

## **Theme: First Aid basics**

1. Introduction to First Aid.
2. Issues in providing care:
3. Primary assessment & basic life support.
4. Secondary assessment.
5. First Aid Kits.

### **1.Introduction to First Aid**

**First aid** is the provision of initial care for an illness or injury. It is usually performed by non-expert, but trained personnel to a sick or injured person until definitive medical treatment can be accessed. Certain self-limiting illnesses or minor injuries may not require further medical care past the first aid intervention. It generally consists of a series of simple and in some cases, potentially life-saving techniques that an individual can be trained to perform with minimal equipment.

#### **The aims of First Aid**

##### *Preserve Life*

Not only the casualty's life, but your own as well. Far too often only one person's life is in danger when the emergency services are called, but by the time they arrive there are more. If you put your life in danger, you can end up fighting for your OWN life instead of the casualty's.

##### *Prevent the situation from Worsening*

The skilled first aider must take action to prevent the whole situation from becoming worse (e.g. removing dangers such as traffic or fumes), as well as acting to prevent the casualty's condition from deteriorating.

##### *Promote Recovery*

The actions of a first aider should, after preventing things from getting worse, help the casualty to recover from their illness or injury.

### **2. Issues in providing care**

#### **2.1. Consent**

## ***Importance***

*Best Practice: First aiders should always err towards treating a victim. Your actions may be covered by a Good Samaritan Law, and where this does not apply, most countries give much leeway to those acting in good faith.*

Most people and cultures involve a certain amount of respect for a person's personal space. This varies with cultural and personal attitude, but touching another person is generally considered to be rude, offensive or threatening unless their permission is gained.

As most first aid treatment does involve touching the victim, it is very important that the first aider gains their permission, so as to avoid causing offense or distress. In most jurisdictions, it may be considered battery if a first aider touches the victim without permission.

## ***Gaining consent***

The simplest way to gain consent is to ask the victim if they will allow you to treat them. Talk to the victim, and build up a rapport with them. During this conversation, it is important to identify the following key points:

- **Who you are** - Start with your name, and explain that you are a trained first aider

- **Why you are with them** - They are likely to know they have an injury or illness (although you can't always assume this in the case of patients in emotional shock, children or those with learning difficulties), but explain to them that you would like to help with their injury or illness

- **What you are going to do** - Some first aid procedures can be uncomfortable (such as the sting which accompanies cleaning a wound with saline), so it is important to be honest with the patient about what you are doing, and if necessary, why it is important.

## ***Implied consent***

There are some cases where you can assume that the victim gives their consent to you treating them. The key, unequivocal reason for assuming consent is if the patient:

- **Is unconscious**
- **Has a very reduced level of consciousness**

In these cases, you can perform any reasonable treatment within your level of training, and your position is protected in most jurisdictions.

### *Judgment of consent*

There are also some cases where the first aider may have to exercise a level of judgment in treating a victim who may initially refuse. Cases like this include when the victim is:

- **Intoxicated**
- **Irrational** (i.e. delusional, insane or confused due to the injuries)
- **A minor** (parent or guardian must give consent if present and able; otherwise consent is implied)
- **Suffering from learning difficulties**

In these judgment cases, the first aider must make a decision, even if the victim is refusing treatment. If this occurs it is very important to make a note of the decision, why it was taken, and why it was believed that the person was unfit to refuse treatment. It is advisable to summon professional medical assistance if you believe the victim should be treated and is refusing, as medical professionals are experienced in dealing with people reluctant to accept treatment.

### *Other influences of consent*

#### **Wishes of relatives**

In some cases, relatives may object to the treatment of their relative. This can be a problematic area for the first aider, with several important factors to be considered.

In the first instance, it may not be any decision of the relative to choose to consent to first aid treatment. In most countries, the only time this decision can be definitively taken is if the person requiring treatment is a child.

In other cases, the presumption for the first aider must be towards treating the victim, especially if they are unconscious.

The other main consideration is if the person claiming to refuse consent on behalf of the victim is in fact a relative, or if they have the victim's best interests at heart. In some cases, the person may have caused harm to the victim. If in this case, you fear for your safety, or the person becomes aggressive, you should look after your own safety as a priority, and call for assistance from the police.

### **Advance directive**

Some victims may have a statement recorded, called an advanced directive or living will, that they do not wish to be treated in the case of life threatening illness. This can be recorded on a piece of paper, or on wearable items such as a bracelet.

The legal force of these items may vary widely between countries. However, in the majority of cases they should follow a certain format, and be countersigned by a solicitor or notary public.

In any case, as suggested above, the first aider should always presume towards treating a victim, allowing health care professionals to make the final decision. Almost every first aid treatment will only extend life, rather than definitively save it, meaning you are usually not breaking the advance directive. This includes actions such as CPR, which simply extend the time until which definitive treatment will work - usually delivered by a health care professional, who can make their own clinical decision on any advance directive.

## **2.2. Protective Precautions**

### ***Awareness of Danger***

The first thing that any first aider should be aware of when entering a situation is the potential for danger to themselves. This is especially important in first aid, as situations which are dangerous are the most likely to produce casualties who require first aid.

Danger can consist of:

- **Environmental danger** - A danger in the surroundings, such as falling masonry, broken glass, fast vehicles or chemicals.

- **Human danger** - Danger from people at the scene (including the victim) which can be intentional or accidental.

## ***Barrier Devices***

Keeping yourself protected is the first priority of any first aider. The key skill for this is awareness of your surroundings and the changing situation.

Once you are aware of the hazards, you can then take steps to minimize the risk to oneself. One of the key dangers to a first aider is bodily fluids, such as blood, vomit, urine and feces, which pose a risk of cross contamination. Body fluids can carry infections and diseases, including, but not limited to, HIV and hepatitis.

### ***Gloves***

A Purple Nitrile Glove The main tool of the first aider to avoid this risk is a pair of impermeable gloves. Gloves protect the key contact point with the victim (i.e. the hands) and allow you to work in increased safety. They protect not only from bodily fluids, but from any dermatological infections or parasites that the victim may have.

*The first thing a first aider should do when approaching, or on their way to, a victim is to put on their gloves.*

Remember **GO** to the victim (Gloves On) They are generally of three types:

- **Nitrile** - These gloves can come in any color (often purple or blue) and are completely impermeable to bodily fluids. These are the gloves most recommended for use during victim contact. This material is also rated for dealing with chemical spills. If you ever need to deal with chemical burns, these are the gloves to use (you can brush off dry chemicals with gloved hands if you use nitrile). Nitrile gloves, however, are also the most expensive.

- **Latex** - Usually white gloves, often treated with powder to make them easier to get on or off. These are not used as widely as they once were due to a prevalence of allergies to latex. Latex allergies are rarely life-threatening; if you must use latex gloves, ask the victim if they have a severe allergy to latex.

- **Vinyl** - Vinyl gloves are found in some kits, although they should not be used for contact with body fluids, though they are far better than nothing. They should primarily be used for touching victims who do not have external body fluids

due to the glove's high break rate. For this reason, some organizations recommend they are not kept in first aid kits due to the risk of confusion.

### ***CPR Adjunct***

A CPR pocket mask, with carrying case The other key piece of protective equipment that should be in every first aid kit is an adjunct for helping to perform safe mouth-to-mouth resuscitation.

With mouth-to-mouth resuscitation, there is a high probability of bodily fluid contact, especially with regurgitated stomach contents and mouth borne infections. A suitable mask will protect the rescuer from infections the victim may carry (and to some extent, protect the victim from the rescuer). It also makes the performance of CPR less onerous (not wishing to perform mouth to mouth is a key reason cited for bystanders not attempting CPR).

CPR adjuncts come in a variety of forms, from small keyrings with a nitrile plastic shield, up to a fitted rescue 'pocket mask' such as the one pictured.

### ***Other equipment***

Larger first aid kits, or those in high risk areas could contain additional equipment such as:

- **Safety glasses** - Prevents spurting or pooled fluid which could splay from coming in

contact with the eyes.

- **Apron or gown** - Disposable aprons are common items in larger kits, and help protect the rescuers clothing from contamination.

- **Filter breathing mask** - Some large kits, especially in high risk areas such as chemical plants, may contain breathing masks which filter out harmful chemicals or pathogens. These can be useful in normal first aid kits for dealing with victim who are suffering from communicable respiratory infections such as tuberculosis.

Often times, all of these will be included as a part of a larger kit. The kit should have a list of instructions on how to properly don/don off the equipment. Follow these instructions to prevent an accidental exposure.

## ***Improvisation***

Improvised care for bleeding. Many first aid situations take place without a first aid kit readily to hand and it may be the case that a first aider has to improvise materials and equipment. As a general rule, some help is better than no help, especially in critical situations, so a key first aid skill is the ability to adapt to the situation, and use available materials until more help arrives.

Some common improvisations include:

- Gloves → plastic bags, dish gloves, leather work gloves (wash your hands with soap and water especially well after using these)
- Gauze → clean clothing (but not paper products)
- Splints → straight sections of wood, plastic, cardboard or metal
- Slings → the victim's shirt's bottom hem pinned to the center of their chest will immobilize a forearm nicely

## **2.3. Legal Aspects**

### ***Good Samaritan Laws***

*Best Practice - All rescuers should not be afraid of liability affecting them whilst performing their duties. In many cases, it is often best to provide care and to do so to the best of your ability without worry of legal implications.*

**Good Samaritan laws** in the United States and Canada are laws that reduce the liability to those who choose to aid others who are injured or ill, though it does not protect you from being sued, it just significantly reduces your liability. Ontario's *Good Samaritan Act* [1] is one example of such legislation. They are intended to reduce bystanders' hesitation to assist, for fear of being prosecuted for unintentional injury or wrongful death. In other countries (as well as the Canadian province of Quebec), Good Samaritan laws describe a legal requirement for citizens to assist people in distress, unless doing so would put themselves in harm's way. Citizens are often required to, at minimum, call the local emergency number.

*Check with your government for applicable legislation in your area.* Typically, the Good Samaritan legislation does not cover an individual who

exceeds their training level or scope of practice; nor would you be protected against gross negligence.

### ***General guidelines***

1. Unless a caretaker relationship (such as a parent-child or doctor-patient relationship) exists prior to the illness or injury, or the "Good Samaritan" is responsible for the existence of the illness or injury, no person is required to give aid of any sort to a victim.

2. Any first aid provided must not be in exchange for any reward or financial compensation. As a result, medical professionals are typically **not** protected by Good Samaritan laws when performing first aid in connection with their employment.

3. If aid begins, the responder must not leave the scene until:

- It is necessary in order to call for needed medical assistance.
- Somebody of equal or higher ability can take over.

• Continuing to give aid is unsafe (this can be as simple as a lack of adequate protection against potential diseases, such as vinyl, latex, or nitrile gloves to protect against blood-borne pathogens) — a responder can **never** be forced to put himself or herself in danger to aid another person.

4. The responder is not legally liable for the death, disfigurement or disability of the victim as long as the responder acted rationally, in good faith, and in accordance with their level of training.

### ***Negligence***

Negligence requires three elements to be proven:

*Duty of care.* You had a duty to care for the victim Often, if you begin first aid, then a duty of care exists.

*Standard of care was not met.* You didn't perform first aid properly, or went beyond your level of training. The standard of care is what a reasonable person with similar training would do in similar circumstances.

### ***Causation***

The damages caused were your fault. Causation requires proof that your act or omission caused the damages.

### ***Assisting with Medications***

Assisting with medications can be a vital component during a medical emergency. Assisting with medications includes helping the victim locate the medication, taking the cap off of a bottle of pills, and reading the label to ensure that the victim is going to take the right medication. Assisting, however, *does not* imply actually administering the medication – this is an advanced level skill, which, if done, may open you up to liability from going beyond your level of training. However, by assisting, you may be able to help the victim find their medications more quickly, resulting in an improved outcome.

## **2.4. Critical Incident Stress & Victim Death**

### ***What is Critical Incident Stress?***

Any emergency that involves a severe injury or death is a critical incident. This incident could be amplified should the emergency involve a family member or friend. The stress that these incidents cause may overwhelm a first aider and shut down their ability to cope. This is what is known as critical incident stress (CIS). This condition may have a great impact on the first aider suffering from it, and if left un-treated, this stress may lead to a more serious condition known as post-traumatic stress syndrome.

### ***Signs of CIS***

- May not perform well at their job.
- May seem pre-occupied.
- Confusion
- Poor concentration
- Denial
- Guilt
- Anger
- Change in appetite
- Unusual behavior

## ***Treatment***

CIS requires professional help to avoid Post-Traumatic Stress Syndrome. However, there are supplements to professional treatment that will help such as:

- Relaxation techniques
- Avoiding drugs and alcohol
- Eating a balanced diet
- Getting enough rest
- Talking with peers

## **2.5. Abuse & Neglect**

### ***Don't do this!***

**Never** confront any suspected abusers.

**Never** judge whether or not a complaint is true or not. Always treat any complaint in a serious manner.

*Abuse:* is when a person's well-being is deliberately and intentionally threatened. In some jurisdictions, if you are a health care provider then you may be obligated to report abuse or neglect that you observe. In particular, if you are in any position of authority in relation to a child, you are likely required by law to report child abuse.

If you are not under a professional duty of care, it is strongly recommended that you report any instances of suspected abuse. Stick to reporting the facts, and let the authorities determine the truth of any suspicion. Never confront the potential abuser yourself - consider your own safety.

The most vulnerable groups are the young and elderly, but be aware of the potential for abuse in all people (such as abuse of a spouse of either gender).

### ***Physical abuse***

abuse involving contact intended to cause pain, injury, or other physical suffering or harm

### ***Emotional abuse***

a long-term situation in which one person uses his or her power or influence to adversely affect the mental well-being of another. Emotional abuse can appear in a variety of forms, including rejection, isolation, exploitation, and terror.

***Sexual abuse***

is defined by the forcing of undesired sexual acts by one person to another.

***Neglect***

a category of maltreatment, when there is a failure to provide for the proper physical care needs of a dependent.

Some forms of abuse may be more obvious such as physical abuse but the rest may be concealed depending on the victim. If you notice any whip marks, burns, bruises with an unexplained origin, slap marks, bite marks, etc., you may suspect abuse.

If the person's life is in immediate danger then you should contact emergency medical services. As a first aider you are in a good position to do this without suspicion – if questioned you should state that you believe the victim requires further treatment. If possible, you should request police assistance, although not if you are in the presence of the suspected abuser. To help with this, some ambulances operate a safeword system (usually for their crews) which can be entered in to the call to flag an abuse query. These are not widely published (to protect their usage), but if you work for a recognized organization, they may be willing to share this word with you or your group.

If the person's safety is not in immediate danger, you should contact your local government department which deals with accusations of abuse, which may vary within locations by the demographics of the person being abused (child, elder, learning difficulties etc.). If in doubt, contact your local police, who should be able to signpost you to the most appropriate service.

**3. Primary assessment & basic life support**

**3.1. Emergency First Aid & Initial Action Steps**

***Primary Assessment***

**Protecting yourself.** First aiders are **never** required to place themselves in a situation which might put them in danger. Remember, you cannot help a victim if you become a victim yourself.

When a first aider is called upon to deal with a victim, they must always remember to safeguard themselves in the first instance and then assess the situation. Only after these steps are completed can treatment of the victim begin.

When called to a scene, remember that personal safety is paramount. Before you enter a scene, put on personal protective equipment, especially impermeable gloves.

As you approach a scene, you need to be aware of the dangers which might be posed to you as a first aider, or to the victim. These can include obviously dangerous factors such as traffic, gas or chemical leaks, live electrical items, buildings on fire or falling objects. While many courses may focus on obvious dangers such as these, it is important not to neglect everyday factors which could be a danger. (*ex. Gas fires, where in getting close to a victim could result in burns from the heated vapor.*)

There are also human factors, such as bystanders in the way, victim not being co-operative, or an aggressor in the vicinity who may have inflicted the injuries on the victim. If these factors are present, have the police called to control the situation.

Always remember the big **D** for Danger.

Once you have made your first assessment for danger, you should continue to be aware of changes to the situation or environment throughout your time with the victim.

If there are dangers which you cannot mitigate by your actions (such as falling masonry), then **STAY CLEAR** and call the emergency services. Remember to **never put yourself in harms way**.

**What has happened?** As you approach, try to gain as much information as possible about the incident. Try and build a mental picture to try and help you treat the victim.

Assess the **Scene** - Where are you? What stores, clubs, public buildings, etc. are nearby? Has anything here caused the injury? What time of day is it?

Get some **History** - If there are witnesses, ask them what's happened "Did you see what happened here?" and gain information about how long ago it happened "How long have they been like this?", but start your assessment and treatment of the victim while you are doing this.

Be sure to **Listen** - While working on a victim you may overhear information from witnesses in the crowd. An example of this would be an old man falling on the sidewalk, as you approach the scene you can hear someone say "He was just walking and his legs went out from under him." But you may not see the person saying this. Everything should be taken into account should no witnesses want to become involved or you cannot ask questions.

Note what is said and continue treatment.

**Responsiveness.** Once you are confident that there is minimal danger to yourself in the situation, the next key factor is to assess how responsive the victim is.

This can be started with an initial responsiveness check as you approach the victim. This is best as a form of greeting and question, such as:

"Hello, are you alright?"

The best response to this would be a victim looking at you and replying. This means that the victim is Alert.

Victims can be quickly assessed and prioritized on the **AVPU** scale, and this will help make decisions about their care. The scale stands for Alert, Voice, Pain, and Unresponsive. If the victim looks at you spontaneously, can communicate (even if it doesn't make sense) and seems to have control of their body, they can be termed **Alert**.

Key indicators on the victim are their:

- **Eyes** - Are they open spontaneously? Are they looking around? Do they appear to be able to see you?

- **Response to voice** - Do they reply? Do they seem to understand? Can they obey commands, such as "Open your eyes!"?

If the victim is not alert, but you can get them to open their eyes, or obey a command by talking to them, then you can say that they are responsive to **Voice**

If a victim does not respond to your initial greeting and question, you will need to try and get a response to pain from them.

The word "pain" is a bit misleading - it refers to any physical stimulus. The first stimulus to use is a tap/shake of the shoulder. There are other, more painful stimuli that can be employed should this be unsuccessful, but all of these have their downsides, especially if overused.

Of these, the three most commonly used ones are:

- **Sternal rub** - This involves digging your knuckle in to the sternum, or breastbone, of the victim (between the nipples).

- **Nail bed squeeze** - Using the flat edge of a pen or similar object, squeeze in to the bottom of the victim's fingernail (hard).

- **Ear lobe squeeze** - using thumb and forefinger, squeeze the victim's ear hard.

If any of these provoke a reaction (groaning, a movement, fluttering of the eyes), then they are responsive to pain. It is important to note that different trainers have different opinions on these, so ask your trainer before employing any of these on a first aid course.

Any of the responses A, V or P, mean that the victim has some level of consciousness. If they are not alert, you should *always* summon professional help - call an ambulance.

If they are only responsive to Voice or Pain, then consider using the **Recovery position** to help safeguard them.

If they do not respond to voice or pain, then they are **Unresponsive** and you must urgently perform further checks on their key life critical systems of breathing and circulation (ABCs).

### *Summary*

To this stage the first aider, on approaching a victim should have:

- **GO** - Put their gloves on
- **D** - Checked for danger
- **R** - Checked for responsiveness
- **S** - Looked at the scene for clues about what has happened
- **H** - Gained history on the incident
- **AVPU** - Assessed to see how responsive the victim is.

This can be remembered as the mnemonic "**Go DR SHAVPU**" (Go Doctor Shavpu)

### *Next Steps*

If the victim is unconscious, the first aider should immediately **call an ambulance** – you will need professional help regardless of whether they are breathing or not. Waiting would endanger the victim's life unnecessarily. If you are alone with an adult victim, call immediately, even if you must leave the victim. Placing them into the recovery position will safeguard their airway against aspiration if they should vomit while you are calling the ambulance. If you are alone with a child, continue your primary assessment; you will call once you have confirmed that the victim is breathing, or after 2 minutes of CPR. If you are not alone, have your bystander call the ambulance immediately while you continue your assessment and care of the victim.

If there is more than one person injured the rescuer must determine the order in which victims need care. In general, rescuers should focus on the victim with the injury that is the greatest threat to life. Simple triage techniques should be applied to make sure that those in greatest need of care receive support quickly.

### *Treatment*

The last step is to actually provide care to the limits of the first aider's training -- *but never beyond*. In some jurisdictions, you open yourself to liability if you attempt treatment beyond your level of training.

Treatment should always be guided by the 3Ps:

**Preserve life**

**Prevent further injury**

**Promote recovery**

Treatment obviously depends on the specific situation, but all victims must receive some level of treatment for shock. The level of injury determines the level of treatment for shock which is required, but all victims will require it.

The principles **first, do no harm** and **life over limb** are essential parts of the practice of first aid. Do nothing that causes unnecessary pain or further injury unless to do otherwise would result in death.

### **3.2. Priorities of treatment**

Certain skills are considered essential to the provision of first aid and are taught ubiquitously. Particularly the "ABC"s of first aid, which focus on critical life-saving intervention, must be rendered before treatment of less serious injuries. ABC stands for Airway, Breathing, and Circulation

#### **A for Airway**

The airway of the human body is one of the more important parts to be checked when providing first aid. The airway is the entrance point of oxygen and the exit point of carbon dioxide for the body. Should this become blocked, respiratory arrest or cardiac arrest (if left un-treated) may occur.

An unconscious person's airway may be blocked when their tongue relaxes and falls across the airway. The technique used to open the airway is called the "head-tilt chin-lift" technique. The victim must be supine (lying on their back). With one hand on the forehead and the other hand under the chin, the victim's head is tilted back, and their chin lifted. The victim's jawline should be perpendicular to the ground.

Conscious victims can normally maintain an open airway; if the victim is talking or has no respiratory distress, their airway is adequate.

You may also check the airway for visible, removable obstructions in the mouth, which you could remove with a finger. You can remove any item in the

mouth which is removable, but should not waste time trying to remove lodged items such as dentures.

If a conscious victim's airway is obstructed by a foreign object, the object must be removed. Abdominal thrusts are the standard method for conscious victims. Refer to Obstructed Airway for unconscious procedures.

### **3.3. B for Breathing**

#### **Principles**

Human respiration works by inspiring fresh air, absorbing part (but not all) of the oxygen in it, which is then distributed to the cells by the blood, and exchanging carbon dioxide. Lungs have a capacity of a dozen of liters.

When a victim stops breathing, spontaneous respiration can restart if stimulated by insufflations. However, a victim in respiratory arrest is likely to fall into *cardio-respiratory* arrest.

#### **Checking the respiration**

After opening the victim's airway, check for breathing. To do this, place your cheek in front of the victim's mouth (about 3-5 cm away) while looking at their chest. You can also gently place a hand on the centre of the victim's chest if you wish. You may be able to detect the following signs if the victim is breathing:

1. Feel the airflow on your cheek
2. Hear the airflow
3. See the chest rise and fall
4. Smell the breath of the victim
5. Feel the chest rise and fall under your hand (if you have placed it on the chest)

Search for these signs for 10 seconds. If there is no breathing, you must start CPR.

#### **Calling For Help**

If a bystander has not already summoned assistance, then you must at this point call the Emergency Medical Service or Ambulance Service.

If an ambulance is required, get someone else to call if possible. If you're alone, make the call yourself:

- Europe: 112
- USA & Canada: 911
- Australia: 000
- United Kingdom: 999

You will need to give the emergency services:

- Your exact location
- Nature of the incident
- Services you require
- A telephone number you can be contacted back on (for instance, if they have difficulty finding you)

In some cases, they will run through a list of questions with you, in order to help prioritise your call properly. They may also ask the name and details of the caller. Sometimes, the victim must be left alone while the first aider leaves to seek help for them. If the victim is unconscious they should be left in the recovery position so that they do not choke to death if they should vomit while left unattended. Whilst ordinarily, if a spinal injury is suspected, it is advised not to move the casualty, if they are unconscious and need leaving alone, it is essential that the recovery position is employed anyway. There are alternative methods for safer positioning available to those with more advanced training.(See Suspected Spinal Injury for more information.)

### **Rescue Breaths**

Regional Note - In Europe, give 5 rescue breaths for victims of:

- Drowning
- Trauma
- Drug overdose

For other victims, begin with compressions instead of rescue breaths.

Rescue breaths must be provided to victims in a state of respiratory arrest; *do not* provide them to a weakly breathing victim. If you cannot detect the breath of the victim, begin CPR.

If you have a CPR mask, use it to protect yourself and the victim from exchange of body fluids. Cheap, keyring-sized CPR masks are available in most pharmacies. Make sure you read the instructions for how to use any equipment you buy. However, chances are that you will find yourself unequipped; do your best with what you have, but do not place yourself in danger by direct contact with body fluids, such as blood - proceed to compressions only.

Start by giving two rescue breaths.

- Maintain an open airway using the head-tilt chin-lift

- Plug the nose of the victim with your free hand

- Put your mouth on the mouth of the victim in an airtight manner, and blow into the mouth of the victim, do not blow forcefully as this may cause the air to enter the stomach, which will cause vomiting, the best way to avoid this is to blow air into the mouth just enough to make the chest rise

- Let the air exit, and give another breath

Continue with CPR compressions.

### **3.4. C for Compressions**

#### **Principles**

The purpose of doing chest compressions is to effectively squeeze the heart inside the victim's chest, causing blood to flow. This allows the normal gaseous exchange between the lungs, bloodstream and tissues to occur. Compressions are now usually performed before any rescue breaths due to the fact that when normal breathing and circulation stop, there is still a good amount of residual oxygen left in the bloodstream (as it has no way to exchange out of the body).

#### **Technique**

The aim is always to compress in **the center of the chest**, regardless of the victim. This means that compressions are performed on the sternum or breastbone of the victim, approximately in line with the nipples on males and children.

Compressions for infant CPR are done with two fingers.

**For adults (>8)** - place the palm of one hand in the centre of the chest, approximately between the nipple line (on adult males – for females, you may need

to approximate the ideal position of this line due to variations in breast size and shape). Bring your other hand to rest on top of the first hand, and interlock your fingers. Bring your shoulders directly above your hands, keeping your arms straight. You should then push down firmly, depressing the chest to about one third (1/3) of its depth.

**For children (1-8)** - place the palm of one hand in the centre of the chest, approximately between the nipple line. Bring your shoulder directly above your hand, with your arm straight, and perform compressions to one third (1/3) the depth of the chest with one arm only.

**For infants (<1yr)** - Use your forefinger and middle finger only. Place your forefinger on the centre of the child's chest between the nipples, with your middle finger immediately below it on the chest, and push downwards using the strength in your arm, compressing the chest about one third (1/3) of its depth.

Give 30 compressions in a row, and then two (2) rescue breaths. Then restart your next cycle of compressions.

### **Making compressions effective**

**You MUST allow the ribs to come all the way back out after each compression**, followed by a brief pause. This allows the heart's chambers to refill. Spacing compressions too close together will lead to them being ineffective.

**You are aiming for a rate of 100 compressions per minute**, which includes the time to give rescue breaths. In practice, you should get just over 2 cycles of 30 compressions in along with breaths per minute.

**Almost everyone compresses the chest too fast** - Experience shows that even well trained first aiders tend to compress the heart too fast. The rate you are aiming for is only a little over one per second. The best equipped first aid kits should include a Metronome with an audible 'beep' to match your speed to. Many public access defibrillators have these included in their pack. If one is not available, count the number of compressions with the word 'and' between them. When you press down on the chest, say the number, when the chest rises say 'and'. this way, you will be saying 'one-and-two-and-three...'

**Keep your arms straight** - A lot of television and films show actors 'performing CPR' bending their elbows. This is not correct - you should always keep your arms straight, with your elbows locked and directly above your hands.

**It often helps to count out loud** - You need to try and get 30 compressions per cycle, and it helps to count this out loud or under your breath. Performing compressions is tiring, and you may not be able to count out loud for the duration, but ensure you keep counting.

**If you lose count, don't stop, just estimate** - It is important to carry on once you've started, so if you lose count, don't panic, and simply estimate when 30 compressions is over, and do 2 breaths, then start over counting again.

**You are likely to break ribs** - When performed correctly, especially on older people, compressions are more likely than not to break ribs or the sternum itself. You should carry on regardless of this occurring. It is a sign that you are performing good, strong compressions. Oftentimes the cracking sound you will hear is just the cartilage of the ribs and sternum breaking, and not the bones themselves. If bystanders are concerned about injury to the victim, you may want to remind them of the *life over limb* principle and assure them that it is normal to hear these sounds.

### **When to Stop**

You should continue giving the victim CPR until:

- **The victim starts breathing spontaneously** - This does not include gasping, called *agonal breathing*. Victims are also likely to make sighing noises or groans as you perform chest compressions - this should not be mistaken for breathing.

- **The victim vomits** - This is an ACTIVE mechanism, meaning the victim moves and actively vomits. Not to be confused with regurgitation, where stomach contents make their way passively in to the mouth. If the victim vomits, roll them to their side, clear the airway once they're done vomiting and reassess ABCs.

- **Qualified help arrives** and takes over. This could be a responder with a defibrillator, the ambulance service or a doctor. However DO NOT STOP until

told to do so. They are likely to require time to set up their equipment, and you should continue with CPR until instructed to stop. They are likely to work around you, placing defibrillation pads on the victim's chest while you continue compressions. Continue working as normal, and let them work around you.

- **You are unable to continue** - CPR is physically very demanding, and continued periods can be exhausting. Try to change places frequently with another trained rescuer to lessen the chance of exhaustion.

- **You put yourself in danger by continuing** - Hazards may change, and if your life is endangered by a new hazard, you should stop CPR. If possible, remove the victim from the hazardous situation as well.

### **Obstructed Airway**

If your ventilations don't go in, try adjusting the angle of the head (usually tilting it further back) and re-attempt ventilation. If the breath still doesn't go in, then do your compressions, and check the airway for obvious foreign obstructions after the compressions. If you see a foreign obstruction, remove it with your fingers if possible. Do not discontinue CPR because the airway is occluded.

## **3.5. D for Deadly Bleeding**

### **Deadly Bleeding**

*Best Practice - If the gauze or dressing becomes saturated, DO NOT take the gauze away. Apply more gauze as necessary, only professional medical personnel should remove dressings.*

CPR without enough blood is useless, so a check for deadly bleeding should be included in your primary survey whenever possible.

**If your victim is breathing**, then you should continue your primary assessment with a check for deadly bleeding.

**If your victim isn't breathing**, then you'll be doing CPR; a bystander or second trained first aider may be able to perform this check while you continue resuscitation.

### **Assessment**

With **gloved hands** check the victim's entire body for bleeding, starting with the head. Run your hands as far under the victim as possible on either sides, checking your gloves often. If your hands are bloody, then you've found bleeding. Make sure you check the head carefully; if you find an injury on the head or neck, it may indicate a spinal injury, in which case, the spine should be immobilized. As well, hair conceals blood surprisingly well - make sure you check the scalp thoroughly.

**Caution** - Remember that about 80% of life-threatening bleeding can be controlled adequately using direct pressure alone and the application of a tourniquet may result in the loss of the limb.

### **Treatment**

The key element in treating severe bleeding is the application of firm, direct pressure to the wound, using sterile gauze or other dressing. The wound may be elevated above the heart to reduce blood pressure, though this should not be done if there is a risk of disturbing fractures, or if it causes much pain to the victim.

Consider using pressure points to control major bleeding: press down on an artery that is between the heart and the wound to keep blood from flowing to the wound. Tourniquets may also be useful in controlling massive bleeding; this is not a standard procedure and should **only be used as a last resort when the victim will die without it.**

### **3.6. CPR summary**

#### **Area - check the area**

Look for hazards. If there are hazards, remove them, or remove the victim from them if possible. If not, then retreat to a safe distance, call EMS and wait for their arrival. Make sure that you do not put yourself in danger. If you are near a road, ensure that you are clearly visible to traffic.

**Put on gloves** if you have them.

#### **Awake - check level of consciousness**

*Does the victim respond to voice or painful stimulus?*

**If YES**, check the victim for other conditions and call for help if necessary.

**If NO**, call EMS.

### **Ambulance - call EMS**

Call EMS using a bystander if possible. If you're alone, and the victim is an adult (>8 years old), then leave the victim to call EMS yourself. If you're alone but the victim is a child (1-8 years old) or an infant (<1 year old), then continue; you'll call EMS later.

Obtain an AED and AED-trained responder if possible.

### **Airway - open the airway**

Quickly remove any loose and obvious obstructions from the mouth. Then tilt the head back and lift the chin so the victim's jawline is perpendicular to the ground

### **Breathing - check for breathing**

Correct position for CPR. The arms are fully extended and the thrusts are given from the hips.

*Is the victim breathing?*

**If YES**, place the victim in the Recovery position and call for help unless a spinal injury is suspected in which it is crucial to **not move the patient**. If the patient vomits, however, it is more important to roll them over to their side while holding the back, neck, and head stable. **If NO**, give 2 rescue breaths and begin compressions.

### **Compressions – begin compressions**

CPR Table

Age Group	Adult	Child	Infant
Single-Person	30-2	30-2	30-2
Two-Person	30-2	15-2	15-2
Technique	Both hands	One hand	Two fingers

- Adult technique: top hand pulls bottom hand's fingers back while also applying pressure.
- Rescue Breaths are given at a rate of 2-3 seconds between breaths.
- Compressions are at a rate of 100 per minute.

- Hand/finger placement is just below the nipple line and above the bottom of the breast bone, just slightly to the (victim's) left.

- After 5 cycles (approx. 2 minutes) call EMS if you haven't done so already (in the case of children or infants).

After 5 cycles (approx. 2 minutes) call EMS if you haven't done so already (in the case of children or infants). If a bystander is available, get them to call immediately upon arrival.

Continue CPR until emergency help takes over, the victim moves or takes a breath, or you are too exhausted to continue. If an AED and AED-trained responder arrives on the scene, it will have priority over CPR. Continue CPR until the AED operator asks you to stop.

#### **4. Secondary assessment**

##### **4.1. Head- to- toe**

The purpose of a secondary assessment (composed of a head-to-toe, history and vitals) is to continually monitor the victim's condition and find any non-life-threatening conditions requiring treatment. A secondary assessment should be done for any victim requiring ambulance intervention, or if there is a concern that the victim's condition may deteriorate.

In some cases, you may want to do an shortened secondary survey - use your best judgment.

##### **Who is this for?**

The **Head-to-toe** assessment is a technique used by lay rescuers, first responders, and ambulance personnel to identify an injury or illness or determine the extent of an injury or illness.

It is used on victims who meet the following criteria:

- Victim of trauma injuries (except minor injuries affecting peripheral areas)
- Unconscious victims
- Victims with very reduced level of consciousness

If a victim is found unconscious, and no history is available, you should initially assume that the unconsciousness is caused by trauma, and where possible immobilize the spine, until you can establish an alternative cause.

The secondary assessment should be performed on all the victim meeting the criteria (especially trauma) regardless of gender of rescuer or victim. However, you should be sensitive to gender issues here (as with all aspects of first aid), and if performing a full body check on a member of the opposite sex, it is advisable to ensure there is an observer present, for your own protection. In an emergency however, victim care always takes priority.

### **Priority of ABCs**

The head-to-toe should be completed after the primary survey, so you are already confident in the victim having a patent airway, breathing satisfactorily and with a circulation.

You should always make ABCs a priority when dealing with victims who are appropriate for a secondary survey. In the case of trauma victims, where the victim is conscious and able to talk, keep talking to them throughout. This not only acts to reassure them and inform them what you're doing, but will assure you that they have a patent airway and are breathing.

For unconscious victims, if you are on your own, check the ABCs between checking every body area, or if you are with another competent person, make sure they check ABCs continuously whilst you perform the survey.

Remember that if the person is unconscious and if you know or suspect it to be a trauma injury (evidence of blood, fall etc.) than you **MUST** treat it as a potential spinal injury in the first instance. This is because in trauma, any blow to the head sufficient to cause unconsciousness is also sufficient to cause spinal injury. In this case *immobilization of the head, neck and spine takes priority over the secondary survey*. If you have a second rescuer or bystander, then have them immobilize while you perform the head-to-toe.

### **What is being looked for?**

The head-to-toe is a detailed examination where you should look for abnormality. This can take the form of asymmetry; deformity; bruising; point tenderness (wincing or guarding - don't necessarily expect them to tell you); minor bleeding; and medic alert bracelets, anklets, or necklaces.

It is important to remember that some people naturally have unusual body conformation, so be sensitive about this, but don't be afraid to ask the conscious victim or relatives if this is normal for them. It is always worth looking for symmetry - if it is the same both sides, the chances are, it's normal.

### **The six areas**

Divide the body into 6 areas; after you examine each area, you reassess ABCs.

- **Head and neck** - The head and neck are important areas to assess, and you should take time and care to look for any potential problems.

- **Head** - Using both hands (with gloves on), gently run your hands across the skull, pressing in gently but firmly, starting at the forehead and working around to the back of the head. Feel for indentations, look for blood or fluid and watch the victim for signs of discomfort. If it is a trauma injury, check both ears for signs of blood or fluid.

- **Neck** - The neck is an important area. Start at the sides of the neck and gently press in. Watch carefully for signs of pain. Move around until you reach the spine, moving as far down the neck as possible without moving them, if they are on their back. If there is pain, tenderness or deformity here, then you should stop the survey and immediately immobilize the neck, placing one hand on each side of the head, with the thumb around the ear. This is most comfortable done from 'above' with the victim lying supine on their back, although you should support the victim in the position you find them. If there is room, you can also lie on your front, with your elbows on the floor to support the head. If there are two people, one should immobilize the head, whilst the other continues the survey. If there is only one person, immobilize the head and wait for help.

- **Shoulders, chest and back** - This area of the body contains many of the vital organs, so it is important to look for damage which could indicate internal injury

- **Shoulders** - You should try and expose the shoulders if possible, looking for obvious deformity, especially around the collar bones. You can try pressing along the line of the collar bone, watching for deformity or pain. You should then place a hand on each shoulder, and gently push down, looking to ensure that one side does not move more than the other.

- **Chest** - The chest is ideally done exposed, although you should be aware of the sensitivity of females to this, and if you are able to keep breasts covered, it is advisable to do so. You should be looking for sections of the chest which are out of line with the rest of it, or which are moving differently to the rest of the chest whilst breathing. You should also look for obvious wounds. You can then gently press on the chest. The best way to do this is to imagine the chest divided in to four quarters running neck to stomach. You should place one hand (balled as a fist works well here, to avoid concerns over excess touching) and press down one on the left and one on the right in each quarter (avoiding breasts if applicable). You are watching for one side moving differently to the other, or for pain being caused.

- **Back** - If the victim is lying on their side, or front, you can also feel down their spine. If they are lying on their back, then skip this part of the check, and leave it for the ambulance crew.

- **Arms and hands** - Run both your hands down one arm at a time, looking for deformity or pain.

- **Abdomen** - The abdomen contains the remainder of the body's critical organs, so it should be checked for potential damage. The abdomen is mostly done by gentle pushing, using the flat of your hands. Again, use symmetry, and push both sides simultaneously.

Check if the abdomen feels hard (called 'boarded') or for pain caused by the palpation.

- **Pelvis** - The pelvis (hips) is a large bone, with potential for a fair amount of damage. The main diagnostic test is to place a hand on each hip and first gently compress the hips together with both hands (there should be very little movement, and little to no pain). If the patient has moderate to severe pain when the hips are compressed, or the hips move when compressed, **do not** rock the hips from side to side. If there is no pain or movement, gently push down on the hips in a "rocking" motion to see if there is any movement.

- **Legs and feet** - As with arms, use both hands at the same time, running them down the inside and outside of each leg simultaneously (avoiding the groin area on the inside). You should also look for any shortening or rotation of one leg compared to the other. Finally, you take each foot, check that it has normal motility (can be moved normally) and has no obvious injuries

#### **4.2. History**

Taking a victim history is a crucial step. If an ambulance needs to be called and the victim is conscious, taking a history before the victim's condition worsens will assist the responding paramedics and the emergency department to better help the victim and be aware of medical conditions the victim is suffering from.

Some common things to ask for in a history are can be remembered using the acronym

##### **Chief complaint**

What is the problem?

##### **History of chief complaint**

How did this happen?

Has it ever happened before?

##### **Allergies**

Are you allergic to anything?

##### **Medical history and medications**

Do you have any medical conditions (angina, high BP, diabetes...)?

Do you take any medications?

Do your medications help when this happens?

What is the name of your normal doctor?

### **Pain assessment**

Pain location

Quality of pain (sharp/dull, squeezing...)

Radiating pain?

Severity of pain (on a scale from 1 to 10)

Timing (Constant? For how long?)

Also try to find out what makes it feel better/worse

### **Important Information**

Name, date of birth, age, sex, address...

### **Onset**

When did the symptoms start?

What were you doing?

### **Next of Kin**

Is there anyone you would like contacted?

## **4.3. Vitals**

### **Purpose**

As part of your ongoing assessment of the victim, and in preparation for the arrival of any assistance you have called, it is important to keep a check on a victim's vital signs.

If possible, these recordings should be written down so that you can keep a record of any changes, and hand this over to the ambulance crew who take the victim from you. Ideally, it should be recorded on a report, which should form part of every first aid kit. Alternatively, you can write it on any piece of paper, or often first aiders end up writing on their protective glove.

### **Assessments**

The vital signs you are looking to record relate to the body's essential functions. It starts with the airway and breathing already covered in basic life support (although you should look for additional detail) and continues with circulation, look of the skin, level of consciousness and pupil reaction.

## **Breathing**

While maintaining an open airway, ensure that the victim is breathing and count the rate of breathing. The easiest way to do this is to count the number of breaths taken in a given time period (15 or 30 seconds are common time frames), and then multiply up to make a minute. The longer the time period, the more accurate it is, however you are likely to want the patient not to converse (as this disrupts their breathing pattern), and it is important not to tell them that you are watching their breathing, as this is likely to make them alter the pattern, so a shorter period is likely to be more useful and reduce worry for the patient.

In addition to rate, you should note if the breathing is heavy or shallow, and importantly if it is regular. If it is irregular, see if there is a pattern to it (such as breathing slowly, getting faster, then suddenly slower again). Note whether breathing is noisy (wheezing could be a sign of asthma, rattling (also called 'stridor') a sign of fluid in the throat or lungs)

## **Circulation**

Whereas in the primary survey, we did not check the circulation of the victim to see if the heart was beating (we assumed that if the victim was breathing, their heart was working and if they were not breathing, their heart was also stopped), it is important in monitoring the breathing victim to check their circulation.

The two main checks are:

- **Capillary Refill** - The capillaries are the smallest type of blood vessel, and are responsible for getting blood in to all the body tissues. If the blood pressure is not high enough, then not enough blood will be getting to the capillaries. It is especially important to check capillary refill if the victim has suffered an injury to one of their limbs. You check capillary refill by taking the victim's hand, lifting it above the level of the heart, and squeezing reasonably hard for about a second on the nailbed. This should move the blood out, and the nail bed will appear white. If the pink colour returns quickly (and in a healthy victim, it may return before you even move your fingers away to look!), then this is normal. Victims who have poor peripheral circulation, especially the elderly and hypothermia victims, may not

demonstrate adequate capillary refill due to general lack of bloodflow, making this test less valuable on these patients. A normal time for the pink colour to return is less than two seconds. If it takes longer than two seconds for colour to return, then this could indicate a problem and you should seek medical advice.

- **Pulse check** - As a first aider, you can also check a victim's heart rate by feeling for their pulse. There are three main places you might wish to check for a pulse:

- **Radial pulse** - This is the best pulse to look for a first aider, on a conscious victim, as it is non-invasive and relatively easy to find. It is located on the wrist (over the radial bone). To find it, place the victim's hand palm up and take the first two fingers of your hand (NEVER use your thumb, as it contains a pulse of its own) and on the thumb side of the victim's wrist you will feel a rounded piece of bone, move in from here 1-2cm in to a shallow dip at the side of the bone, and press your fingers in (gently), where you should be able to feel a pulse. Taking a pulse here can be a skill that takes practice, so it is worth frequently testing this skill. Should there be no pulse in a victim who is pale and unwell, you are advised to seek medical assistance urgently.

- **Carotid Pulse** - This is in the main artery which supplies the head and brain, and is located in the neck. This is best used on unconscious victims, or those victim where you are unable to find a radial pulse. To locate it, place your two fingers in to the indentation to the side of the windpipe, in line with the Adam's Apple (on men), or approximately the location a Adam's Apple would be on women.

- **Pedal Pulse** - The pedal pulse can be found in several locations on the foot, and this is used when you suspect a broken leg, in order to ascertain if there is blood flowing to the foot.

When measuring a pulse you should measure the **pulse rate**. This is best achieved by counting the number of beats in 15 seconds, and then multiplying the result by four. You should also check if the pulse is regular or irregular.

## **Skin**

Related to circulation, is the colour of the skin. Changes in circulation will cause the skin to be different colours, and you should note if the victim is flushed, pale, ashen, or blue tinged.

It should also be noted if the victim's skin is clammy, sweaty or very dry, and this information should be passed on to the ambulance crew.

### **Level of Consciousness**

You can continue to use the acronym **AVPU** to assess if the victim's level of consciousness changes while you are with them. To recap, the levels are:

**A**lert

**V**oice induces response

**P**ain induces response

**U**nresponsive to stimuli

### **Pupils**

Valuable information can be gained from looking a victim's pupils. For this purpose, first aid kits should have a penlight or small torch in them.

Ideally, the pupils of the eye should be equal and reactive to light, usually written down as PEARL.

**P**upils

**E**qual

**A**nd

**R**eactive to

**L**ight

To check this, ask the victim to look straight at you with both eyes. Look to see if both pupils are the same size and shape (be sensitive to those who may be blind in one eye, or may even have a glass eye, although they will usually tell you).

To check if they are reactive, take the penlight, and ask the victim to look at your nose. Briefly (5 seconds or so) shield their eye with your hand from the light source where they are (sunlight, room lighting etc.), and then turn on the penlight, positioning it off to the side of their head. Move the penlight in over their eye

quickly, and watch to see the size change. A normal reaction would be the pupil getting smaller quickly as the light is shone in to it. Repeat on the other eye.

If both pupils are the same, and both react, note this on your form as PEARL, or else note down what you did, or did not see.

### 5. First Aid Kits

Everyone should have a well-stocked first aid kit for in the car, at home, and other events. For first aid kits in the workplace, there will be legislation which specifies what must be present; this will depend on the size and type of the workplace. Make sure you know where first aid kits are located, whether at home, at work, or at play. First aid kits should be clearly marked; in the workplace, there should be sufficient indication of the kit's location for those who are unfamiliar with it's location to identify it.

First aid kits must be kept well-stocked; supplies do expire, and must be replaced periodically. Consider creating a schedule for checking that the kit is stocked, and replacing any expired items as required. Quantities below are guidelines; you should determine what is required based on the kit's expected use.

If possible use a bright-colored, watertight plastic container. Tool boxes are popular, or it may be worthwhile to purchase a kit made specifically for this purpose.

#### Recommended Contents

Item	Home	Car	Wilderness	Workplace (<5workers)[1]	Workplace (5-15 workers)	Workplace (15-200 workers)	Workplace (>200 workers)
Gloves (pairs)[2]	2	2	10	25[3]	50	100	200
CPR mask	1	1	1	1	1	1	1
Tape (roll)[4]	1	1	2	1	2	4	8
3"x3" sterile gauze pads	4	8	20	4	12	48	96
4"x4" sterile gauze pads	4	8	20	2	2	10	20
Trauma dressing (ABD)	0	1	2	2	2	6	10

pad)								
Non-stick gauze[5]	4	8	20	2	2	10	20	
Roll 2" gauze	1	2	5	2	4	8		
Roll 4" gauze						8	16	
Adhesive bandages	20	40	50	12	24	48	100	
Antiseptic solution[6]	1	1	1	1	1	1	1	1[7]
Antibiotic ointment[8]	1	1	1	1	1	1	1	1
Triangular bandages	2	4	4	1	6	12	24	
Safety pins[9]	10	20	20	10	10	20	20	
Paramedic Scissors	1	1	1	1	1	1	1	1
Tweezers	1	1	1	1	1	1	1	1
Instant hot & cold packs	1 of each	1of each	2 of each		1 of each	1 of each	2of each	
First Aid guide[11]	1	1	1	1	1	1	1	1
Pen/pencil	2	2	2	2	2	2	2	2
Paper (or report forms)[12]	2	2	10	5	10	20	50	
Splint[13]	1	2	2		1	Assorted sizes	Assorted sizes	
Splint padding[14]	2	4	4		2	2	10	
Waste bag[15]	1	1	1	1	1	1	a biohazard recepticle and/or a sharps container	
Phone numbers[16]	1	1	1	1	1	1	1	1
Thermometer	1		1					
Sterile saline solution or bottle of water		1	1					eyewash station
Waterproof matches (box)	1	1	1					
Whistle		1	1					
Flashlight (and spare batteries)	1	1	1					
Penknife		1	1					
Certifications[17]				Proof of currency for trained staff	Proof of currency for trained staff	Proof of currency for trained	Proof of currency for trained staff	

						staff	
Log book[18]				1	1	1	1