

# FIRST AID & CPR MANUAL



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## EMERGENCY ACTION PRINCIPLES

These are the steps that you should always follow during an emergency. Each of these steps is explained further as you read through the manual.

1. Make sure the area is safe. Failure to do this can lead to you becoming injured.
2. Activate the Emergency Medical System. Call 9-1-1.
3. Perform the Primary Survey (see appendix B for more detail):
  - a. Open the airway.
  - b. Check for breathing.
  - c. Start CPR (and check for severe bleeding).
4. Perform a Secondary Survey: check for non-life threatening conditions.
5. Rest and reassure the casualty.
6. Monitor and treat for shock.

## YOUR OWN SAFETY

There is no one more important than you. This is something that you must keep in mind when faced with a situation where someone else needs help. This is not a selfish statement; in fact it's a selfless statement. It means that first you need to take care of yourself before you can take care of anyone else. Rushing into a situation without first checking for safety may result in you also becoming injured which means you will not be able to help the other person, and you are now also a casualty.

Before entering a situation you must make sure that there are no dangers that can harm you, other bystanders, or the casualty. Some of the things to check for include;

- Fires or potential fires
- Fumes or smoke
- Falling objects
- Broken glass on the floor where you'll be leaning
- Electrical wires/sources
- Oncoming traffic if on the road

If there are dangers you have three possible choices. You can either go and get help immediately and not get any closer. You can move the casualty away from danger, or you can eliminate the danger if you can do so safely (e.g. open windows to expel fumes).

Remember, if you get hurt you are not going to be able to help anyone else.

## ACTIVATING THE EMERGENCY MEDICAL SYSTEM

Don't hesitate to get help when someone is hurt. In most cities the best and fastest way to get help is to call 9-1-1. By calling this number you will be activating the Emergency Medical System, also known as EMS. This service will get you the police, the fire department, and the paramedics. Although the paramedics are the best trained for medical emergencies, all are trained to administer first aid, and can be of assistance.

When activating the EMS stay calm and answer the questions that the dispatcher will ask. They need to know things such as where you are, what happened, how many people are hurt, and who is doing first aid. When they have finished asking you questions then they will tell you to hang up, don't do so until they are done talking to you.

You can call 9-1-1 from any phone that has an outside line, such as a public phone, a cell phone, your home phone, your work phone, etc. If the phone you are using does not have a direct line to the outside then you may have to press a special number first, such as "9" and then dial the emergency number. If you are using a public phone it is free to dial 9-1-1, you don't need a quarter.

When using a regular land line the phone can easily be traced and the paramedics will know where you are calling from. But, just to be safe give them your location anyway. If using a cell phone they may be able to triangulate your location but will probably not know exactly where you are so you will have to provide this information as accurately as you can.

If the area you are in does not have the 9-1-1 service then you should know the emergency number for that area, or dial zero and go through the operator.

Remember, stay calm and answer their questions. The EMS dispatchers are very well trained to handle these kinds of situations.

Sometimes there is a fee for calling 9-1-1. But, this will be between the EMS and the person who was injured. During an emergency you should not be concerned with minor details; your primary concern is to help the injured person.

There is no penalty for you as a rescuer for calling the EMS, as long as you thought it was an emergency. Do not call 9-1-1 for situations which are not an emergency. Some examples of an emergency include:

- Fires
- Thefts in progress
- Vehicular accidents where someone is hurt
- Medical emergencies

ICE: this stands for In Case of Emergency. It is something that has recently begun and many people are doing it. In case you are injured it is really helpful for the police if they know who to contact (e.g. family members). So, on your cell phone you should label a couple of important phone numbers as "ICE" this way the police will know that these are the people are the ones to contact. Otherwise they need to sift, and possible call, many numbers on your contact list.

### RESPIRATORY SYSTEM

This is made up of your mouth, nose, throat, air passages, and lungs. The main purpose of this system is to bring fresh air into your body and the get rid of used up air. The respiratory system can get into trouble if the person can't breathe properly.

### CIRCULATORY SYSTEM

This is made up of your heart and blood vessels. The heart is responsible for pumping blood throughout your body. The blood contains the fresh air which was obtained from your lungs. The blood also brings used air back to the lungs to be breathed out. As you can imagine, the respiratory and the circulatory systems work very closely together. When there is a problem with one it usually causes a problem with the other.

The heart is a very special organ. It has its own electrical system. It is made of a muscle called the myocardium which can transmit electrical signals. Just like any other tissue it requires oxygen to work properly. The heart gets oxygen through its very own circulatory system called the coronary arteries. These arteries intertwine throughout the myocardium to supply the tissue with fresh oxygen. It is when there is a problem with the coronary arteries, or with the electrical system, that a person may have a heart attack.

Some things that can cause a problem with the respiratory and circulatory systems:

- Choking
- Allergies which cause swelling to the throat
- Asthma
- Hyperventilation
- Heart attack
- Suffocation
- Smoke inhalation
- Drowning
- Physical injuries to the airway (mouth, throat, lungs, ribs)
- Heart attack
- Strokes
- Bleeding
- Shock

Most of these topics will be covered as we go along through the book.

Some of the other body systems include:

- The nervous system, which is responsible for sensing everything around you, controlling all your movements and all your organs.
- The skin, which is your protection from the environment. The skin also helps control your body temperature.
- The immune system which protects your body from harmful pathogens. Occasionally the immune system 'over reacts' which can lead to anaphylactic shock.

Remember, that all systems need to function properly. When there is a problem with one of the system it usually causes problems with the other systems.

### CLINICAL DEATH

This is when someone's lungs and the heart stop working. Usually the lungs will stop first then shortly after that the heart will stop as well. All living tissue in the body needs oxygen to survive. Because of this treating clinical death is vital to keeping the organs alive.

### BIOLOGICAL DEATH

This is when brain cells begin to die because of lack of oxygen. Once the body does not have oxygen it takes about 4-6 minutes until brain cells begin to die. After about 10 minutes without air there is a high chance of irreversible brain damage.

#### *Notes:*

- Our goal as first aiders is to prevent biological death by getting help for the person as soon as possible, and performing CPR if the casualty becomes unconscious and their breathing stops.
- Remember, as first aiders we will not know if they have brain damage so we must do everything we can to help them. We are not allowed to decide if someone is biologically dead or not. Even paramedics will do everything they can to save someone, until they are told to stop by a medical doctor, which is the only one who can pronounce someone biologically dead.

## PROBLEMS WITH THE AIRWAY AND BREATHING - ASTHMA

### DEFINITION

- Asthma is a disease that you can be born with or develop later on in life. Some people outgrow it as they get older. When someone has an asthma attack their air passages become very tight, they spasm, and secrete mucous. This makes it very difficult to breathe. Usually breathing out may be more difficult than breathing in.

### CAUSES

- Physical exertion, emotional stress, irritants in the air such as dust or smoke, cold dry air, or hot humid air.

### WARNING SIGNS

- The person will be gasping for air, there will be wheezing sounds, they will appear weak and tired, they will be anxious, and will become unconscious if the condition worsens.

### HELPING

- Find out if they are having an asthma attack by asking them. Help them take their medication. But remember that you are not allowed to administer it. All you can do is help them take it. Help them move away from the cause of the asthma attack. Activate the EMS if the medication doesn't help or they become worse.

### *Notes:*

- There are different types of medication but they all involve spraying of the medicine into the mouth. Anyone with asthma should always be wearing their medic alert tag, and should always have their medication with them.
- Children may need what's called a spacer to assist them in taking their medication. This is a plastic tube that is attached to their puffer on one end, and a mask on the other end. This is needed because children may not have learned yet how to control their breath, which is needed to inhale directly from the puffer.

## PROBLEMS WITH THE AIRWAY AND BREATHING - HYPERVENTILATION

### DEFINITION

- Hyperventilation is when someone is taking in more oxygen than they really need. This causes an imbalance of the various gases in your body. Although it may sound good to get in more oxygen, in fact it is not, and can cause havoc with the breathing mechanism.

### CAUSES

- A person may hyperventilate because of anxiety, emotional stress, or by doing it on purpose by breathing too fast.

### WARNING SIGNS

- The person will be breathing too fast, they will look anxious, weak, tired, and they will become unconscious if the condition continues.

### HELPING

- Help move the person away from the cause (e.g. watching an accident scene), talk and reassure them, have them sit down, ask them to breathe with you so they will slow down their breathing rate. If the condition continues then you need to activate the EMS because this can result in unconsciousness.

### *Notes:*

- Do not have them breathe into a paper bag this will only make them much more anxious. Do not leave them alone as they may become unconscious and stop breathing.

## PROBLEMS WITH THE AIRWAY AND BREATHING - ANAPHYLAXIS

### DEFINITION

- An over-reaction of the body's immune system, where different chemicals are released to try and destroy the perceived invader.

### CAUSES

- Medication, foods (e.g. eggs, nuts, kiwis, strawberries, sea food, etc), perfumes and soaps.

### WARNING SIGNS

- There will be redness, hives, and itchiness in the area. There will also be swelling which can be life threatening if this is near the throat or face because it can restrict breathing.
- Unconsciousness.

### HELPING

- Immediately remove the person from the cause. Activate the EMS immediately. Assist them in taking their medication (Epi-Pen).
- The epi-pen is injected in the upper thigh, where there is plenty of tissue and blood flow. First, the top safety cap needs to be removed which allow the spring inside the tube to work once the epi-pen is thrust into the leg muscle. Once injected the epi-pen should be held in place for about 20 seconds to make sure all the medicine enters the tissue.
- This needle is a single dose, meaning you cannot use the same needle more than once.
- If the person has a second epi-pen, do not use it until the symptoms return.

### *Notes:*

- Their medication will help control the swelling. The EMS must be activated even if they have medication because it will only last for about 10-15 minutes. People can develop allergies at any time throughout their lives.

## PROBLEMS WITH THE AIRWAY AND BREATHING - CHOKING

### DEFINITION

- This is where something is stuck in your throat and you are having trouble breathing. It can be a partial obstruction where you can still cough and breathe, or it can be complete where you cannot breathe at all.

### CAUSES

- Eating too fast, swallowing without chewing, laughing and talking while eating. For children and infants some other common causes include broken balloon pieces, toys, and other objects that they may find lying around.

### WARNING SIGNS

- If it's a partial obstruction the person will be attempting to remove the object by coughing. If it's a complete obstruction the person will not be able to cough, they will be turning blue, they will look scared.

### HELPING

- If it's a partial obstruction just stay with the person and encourage them to keep coughing. If you think it's getting worse then get help. If it's a complete obstruction then you need to do abdominal thrust (chest thrusts if they are pregnant or too large for you to get your arms around them). Continue the thrusts until the object comes out or the person becomes unconscious.

### *Notes:*

- The practical components are explained further in appendix A.

## PROBLEMS WITH BREATHING

The important thing to remember is that any problems with the airway will cause a problem with breathing. And this can become life threatening.

### RESPIRATORY DISTRESS

- This is where the casualty is still able to breathe, but is having problems doing so.

### RESPIRATORY ARREST

- This is where breathing has stopped all together, and it is now an emergency. The casualty may still be conscious or may be unconscious.

### RESCUE BREATHING

- If the casualty has become unconscious then you must begin CPR. Refer to appendix A for the detailed steps.

## PROBLEMS WITH CIRCULATION

Circulation refers to blood circulating throughout the body. The major cause of circulation problems is usually a heart attack, but can also be caused by injury, breathing problems, shock, etc. If the person is not breathing than circulation will also stop, therefore, CPR must be started as soon as possible. The practical components are explained further in appendix A.

### BLOOD VESSEL DISEASE

- This is sometimes referred to as coronary artery disease, cardiovascular disease, heart disease, atherosclerosis, arteriosclerosis. But, the bottom line is that it all means the same thing.

### DEFINITION

- It simply refers to the narrowing of the blood vessels by plaque buildup. This will cause poor blood flow to any part of the body, including the heart which can cause a heart attack, or the brain which can cause a stroke. In the case of a heart attack the blood vessels (coronary arteries) have become blocked and no longer allow blood to flow through to the heart muscle. As a result the heart muscles cannot function properly and will soon die.

### CAUSES

The causes are referred to as Risk Factors. There are two categories:

- Non-Modifiable Risk Factors, meaning you cannot control these. They include; age, gender (male or female), type I diabetes, heredity/genetics.
- Modifiable Risk Factors, meaning you can control these. They include: smoking, obesity, sedentary life style, high blood pressure/hypertension, and diet (e.g. fat/cholesterol intake).

### MORE ON RISK FACTORS

- Age: as we get older there is a bigger risk of heart disease simply because we've had more time to damage our bodies.
- Gender: men have a higher chance for two main reasons:
  - Men carry excess fat higher up in the bodies which affects internal organs. The belief is that this causes higher blood sugar and higher cholesterol.
  - Estrogen (which men don't have) has been shown to reduce the chance of heart disease in women.
- Diabetes: this disease, over years, will cause damage to small blood vessels which affects circulation. This can lead to heart disease, kidney failure, blindness, and amputations.

- Genetics: as unfair as this may seem there are some people genetically predisposed to developing heart disease. If heart disease has been a problem with older family members then this may also be a problem for you.
- Smoking: there is no doubt that smoking is harmful. What some people don't realize is that it is not just a risk for lung cancer. The poisonous chemicals in smoking are absorbed by the blood and carried throughout the body. These poisonous chemicals cause high blood pressure, cause your arteries to become very stiff, and cause plaque to build up in the arteries.
- Obesity: having excess fat puts a lot of stress on your body. It also causes high blood pressure, high triglycerides, and is associated with high sugar levels in the blood. Losing excess fat is not easy but following a healthy eating style and being physically active is the best approach.
- Sedentary lifestyle: Exercise is one of the best things you can do for your body. It strengthens the heart muscle, lowers blood pressure, controls excess calories from being stored as fat, strengthens bones and muscles, etc. To stay healthy exercise should be done almost daily. So, go for a walk, jog, swim, play tennis, squash, do an aerobic class, etc. Whatever you need to do to get your body moving.
- High blood pressure (HBP): this is defined as the force the blood is exerting on your arteries as it flows through them. It is also called hypertension. If the pressure is too great the blood vessels stretch beyond their capacity which will lead to small cracks. These small cracks are wounds which must heal. This means that as they heal there may be scar tissue that develops in the area which may impede blood flow. Or, if pressure is too high, the blood vessel may simply burst causing an aneurysm. Despite contrary belief there are no warning signs for HBP except to have it checked by your physician at least once a year.
- Poor diet: most people in North America have poor eating habits. Way too much processed, refined, and high saturated-fat foods, too much sugar, etc. And, not nearly enough fresh fruits and vegetables. Poor diets can easily lead to high cholesterol, obesity, HBP, type 2 diabetes, etc.

The more risk factors you have the higher your chance of developing blood vessel disease. There is no cure for blood vessel disease. That is why it is so important to start regular life style habits early on.

### CPR

- The new 2006 guidelines state that if an unconscious person has stopped breathing you must begin CPR. The reason for this is that when breathing stops the heart will also stop soon after. So, CPR is needed to keep the blood moving throughout the body.

## HEART ATTACK

### WARNING SIGNS

- Pain/tightness/numbness in the shoulders, arms, neck, back, chest.
- Bluish, pale skin.
- Rapid but weak pulse.
- Shallow rapid breathing.
- Nausea or vomiting.
- Unconsciousness (refer to appendix for steps to take).
- These warning signs may come and go. Even if the warning signs disappear this person may still be having a heart attack and still need immediate help.

### HELPING

- Help them get in a comfortable position, make sure they are resting.
- Activate the EMS.
- Reassure them that help is on the way.
- Check for medical history of a similar problem, as they may have medication (but only assist, do not administer medication).
  - Angina is a condition of partial blockage of the arteries feeding the heart muscle. If they say they have this condition then help them take their medication (nitroglycerin).
  - This medication will help dilate the blood vessels so more blood can flow through.
  - If they have taken any erectile-dysfunction medication within the last 48 hours they should not take nitroglycerin because both medicines have a similar affect (blood vessel dilation) which can lead to very low blood pressure, unconsciousness, and death. Ask first!
- If they wish, they may take one Bayer Aspirin, as this may prevent further damage to the heart muscle. Note, if they have asthma they may be allergic to aspirin – ask first!
- Do not give them anything to eat or drink.
- Stay with them all the time and comfort them.

### *Notes:*

- It is extremely common for people to ignore the warning signs of a heart attack. Unfortunately, this is one reason why so many people die from this disease – because they don't get help soon enough. As a first responder it is your job to activate the EMS as soon as possible.

## DEFIBRILLATION (AUTOMATED EXTERNAL DEFIBRILLATION – AED)

Fibrillation is what happens in 80% of the cases when someone is unconscious from a heart attack. This is a condition where there is still electrical activity in the heart, but it is very irregular and erratic. As a result, the heart is not working properly to create circulation.

An Automated External Defibrillator (AED) is a machine that is designed to administer an electric shock. The concept behind this is that the shock will momentarily cause the heart's electrical system to stop, and then it will begin to work again with a regular rhythm. The main reason this works is because the heart has its own, self-sustaining, electrical system.

A defibrillator can detect electrical signals from the heart and determine if a shock would benefit the person. The main factor is whether or not the heart is fibrillating. If the electrical rhythm is normal, or there is no electrical activity at all, then the machine will not shock.

AEDs are now becoming more common in our society, as they have been shown to save many lives if they are used on the spot by trained bystanders, before the paramedics arrive. The key to this lifesaving machine is that it must be administered as soon as possible, because the casualty's chance of being saved decreases by about 10% with every minute of delay. CPR is still an important component in helping someone with no signs of circulation.

### *How to use a defibrillator:*

- These machines should only be used on an unconscious non-breathing person. They are designed for adult and children over 25kg in weight.
- Bear the person's chest. Remove all clothing, including bras and jewelry. If needed shave the areas where the pads will be placed.
- Remove the covering from the pads and place one pad on the right hand side between the shoulder and the neck, just over the collarbone. Place the second pad on the left side about 3 inches below the left breast over the ribs. Look at the diagrams on the pads for more info.
- Plug the pads into the machine.
- Turn the machine on.
- Once the machine is on follow the machine's instructions fully. It will tell you exactly what to do.
- First, the machine will analyze the heart's electrical activity. It will do this every two minutes regardless of what happens next.
- If the machine detects a non-shockable rhythm then the machine will tell you to begin CPR. In the meantime it will give you a two minute count down, at which point it will re-analyze.
- If the machine detects a shockable rhythm it will begin to charge. When it is ready it will tell you to deliver a shock. You do this by simply pushing the shock button.
- Before delivering the shock make sure no one, including you, is touching the person, as this is electricity and can be very dangerous.

- After the shock the machine will tell you to begin CPR. In the meantime it will give you a two minute count down, at which point it will re-analyze.
- This process will be repeated to a maximum of 9 times. At which point the machine will not shock again. But, if needed, continue CPR until paramedics arrive.

*Note:*

- Once the machine is on do not turn it off.
- Machines record voices for learning and statistical purposes.
- The battery is lithium and lasts a very long time (usually guaranteed up to 3 years).
- Machines do a daily, weekly, and monthly self tests. If there is a problem they will usually emit a beeping noise.
- Most machines will have an extra set of electrical pads, a pair of scissors, and a razor.

## STROKE

### *WARNING SIGNS*

- Numbness, tingling, paralysis on one side of the body, extremities, hands, and feet.
- Slurred speech, not making sense.
- Trouble understanding you.
- Uneven pupils.
- Nausea or vomiting.
- Decreased level of consciousness.

### *HELPING*

- Help them get in a comfortable position on their side, make sure they are resting.
- Activate the EMS.
- Reassure them that help is on the way.
- Keep them warm with a blanket.
- Do not give them anything to eat or drink.
- Stay with them all the time and comfort them.

### *Notes:*

- It is extremely common for people to ignore the warning signs of a stroke. Unfortunately, this is one reason why so many people die from this disease – because they don't get help soon enough. As a first responder, it is your job to activate the EMS as soon as possible. Sometimes a stroke is called Cerebral Vascular Accident (CVA). Mini stroke is a condition where the casualty experiences similar warning signs as that of a stroke, but these warning signs go away on their own. This is a warning sign that a serious stroke may occur and the person needs medical help immediately. This condition is sometimes called Transient Ischemic Attack (TIA).

## SHOCK

### *DEFINITION*

- Poor circulation to the vital organs.

### *CAUSES*

- Dilated blood vessels, bleeding, and severe dehydration, all leading to a drop in blood pressure, which results in poor circulation. These can be caused by severe emotional trauma, physical injury, illness, etc.

### *WARNING SIGNS*

- Unusual behavior (e.g. very calm or very anxious), lack of pain to an injury, rapid breathing, rapid but weak pulse, bluish skin (cyanosis), unconsciousness.

### *HELPING*

- Activate the EMS right away. Assist the person to lie on their side to improve circulation, treat any injuries, and help them take any medication for an illness.

### *Notes:*

- Shock is very serious and life threatening. The casualty may not know that they are in shock. Stay calm, make sure they rest, and reassure them that help is on the way.

## FAINTING

### *DEFINITION*

- This is very similar to shock except it's a temporary condition.

### *CAUSES*

- It usually occurs because of a temporary decrease of blood flow to the brain, which can be caused by not eating properly, standing up too fast, or low blood pressure.

### *WARNING SIGNS*

- The casualty feels faint, or faints.

### *HELPING*

- If they feel faint have them lie down which will help with circulation. If they faint they will usually wake up in a few seconds. Encourage the person to stay lying down for a few minutes until they feel better. If they do not wake up within one minute, or they became injured during the fall then activate the EMS, and treat any injuries.

### *Notes:*

- If someone has fainted, even if they feel fine afterwards, they should still go see their doctor to rule out any major problems.

## EXTERNAL BLEEDING

### DEFINITION

- This is where the blood vessels and the skin are cut and blood is escaping the body.

### CAUSES

- Damage to the skin caused by trauma. Can be a laceration (clean cut), abrasion, or avulsion (with skin still hanging).

### Helping:

- If it's a minor bleed allow some bleeding to take place as this will help clean the wound. Then wash with warm water and soap, apply a dressing to keep it clean, change the dressing every few hours, and monitor for signs of infection.
- If the bleeding is severe than apply the RED principle:
  - Rest: make sure the person is resting so as to decrease the heart rate and blood pressure.
  - Elevate: raise the injured limb above the heart to slow down the bleeding.
  - Direct Pressure: put pressure directly over the wound to help control bleeding, tie the dressing in place. But, do not make the dressing too tight so as to restrict blood flow. Do not remove the dressing. Get medical help.

### Notes:

- If there is an impaled object do not remove it as this can cause much more injury and bleeding. Instead, apply dressing around the object then tie in place to control bleeding. Take extra care not to move the object.

Refer to appendix B for bandaging techniques.

## INTERNAL BLEEDING

### *DEFINITION*

- This is where the blood vessels are broken but the skin is not, so the person is bleeding under the skin. Injured organs will result in internal bleeding.

### *CAUSES*

- Usually physical trauma, being hit, falling. Very common in car accidents.

### *WARNING SIGNS*

- Bruising, pain, tenderness, mechanism of the injury, blood in spit, vomit, or urine.

### *HELPING*

- If it's a minor bruise on the arm or leg then rest the injured part, apply an ice pack for a few minutes, and watch for signs that it is not healing. If it's severe internal bleeding in the core of the body then active the EMS, make sure the person is resting, treat for shock, apply an ice pack, but do NOT put pressure over the wound.

### *Notes:*

- Internal bleeding is not always obvious, but can be life threatening.
- Infection can occur with any wound whether internal or external. If you suspect an infection then seek medical help immediately, as it can become life threatening. Watch out for warning signs such as; the wound is not healing or is getting bigger, discoloration, fluid discharge, and increased pain.

## SECONDARY SURVEY

This involves checking for other non-life threatening injuries. Obviously it is done after the primary survey, which involves looking after the life threatening injuries. It is done by starting from the head and moving down to the toes while checking for bumps, bruises, bone deformity, and minor cuts. If anything is found it is treated and/or reported to the paramedics once they arrive.

If the person is unconscious you do this by looking and by touching (feeling for bumps and broken bones).

If the person is conscious you do this by talking to them and asking them questions.

If you think there is an injury do NOT move that body part.

Keep in mind that this is secondary to primary. Never ignore breathing problems, or CPR, or severe bleeding in order to do a secondary survey.

# DIABETES

## DEFINITION

- Diabetes is a disease in which your body cannot properly store and use fuel for energy. The fuel that your body needs is called glucose, a form of sugar. Glucose comes from foods such as breads, cereals, pasta, rice, potatoes, fruits and some vegetables. To use glucose, your body needs insulin. Insulin is made by a gland in your body called the pancreas. There are two major types of diabetes: type 1, and type 2.
  - Type 1 diabetes is when the body makes little or no insulin. It used to be called insulin-dependent or juvenile diabetes. This requires daily injections of insulin.
  - Type 2 diabetes: occurs when your body can't use the insulin it makes. If you have type 2 diabetes, you may be able to keep your blood glucose levels in a target range by healthy eating, exercising, and taking medication.

There are 2 types of diabetic emergencies

- Hyperglycemia (insulin shock): this is where there is too much sugar in the blood, and not enough insulin. It can occur by not taking medication and/or by eating things high in glucose.
- Hypoglycemia (diabetic coma): in this case there is not enough sugar and too much insulin. This can occur if too much insulin is taken or not enough glucose has been consumed.

## CAUSES

- Hyperglycemia:
  - Eating food high in simple sugars.
  - Not taking medication (insulin).
- Hypoglycemia:
  - Not eating at the right times (missing a meal).
  - Being over active without having planned for it.
  - Taking too much medication.

## PREVENTION

- There is no way to prevent type 1.
- Type 2 can be prevented by following a healthy lifestyle of regular physical activity, healthy eating, and controlling obesity.

## WARNING SIGNS

- Dizziness, drowsiness, and confusion.
- Rapid breathing.
- Rapid pulse.
- Feeling and looking ill.
- Unconsciousness.

## HELPING

- Help the person take a bit of sugar (candy, juice, fruit, etc), however, NutraSweet or aspartame is not effective. Monitor their condition and do not hesitate to call an ambulance if their condition does not improve within a couple of minutes. Do NOT administer medication; this is reserved for medical professionals only.

### *Notes:*

- Diabetes is a life-long condition. High blood glucose levels over a long period of time can cause blindness, heart disease, kidney problems, amputations, nerve damage, and erectile dysfunction. Good diabetes care and management can delay or prevent the onset of these complications.

## SEIZURES

### DEFINITION

- Seizures are neurological disorders where the signals in the brain become mixed up.

### CAUSES

- The most common cause is from the medical condition called epilepsy. However, they can also be caused by concussions, allergic reactions, brain tumors, and high fever in children.

### PREVENTION

- If someone has epilepsy they may have medication to take which will reduce the chance of seizures. Other causes are hard to prevent because nothing is suspected of being wrong until the seizure.

### WARNING SIGNS

- Aside from the casualty having some kind of aura, e.g. smelling burnt toast, there are no warning signs that a seizure is about to happen. Once it begins the person may appear totally spaced out, may appear to be sleep walking, or may be on the ground convulsing.

### HELPING

#### GENERALIZED CONVULSIVE SEIZURES

- Keep calm and let the seizure take its course. Do not try to stop the seizure or revive the person.
- Protect person from further injury by moving hard or sharp objects away, but do not interfere with the person's movements. Place something soft and small, such as a sweater, under their head, and loosen tight clothing around the neck.
- Do not force anything in the person's mouth. This could cause teeth and jaw damage, or choking. The person will not swallow their tongue during a seizure.
- Roll the person on their side as soon as possible, to allow saliva or other fluids to drain away, helping to clear the airway. Do not be frightened if a person having a seizure stops breathing momentarily.
- If a seizure goes on longer than 5 minutes, repeats without full recovery, or the person becomes injured, then call for medical assistance.
- Always be comforting, be gentle, and reassure the person, as it may take some time for them to become re-oriented.

## PARTIAL NON-CONVULSIVE SEIZURES (E.G. LIKE SLEEP WALKING)

- Stay with the person and let the seizure take its course. Do not try to stop the seizure or revive the person. The person will be unaware of his or her actions, and may or may not hear you.
- Gently guide the person away from danger, and move dangerous objects out of the way.
- Partial seizures may spread to other areas of the brain. Do not be alarmed if a convulsive seizure follows.

### *Notes:*

- Always be comforting, be gentle, and reassure the person, as it may take some time for them to become re-oriented.

## BURNS

### DEFINITION

- A burn is damage to the skin or underlying tissue caused by heat. There are 3 levels of severity; 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>.

### CAUSES

- There are 5 main sources of burns; electricity, radiation (sun), thermal (something hot), chemical, and friction.

### PREVENTION

- Use safety rules.
- Use safety equipment when working with chemicals.
- Hire professionals for work dealing with e.g. electricity.
- Avoid sun exposure.
- Keep hot objects away from children.

### WARNING SIGNS

- 1<sup>st</sup> degree: red, swollen, pain.
- 2<sup>nd</sup> degree: red, swollen, blisters.
- 3<sup>rd</sup> degree: damaged skin to the point where the underlying tissue is visible.

### HELPING

- For 1<sup>st</sup> and 2<sup>nd</sup> degree burns you should cool the area immediately with gently running cold water for about 10-15 minutes, or until it has cooled off. Do not break any blisters as this will make the wound worse.
- For 3<sup>rd</sup> degree burns do not put anything on the burn, seek medical help immediately and treat for shock. 3<sup>rd</sup> degree is extremely life threatening even when a small body part is affected. If there is clothing on the burn do not remove it as this may also remove skin. There is a very high risk of infection from this kind of burn.

*Notes:*

- As with all other emergencies make sure the area is safe for you first. Watch out for live wires, hot objects, chemical spills, etc.
- The severity of a burn can also be increased depending on the sensitivity of the body part that is burnt, or the amount of the body that is burnt.
- With electrical burns check for an exit wound as well as treating for the entrance wound.
- With chemical burns flush the area with lots of water to get it off the casualty's skin.
- Never apply ointments, butter, or other home remedies on burns, as this may make the burn worse, keep the heat trapped in, or cause an infection.

## HYPOTHERMIA

### DEFINITION

- A drop in the core body temperature, even as little as 1 to 2 degrees Celsius, from the normal of 36 degrees Celsius.
- Sometimes this can happen within minutes, other times it takes a while to take place.
- It is sometimes accompanied by frost bite.

### CAUSES & PREVENTION

- Exposure to the cold.
- Not being dressed properly.
- Damp weather.
- Being wet.
- Being tired or dehydrated.

### WARNING SIGNS

- Feeling cold.
- Shivering, which will stop as the condition worsens.
- Becoming confused and disoriented.
- Slow pulse and breathing rates.
- Unconsciousness.

### HELPING

- Get medical help.
- Get them inside near a heat source.
- Remove wet clothing and replace with dry clothing.
- If conscious give them warm fluids to drink – slowly.
- Avoid alcohol, caffeine, and carbonated drinks.

#### *Notes:*

- Being wet or submersed in cold water will cause hypothermia much quicker because water is very conductive and draws the heat out of your body faster.

## FROST BITE

### DEFINITION

- A freezing of a body part, such as the hand, foot, face, etc. Superficial is the surface of the skin, whereas deep frost bite affects the underlying tissues.
- Sometimes this is accompanied by hypothermia.

### CAUSES & PREVENTION

- Exposure to cold, wind, wet conditions.
- Not wearing protective clothing.

### WARNING SIGNS

- Cold feeling.
- Numbness.
- Inability to use the body part.
- Tingling, then pain.
- As it gets worse all sensation will disappear.
- The skin will first appear white or yellowish. If the tissue dies it will become black charred color.

### HELPING

- For deep frost bite get medical help.
- Warm up the body part slowly and gradually by wrapping it in warm clothing and/or submersing it in lukewarm water – not hot water as it will burn the skin.

### *Notes:*

- If there is a chance of the body part refreezing then it might be better to get medical help first before allowing it to warm up.
- Do not rub or force the body part to bend, this will cause more damage.

## HEAT EMERGENCIES (HYPERTHERMIA)

### DEFINITION

- Perspiration is the body's main method of regulating its temperature. As sweat evaporates off the skin heat is taken with it, as a result cooling down the body. Without this method the body would quickly over heat and the person would die. Anything that impairs body temperature regulation is hazardous.
- There are 3 levels of heat emergencies: heat cramps, heat exhaustion, and heat stroke.

### CAUSES & PREVENTION

- Exercising in hot humid and/or polluted weather.
- Becoming dehydrated.
- Drinking alcohol, caffeinated, or carbonated drinks (contributes to dehydration).
- Over using saunas, whirlpools, and warm environments such as gyms, aerobic classes, and stuffy rooms.

### HEAT CRAMPS

#### WARNING SIGNS

- Painful muscular involuntary contraction.
- Sweating or moist skin.
- Tired, irritable, and thirsty.

#### HELPING

- Removing them from the source of heat.
- Gently stretch/massage affected area.
- Slowly rehydrate with water, juice, or sport drinks.
- Rest for several minutes or even a couple of hours.
- Avoid alcohol, caffeinated and/or carbonated drinks as they will only make the condition worse by promoting dehydration.

## HEAT EXHAUSTION

### WARNING SIGNS

- Sweating.
- Tired.
- Irritable.
- Thirsty.
- Lethargic.
- Slight headache.
- Nausea.
- Dizzy/weak.
- May have slightly elevated body temperature.

### HELPING

- Remove from source of heat.
- *Slowly* rehydrate by drinking water, juice, or sport drinks.
- Rest is very important to prevent a re-occurrence.
- Remove sweaty clothing.
- Fan or gently cool the skin with cool towels or ice packs.
- Avoid alcohol, caffeinated and/or carbonated drinks as they will only make the condition worse by promoting dehydration.
- If vomiting occurs you should activate EMS.

## HEAT STROKE

### WARNING SIGNS

- Elevated body temperature.
- Very tired/weak.
- Sweating may stop - this is not a good sign.
- Severe headache.
- Red hot dry skin.
- Rapid, weak pulse becoming irregular, rapid breathing, or reduced/absent vital signs (consciousness, breathing, pulse).

## HELPING

- Remove from heat source.
- Place in recovery position.
- Activate 9-1-1 ASAP.
- Monitor/treat ABCs.
- Remove sweaty clothing.
- Fan or gently cool the skin with cool towels or ice packs.
- Do not douse with cold water - this may cause shock.
- At this point it is too late to give fluids by mouth and it may induce vomiting.

## BONE AND JOINT INJURIES

### DEFINITION

- This is an injury to a bone, a joint, a ligament, or a tendon.
- Bone fractures, if set properly, will heal fully in a few weeks and will be stronger than before. This happens because the area builds up with more calcification than before.
- Joint injuries usually involve a dislocation. This is where the bone has popped out of its socket. This may be accompanied with a fracture, a strain, or a sprain. It may pop back in it may not. Either way seek medical help. Do not push it back into place.
- Tendons are strong tissues that connect a muscle onto a bone. When a tendon tears it is called a strain. They become torn they take a very long time to heal, many times never as good as before, and sometimes surgery is required to reattach them.
- When a ligament is torn it is called a sprain. Ligaments connect a bone to another bone. These are found around the joints. Ligaments are very strong, but, as with tendons, when they tear they take a long time to heal, never as good as before, and sometimes surgery is required.

### CAUSES

- Any kind of force that is greater than what the tissue can withhold will cause such an injury. Some common activities include falling, twisting, getting hit, etc.

### PREVENTION

- Wear safety equipment and wear it properly.
- Know the safety rules of sports played.
- Use seat belts and car seats.
- Keep joints and bones strong through weight bearing physical activities.

### WARNING SIGNS

- A 'snapping' noise.
- Pain.
- Deformity.
- Inability to move.
- Swelling.
- Bruising.

### HELPING

- Apply the RICE principle.
  - Rest the injured body part and the entire casualty.

- Immobilize the injured body part.
- Cold compress over the injury to reduce swelling.
- Elevate the injured body part if it can be done without causing further injury.
  
- Seek medical help.
- Do not rub or move the injured body part.
- If there is a protruding bone then bleeding will need to be taken care of by applying indirect pressure.
- Never straighten or realign an injured body part.

*Notes:*

- Refer to appendix B for splinting and bandaging techniques.

## SPINAL INJURIES

### DEFINITION

- An injury to the muscles, bones, or nerves associated with the spine.

### CAUSES

- Any impact, direct or indirect, to these body parts. Very common in vehicle accidents, diving in shallow water, cycling accidents, sport accidents such as hockey and football, etc.

### PREVENTION

- Wear safety equipment and wear it properly.
- Know the safety rules of sports played.
- Use seat belts and car seats.
- Avoid alcohol intake when doing physical activity as it impairs sound judgment.

### WARNING SIGNS

- Mechanism of injury (how it occurred).
- Pain, numbness, or paralysis.
- Bleeding, swelling, or bruising around the head, ears, or nose.
- Unconsciousness.

### HELPING

- Make sure the person doesn't move.
- Hold them still. You need to and explain to them that they may have a serious injury and should not move.
- Activate the EMS right away.
- If they are unconscious to your CPR steps. Airway and breathing take priority.

### *Notes:*

- Any time there is a spinal injury you should also suspect a concussion, and vice versa.

## CONCUSSIONS

### DEFINITION

- An injury to the head or the brain. Literally bleeding in the brain or the area around the brain.

## CAUSES

- Any impact, direct or indirect, to the head.
- May be associated with a spinal injury.

## PREVENTION

- Wear safety equipment and wear it properly.
- Know the safety rules of sports played.
- Use seat belts and car seats.
- Avoid alcohol intake when doing physical activity as it impairs sound judgment.

## WARNING SIGNS

- Mechanism of injury.
- Pain or numbness.
- Bleeding, swelling, or bruising.
- Confused.
- Loss of memory.
- Dizzy.
- Ringing in the ears.
- Nausea or vomiting.
- Unconsciousness.

## HELPING

- Make sure the person doesn't move.
- Hold them still if you need to and explain to them that they may have a serious injury and should not move.
- Activate the EMS right away.
- If they are unconscious to your CPR steps but open the airway with a modified jaw thrusts, as opposed to a head tilt.

### *Notes:*

- Any time there is a spinal injury you should also suspect a concussion, and vice versa.
- Anyone with a suspected concussion should seek medical help as soon as possible.
- If they have become unconscious from the concussion then activate the EMS right away.
- Many athletes will not admit to having had a concussion because then they cannot play anymore. Unfortunately that is why the condition becomes worse.
- Concussions are very life threatening.
- There is a condition called Baby Shaken Syndrome, where babies are injured by violent shaking.
  - Never shake a baby – on purpose, by accident, or when angry.

- Never throw them up in the air – no matter how much they enjoy it.
- Never twirl them around while holding them by their feet.
- These activities can cause brain injuries, sometimes minor sometimes serious.

## POISONS

### DEFINITION

A poison is a substance which enters the body and can cause illness or death. It may act within a matter of seconds (e.g. carbon monoxide) or a matter of years (car pollution). There are four basic ways in which poison can enter the body; by swallowing, breathing, injecting, or absorbing.

### INGESTED POISONS

Some examples can include bad food, household cleaners, perfumes, nail polish remover, etc.

If the person is having trouble breathing, is convulsing, is unconscious, or is in pain, call the EMS immediately. If the person appears to be fine but you want to make sure call the poison control center. For your area this number can be found at the front of your local telephone directory. In order for them to help you they need to know what the person took, how much, their age and weight, and their present condition. They will either tell you to seek medical help immediately, give them something to drink, or to monitor them to make sure they don't get worse. Make sure you do not induce vomiting unless you are told to do so by the poison control center as some substances are corrosive and may burn on the way up. Also, do not give anything to drink unless instructed by the poison control centre as some substances may react more with drinks. Always keep cleaners and chemicals high up so children cannot access them.

### BREATHED/INHALED POISONS

This can include fumes from household cleaners, industrial products, smoke, etc. Fresh air is the immediate first aid treatment. But first make sure you are not putting yourself in danger. Seek medical help for the person immediately. Never mix cleaners unless it specifies on the container. Never use chemicals in poorly ventilated areas.

Be aware of carbon monoxide as it cannot be smelled, has no taste, and cannot be seen. It can be produced by any engine (e.g. house furnace, car), or even a fireplace with poor ventilation. Every home should have a carbon monoxide detector. If the detector begins to sound you need to leave the house immediately and call the fire department from the neighbor's house. Carbon monoxide poisoning makes you feel sleepy and drowsy and can have an effect in a matter of minutes so you aren't aware of what is happening.

## INJECTED POISONS

Some examples include needles, broken glass, mosquitoes, spider bites, bee stings, etc. As soon as possible remove the object from the skin. Clean the area thoroughly with soap and water. If an allergic reaction occurs, or you believe there is a risk of infection, seek medical help.

## ABSORBED POISONS

These are poisons which enter the body through the skin, but do not cause a puncture. Some examples are household cleaners, industrial products, poisonous plants, etc. Remove the substance as soon as possible by using large amounts of running water. Do your best not to contaminate other body parts. There are some chemicals that will react more with water, but if you leave them on the skin they will react anyway with the skin moisture. Seek medical help. If you work with chemicals make sure you know how to do the job safely and always use safety equipment.

WHMIS: Workplace Hazardous Material Information System is government regulated training that anyone working with chemicals needs to take. This is mandatory on many jobs and it is the responsibility of the employer to assure all employees are properly trained. In addition, it is the responsibility of the employer to make sure all employees have the proper equipment to perform their jobs properly and safely.

MSDS: Material Safety Data Sheet is written information on various products. Any workplace which deals with chemicals needs to have this information readily available.

## RABIES

### DEFINITION

This is a virus that can be transmitted to/from any warm blooded animal, including rodents, birds, bats, and humans. The rabies virus attacks the nervous system, and, depending on how much is transmitted, and where in the body it enters, will cause death within 3 days to about 4 weeks, if the vaccine isn't administered soon enough. If one contracts rabies they must get the vaccine before they experience secondary warning signs. If not, death is imminent.

### WARNING SIGNS

- The primary warning signs:
  - Getting bitten or scratched by a rabid animal. Of course one won't know for sure if the animal is rabid, so the safest thing is to assume that it is and seek medical help.
- The secondary warning signs:
  - trouble swallowing
  - saliva building up in the mouth
  - aggressive or irregular behavior
  - dizziness
  - loss of balance
  - memory loss

These warning signs are the same for animals and humans.

### PREVENTION

- Stay away from wild animals.
- If you see an animal that has wound marks, or is portraying warning signs listed above, call the animal control centre.
- Never try and catch a wild animal, you will get bitten for sure.

### HELPING

- Treat the wound for bleeding and seek medical help immediately.

#### *Notes:*

- Even household pets, if allowed to roam outside, can contract rabies and bring it back in the home.
- The only way to test for rabies is by killing the animal and testing its nervous system.
- If treatment isn't sought quick enough death is the only outcome.

## TICKS

### DEFINITION

These are tiny insect-like bugs that live in the woods and can easily fall on you as you walk by. They are very small, you don't feel them, and they are very hard to see. They burrow slightly under the first layer of the skin and stay there. The biggest problem is that many times they carry diseases such as Rocky Mountain Fever, or Lyme disease.

### WARNING SIGNS

- Red, itchy hives.
- Swelling.
- Numbness or pain in muscles and joints.
- Flu-like symptoms.
- Heart palpitations.

### TREATMENT

- Remove the tick using tweezers. Make sure you get all of it.
- Wash the area with soap and water.
- Seek medical help (family doctor) to obtain antibiotics.

### PREVENTION

- When doing outdoor activities wear long sleeve clothing, a cap, and long pants.
- After the activity take a few minutes and examine self or each other for ticks, they usually end up on the scalp, shoulders, or upper back.

## SNAKE BITES

### DEFINITION

Not all snakes are poisonous, but if you get bitten by a poisonous one you better rush to medical help immediately. If you can try and remember the color and pattern of the snake so they can identify it and give you the correct anti-venom.

### HELPING

- Have the person rest with the bitten body part lower than the heart.
- Seek medical help as soon as possible.
- If the person becomes unconscious begin the Primary Survey.

### *Notes:*

- Unless you want poison in your mouth do NOT cut the bite site and suck the blood out.
- Do not try to catch the snake it will bite again.
- There are many snake bite kits on the market, all designed to suck the poison out. However, blood flows very quickly, within a matter of a few seconds the poison will spread and this will have no effect.

## EMERGENCY CHILD BIRTH

### DEFINITION

Emergency child birth is defined as a situation where the expecting mother-to-be cannot reach medical facilities in time and needs to give birth on the spot.

### CAUSES

Being away from medical facilities and not having transportation is the most common cause for this situation.

### WARNING SIGNS

If the mother says, “the baby is coming,” or the baby’s head is showing, or the contractions are less than two minutes apart, then it is time to deliver the baby on the spot.

### HELPING

Although it is very easy to panic in such a situation keep in mind that giving birth is natural and has been done for thousands of years, even before hospitals were created.

As a rescuer here’s what you should do:

- Make sure the EMS has been called.
- Make the mother comfortable on her back. Remove any necessary clothing but keep her covered to protect her privacy. Put some clean towels under her.
- As a rescuer all you have to do is support the baby as it comes out. Hold the head as it is heavy compared to the rest of the baby.
- As soon as you can see the baby’s throat make sure the umbilical cord is not wrapped around it. If it is use your finger to loosen it and pass it over the head. This is easy to do.
- Once the baby comes out wrap it in a clean towel.
- Clean its mouth and nose.
- If it is not breathing massage its back and tickly its feet. This should help stimulate the breathing mechanism.
- If it is still not breathing begin rescue breathing and CPR.
- Never hold the baby upside down and slap it. This is a TV thing, and if you should drop the baby you’ll be in trouble.
- If the baby is fine give it to the mother to hold.
- The other end of the umbilical cord will be attached to the placenta which will still be inside the mother. Do not pull, it will come out on its own in a few minutes in another set of contractions.
- Do not cut the cord. Simply wrap the placenta in a towel and keep with the baby.

- Never put the placenta lower than the baby as blood may drain from the baby back into the placenta. If you wish you may tie something around the umbilical cord a few centimeters away from the baby and from the placenta. But do not cut it.
- If the baby begins to come out feet first it is a complication but there is nothing you can do. Instruct the mother not to push. Do not try to push the baby back in. Simply support it any way it comes out.

## APPENDIX A

### UNCONSCIOUS CASUALTY

#### SAFETY

- Make sure there are no dangers so you don't get hurt.
- If it is dangerous call for help, make the area safer, or move the person from danger.

#### WAKE THEM UP

- Gently try to see if they can respond by calling out to them and gently tapping their shoulders.

#### 9-1-1/EMS

- If they don't wake up (or if they are injured) you or someone else must activate the EMS.

#### AIRWAY

- Place them on their backs, carefully so as to not cause any injury.
- Open their airway by tilting their head back and lifting their chin upwards. This will remove the tongue from blocking the airway. Keep the airway open.

#### BREATHING

- Check for Breathing by looking, listening, and feeling for air (10 seconds).
- If they are breathing then monitor and put them in the recovery position until the paramedics arrive.
- If they are not breathing give them 2 breaths, allowing the air to come out in between.
- If the air goes in then go to "Circulation."
- If the air does not go in, re-position the head-tilt/chin-lift a bit further back and try blowing again.
- If the air still does not go in then go to "Circulation" but check the mouth for the food after doing CPR.

#### CIRCULATION

- Start CPR if needed (compressions and breaths).
- It is 30 compressions to 2 breaths. Continue until paramedics arrive or until something changes with the person (reassess at this point).
- If the air was not going in make sure you check the mouth, to see if the food came out, after each set of compressions. If you see the object in their mouth, take it out and reassess breathing.

### CONSCIOUS CHOKING ADULT OR CHILD

- Ask them if they are choking.
- Ask them if you can help.
- Step behind them and do abdominal thrusts (chest thrusts if they are big or pregnant).
- Continue until the food comes out or until they become unconscious.
- If the food comes out make them comfortable and activate 9-1-1 if they need it.
- If they become unconscious;
- Lay them down.
- Activate 9-1-1.
- Check their mouth for the food.
- Follow the ABC steps above.

#### CONSCIOUS CHOKING INFANT

- Lay them on your arm face down and give 5 back blows.
- Turn them over face up and give 5 chest compressions.
- Continue until the food comes out or until they become unconscious.
- If the food comes out make them comfortable and activate 9-1-1 if they need it.
- If they become unconscious;
- Lay them down.
- Activate 9-1-1.
- Check their mouth for the food.
- Follow the “Unconscious Casualty” steps above.

#### HEAD/TILT-CHIN/LIFT

- This is done so as to lift the tongue off the throat so as to open the airway. It is done by placing one hand on the forehead and pushing the head back, and by placing on finger on the underside of the chin and lifting the chin upwards.
- If you suspect a neck injury then you should open the airway using the modified jaw thrust, without the head tilt.

#### TONGUE-JAW LIFT

- This is done when you want to see if there is food inside an unconscious person’s mouth.
- It is done by opening their mouth and grabbing their tongue (like a tongue depressor) with your thumb. Now you can see inside their mouth.
- If you see an object, then use the other hand to pull it out.
- Never put any foreign objects, e.g. tweezers, inside their mouth to pull out the object.
- If the object is liquid or hard to get out, turn the person on their side and try scooping it out from this position.

### BANDAGING

Bandaging is something you would do to control severe bleeding. Ideally you want to use sterile dressing, however, when someone is bleeding severely you may have to use whatever you have near you (e.g. towels, clothing). The idea is to put pressure over the cut, with a dressing, to control bleeding, and tying the dressing in place. You want to tie with enough pressure to control the bleeding but not so much so that blood does not get through to the remainder of the limb. If you restrict blood flow that area may die and may require amputation, so be very careful. As you are tying the dressing ask the injured person to make sure you are not making it too tight. Once you've tied the dressing you need to check to make sure you did not make it too tight, and check this every couple of minutes. For example, if you've bandaged a forearm here's how you check for circulation:

Compare both hands to make sure they are similar in temperature and color.

- Check the hand to make sure it is not swelling or turning blue.
- Ask the person if the hand feels numb or tingly.
- If they lose sensation then it's too tight. Do not remove the bandage but loosen it a bit.
- If the first dressing becomes soaked with blood then simply put another one on top. Do not remove the original one as you will be reopening the wound.

#### *Notes:*

- Always use caution when dealing with bodily fluids. Wear gloves and wash your hands immediately after.
- Keep in mind that the injured person may go into shock.

### SLING

A sling is something you use to keep the hand/arm elevated above the heart and to make it more secure and comfortable for the injured person. It should only be used if it does not cause more pain or discomfort.

## SPLINTS

The main purpose of a splint is to keep an injured body part immobilized (e.g. a broken leg). It should only be done if paramedics are going to take a long time arriving, or if you have to move the person. Never move or try to realign the injured body part. Always splint in the position found.

There are three main types of splints:

Anatomical: this means using a non-injured body part to immobilize an injured body part. E.g. to splint a broken left lower leg you would tie both legs together so the good leg provides support to the injured leg.

1. Soft: this means using something like a thick sweat shirt, a jacket, a towel, or a blanket to wrap around and immobilize. This kind of splint works very well with hand or ankle/foot injuries.
2. Rigid: this refers to using a firm object, such as a piece of wood, to immobilize. There are many types of rigid splints you can purchase or you can use whatever you see around you, e.g. magazines, newspapers, umbrellas, etc.