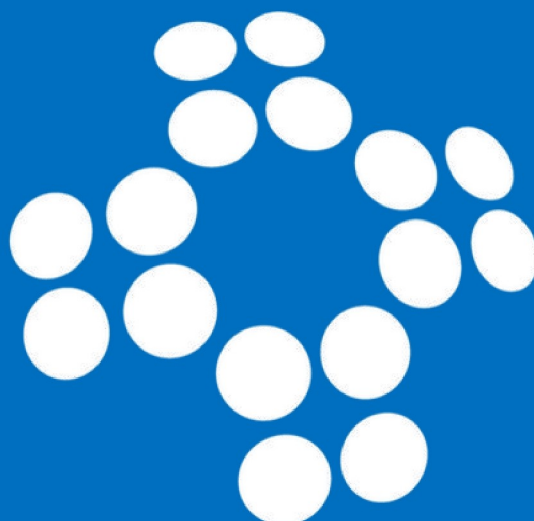
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