

# Winter/Spring First Aid Training

In this unit we will cover areas that may be more common in Winter and Spring seasons

## INJURIES TO MUSCLES, BONES AND JOINTS:

### TYPES OF INJURIES

The four basic types of injuries to muscles, bones and joints are fractures, dislocations, sprains and strains. They occur in a variety of ways but may be more common in the winter due to slips and falls on the ice and other slippery surfaces. Wearing footwear with good grips and using care when walking can help minimize these types of injuries.

#### Fractures

A *fracture* is a complete break, a chip or a crack in a bone. A fall, a blow or sometimes even a twisting movement can cause a fracture. Fractures are open or closed. An *open fracture* involves an open wound which occurs when the end of a bone tears through the skin. In a *closed fracture* the skin is not broken. Closed fractures are more common, but open fractures are more dangerous because they carry a risk of infection and severe bleeding. In general, fractures are life threatening only if they involve breaks in large bones such as the thigh, sever an artery or affect breathing. Since you cannot always tell if a person has a fracture, you should consider the cause of the injury. A fall from a significant height or a motor vehicle crash could signal a possible fracture.

#### Dislocations

Dislocations usually are more obvious than fractures.

A *dislocation* is the movement of a bone at a joint away from its normal position. This movement usually is caused by a violent force tearing the ligaments that hold the bones in place. When a bone is moved out of place, the joint no longer functions. The displaced end of the bone often forms a bump, a ridge or a hollow that does not normally exist.

#### Sprains

A *sprain* is the tearing of ligaments at a joint. Mild sprains may swell but usually heal quickly. The person might not feel much pain and is active again soon. If a person ignores the signals of swelling and pain and becomes active too soon, the joint will not heal properly and will remain weak. There is a good chance that it will become reinjured, only this time more severely. A severe sprain also can involve a fracture or dislocation of the bones at the joint. The joints most easily injured are at the ankle, knee, wrist and fingers.

#### Strains

A *strain* is a stretching and tearing of muscles or tendons. Strains often are caused by lifting something heavy or working a muscle too hard. They usually involve the muscles in the neck, back, thigh or the back of the lower leg. Some strains can reoccur, especially in the neck and back.

### What to Look For

Always suspect a *severe injury* when any of the following signals are present:

- There is pain. One of the most common signals in any muscle, bone or joint injury is pain. The injured area may be very painful to touch and move.
- There is significant bruising and swelling. The area may be swollen and red or bruised.
- There is significant deformity. The area may be twisted or strangely bent. It may have abnormal lumps, ridges and hollows.
- The person is unable to use the affected part normally.
- There are bone fragments sticking out of a wound.
- The person feels bones grating or the person felt or heard a snap or pop at the time of injury.
- The injured area is cold, numb and tingly.
- The cause of the injury suggests that it may be severe.

It can be difficult to tell if an injury is to a muscle, bone or joint. Sometimes an x-ray, computer assisted tomography (CAT) scan or magnetic resonance imaging (MRI) is needed to determine the extent of the injury.

Call 9-1-1 for the following situations:

- There is obvious deformity.
- There is moderate or severe swelling and discoloration.
- Bones sound or feel like they are rubbing together.
- A snap or pop was heard or felt at the time of the injury.
- There is a fracture with an open wound at, or bone piercing through, the injury site.
- The injured person cannot move or use the affected part normally.
- The injured area is cold and numb.
- The injury involves the head, neck or spine.
- The injured person has trouble breathing.
- The cause of the injury suggests that the injury may be severe.
- It is not possible to safely or comfortably move the person to a vehicle for transport to a hospital.

## What to Do Until Help Arrives

General care for injuries to muscles, bone and joints includes following the mnemonic RICE:

- **Rest**—Do not move or straighten the injured area.
- **Immobilize**—Stabilize the injured area in the position it was found, preventing further injury.
- **Cold**—Use an ice pack wrapped in a thin fabric and apply to the injured area for 20 minutes. If continued icing is needed, remove the pack for 20 minutes, and then replace it.
- **Elevate**—To help reduce swelling, elevate the injured part only if it *does not* cause more pain.

Some injuries, such as a broken finger, may not require you to call 9-1-1, yet they still need medical attention. Injuries to the pelvis, hip or thigh can be life threatening. A person with such an injury should not be moved unnecessarily.

## Head, Neck and Spinal Injuries

Although head, neck and spinal injuries make up only a small fraction of all injuries, these injuries may be life threatening. These injuries can damage bone and soft tissue, including the brain and spinal cord. Since generally only x-rays, CAT scans or MRIs can show the severity of a head, neck or spinal injury, you should always care for such injuries as if they were serious.

An injury to the brain can cause bleeding inside the skull. The blood can build up and cause pressure, resulting in more damage. The main signals of brain injury are dizziness, confusion or unconsciousness. Injuries to the spine can fracture vertebrae and tear ligaments. In some cases, the vertebrae can shift and cut or squeeze the spinal cord. This can paralyze the person or be life threatening.

## What to Look For

When you encounter an injured person, try to determine if there is a head, neck or spinal injury. Think about whether the forces involved were great enough to cause one of these injuries. Always suspect a head, neck or spinal injury if a person is unconscious and/or if his or her safety helmet is broken.

You also should suspect a head, neck or spinal injury if the injured person:

- Was involved in a motor vehicle crash or subjected to another significant force.
- Was injured as a result of a fall from greater than a standing height.
- Is wearing a safety helmet that is broken.
- Has tingling or weakness in the extremities.
- Appears to be intoxicated.
- Complains of neck or back pain
- Is not fully alert.
- Appears to be frail or older than 65 years.
- Is a child younger than 3 years with evidence of a head or neck injury.

Always call 9-1-1 immediately anytime you suspect a head, neck or back injury.

## What to Do Until Help Arrives

While you are waiting for emergency medical services (EMS) personnel to arrive, the best care you can give is to minimize movement of the person's head, neck and spine. As long as the person is breathing normally, support the head and neck in the position found. Do this by placing your hands on both sides of the person's head in the position in which you found it. If the head is sharply turned to one side, do not move it. If a person with a suspected head, neck or spinal injury is wearing a helmet, do not remove it. Minimize movement using the same manual technique you would use if the person were not wearing one.

## Concussion

A concussion is a type of brain injury that involves a temporary loss of brain function resulting from a blow to the head. A person with a concussion may not always lose consciousness. The effects of a concussion can appear immediately or very soon after the blow to the head and include sleep, mood and cognitive disturbances, and sensitivity to light and noise. However, some effects do not appear for hours or even days and may last for several days or even longer.

Call 9-1-1 if the person is unconscious, and anytime a concussion is possible or suspected the person should be seen by a medical professional.

## What to Look For

Signals of a concussion include:

- Confusion and/or repeated questioning which may last from moments to several minutes.
- Headache.
- Brief loss of consciousness.
- Speech problems
- Temporary memory loss
- Nausea and vomiting.
- Blurred vision or light sensitivity.

## What to Do Until Help Arrives

To care for a person with a suspected concussion:

- Support the head and neck in the position in which you found it.
- Maintain an open airway.
- Control any bleeding and apply dressings to any open wounds.
- Do not apply direct pressure if there are any signs of an obvious skull fracture.
- If there is clear fluid leaking from the ears scalp, cover the area loosely with a sterile gauze dressing.
- Monitor the person for any changes in condition.
- Try to reassure the person. Encourage him/her to talk with you; it may prevent loss of consciousness.

## Cold-Related Emergencies

*Frostbite* and *hypothermia* are two types of cold related emergencies.

### Frostbite

Frostbite is the freezing of body parts exposed to cold. Severity depends on the air temperature, length of exposure and the wind. Frostbite can result in the loss of fingers, hands, arms, toes, feet and legs.

## What to Look For

The signals of frostbite include lack of feeling in the affected area, swelling and skin that appears waxy, is cold to the touch or is discolored (flushed, white, yellow or blue). In more serious cases, blisters may form and the affected part may turn black and show signs of deep tissue damage.

Call 9-1-1 for more serious frostbite or seek emergency medical help as soon as possible.

## What to Do Until Help Arrives

To care for frostbite, handle the area gently. Remove wet clothing and jewelry, if possible, from the affected area. Never rub a frostbitten area as this causes further damage to soft tissues. Do not attempt

to rewarm the frostbitten area if there is a chance that it might refreeze or if you are close to a medical facility. For minor frostbite, rapidly rewarm the affected part using gentle skin-to-skin contact such as with a warm hand. To care for a more serious injury, gently soak it in water not warmer than about 105° F. Keep the frostbitten part in the water until normal color returns and it feels warm (20 to 30 minutes). If fingers or toes are frostbitten, place cotton or gauze between them. Do not break any blisters or give ibuprofen when caring for frostbite.

## Hypothermia

In a hypothermic condition, the entire body cools because its ability to keep warm is failing. The person will die if not given the proper care. The air temperature does not have to be below freezing for people to develop hypothermia. This is especially true if the person is wet or if it is windy.

Certain conditions can more easily lead to hypothermia, including:

- Ingestion of substances that interfere with the body's ability to regulate temperature (such as alcohol, other drugs and certain medications).
- Any medical condition that impairs circulation, such as diabetes or cardiovascular disease.
- Prolonged exposure to cold, wet and/or windy conditions or wet clothing.

## What to Look For

Signals of hypothermia include the following:

- Shivering
- Glassy stare
- Numbness
- Loss of consciousness or Indifference

Shivering that stops without rewarming is a sign that the person's condition is worsening. He or she needs immediate medical care. Always contact 9-1-1 immediately anytime you suspect someone has hypothermia.

## What to Do Until Help Arrives

Start by caring for life-threatening conditions. Make the person comfortable. Gently move the person to a warm place. Remove wet clothing and dry the person. Put on dry clothing. Warm the body *gradually* by wrapping the person in blankets and plastic sheeting to hold in body heat. Also, keep the head covered to further retain body heat. If the person is alert, give warm liquids that do not contain alcohol or caffeine. Do not warm the person too quickly, such as by immersing the person in warm water. Check breathing and monitor for any changes in the person's condition and care for shock. In cases of *severe hypothermia*, the person may be unconscious. Breathing may have slowed or stopped. The body may feel stiff because the muscles became rigid. Check for breathing for no more than 10 seconds and care for any conditions you find.

## POISONING

A poison is any substance that causes injury, illness or death if it enters the body. A person can be poisoned by swallowing poison, breathing it, absorbing it through the skin and by having it injected into the body.

### Swallowed Poisons

Poisons that can be swallowed include some foods, an overdose of drugs, medications, or household items, such as cleaning products and pesticides; and some plants. Many substances that are not poisonous in small amounts are poisonous in larger amounts. Combining certain substances can result in poisoning, although if taken by themselves they might not cause harm.

### Inhaled Poisons

A person can be poisoned by breathing in (inhaling) toxic fumes. Examples of poisons that can be inhaled include:

- Gases, such as carbon monoxide or carbon dioxide and chlorine.
- Fumes from household products, such as glues and paints.
- Drugs, such as crack cocaine.

## Absorbed Poisons

Poisons that can be absorbed through the skin come from many sources including plants, such as poison ivy, poison oak and poison sumac, and fertilizers and pesticides.

## Injected Poisons

Injected poisons enter the body through the bites or stings of insects, spiders, ticks, some marine life, snakes and other animals or through drugs or medications injected with a hypodermic needle.

## What to Look For

Check the scene for bottles of medicine or cleaners, etc. Some signals of poisoning include:

- Nausea and vomiting
- Chest or abdominal pain
- Sweating
- Seizures
- Dizziness
- Irregular pupil size
- Abnormal skin color
- Diarrhea
- Trouble breathing
- Changes in consciousness
- Headache
- Weakness
- Burning or tearing eyes
- Burns around the lips, tongue or on the skin

For life-threatening conditions (such as if a person is unconscious or is not breathing), CALL 9-1-1. If the person is conscious and alert, CALL the National Poison Control Center (PCC) hotline at 1-800-222-1222 and follow the advice given.

## What to Do Until Help Arrives

After you have checked the scene and determined that there has been a poisoning, follow these general care guidelines:

- Remove the person from the source of poison if the scene is dangerous only if you are able to without endangering yourself.
- Check the person's level of consciousness and breathing and care for any life-threatening conditions.
- If the person is conscious, ask questions to get more information.
- Look for any containers and take them with you to the telephone.
- Call the National Poison Control Center Hotline at 1-800 222-1222.
- Follow the directions of the Poison Control Center. If the person becomes violent or threatening, move to safety and wait for help to arrive. Do not give the person anything to eat or drink unless medical professionals tell you to do so. If you do not know what the poison was and the person vomits, save some of the vomit as the hospital may analyze it to identify the poison.

## SUDDEN ILLNESS

It usually is obvious when someone is injured and needs care. The person may be able to tell you what happened and what hurts. Checking the person also gives you clues about what might be wrong. However, when someone becomes suddenly ill, it is not as easy to tell what is physically wrong. At times, there are no signals to give clues about what is happening. At other times, the signals only confirm that something is wrong, without being clear as to what is wrong. In either case, the signals of a sudden illness often are confusing. You may find it difficult to determine if the person's condition is an emergency and whether to call 9-1-1.

## What to Look For

When a person becomes suddenly ill, he or she usually looks and feels sick. Common signals include:

- Changes in level of consciousness, such as feeling lightheaded, dizzy, drowsy or confused, or becoming unconscious.
- Breathing problems (i.e., trouble breathing or no breathing).
- Signals of a possible heart attack, including persistent chest pain, discomfort or pressure lasting more than a few minutes that goes away and comes back or that spreads to the shoulder, arm, neck, jaw, stomach or back.

- Signals of a stroke, including sudden weakness on one side of the face; sudden weakness on one side of the body; sudden slurred speech or trouble forming words; or a sudden, severe headache.
- Loss of vision or blurred vision.
- Signals of shock, including rapid breathing, changes in skin appearance and cool, pale or ashen skin.
- Sweating.
- Persistent abdominal pain or pressure.
- Nausea or vomiting.
- Diarrhea.
- Seizures.

Look around the area for clues that might tell you what is wrong with the person. This may help you to find out what the person was doing when the illness started. For example, if someone working in a hot environment suddenly becomes ill, it would make sense to conclude that the illness resulted from the heat. If someone suddenly feels ill or acts strangely and is attempting to take medication, the medication may be a clue as to what is wrong. For example, the person may need the medication for a heart condition and is trying to take it to avoid a medical emergency.

Call 9-1-1 or the local emergency for any of the following conditions:

- Unconsciousness or altered level of consciousness
- No breathing
- Persistent abdominal pain or pressure
- Vomiting blood or passing blood
- Suspected poisoning
- Stroke
- Painful, swollen, deformed areas (indicates possible broken bone) or an open fracture
- Breathing problems
- Signals of a heart attack
- Severe external bleeding
- Severe (critical) burns
- Seizures
- Suspected/obvious injuries to the head, neck or spine

With some sudden illnesses, you might not be sure whether to call 9-1-1 for help. Sometimes the signals come and go. Remember, if you cannot sort out the problem quickly and easily or if you have any doubts about the severity of the illness, make the call for help.

## What to Do Until Help Arrives

Although you may not know the exact cause of the sudden illness, you should still give care. Initially you will care for the signals and not for any specific condition. In the few cases in which you know that the person has a medical condition, such as diabetes, epilepsy or heart disease, the care you give may be slightly different. This care may involve helping the person take medication for his or her specific illness. Care for sudden illnesses by following the same general guidelines as you would for any emergency.

- Do no further harm.
- First care for life-threatening conditions
- Keep the person from getting chilled or overheated.
- Watch for changes in consciousness and breathing.
- If the person is conscious, ask if he or she has any medical conditions or is taking any medication.
- Do not give the person anything to eat or drink unless he or she is fully conscious, is able to swallow and does not show any signals of a stroke.
- If the person vomits and is unconscious and lying down, position the person on his or her side so that you can clear the mouth.
- If you know the person is having a severe allergic reaction or a diabetic emergency, assist the person with his or her prescribed medication, if asked.
- Check the scene for safety, and then check the person.
- Help the person to rest comfortably
- Reassure the person

## SPECIFIC SUDDEN ILLNESSES

### Fainting

One common signal of sudden illness is a loss of consciousness, such as when a person faints. Fainting is a temporary loss of consciousness. When someone suddenly loses consciousness and then reawakens, he or she may simply have fainted. Fainting occurs when there is an insufficient supply of blood to the brain for a short period of time. This condition results from a widening of the blood vessels in the body. This causes blood to drain away from the brain to the rest of the body. Fainting usually is not

harmful. The person usually recovers quickly with no lasting effects. However, what appears to be a simple case of fainting actually may be a signal of a more serious condition.

## What to Look For

A person who is about to faint often becomes pale, begins to sweat and then loses consciousness and collapses. A person who feels weak or dizzy may prevent a fainting spell by lying down or sitting with his or her head level with the knees.

Call 9-1-1 when in doubt about the condition of a person who has fainted. It is always appropriate to seek medical care for fainting.

## What to Do Until Help Arrives

Lower the person to the ground or other flat surface and position him or her on his or her back, lying flat. Loosen any tight clothing, such as a tie or collar. Check that the person is breathing. Do not give the person anything to eat or drink. If the person vomits, roll him or her onto one side.

## Seizures

When the normal functions of the brain are disrupted by injury, disease, fever, infection, metabolic disturbances or conditions causing a decreased oxygen level, a *seizure* may occur. The seizure is a result of abnormal electrical activity in the brain and causes temporary, involuntary changes in body movement, function, sensation, awareness or behavior.

## What to Look For

Signals of seizures include:

- A blank stare.
  - A period of distorted sensation during which the person is unable to respond.
  - Uncontrolled muscular contractions, called *convulsions*, which last several minutes. A person may experience something called an *aura* before the seizure occurs. If the person recognizes the aura, he or she may have time to tell bystanders and sit down before the seizure occurs.
- Although it may be frightening to see someone unexpectedly having a seizure, you should remember that most seizures last only for a few minutes and the person usually recovers without problems.

Call 9-1-1 or the local emergency number if:

- The seizure lasts more than 5 minutes.
- The person appears to be injured or fails to regain consciousness after the seizure.
- The cause of the seizure is unknown.
- The person has diabetes.
- The seizure takes place in water.
- This is the person's first seizure.
- The person has multiple seizures.
- The person is pregnant
- A child or infant has a febrile seizure.
- The person is elderly and could have suffered a stroke.

If the person is known to have occasional seizures, you *may not* have to call 9-1-1. He or she usually will recover from a seizure in a few minutes.

## What to Do Until Help Arrives

General principles of managing a seizure are to prevent injury, protect the person's airway and make sure that the airway is open after the seizure has ended. Do not hold or restrain the person. Do not put anything in the person's mouth or between the teeth. People having seizures rarely bite their tongues or cheeks with enough force to cause significant bleeding; however, some blood may be present. Remove any nearby furniture or other objects that may injure the person. Give care to a person who has had a seizure the same way you would for an unconscious person. When the seizure is over, make sure that the person's airway is open. Usually, the person will begin to breathe normally. If there is fluid in the person's mouth, such as saliva, blood or vomit, roll him or her on one side so that the fluid drains from the

mouth. The person may be drowsy and disoriented or unresponsive for a period of time. Check to see if he or she was injured during the seizure.

## Stroke

A *stroke* is caused when blood flow to a part of the brain is cut off or when there is bleeding into the brain. Strokes can cause permanent brain damage, but sometimes the damage can be stopped or reversed. A stroke usually is caused by a blockage in the arteries that supply blood to the brain. Once the blood flow is cut off, that part of the brain starts to “suffocate” and die unless the blood flow can be restored. Blockages can be caused by blood clots that travel from other parts of the body, like the heart, or they can be caused by slow damage to the arteries over time from diseases such as high blood pressure and diabetes. In a small percentage of strokes there is bleeding into the brain. This bleeding can be from a broken blood vessel or from a bulging aneurysm that has broken open. A *mini-stroke* is when a person has the signals of a stroke, which then completely go away. Most mini-strokes get better within a few minutes, although they can last several hours. Although the signals of a mini-stroke disappear quickly, the person is not out of danger at that point. In fact, someone who has a mini-stroke is at very high risk of having a full stroke within the next 2 days.

## What to Look For

As with other sudden illnesses, looking or feeling ill, or behaving in a strange way, are common, general signals of a stroke or mini-stroke. Other specific signals of stroke have a *sudden onset*, including:

- Weakness or numbness of the face, arm or leg on one side of the body.
- Incontinence
- Facial droop or drooling.
- Trouble with speech.
- Loss of vision or disturbed vision in eye(s).
- Sudden severe headache.
- Severe altered mental status.
- Loss of balance or coordination, trouble walking or ringing in the ears.

### Think FAST for a Stroke Fast Stand for:

- **Face:** Weakness, numbness or drooping on one side. Ask the person to smile. Does one side droop?
- **Arm:** Weakness/numbness in one arm. Ask the person to raise both arms. Does one drift downward?
- **Speech:** Slurred speech/difficulty speaking. Ask the person to repeat a simple sentence. Are the words slurred? Can the person repeat the sentence correctly?
- **Time:** Determine when the signals began. Time is critical. Call 9-1-1 right away.

## What to Do Until Help Arrives

Note the time that the signals started. If the person is unconscious, make sure that he or she has an open airway and care for life-threatening conditions. If fluid or vomit is in the person’s mouth, position him or her on one side to allow fluids to drain out of the mouth. Remove any material from the mouth with a finger if the person is unconscious. Stay with the person and monitor breathing and for any changes in the person’s condition. If the person is conscious, check for non-life-threatening conditions. A stroke can make the person fearful and anxious. Often, he or she does not understand what has happened. Offer comfort and reassurance. Have the person rest in a comfortable position. Do not give him or her anything to eat or drink.

## Diabetic Emergencies

People who have diabetes may become suddenly ill because there is too much or too little sugar in their blood. There are two major types of diabetes: Type I and Type II diabetes. Type I diabetes which usually begins in childhood, occurs when the body produces little or no insulin. People with Type I diabetes must inject insulin into their bodies daily and are therefore considered to be insulin-dependent.

Warning signals include:

- Frequent urination.
- Increased hunger and thirst.
- Unexpected weight loss.
- Irritability.
- Weakness and fatigue.

Type II diabetes usually occurs in adults but also can occur in children. With Type II diabetes, the body makes insulin but not enough to meet the body’s needs or the body becomes resistant to the insulin

produced. People with Type II diabetes often do not experience any warning signals. Possible warning signals of Type II diabetes include:

- Any signals of Type I diabetes.
- Numbness in the legs, feet and fingers.
- Frequent infections, especially involving the skin, gums and bladder
- Blurred vision.
- Cuts or bruises that are slow to heal.
- Itching.

People with diabetes should monitor their exercise and diet. Self-monitoring for blood sugar levels is a valuable tool. Insulin-dependent diabetics also must monitor their use of insulin. If the person with diabetes does not control these factors, he or she can have a diabetic emergency. A diabetic emergency is caused by an imbalance between sugar and insulin in the body. A diabetic emergency can happen when there is:

- Too much sugar in the blood (*hyperglycemia*): Among other causes, the person may not have taken enough insulin or the person is reacting adversely to a large meal or a meal that is high in carbohydrates.
- Too little sugar in the blood (*hypoglycemia*): The person may have taken too much insulin, eaten too little food, or overexerted him- or herself. Extremely low blood sugar levels can quickly become life threatening.

## What to Look For

Signals of a diabetic emergency include:

- Changes in the level of consciousness.
- Changes in mood.
- Rapid breathing and pulse.
- Feeling and looking ill.
- Dizziness and headache.
- Confusion.

Always call 9-1-1 if:

- The person is unconscious or about to lose consciousness. In this situation, do not give the person anything by mouth. After calling 9-1-1 or the local emergency number, care for the person in the same way you would care for an unconscious person. This includes making sure the person's airway is clear of vomit, checking for breathing and giving care until advanced medical personnel take over.
- The person is conscious but unable to swallow. (In this case, *do not* put anything, liquid or solid, into the person's mouth.)
- The person does not feel better within about 5 minutes after taking some form of sugar.
- You cannot find any form of sugar immediately. Do not spend time looking for it.

## What to Do Until Help Arrives

You may know the person is a diabetic or the person may tell you he or she is a diabetic. Often diabetics know what is wrong and will ask for something with sugar in it. They may carry some form of sugar with them in case they need it. If the diabetic person is conscious and able to swallow, and advises you that he or she needs sugar, give sugar in the form of several glucose tablets or glucose paste, a 12-ounce serving of fruit juice, milk, non-diet soft drink or table sugar dissolved in a glass of water.

Most fruit juices and non-diet soft drinks have enough sugar to be effective. If the problem is too much sugar, this amount of sugar will not cause further harm. Diabetics also may carry glucagon, which they can self-administer to counter hypoglycemia. People who take insulin to control diabetes may have injectable medication with them to care for hyperglycemia.