



RESCUE 7

Standard First Aid CPR & AED

Start today ... to save a life tomorrow!





INTRODUCTION

Welcome to Rescue 7 Inc.'s Blended Standard First Aid with CPR and AED Workshop. The basic philosophy of this seminar is our desire to leave you feeling secure enough to react quickly and effectively in an emergency situation.

The chances are quite good that in your lifetime you will be involved in a situation, which will require familiarity with First Aid, CPR and AEDs. Our workshop is designed to be user friendly so that all people, regardless of ability, will gain the confidence necessary to act effectively until such time as trained emergency personnel arrive at the scene.

The reality of an emergency situation is that seconds count. Congratulate yourself that you have decided to become part of a growing number of people who are going to use these precious seconds to make a difference!

Please note that this document cannot be printed. You may download it and save it as reference. A hard copy will be issued during your in class training session.

CANADA	Approved and Recognized by Provincial Regulators and Agencies, Health Canada, Transport Canada, Human Resources & Skills Development Canada (HRSDC) and the ILCOR 2010 CPR Consensus
--------	--

© Copyright 2014
Rescue 7 Inc.

Table of Contents

Introduction to First Aid.....	7
Legalities & Universal Precautions.....	8
Emergency Medical Services (EMS)	9
Emergency Scene Management (ESM).....	10
Head, Spinal and Pelvic Injuries.....	11
<i>Head Injuries</i>	11
<i>Pelvic Injuries</i>	12
<i>Spinal Injuries</i>	13
<i>Spinal Immobilization</i>	15
<i>Back Injuries</i>	16
Shock.....	17
Fainting	18
Unconscious	19
Bleeding & Wounds	20
<i>Types of Wounds – External</i>	21
<i>Animal Bites</i>	23
<i>Jellyfish</i>	23
<i>Ticks</i>	24
<i>Leeches</i>	24
<i>Abdominal Injuries</i>	25
<i>Types of Wounds – Internal</i>	26
Burns	27
<i>Thermal Burns</i>	28
<i>Radiation Burns</i>	29
<i>Chemical Burns</i>	29
<i>Electrical Burns</i>	29
Medical Emergencies	30
<i>Diabetes</i>	30
<i>Allergies & Anaphylaxis Shock</i>	31
<i>Asthma</i>	32
<i>Convulsions and Seizures</i>	33
Anatomy and Physiology.....	34
<i>The Heart</i>	34
<i>The Lungs</i>	34
Cardiovascular Diseases	35
<i>Risk Factors for Cardiovascular Disease</i>	35
<i>Stroke (“BRAIN ATTACK”)</i>	35
<i>Transient Ischemic Attack (T.I.A.)</i>	36
<i>Heart Attack</i>	36
<i>Angina</i>	37
Sudden Cardiac Arrest.....	38
Cardiopulmonary Resuscitation (C.P.R)	38
Oxygen Administration	40

Oropharyngeal Airway (OPA)	42
Bag-Valve-Mask (BVM)	42
Automated External Defibrillator (AED)	43
<i>Electrocardiograms</i>	44
<i>Defibrillation</i>	45
<i>Using a Defibrillator</i>	46
<i>Special Victim Considerations</i>	47
<i>Defibrillation Safety</i>	47
<i>Special Considerations</i>	48
AED Reporting Forms	49
The 5 Links of the Chain of Survival	49
Choking Emergencies	51
<i>Management of Conscious Choking Victim (Adult/Child)</i>	51
<i>Pregnancy/Obese/Wheelchair/Seated – Chest Thrusts</i>	52
<i>Infants</i>	52
<i>Self-Rescue</i>	52
Unconscious Obstructed Airway	53
Secondary Survey	54
<i>History of the casualty</i>	54
<i>Vital Signs</i>	54
<i>Head-To-Toe Survey</i>	55
Musculoskeletal Injuries	56
<i>Muscles & Joint Injuries</i>	57
<i>Splinting</i>	57
<i>Slings</i>	58
<i>Upper Extremities</i>	58
<i>Lower Extremities</i>	60
Eye Injuries	62
<i>General Eye Injury</i>	62
<i>Avulsed Eye</i>	62
<i>Embedded Objects in the Eyes (Superficial)</i>	62
<i>Embedded Objects in the Eyes (Penetrating)</i>	63
<i>Blunt Injury, Black Eye or Contusion</i>	63
<i>Eye Burns</i>	63
Poisons	64
<i>Ingested Poisons</i>	64
<i>Inhaled Poisons</i>	65
<i>Absorbed Poisons</i>	65
<i>Injected Poisons</i>	66
Heat Illness	67
Cold Injuries and Illness	68
Chest & Rib Injuries	70
Rescue Carries	72
<i>ONE RESCUER CARRIES</i>	72

<i>TWO RESCUER CARRIES</i>	<i>73</i>
Motor Vehicle Collisions (MVCs)	74
Water Accidents	75
Critical Incident Stress.....	76
Post Incident Report Form	77
Blended Learning – Voice Transcripts	78
<i>Sample E.M.S. (Emergency Medical Service – 911) Call.....</i>	<i>78</i>
<i>Head, Spinal & Pelvic Injury – Video Audio.....</i>	<i>79</i>
<i>Shock – Script Animation.....</i>	<i>80</i>
<i>Recovery Position – Video Audio.....</i>	<i>81</i>
<i>Broad and Narrow Bandages – Script Animation.....</i>	<i>81</i>
<i>Medical Conditions: Using and EpiPen – Video Audio</i>	<i>82</i>
<i>Anatomy and Physiology of the Heart & Lungs – Script Animation.....</i>	<i>83</i>
<i>Cardiopulmonary Resuscitation (CPR) – Video Audio.....</i>	<i>84</i>
<i>Conscious Choking – Video Audio.....</i>	<i>85</i>
<i>Unconscious Choking – Video Audio</i>	<i>86</i>
<i>Burns: Recognition - Script Animation</i>	<i>87</i>
<i>Burns: Classifying the Severity of Burns- Script Animation.....</i>	<i>88</i>
<i>Muscle and Joint Injuries – Video Script.....</i>	<i>89</i>
<i>Creating a sling – Video Script.....</i>	<i>89</i>
Notices & Acknowledgements.....	90
Notices & Acknowledgements.....	91

Introduction to First Aid

What is First Aid?

First aid is the assessments and interventions that can be performed by a bystander (or by the victim) with minimal or no medical equipment

Who is a First Aider?

Someone with formal training in first aid, emergency care, or medicine who provides first aid.

What is Medical Care?

The care given by professionals – doctors, nurses, paramedics and firefighters

Goals of First Aid

1. Preserve life
2. Prevent injuries or illnesses from becoming worse
3. Promote recovery

Three Main Priorities of a First Aider

1. Airway – clear
2. Breathing – breathing effectively
3. Circulation – effective circulation (skin temperature, colour, sweating)

Casualty

Any person who suddenly becomes ill or injured is a casualty.

- Adults – Puberty + years-old
- Child – 1 to puberty
- Infant – less than 1 year-old

What are Signs & Symptoms?

Signs: Conditions that we can see, feel, smell and hear by observing a casualty.

Symptoms: Conditions which a casualty must describe to a first aider.

Legalities & Universal Precautions

Good Samaritan Law or Doctrines

A legal principle that prevents a rescuer who has voluntarily helped a victim in distress from being successfully sued for 'wrongdoing.' Its purpose is to keep people from being so reluctant to help a stranger in need for fear of legal repercussions if they made some mistake in treatment.

- Always identify yourself as a first aider before physically touching the victim
- If the victim is conscious – ask their permission to help them
- If the victim is unconscious – you may help them, as it implies consent
- Act reasonably and help them to the best of your ability
- Remain with the victim until relieved by other trained personnel or E.M.S. arrives.

[The Good Samaritan Act – Ontario, April 2001, Bill 20](#)

[Emergency Medical Aid Act – Alberta, R.S.S. 2000, Chapter. E-7](#)

[Emergency Medical Aid Act – Saskatchewan, R.S.S. 1978, Chapter E-8](#)

[Good Samaritan Act – British Columbia, RSBC 1996, Chapter 172](#)

[Emergency Medical Aid Act – Yukon, R.S.Y. 2002, Chapter 70](#)

[Emergency Medical Aid Act – Northwest Territories, R.S.N.W.T. 1988, Chapter E-4](#)

[Volunteer Services Act – Nova Scotia, R.S.N.S. 1989, Chapter 497](#)

[Emergency Medical Aid Act – Newfoundland, RSNL1990, Chapter E-9](#)

No legislation in place in Prince Edward Island, New Brunswick, Nunavut and Manitoba. It is assumed that the common law rules apply

“I may panic or do something wrong!”

Feeling nervous in emergency situations is a perfectly normal response. Usually, nervousness, stress and/or anxiety are pre-empted by the lack of knowledge or experience. Learning to assess injured person's needs will reduce these characteristics.

“Can I contract a disease?”

The risk of infection being transferred to someone assisting at an accident scene is extremely small and practically negligible. There have been no reports of persons acquiring H.I.V. (Human Immunodeficiency Virus) or H.B.V. (Hepatitis B Virus) during mouth-to-mouth resuscitation, the risk can be further reduced by utilizing the appropriate preventative measures (*Personal Protective Equipment - PPE*):

- Use of gloves
- Minimize mouth-to-mouth contact by using a barrier device
- Protect eyes with goggles
- Proper and safe clean up and disposal of bio-hazardous waste



Emergency Medical Services (EMS)

It is very important to know if your workplace or your residence is in a 9-1-1 service area. When calling 9-1-1 in your area you will reach a call dispatcher at a Communications Center. The dispatcher will connect you to the appropriate Emergency Service – Police, Fire and/or Ambulance. Other possible sources of help include: bystanders, hydro, animal control, poison control. With a medical emergency you will be connected to an Ambulance call receiver. Immediately inform the receiver with:

- 1. The Problem**
- 2. Your address and security/access code.**
- 3. Your telephone number**



If you cannot speak into the phone (i.e. choking, heart attack), the call receiver will automatically send a tiered response - Police, Fire, Ambulance - to the address that is presented to them on their **ANI-ALI** (Automatic Number Indicator – Automatic Locate Indicator) computer screen.

- When using a cell phone, 911 will know your cell phone number and the closest intersection within 3 to 30 meters of where you are by using GPS and triangulating your location using cell towers. Label all phones at your place of employment and in your home with emergency information
- DO NOT hang up on 9-1-1 dispatcher/call receiver
- Know your EMS phone numbers when working and/or living outside the 911 regions!

Designating a Bystander to Call 9-1-1

- Always utilize bystanders in an emergency situation
- Point and/or describe the person you are instructing to call 9-1-1 – “You in the red shirt! I have an unconscious male. Call 9-1-1. Do you understand me? Get back to me!”
- Tell them to return to you so that it is confirmed that they have called 9-1-1.

Call for help/emergency medical services (EMS)

- Call **first** – for help (i.e. bystanders, co-workers, other first aiders)
- Call **fast** – Emergency Medical Service, which happens after assessment

Emergency Scene Management (ESM)

Emergency Scene Management (ESM) is a rapid, systematic and orderly manner used to treat a casualty in an emergency.

Scene Survey

- Always take a step back and a deep breath before entering the immediate area of the victim
- Am I Safe? - Always make sure that your peripheral vision is constantly roving the surrounding area — assess the hazards. Make sure you do not become a victim as well. If you cannot make it safe, wait for E.M.S. and keep other people back
- Take charge of the situation.
- Determine the **mechanism of injury (MOI)** and **history** of the scene
Check for responsiveness and obtain consent
- Activate E.M.S – call *first*, call *fast*

Primary Survey

A	Airway	Is it open and clear?
B	Breathing	Look down victim's chest, listen & feel for 5 sec. If not breathing, begin CPR and send for defibrillator.
C	Circulation	(signs of) Skin temperature, colour, moist/dry
D	Defibrillation	
E	External bleeding	Any wet areas or pools of blood visible or under the natural hollows of the body

Secondary Survey

- Ask the “Three Questions” known as the **THREE H's**:
 1. What**HAPPENED?**
 2. Where does it**HURT?**
 3. Any medical**HISTORY?**
- Check and monitor Vital Signs
- Visual and verbal body check from head to toe
- Provide first aid for injuries and illnesses found

Ongoing Casualty Care

Once the Primary Survey and Secondary Survey have been completed:

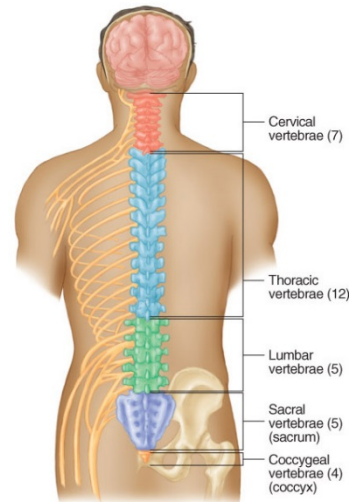
- Continue existing care — monitoring airway and breathing.
- Monitor and treat the victim(s) and bystanders for shock
- Record condition and treatment given
- Remain with victim(s) until EMS arrives and give a report to them

Only Reasons to move a Victim

- If their life is in danger
- If they are in prone position (face down) and not breathing

Head, Spinal and Pelvic Injuries

The head (skull) is made up of the cranium and the face. The brain is protected by the skull. The spine runs from the brain to the coccyx and houses the spinal cord. Major nerves branch in and out of the spinal cord and serve as messengers to and from the brain to different parts of the body. Injury to nerves or spinal cord may cause paralysis and/or loss of sensation to the body below the injured area. Do not attempt to move the victim if you suspect head or spinal injury unless their life is in danger. Keep the victim still, warm, reassured and prevent further movement by stabilizing the head.



Head Injuries

Head injuries may be minor without loss of consciousness to major injuries. Regardless, first aiders should suspect that all head injuries are serious and should be evaluated by health care professionals.

Types of Head Injuries

Concussion	Hematoma
Compression	Fractures

Signs and Symptoms

- Pain – ranging from a headache to severe discomfort.
- Loss of consciousness or change in the level of consciousness.
- Labored or cessation of breathing.
- Swelling
- Deformity
- Bruising
- Unequal size of pupils.
- Bleeding/fluids from ears/nose/mouth.
- Paralysis
- Confused/dazed
- Hearing impairment or ringing in the ear(s).

Management

1. Scene Survey
2. Primary Survey
3. Check the **A.B.C.'s**
4. Control bleeding – do not apply pressure, use loose dressing and allow flow of blood and/or cerebrospinal fluid from ears/nose.
5. Support head by placing your hands on either side of the head, elbows on ground, to prevent further movement.
6. Ongoing care and treat for shock.
7. Monitor level of consciousness and breathing often.
8. Activate E.M.S. (911)

When to Activate EMS for a head injury

- Any head trauma with loss of consciousness greater than 1 minute must have emergency medical evaluation and care
- Victims of minor closed head injury and brief loss of consciousness (1 minute) or who sustains a concussion should be evaluated by a health care professional

Pelvic Injuries

Serious damage to the internal organs, blood vessels and nerves could accompany fractures of the pelvis. The most commonly damaged organ with a pelvic injury is to the bladder, which can lead to infection.

Signs and Symptoms

- Pain in pelvis area.
- Victim is unable to lift legs
- Foot on injured side usually turns outward.
- Pressure on urinary bladder
- THESE SIGNS ALSO ACCOMPANY FRACTURED HIPS.

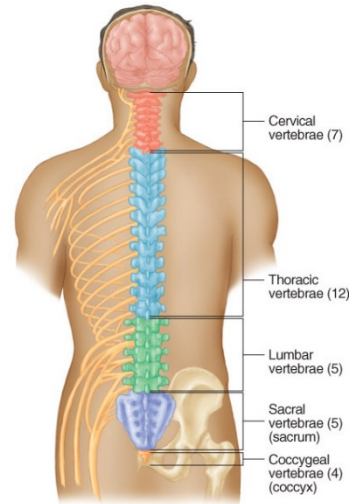
Management

If you suspect a fractured pelvis, you should also suspect a spinal injury. If there was enough force the fracture the pelvis, the spine may also have been injured. Give first aid as you would a spinal injury.

Spinal Injuries

First aid providers should suspect a spinal injury if an injured victim has any of the following risk factors:

- Driver, passenger or pedestrian, in a motor vehicle, motorized cycle or bicycle crash
- Fall from a greater than standing height
- Evidence of head or neck trauma



Signs and Symptoms of Spinal Injuries

- Pain with movement
- Pain without movement
- Swelling/bruising at injured site
- Numbness/tingling
- Paralysis

Management

As a general rule, a victim should not be moved. However, if the victim is face down, unresponsive and does not have an open airway nor is breathing, turn the victim face up. **If the victim is face down, unresponsive but has an open airway and is breathing, it is best not to move the victim.**

1. Scene survey

- Always take a step back and a deep breath before entering the immediate area of the victim
- Am I Safe? - Always make sure that your peripheral vision is constantly roving the surrounding area — assess the hazards. Make sure you do not become a victim as well. If you cannot make it safe, wait for E.M.S. and keep other people back
- Take charge of the situation.
- Determine the **mechanism of injury (MOI)** and **history** of the scene. If head/spinal injuries are suspected → Support head (see step 2)
- Check for responsiveness and obtain consent (see step 3)
- Activate E.M.S – call *first*, call *fast* (see step 4)

2. To support the head:

- Support head by placing your hands on either side of the head, elbows on ground, to prevent further movement. Any movement could cause the injury to worsen, causing paralysis or even more importantly, impair breathing.

3. Check responsiveness and obtain consent

- Is the casualty conscious or unconscious?

4. Call 9-1-1 Immediately

- If alone, activate EMS.
- Bystander available → send bystander to call 9-1-1 and have bystander return.

5. Perform primary survey

6. Control bleeding – do not apply pressure, use loose dressing and allow flow of blood and/or cerebrospinal fluid from ears/nose.

7. If there is a second rescue, they may perform the secondary survey

8. Perform ongoing casualty care.

If the victim is face down, unresponsive and does not have an open airway nor is breathing, turn the victim face up.

1. Scene survey

- Always take a step back and a deep breath before entering the immediate area of the victim
- Am I Safe? - Always make sure that your peripheral vision is constantly roving the surrounding area — assess the hazards. Make sure you do not become a victim as well. If you cannot make it safe, wait for E.M.S. and keep other people back
- Take charge of the situation.
- Determine the **mechanism of injury (MOI)** and **history** of the scene. If head/spinal injuries are suspected → Support head (see step 2)
- Check for responsiveness and obtain consent (see step 3)
- Activate E.M.S – call *first*, call *fast* (see step 4)

2. To support the head:

- Support head by placing your hands on either side of the head, elbows on ground, to prevent further movement. Any movement could cause the injury to worsen, causing paralysis or even more importantly, impair breathing.

3. Check responsiveness and obtain consent

- Is the casualty conscious or unconscious?

4. Call 9-1-1 Immediately

- If alone, activate EMS.
- Bystander available → send bystander to call 9-1-1 and have bystander return.

5. Perform primary survey

- Check Airway
- Check Breathing – in this case, the victim is face down, and not breathing

6. Perform *Two- Rescuer* Log Roll

- The first rescuer at the head supports the head – place his right hand along side the right side of the victim's head and the left hand along the left side.
- The second rescuer kneels behind the victim. Extend the victim's near arm over the victim's head and cross the far leg at the ankle. Get a good grip on the victim, at the shoulder and at the waist.
- At the same time, the two-rescuers roll the victim towards the second rescuer.

7. Once the victim is rolled over successfully, begin CPR

Spinal Immobilization

This procedure requires a minimum of four trained rescuers! Do not attempt this procedure without proper equipment and trained personnel! Only use as a reference in case you have to assist an Emergency Crew.

Materials Needed

- Backboard
- Cervical Collar
- Triangular Bandages
- Blankets, Pillows

Head/Cervical Collars

- Only use a cervical collar if you have been properly trained
- Different brands of collars have different methods to size them and to apply to the victim.
- Remember that if you have a collar you will not be able to maintain a manual airway.



Management

1. One rescuer holds the victim's head and is the leader.
2. One rescuer holds the victim's feet.
3. Two side rescuers pad between the legs with a blanket.
4. Tie the ankles in a "figure 8".
5. Tie the legs together at the calves, knees and thigh.
6. Position wrists on abdomen and tie them together.
7. Place backboard next to the victim on one side – with bandages (straps) already in position and a blanket spread out over the board.
8. The two side rescuers now position themselves on the same side of the victim opposite the backboard.
9. Leader will instruct side rescuers to hold the opposite shoulder, hip, upper thigh and lower leg of the victim.
10. On the leader's count the rescuers will roll the victim on their side. The leader will hold the head carefully in line with the body.
11. The side rescuers will place the backboard under the victim.
12. On the leader's count, the rescuers will gently lower the victim onto the backboard.
13. Wrap blanket over the victim.
14. Position the victim in the center of the board by pulling on the blanket.
15. The rescuers tie the victim to the backboard at the ankles, calves, thighs, hips and armpits.
16. Place blanket(s) around the victim's head to secure/stabilize the head and neck OR place one pillow on one side of the head and another pillow on the other side.
17. Secure head to backboard with bandage at the forehead level and bandage at chin level.
18. Monitor vital signs.

Back Injuries

Back pain is **rarely the result of one accident or injury**. Over time, excessive wear and tear contributes to the back becoming a noticeable problem.

Prevention

Common causes for back problems:

- Poor posture
- Faulty body mechanics
- Stressful habits
- Poor mattresses
- Accidents
- Loss of flexibility
- Decline in physical fitness



Management

Immediate Care

- Eliminate the cause
- Ice
- Rest
- See your doctor and medication

Long Term Care

- Nutrition
- Overweight contributes to poor posture
- Physical fitness
- Increase flexibility and conditioning of your abdominal and spinal muscles
- Stress management
- Tense people are known to have backaches
- Rest
- Smoking restricts circulation and slows the healing process when injury occurs
- Exercise
- Proper posture

Prevention

- Sit close to the desk
- Have a chair that supports a slightly arched position
- Sleep on a **firm** mattress – **not** extremely hard
- Change positions when standing for long periods
- Work at a comfortable height
- Use proper lifting techniques – keep back slightly arched, head high, weight close and widely balanced base of support
- Increase flexibility and conditioning of your abdominal and spinal muscles

Shock

Shock is the insufficient supply of oxygen and other nutrients to some of the body's cells and the ineffective elimination of carbon dioxide and other waste products. If this condition persists cell failure, organ failure, and death will follow. Shock can be a result of any illness/injury or mental trauma and usually accompanies severe bleeding.

Signs and Symptoms

- **Pale Skin**
- **Sweating / Clammy Skin**
- **Cold**
- Weakness
- Nausea
- Thirst
- Anxiety
- Cyanosis (blueness) of lips/ears
- Trembling
- Labored breathing
- Weak/rapid pulse

Causes

- Hemorrhagic (bleeding)
- Hypovolemic (burns, dehydration)
- Cardiogenic (heart attack)
- Neurogenic (trauma / spinal)
- Anaphylactic (allergies)
- Septic (infection)
- Psychogenic (sight of blood)

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions**
4. Monitor vital signs
5. Use the **T.R.W.** Method to treat for shock

T. Treat cause – injury or illness

R. Rest and Reassure the victim.

W. Warm – keep victim warm.

First Aid Positions for Causalities

- Recovery
- Supine
- Semi-sitting
- Position Found

Prevention

To prevent shock from becoming more severe

- Reassure the victim
- Keep the victim warm
- Loosen any tight clothing
- Place in a comfortable position, if injury permits.
- Continue to monitor the victim's vital signs as part of on-going care.

Fainting

When approaching a victim who appears to be unconscious. It is important to determine whether they have fainted, are just sleeping, or in a state of semi-consciousness or unconsciousness.

Fainting

Fainting occurs when there is a temporary lack of oxygen to the brain, causing a person to “black out” temporarily. Usually, a victim will be responsive within 5 seconds of fainting and may seem dizzy or confused after waking up.

Warning Signs

A person who is about to faint looks like a person in shock.

Watch for:

- ***Pale Skin***
- ***Sweating / Clammy Skin***
- ***Cold***
- Nausea
- Dizziness
- Loss of balance

Causes

- Sudden drop in blood pressure
- Diabetes
- Heart Disease
- Brain Tumors

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the Three ‘H’ Questions
4. Place the victim in the recovery position
5. Loosen tight clothing around neck
6. Encourage deep, slow breathing
7. Ongoing care and treat for shock

Unconscious

Unconsciousness means that the victim is unresponsive to verbal and physical stimuli. Unconsciousness can happen suddenly (as a result of cardiac arrest, stroke, head injury, electrocution, etc.) or gradually (as a result of intoxication, hyperglycemia, poisoning, also stroke, etc.).

When a victim is unconscious, all the muscles in the body relax. For this reason, the tongue may relax and block the airway. The situation may become life threatening. Therefore, the first concern is to open the airway by tilting the head back and lifting the chin.

Management

1. Scene Survey
2. Primary Survey
3. Open the airway:
 - Head tilt chin lift — put one hand on the victim's forehead and two fingers from your other hand on the victim's chin, and tilt head backwards
4. Look, listen and feel for breathing (5 seconds)
 - Look for victim's chest to rise and fall
 - Listen for victim's breathing (normal is 10 – 12 breaths/minute)
 - Feel for air being blown onto your cheek
 - If victim is breathing — place in recovery position
 - Treat for shock

The Recovery Position



1. Kneel down beside the victim
2. Put their arm closest to you above their head
3. Put their other arm over the opposite shoulder.
4. Bend their leg furthest away from you at the knee
5. Put your hand closest to their knee on top of their knee
6. Put your other hand on the victim's shoulder
7. Pull the victim towards you by the knee and shoulder
8. Once the victim is on their other side, take the back of your hand and put it in front of their nose and mouth and monitor their breathing

Bleeding & Wounds

The typical adult male has approximately 6 liters of blood. Therefore, loss of blood (1/3rd to 1/2) is very significant, as a minimum amount is required to keep the cardiovascular system working efficiently thus maintaining life.

Signs and Symptoms

Bleeding can be external or internal. There are three classifications:

1. Arterial

- Loss of blood from an artery
- Blood spurts with the pulse and is bright red.

2. Venous

- Loss of blood from a vein
- Blood flows steadily and is dark red.

3. Capillary

- Loss of blood from a capillary bed
- Blood flow is slow and not as bright red as an arterial bleed.

Signs of Infection

- | | |
|----------|---|
| S | Swelling around injured area |
| H | Heat – area feels warm to touch or a fever is present |
| A | Ache – pain at injury site (throbbing possibly), headache, or general feeling of discomfort |
| R | Redness – around injury |
| P | Pus – very good sign of infection |

Prevention

- Be **cautious** when working with sharp instruments
- Follow **safety procedures** in the workplace
- Take **safety precautions** when participating in recreational activities, sports and games
- **Tetanus shot** every 10 years

Management - Direct Pressure and Rest

Personal Protective Equipment (PPE) is important when dealing with blood and body fluids. Use protective gloves to prevent further contamination of injured site and to protect yourself from blood-borne pathogens.

1. Scene Survey
2. Primary Survey
3. Get the victim to rest
4. Apply direct pressure on the wound with a compression bandage; if bandage becomes blood soaked, then put another one on top of it; **DO NOT** remove the first bandage at any time.
5. After bandaging, check for **Signs of Circulation** at the extremities, skin colour and temperature
6. Secondary Survey
7. Ongoing care and Treat for shock

Types of Wounds – External

1. Abrasions

Scrapes and scratches to the outer layer of the skin.
Wash under running water and apply sterile dressing.

2. Incisions

An incision is a smooth cut usually made by a sharp object (i.e. A knife or razor blade), while a laceration is a jagged cut.

Minor Incisions/Lacerations

Wash under running water and apply a sterile dressing

Major Incisions/Lacerations

1. Use **direct pressure** method and **rest**
2. Clean away loose debris/dirt from area
3. Bring edges of wound together, if possible
4. Apply pressure by using a compress bandage
5. Apply additional bandages if blood soaks through

3. Puncture/Embedded Wounds

When objects (such as animal's teeth, nails, and knives) pass through the skin and damage underlying tissues often there is no severe external bleeding but internal bleeding may be profuse and contamination may be serious.

1. **DO NOT** remove the object as it may be acting as a plug
2. Cover object gently with sterile gauze allowing no dirt to enter
3. Pack rolled bandages around object to stabilize
4. Use **direct pressure** method and **rest**, if possible

4. Nose Bleeds

Nosebleeds can result from allergies, high blood pressure, or dry air. A nosebleed with no apparent cause is called a spontaneous nosebleed.

Most nosebleeds can be controlled easily.

- Have the person sit down, lean forward and pinch the nose below the bridge for 10 minutes.
- If nose is still bleeding after 10 minutes seek medical attention.

Traumatic Nosebleeds

Results from some sort of traumatic blow to the head. **DO NOT** apply direct pressure to the nose – absorb any blood or fluid with a dressing under the nose. **SEEK MEDICAL ATTENTION IMMEDIATELY**

**DO NOT BLOW YOUR NOSE FOR AT LEAST 2 HOURS
HAVE PERSON BREATHE THROUGH THEIR MOUTH**

5. Amputations

Involves the extremities. When a finger, toe, hand, foot or limb is completely cut through or torn off. Profuse bleeding may occur or there may be little or no bleeding as the force of the amputation may cause blood vessels to collapse or retract and close.

Full Amputation

1. Scene Survey
2. Get the Casualty to rest
3. Primary Survey
4. Activate E.M.S.
5. Use the **direct pressure** method and **rest**
6. Wrap the injured area in a clean, moist dressing (if unable to moisten, use a dry dressing)
7. Secondary Survey and ask the **Three 'H' Questions**
8. Ongoing Care and treat for shock.
9. Put appendage in a bag and into another bag with ice and water if possible
10. If there is no bag available then wrap in a clean cloth
11. Label with time of day / seek medical attention

Partially Amputated

1. Try to keep it in its normal position
2. Cover with sterile gauze
3. Bandage around area to create support
4. Keep dry and cool – may apply ice or cold compress to outside of bandage

Animal Bites

Many animals bite when provoked or are frightened. Bites may cause open wounds, which often become infected.

1. Scene Survey - If possible, contain the animal without injuring yourself
2. Primary Survey
3. Secondary and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Clean the affected area with soap and water
5. Allow the wound to bleed in order to cleanse the wound
6. If bleeding is severe – use **direct pressure method** and **rest**.
7. Monitor vital signs
8. Ongoing care and treat for shock
9. Activate E.M.S. (911)

Jellyfish

Jellyfish stingers are now becoming more common on beaches worldwide and more swimmers are coming in contact with jellyfish. Jellyfish sting typically results in a painful, itchy rash that may develop into blisters. In some cases, jellyfish stings have caused death.

Signs and Symptoms

- itching/burning reactions
- severe generalized pain
- nausea and vomiting
- difficulty breathing
- sweating
- possible heart failure

Management

1. Scene Survey
2. Primary Survey
3. Secondary and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. All jellyfish stings should be washed with a large volume of vinegar. If vinegar is not available, a baking soda paste may be used instead
5. Hot water immersion should be used to reduce pain, for at least 20-30 minutes
6. Monitor vital signs monitor
7. Ongoing care and treat for shock
8. Activate E.M.S. (911)

Ticks

Ticks are found in dense woods. They drop from trees and cling to animals and humans, biting through the tissue. Ticks may carry an infectious disease, commonly known as Lyme Disease.

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Remove the tick from the skin with tweezers – grab it as close to the victim's skin as possible
5. If there are no tweezers – use your fingers but protect them with a glove or piece of cloth
6. Wash the affected area with soap and water and wash your hands
7. Ongoing care and treat for shock

Leeches

Leeches are found in swamps, ponds and lakes. They like to feed on warm blood and they are very hard to detach from the body.

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History). Remove the leech by placing a small flat object (i.e. fingernails, credit card or ruler) under the head first - the narrow side of the leech - and try to break the suction hold. Repeat on the opposite side of the leech so that you break the suction. Once suction has been broken, flick the leech away.
4. Leech should fall off in one piece
5. Clean affected area with soap and water
6. To relieve irritation – apply a paste of baking soda and water
7. Monitor for infection
8. Ongoing care and treat for shock

Abdominal Injuries

The abdominal cavity contains organs such as the stomach, small intestine, large intestine, liver, kidneys, and spleen. Several large arteries and veins are also located in the abdominal cavity. Any object that punctures the abdominal wall can injure one or more organs, can cause severe bleeding and infection.

Causes

Knives, broken glass, vehicular accident, bullets.

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions**
4. Activate E.M.S.
5. Control external bleed and dress all wounds
6. Lay victim on their back with their knees up (flexed) to reduce pain by relaxing the abdominal muscles.
 - Do not touch or try to replace any exposed organs
 - Cover organs with **occlusive dressing** and bandage in place – if victim allows you, place moistened, sterile dressing on wound first.
 - Do not remove any impaled objects – stabilize with bulky dressings bandaged in place.
 - Do not give victim anything by mouth.
7. Ongoing care and treat for shock

Types of Wounds – Internal

1. **Contusion (bruise)**

- Usually caused by a fall or a blow to the body
- Minor swelling may occur
- May apply a cold compress to reduce blood flow (10 minutes on, 10 minutes off)
- **DO NOT** apply ice directly to the skin

2. **Major**

- The larger the contusion, the more blood loss, and this may indicate extensive tissue damage in the area
- Swelling and deformity over major organs (spleen, liver, kidney) may be a sign of more serious injuries

Signs and Symptoms

- **Pale Skin**
- **Sweating / Clammy Skin**
- **Cold**
- Dizziness, nausea
- Thirsty
- Blood in urine
- Releasing bodily fluids through ears, nose or mouth
- Difficulty breathing

Management

1. Scene Survey
2. Identify yourself, get consent
3. Primary Survey
4. Place Casualty in a position so that maximum weight is on bruised area, if possible
5. Activate E.M.S. immediately
6. Secondary Survey and ask the **Three 'H' Questions**
7. Ongoing care and Treat for shock

3. **Crush Injuries**

Crush injuries lead to body swelling and kidney failure

Management

1. Scene Survey
2. Primary Survey
3. Activate E.M.S.
4. Move victim as little as possible
5. Treat any visible wounds and apply ice to the area
6. Secondary survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
7. Ongoing care and Treat for shock

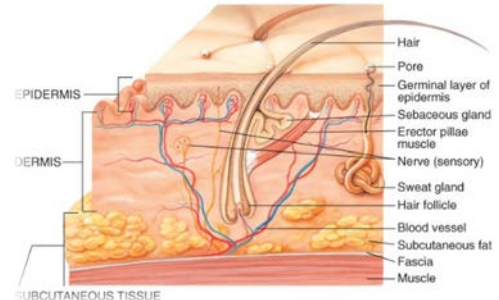
***** If the victim can still breathe, DO NOT remove crushing item *****

Burns

Injury to the skin occurs when there is a burn. The skin is the part of the body constantly in contact with the environment. Other injuries may occur because of burns (respiratory failure, tissue swelling and nerve damage).

Prevention

- Smoke alarms
- Fire extinguisher
- Fire evacuation plan
- Childproofing house
- Keep pot handles turned in
- Follow **all** fire bylaws in the workplace



Signs and Symptoms

- **1st Degree Burn** Reddening of the skin, pain at site
- **2nd Degree Burn** Reddening, swelling, blistering, intense pain
- **3rd Degree Burn** Charred black or dry and white. Painless except around edges where there may be 2nd degree burns with pain

Classifying Burns

- **Thermal** (flame, steam, hot liquids, hot objects, heat)
- **Chemical** (various acids, bases, caustics)
- **Electrical** (AC current, DC current, lightning)
- **Radiation** (sunburn)

Rule of Nines

Allows you to roughly estimate the extent of the burn area on the victim's body surface:

Adult		Child	
• Head and neck	9%	• Head and neck	18%
• Each arm	9%	• Each arm	9%
• Front surface of trunk	18%	• Front surface of trunk	18%
• Rear surface of trunk	18%	• Rear surface of trunk	18%
• Each leg	18%	• Each leg	14%
• Genitalia	1%		
TOTAL	100%	TOTAL	100%

Classifying the Severity of Burns

Depending on the degree of the burn, how much of the body is burned, and where the burn is located, will allow you to classify the severity of the burn.

1. Critical

- Second and third degree injuries involving the face, hands, feet, groin and major joints.
- Third degree burns involving more than 10% of the body surface.
- Second degree burns involving more than 30% of the body surface.
- First degree burns involving more than 75% of the body surface.

2. Moderate

- Third degree burns that involve less than 10% of the body surface excluding, face, hands, feet, groin and major joints.
- Second degree burns that involve 15% to 30% of the body surface.
- First degree burns that involve 50% to 75% of the body surface.

3. Minor

- Third degree burns involving less than 2% of the body surface excluding face, hands, feet, groin and major joints.
- Second degree burns that involve less than 15% of the body surface.
- First degree burns that involve less than 20% of the body surface.

5 instances where medical care is required for a burn

- The burn comes from a fire, an electrical wire or socket, or chemicals.
- The burn is on the face, scalp, hands, joint surfaces, or genitals.
- The burn looks infected (with swelling, pus, increasing redness, or red streaking of the skin near the wound)
- You are uncertain of the severity of the burn
- The person is in shock

Thermal Burns

Sources include flame, steam, hot liquids or objects, heat

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Remove jewelry, remove only loose clothing
5. Submerge in cool water for 15 minutes
6. Reassess
7. **If 1st Degree:** Submerge until pain subsides
If 2nd Degree: Cover with loose dressing
If 3rd Degree: Cover with loose dressing and activate 911
8. Treat for shock

Radiation Burns

Sources include sunburns

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the Three 'H' Questions (Happened, Hurt, History)
4. Remove jewelry, remove only loose clothing
5. Submerge in cool water for 15 minutes
6. Reassess
7. If 1st Degree: Submerge until pain subsides
If 2nd Degree: Cover with loose dressing
If 3rd Degree: Cover with loose dressing and activate 911
8. Treat for shock

Chemical Burns

Sources include various acids, bases and caustics

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Consult any MSDS sheets for First Aid Treatment
5. Flush with cool water for 15 minutes – use copious but gentle flow of water. Brush off contaminated part of body first if it is a dry chemical (i.e.: dry lime, carbolic acid, sulfuric acid, hydrofluoric acid) – these chemicals react with water
6. Remove clothing and jewelry during flushing process if possible
7. Treat for shock

Electrical Burns

Sources include AC current, DC current and lightning

1. Scene Survey – make sure power source is shut down
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Examine body for entrance and exit burn sites
5. Treat for shock

<p>DO NOT PUT ICE ON A BURN DO NOT PUT OINTMENTS OR CREAM ON A BURN</p>

<p>IF ON FIRE, STOP, DROP AND ROLL</p>

Medical Emergencies

Diabetes

The pancreas, a vital organ in the abdominal region, manufactures and releases insulin into the body. This insulin reacts with sugars in our body. We receive our sugar from the food we eat. When there is decreased production of insulin, it will not allow our sugar in the blood to break down and enter the body's cells to give us energy. This condition is known as Diabetes Mellitus

Two Types of Diabetes

1. **TYPE I Insulin Dependant**
2. **TYPE II Non-Insulin Dependant**

A **Diabetic Coma** results from a decreased insulin supply – the body is not producing enough insulin or the person is not taking their proper dosage of insulin. The victim is in a **High Blood Sugar** state. This is a slow onset.

Insulin Shock occurs when there is too much insulin in the body. This is a result of the person taking too much insulin, has reduced sugar intake or has over-exercised allowing faster sugar absorption then normal. The victim is in a **Low Blood Sugar** state. This is a rapid onset.

Signs and Symptoms

Low Blood Sugar	High Blood Sugar
<ul style="list-style-type: none">• Rapid Onset• Hunger• Irritable• Confused• Shaky• Slurred speech• Cold, clammy skin	<ul style="list-style-type: none">• Slow Onset• Thirst• Nausea• Dry, warm skin• Drowsy• Frequent urination• Fruity smelling breath

Prevention

TYPE I – Insulin Dependent

- Have a person carry their **Insulin Kit** with them at all times
- Have the person wear a bracelet/necklace identifying their condition
- Encourage family members to learn how to use the **Insulin Kit** and recognize the signs and symptoms.

TYPE II – Non-Insulin Dependent

- Have a person wear a bracelet/necklace identifying their condition
- Educate family members to recognize the signs and symptoms

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** -(Happened, Hurt, History)
4. Look for a **Medic alert bracelet/necklace**
5. If the victim requires sugar, allow them up to **8 ounces (1 cup) of a liquid with sugar in it (i.e. pop, orange juice) or a solid with sugar in it (i.e. candy, chocolate bar)**. If there is no improvement in first few minutes – activate E.M.S.

**WHEN IN DOUBT, START WITH SUGAR!
DO NOT ADMINISTER INSULIN UNLESS YOU ARE MEDICALLY
TRAINED BY A PROFESSIONAL!**

Allergies & Anaphylaxis Shock

Different people respond to foreign substances differently. When the body is sensitive to a foreign substance, it reacts. Reactions can be mild to severe and can even be life threatening like *Anaphylactic Shock*.

Causes

- Insect stings/bites
- Ingested substances (foods such as nuts and shell fish)
- Inhaled substances (such as dust or pollen)
- Injected substances (drugs such as penicillin)
- Absorbed substances (certain chemicals in contact with skin)

Signs and Symptoms

- Itching, hives
- Dizziness
- Nausea
- Difficulty breathing
- Headache



Management

1. Scene Survey
2. Primary Survey
3. Look for a **Medic alert bracelet/necklace**
4. Monitor vital signs
5. Locate victim's medication (epi-pen/allerject)
6. Activate E.M.S. (911) if necessary
7. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
8. Ongoing care and treat for shock



Asthma

Asthma is an inflammatory disease that occurs when the air sacs of the lungs become narrowed and there is an overproduction of mucus. These complications severely restrict airflow causing breathing difficulties.

Prevention

- Control of stress
- Environmental pollutants (cigarette smoke)
- Allergies (dust mites, pollen)

Signs and Symptoms

- Shortness of breath/wheezing/coughing
- Tightness in chest
- Cyanosis
- Anxious

Management

1. Scene Survey
2. Primary Survey
3. Look for a **Medic alert bracelet/necklace**
4. Locate victim's medication (puffer/inhaler)
5. Rest victim
6. Get victim to breathe in through the nose and out through the mouth.
7. Activate E.M.S. (911) if problems persist



Convulsions and Seizures

Seizures are caused by irregular electrical activity of the brain, which may be due to injury, disease, fever, poisoning or infection. The irregular activity may propel the body to have uncontrolled muscular contractions. Seizures may be caused by a condition called epilepsy, which is usually controllable with medication. Some children and infants have seizures that are caused by a sudden high fever.

Causes

- Epilepsy or other medical condition
- High fever or drastic temperature change
- Drugs/alcohol overdose
- Stroke
- Brain injury
- Diabetes
- Photogenic – strobe lights
- Audiogenic – thunder
- Poisoning
- Stress

A) Non-Convulsive Seizures

- Non-responsive
- Trembling
- Drooling
- Daydreaming
- Blinking

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey
4. Stand by and Monitor vital signs
5. **SEEK MEDICAL ATTENTION IMMEDIATELY**



B) Convulsive Seizures

- Possible aura – warning the victim that a seizure is about to occur
- Level of consciousness – causing victim to fall
- Victim becomes rigid
- Possible loss of bladder or bowel control
- Frothing at mouth

Management

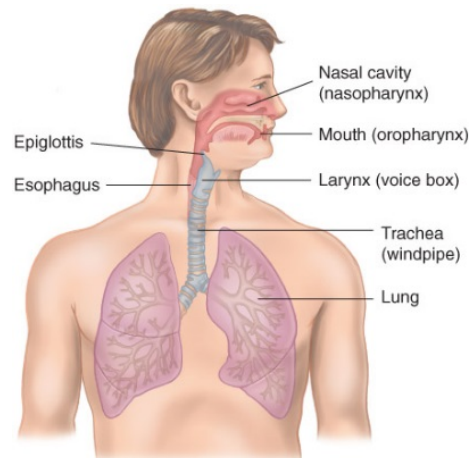
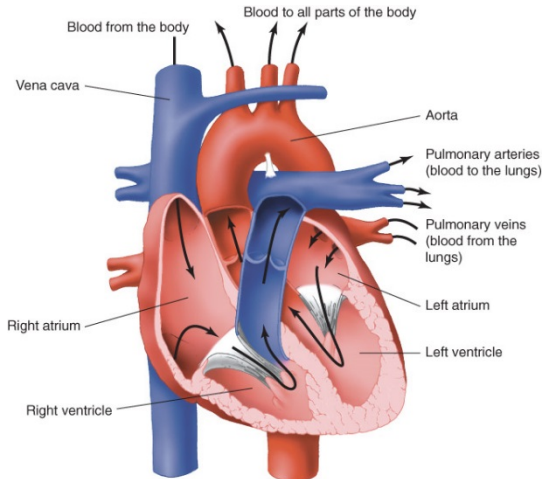
1. Scene Survey
2. Clear area and protect victim from area
3. Protect victim's head with pillow or blanket or your thighs
4. **DO NOT** attempt to restrain the victim
5. Roll victim into the recovery position when seizure has ended, allowing fluids to drain and to maintain an airway
6. Cover victim with a blanket or jacket
7. Ongoing Care and treat for shock
8. Allow victim to rest afterwards

Anatomy and Physiology

The Heart

The heart is about the size of an average fist. It is a hollow, cone-shaped structure that typically weighs 250 to 300 grams. It is located between the breastbone (sternum) and the backbone (spinal column). There are four chambers in the heart. The upper chambers are called the right and left atrium. They are chambers that receive blood. The lower chambers are the right and left ventricle. These chambers pump blood out of the heart. Valves in the heart keep blood flowing through the chambers in the correct directions.

The heart is actually two side-by-side pumps, each serving a separate blood circuit. The blood vessels that carry blood to and from the lungs are called the pulmonary circuit. This circuit strictly serves as the site of the gas exchange of carbon dioxide and oxygen. The blood vessels that carry blood to and from all body tissues constitute the systemic circuit.



The Lungs

The lungs are clusters of air sacs (alveoli) surrounded by capillaries. The alveoli transfer oxygen to the blood in the capillaries. From the alveoli, the carbon dioxide produced by the body cells is breathed out.

Air enters the airway through the nose and/or mouth. It passes along the throat, past the voice box (larynx), down the windpipe (trachea) and through the two main branches of the lungs, the bronchi.

Air that enters the lungs contains about 21% oxygen and very little carbon dioxide. Air that is breathed out contains 16% oxygen and about 5% carbon dioxide. The air we breathe out has enough oxygen to help a person who has stopped breathing.

Cardiovascular Diseases

Cardiovascular disease is the number one cause of death of Canadians. Almost 32% of Canadians die of this disease, more than any other disease. Strokes, Transient Ischemic Attacks, Heart Attacks, Angina Pectoris and Cardiac Arrest are all cardiovascular related diseases.

Risk Factors for Cardiovascular Disease

<u>Modifiable</u>	<u>Non Modifiable</u>
<ul style="list-style-type: none">• Diabetes• High Blood Pressure (HBP)• High Blood Cholesterol (HBC)• Stress• Lack of exercise• Smoking• Obesity• Alcohol• Diet	<ul style="list-style-type: none">• Hereditary• Age

Stroke (“BRAIN ATTACK”)

A stroke is a blood clot or a rupture of a blood vessel supplying blood to the brain. Thus, the part of the brain that does not receive oxygen is damaged. A cerebrovascular accident, better known as a stroke, can result in the impairment of body function. A severe stroke may result in death.

Signs and Symptoms

- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination
- Sudden, severe headache with no known cause

Management

1. Scene Survey
2. Primary Survey
3. As soon as you recognize the signs and symptoms of a stroke, call 911
4. Ongoing care Treat for shock
5. Protect from further injury make casualty comfortable; loosen tight clothing

Transient Ischemic Attack (T.I.A.)

T.I.A.'s are caused by a temporary blockage of an artery causing a lack of oxygen to part of the brain. It can be recognized as stroke since the signs and symptoms are the same. Although T.I.A.'s do not last a long time (less than 24 hours), the blockage clears on its own, and leaves no permanent damage it is an early warning sign that a stroke may be imminent.

Management

Same as strokes

Heart Attack

A heart attack occurs when part of the heart muscle dies due to the lack of oxygen caused by a blockage of one or more coronary arteries. Commonly, this is a result of the hardening of coronary arteries (atherosclerosis), which restricts blood supply to the heart. Heart attacks kill more Canadians than any other cause of death.

Signs and Symptoms – “PASS IT ON”



- | | |
|----------|---|
| P | Pale |
| A | Anxious |
| S | Sweating |
| S | Shortness of Breath |
| | |
| I | Indigestion |
| T | Tightness — possibly in arm, neck, jaw, or back |
| | |
| O | Overall Weakness |
| N | Nausea and/or vomiting |

**DENIAL — Up to 50% of victims are dead on arrival due to denial!
Most people delay 2 hours before seeking help when experiencing a heart attack. As a result, 50% of heart attack victims die within the first two hours after the attack according to the Heart and Stroke Foundation.**

Prevention

- Education about the risks of heart attacks and knowing your family history
- Annual physical exam
- Keep HBP and HBC in the “safe zone”
- Train annually in CPR

Management

1. Scene Survey
2. Primary Survey
3. As soon as you recognize the signs and symptoms of a Heart Attack, activate E.M.S. and treat for shock.
4. Provide emotional support
5. Keep the victim calm and reassure him/her
6. Stay with the victim
7. Loosen tight clothing and place victim in restful, comfortable position (sitting or semi-sitting)
8. Supply oxygen – providing there is oxygen and someone trained to use it properly
9. If unconscious, check airway, check breathing. If not breathing, begin CPR.

Angina

The term angina pectoris literally means pain in the chest. The heart relies on a constant supply of oxygen. If it does not get enough because of diseased or narrowed arteries, the patient experiences chest pain or discomfort.

Most often angina occurs as a result of physical activity beyond the patient’s limit, emotional stress, or extreme hot or cold weather. Sometimes, though rarely, it has no apparent cause.

It is impossible for you to tell the difference between the pain of angina and the pain of a heart attack. Though angina usually leaves the heart undamaged, if it is left untreated, it may eventually cause a heart attack.

Note that angina does not always manifest itself as pain. It may be a feeling of tightness, heaviness, squeezing or constriction in the chest.

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three ‘H’ Questions** (Happened, Hurt, History)
4. Stay with the victim while he/she takes their medication (Nitroglycerine)
5. If signs or symptoms increase or intensify at any time, or, if the victim does not have their medication with them, call 911.



Sudden Cardiac Arrest

Cardiac arrest occurs when the heart, for any of a variety of reasons, is not pumping. The patient will be unconscious and not breathing. Pumping action ceases and the body's cells, without oxygenated blood, begin to die. Brain cells begin to die within 4 to 6 minutes following cardiac arrest.

Causes of Sudden Cardiac Arrest

- Heart Attack
- Stroke
- Trauma to the chest
- Electrical Shock
- Drug overdoses
- Suffocation
- Drowning

Cardiopulmonary Resuscitation (C.P.R)

Management

1. Scene Survey
2. Primary Survey
3. Open the airway –head tilt, chin lift
4. Check for breathing for up to 5 seconds (use a barrier device, if possible)
5. Not breathing start with 30 compressions.
 - 30 chest compressions to 2 breaths
 - Push down on the victim's chest 2 inches in depth on the center of the sternum
 - Try to do 100 compressions per minute

30:2 WILL PULL THEM THROUGH

Reasons to Stop CPR

1. You are too exhausted to continue
2. Scene becomes unsafe
3. A medical doctor instructs you to stop or EMS takes control

NOTE: When positioning a pregnant victim on a flat surface, try to place a soft object (i.e. pillow, jacket) under the right hip. This will shift the uterus to the left side of the abdomen and allow blood return to the heart through the major blood vessels.



Cardiopulmonary Resuscitation (CPR)

	Adult (Puberty+ Years)	Child (1- Puberty Years)	Infant (Less Than 1 Year)
Activity			
Airway	Head Tilt/Chin Lift	Head Tilt/Chin Lift	Head Tilt/Chin Lift
Breathing	2 breaths at 1 second per breath until chest rises	2 breaths at 1 second per breath, until chest rises	2 breaths at 1 second per breath, until chest rises
Hand Position	Place both hands on lower half of breastbone	Place one or two hands on lower half of breastbone	Place two fingers on the breastbone just below the nipple line
Depth	2"	1/3 the depth of the chest (approx. 2")	1/3 the depth of the chest (approx. 1.5")
Rate	100 per minute	100 per minute	100 per minute
Compression to Ventilation Ratio	30:2 (one or two rescuers)	30:2 (one or two rescuers)	30:2 (one or two rescuers)
Alone – When to Activate E.M.S.	Immediately after determining if victim is unresponsive	After performing 5 cycles (2 minutes of CPR)	After performing 5 cycles of CPR (2 minutes of CPR)
AED Use	YES, Deliver 1 shock as soon as possible, followed by 5 cycles of CPR	YES, Deliver 1 shock as soon as possible, followed by 5 cycles of CPR. Use pediatric pads if available.	YES, Deliver 1 shock as soon as possible, followed by 5 cycles of CPR. Use pediatric pads if available.

Oxygen Administration

Oxygen is essential for life. When the oxygen supply to the body is reduced due to illness or injury, permanent damage to the brain and other vital organs may result. Unresponsive persons in respiratory or cardiac arrest have a critical need for emergency oxygen to help prevent damage to the brain and heart. Emergency oxygen should be used during cardiopulmonary emergencies such as respiratory or cardiac arrest, as soon as it is available.

Oxygen systems should provide the highest oxygen concentration possible to both a breathing and non-breathing person. The type of delivery device used should be based on the ease of use and its ability to provide high concentrations of oxygen.

Oxygen Administration Masks for Breathing Casualty

- Nasal Cannula
 - Should only be used on responsive ill or injured persons who will not tolerate a mask
 - Limits concentration of oxygen delivered
 - May cause drying of nasal passages
 - Flow rate should be a maximum of 6 liters per minute
- Rebreather (Simple) Mask
 - Common in portable emergency oxygen units
 - Used only for breathing persons
 - Mixes ambient air with oxygen to deliver increased oxygen concentration
 - Flow rate of 6 – 10 liters per minute
- Non-rebreather Mask
 - Improved method of giving oxygen in emergency care of breathing persons
 - Used only for breathing persons
 - High oxygen concentration delivered
 - Non-rebreather bag must be full/primed before mask is placed on the ill or
 - Injured person and bag must remain inflated during oxygen delivery. To fill the bag, cover valve between mask and reservoir bag for a few seconds until the reservoir bag is filled with oxygen. Then put NRB on patient and increase oxygen level if reservoir bag does not remain full.
 - Flow rate should be set to 15 liters per minute

Oxygen Administration to the Non-breathing Casualty

- Refer to *Bag-Valve-Mask* protocols on page 38.

Oxygen Delivery Devices

Device	Common Flow Rate	Oxygen Concentration	Function
Nasal Cannula	1-6 L/min	22-44%	Breathing patients only
Pocket Mask	6-10 L/min	35-55%	Breathing and nonbreathing patients
Bag-Valve- Mask (BVM)	15+ L/min	90+%	Nonbreathing patients
Nonrebreather Mask	10-15 L/min	90+%	Breathing patients only

Oxygen system assembly procedures

1. Remove protective seal on cylinder post valve
2. Connect handle
3. Quickly open and close the valve to test and clean. Be sure exit port is directed away from user
4. Check to assure sealing mechanism is in place on regulator or at connection to tank stem
5. Attach regulator/flow controller to cylinder post valve
6. Attach breathing device (nasal cannula, non-rebreather mask, bag-valve mask, or resuscitation mask) to regulator
7. Adjust flow control to desired setting
8. Test for oxygen flow and then administer to the patient
9. Monitor oxygen flow to ensure continued operation and delivery.
 - When tank is empty (200 psi), prepare to change tank if a replacement is available.
 - If an additional tank is not available, prepare to remove the delivery device.
10. When complete, remove delivery system (mask/cannula) from patient, then turn off valve and release excess gas from the regulator and delivery system

Safety with oxygen

- Always check that the cylinder is clean
- Store cylinders upright and secure
- Adhere to Government regulations regarding the storage of oxygen cylinders
- Empty cylinders should be returned for filling without delay
- DO NOT expose cylinders to extreme heat or flame (oxygen is flammable and potentially explosive)
- DO NOT smoke near oxygen equipment
- DO NOT store near grease or oil

Oropharyngeal Airway (OPA)

An oropharyngeal airway (OPA) is a curved piece of plastic inserted over the tongue and used to maintain a patent (open) airway. It does this by preventing the tongue from covering the epiglottis, which could prevent the patient from breathing. When a person becomes unconscious, the muscles in their jaw relax and may allow the tongue to obstruct the airway. The tongue is the most common cause of a blocked airway. OPAs are used on unconscious victims, not conscious patients since it may induce gagging, vomiting and aspiration.

The correct size OPA is chosen by measuring from the casualty's earlobe to the corner of the mouth.

To insert an OPA the following:

1. Insert the OPA upside down until the soft palate is reached.
2. Turn the OPA 180 degrees and slip it over the tongue. Be sure not to use the airway to push the tongue backward and block, rather than clear, the airway.
3. Flange should rest on lips



Bag-Valve-Mask (BVM)

A *bag-valve-mask* (BVM) is a hand-held device used to provide ventilation to a patient who is not breathing or who is breathing inadequately and is commonly referred to "*bagging*" the victim.

Establish and maintain patient airway:

1. **Medical patient:** use Head Tilt-Chin Lift, or Head tilt-Jaw Thrust
2. **Trauma patient:** use Modified Jaw Thrust

To create a proper BVM-to-face seal, while maintaining open airway position:

1. Place the mask on the patient's face before attaching the bag.
2. Cover the nose and the mouth with the mask without extending it over the chin.
3. Change the size of the mask, as appropriate, to create a good seal.
4. Hold the mask in place using the one-hand E-C technique.
5. Use the non-dominant hand, to create a C-shape with the thumb and index finger over the top of the mask and apply gentle downward pressure.
6. Hook the remaining fingers around the mandible and lift it upward toward the mask, creating the E.



Automated External Defibrillator (AED)

WELCOME to Rescue 7 Inc.'s Automated External Defibrillator (AED) training. Rescue 7's goal is to leave you feeling secure enough to use an AED in an emergency situation. Our workshop is designed to be user-friendly so that all participants will gain confidence and skills necessary to act effectively until such time as emergency personnel arrive at the scene.

The reality of an emergency situation is that seconds count. Congratulate yourself that you are becoming a part of a growing number of first responders who are going to use those precious to make a difference.

By the end of this workshop you will be able to:

- Describe the importance of early defibrillation and the role that you play in the chain of survival
- Demonstrate the proper use of an AED
- Describe the safety issues associated with the use of an AED
- Describe the use of an AED in the care of patients with special considerations such as pregnancy, pacemakers, trauma, etc.
- Demonstrate your capability of responding to a cardiac arrest simulation (both the use of an AED and CPR skills)
- Describe basic AED maintenance and Reporting



Electrocardiograms

An electrocardiogram (ECG) is a visual record of the electrical activity of your heart. Attaching electrodes to various locations on the body produces the visual recording.

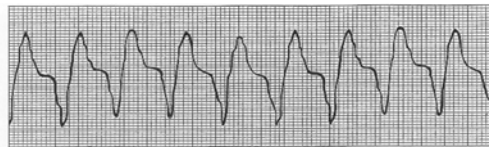
What is Normal Sinus Rhythm?

The ECG of a healthy heart will display electrical activity as shown below. As you can see, each heartbeat is spaced at regular intervals. When a person's heart rate is between 60 to 100 beats per minute, it is called a Normal Sinus Rhythm.



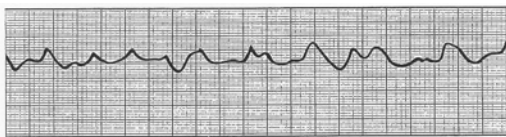
What is Ventricular Tachycardia?

Ventricular tachycardia usually occurs before ventricular fibrillation. The rapid beating of the heart does not allow for the ventricles to fill with blood. This reduces the amount of blood that the heart can pump and blood pressure falls. Like ventricular fibrillation, ventricular tachycardia may be successfully treated with defibrillation.



What is Ventricular Fibrillation?

A heart attack may disrupt the heart's normal rhythm. It may cause the heart muscle to "quiver" instead of pumping regularly at the right number of heartbeats. This uncoordinated quivering is called ventricular fibrillation. Ventricular fibrillation is the most common initial rhythm associated with cardiac arrest and may be successfully treated with defibrillation.



What is Asystole?

When a victim displays an asystolic rhythm, this means that there is no electrical rhythm in the heart. In this case, the heart is not in a shockable rhythm. Defibrillation is not effective in starting the heart.



Defibrillation

Defibrillation involves the placing of electrodes on an unconscious and non-breathing patient's bare chest. The Automated External Defibrillator (AED) attached to the electrodes determines what type of rhythm the heart is experiencing and advises if an electrical shock should be delivered.

How does a defibrillator work?

The electrical charge that the defibrillator delivers to the victim is an attempt to momentarily stop the heart's electrical activity, in hopes that the body's electrical system will start the heart beating normally again.

Three main principles of Defibrillation

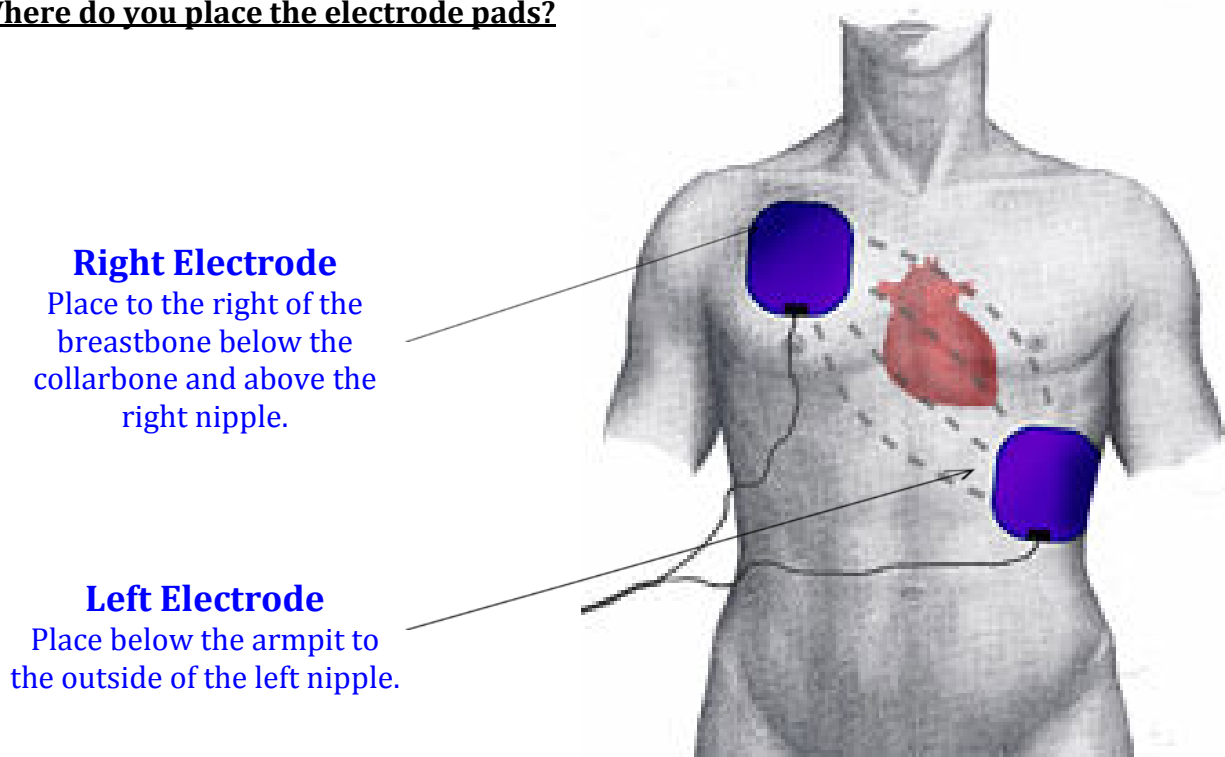
1. Cardiac arrest usually means that normal electrical impulses are disrupted.
2. Defibrillation is the application of an external electrical shock to terminate all electrical activity in the heart. This allows the natural pacemakers of the heart to restore a normal rhythm.
3. Time from collapse to defibrillation is the most critical factor for survival.

When do you use a defibrillator?

Under the following conditions:

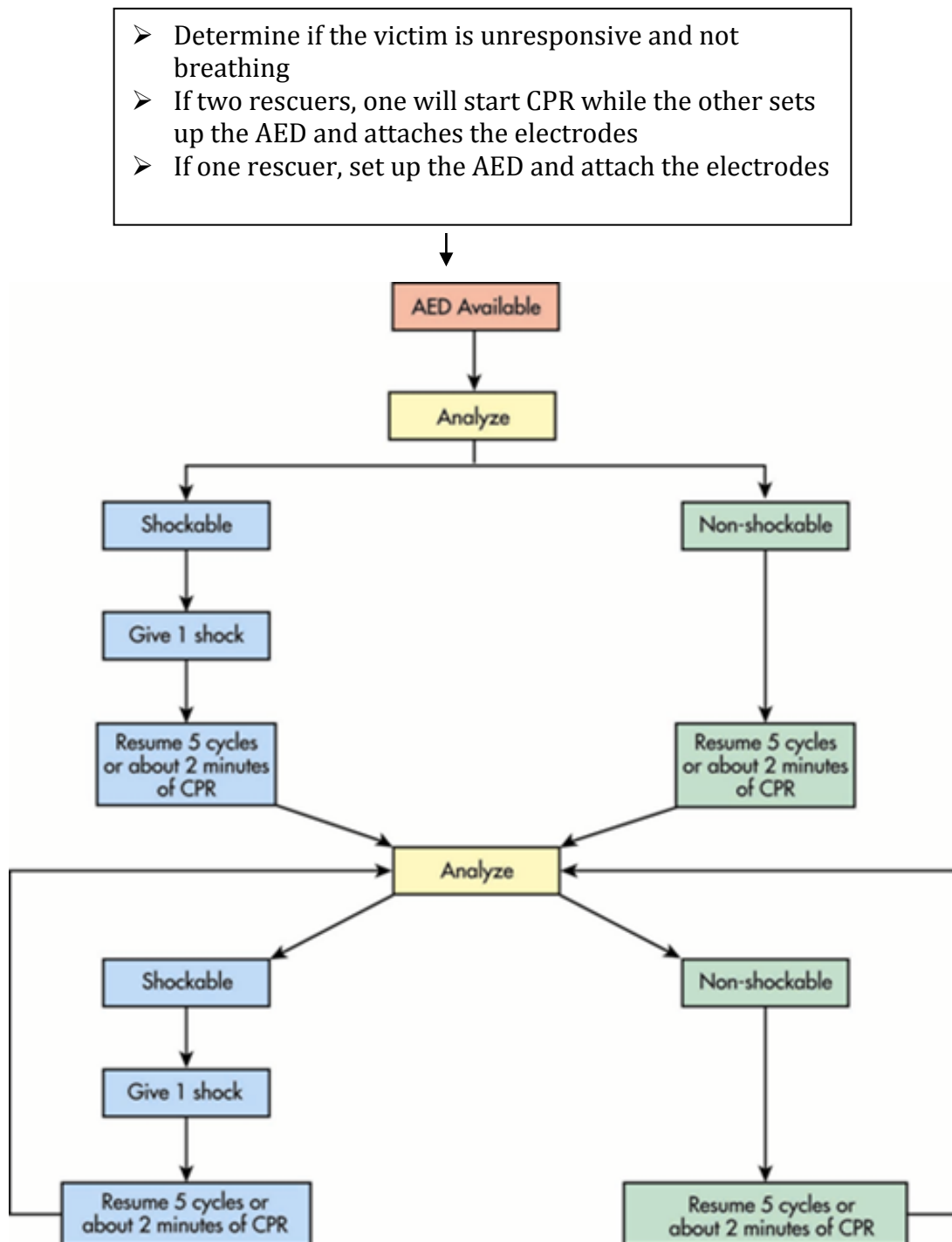
1. The patient is unresponsive and not breathing
2. The patient did not experience loss of consciousness and stopped breathing because of a significant, visible traumatic injury. The only exception is the confirmed or suspected cases of electrocution.

Where do you place the electrode pads?



Using a Defibrillator

The following flowchart describes the standing order to follow:



NOTE: This information is generic in nature. For detailed information please refer to the AED companion manual provided with your AED that outlines the use and protocol(s) of your particular AED unit.

Special Victim Considerations

1. Sweaty Chest

Solution – Dry with a towel, do not use alcohol

2. Hairy Chest

Solution – Shaving may be needed

3. Victim on a wet surface

Solution – Move victim from wet area before using defibrillator (NOTE: dry off victim's chest using a towel if they were in a wet area)

4. Victim has a nitroglycerin patch on their chest

Solution – Remove the patch and wipe area, continue with pad placement

5. Victim has a pacemaker or internal defibrillator

Solution – do not place pads directly over pacemaker or internal defibrillator area

6. Female victim

Solution – If the victim is wearing a bra, this must be removed as the metal can act as a conductor of electricity

Defibrillation Safety

1. Do not touch patient during the analysis or shocking phase
2. Warn bystanders and other rescuers that you are ready to shock (e.g. I'm clear, your clear, everybody clear)
3. Perform a visual inspection to ensure that no one is touching the patient
4. Press the shock button to deliver shock

REMEMBER
WATCH THE PATIENT, NOT THE AED!!!

Special Considerations

Drowning: Move the victim to a dry area, remove clothing from the upper body and dry off the chest before applying the electrodes. CPR should be performed during this time.

Electrocution/Hazardous Material: Ensure the scene is safe for you to approach the victim before you begin the established protocols. If the scene is NOT SAFE do not begin the protocols or touch the victim.

Burns or Smoke Inhalation: Follow the established protocols.

Hypothermia: Check for a response and breathing for 45 seconds. No more than 3 shocks should be delivered.

Hanging: Remove the attachment from the victim's neck prior to beginning the protocol

Marine Rescues: Transport the victim towards land immediately after the AED unit issues "Begin CPR" voice prompt OR a persistent "Motion Detected" voice prompt that prevents the AED unit from performing a heart rhythm analysis. Continue CPR until land is reached. Ignore all further voice prompts given by the AED during marine transport. When land is reached, transfer care to EMS OR continue with the cardiac arrest protocol.

DO NOT use an AED on a victim of cardiac arrest resulting from:

- Gun Shot
- Stab Wounds
- Obvious severe traumatic injuries resulting from a fall from a height, crash injury or motor vehicle collision

AED Reporting Forms

The delegating medical authority should review all incidents of AED use through:

1. Review of written patient care report
2. Review of ECG tapes if the AED is so equipped, or
3. Review of the AED memory module if so equipped

Rescue 7 Inc. SAMPLE

Customer Event Report Form

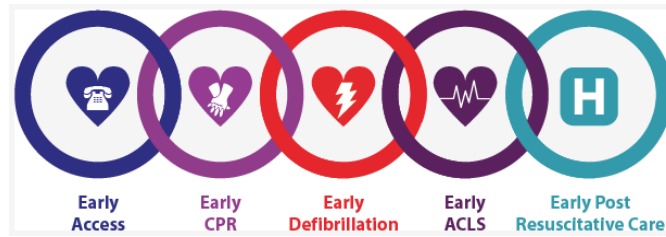
Reporter Information: <table border="1" style="width: 100%;"><tr><td style="width: 50%;">Name:</td><td></td></tr><tr><td>Address:</td><td></td></tr><tr><td></td><td></td></tr><tr><td>Tel:</td><td></td></tr><tr><td>Email:</td><td></td></tr></table>	Name:		Address:				Tel:		Email:		User Information: Users Name: _____ Was user trained? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, what training did they receive? _____
Name:											
Address:											
Tel:											
Email:											

Device Information: <input type="checkbox"/> PAD Serial Number _____	<input type="checkbox"/> AED Serial Number _____
---	---

Patient Information
☐ Male ☐ Female Age: _____ Time of Use (Local): _____ Date of Use: _____
Was the event witnessed? ☐ Yes ☐ No
Was Patient breathing on arrival of responder? ☐ Yes ☐ No
Time CPR was started (if known)? _____
Downloaded/printed? ☐ Print out ☐ Saver File
Report/Description of event:
Further Information:
Elapse Time _____
Time of First Shock _____
Number of Shocks Given _____
What was the patient outcome? _____
Additional comments/suggestions:

Signature: _____ Date: _____

The 5 Links of the Chain of Survival



1. Early Access to EMS:

- Early Signs and Symptoms of warning signs of heart disease and stroke can reduce delays to treatment.
- Once bystanders recognize the emergency, the Emergency Medical Services System must be activated by calling 911 or the local emergency number for help.
- Individuals experiencing the signs of a heart attack must be assisted as quickly as possible
- Delays occur when the individuals or a bystander does not recognize the warning signs of a heart attack, and when a universal access number (i.e. 911) system is not in place

2. Early CPR:

- Basic CPR must be started immediately after cardiac arrest is recognized
- CPR keeps oxygenated blood flowing to the heart and the brain until normal circulation can be restored. CPR is beneficial within a small window of opportunity; 3 to 8 minutes in length.
- Delays are encountered when the bystander is not trained in CPR and does not know how to respond to the emergency

3. Early Defibrillation:

- Defibrillation means shocking the heart in order to restore its normal, spontaneous rhythm.
- Early defibrillation is the link most likely to improve survival rates of heart attack patients.
- The speed with which defibrillation is performed determines the success of the resuscitation attempt.
- Restoration of a normal rhythm requires that defibrillation be administered within 5 to 10 minutes.

4. Effective Advanced Care:

- Advanced care can help the heart maintain normal heart rhythm after defibrillation.
- Allows for trained EMS personnel to monitor the patient on the way to the hospital.

5. Integrated Post-Cardiac Arrest Care:

- This is a new addition chain and it recognizing the importance of ICU post-cardiac arrest.

Choking Emergencies

A person may become unconscious in less than a minute if they are deprived of oxygen. A fully obstructed airway is a life-threatening emergency. The most common cause of choking in adults is airway obstruction caused by food. In children, reported cases of choking occur while eating or with non-food items such as coins or toys during games.

Signs and Symptoms

- Unable to **SPEAK, BREATHE, COUGH**.
- Hands around the neck area.
- Change in skin color.
- Eyes bulging.

Prevention

- Cut food in small, chewable pieces.
- Keep small objects away from young children.
- Avoid placing objects such as nails or pins in your mouth for quick access.
- Avoid eating in a rush. Take time to chew food carefully.



Management of Conscious Choking Victim (Adult/Child)

1. Scene Survey
2. Ask the victim, "Are you choking?" If they can speak, breathe or cough, then stand by and encourage them to cough.
3. If they cannot speak, breathe or cough – Identify yourself and ask, "Can I help?" to gain consent
4. Give **5 Back Blows**
 - Stand behind victim, slightly lean the victim forward
 - Place the heel of your hand between the shoulder blades of the victim, and give up to 5 forceful blows
5. Give **5 abdominal Thrusts**
 - Stand behind victim and wrap your arms around their waist.
 - Make a fist with one hand, with thumb on the outside and place thumb side of fist towards abdominal area just above the navel.
 - Grasp your fist with the other hand and pull inward and upward.
 - Give up to 5 abdominal thrusts
5. Repeat back blows/ abdominal thrusts combination until the victim's airway is clear or they become unconscious.
6. If a bystander is present, send them to activate E.M.S.

Pregnancy/Obese/Wheelchair/Seated – Chest Thrusts

1. Scene Survey
2. Ask the victim, “Are you choking?” If they can speak, breathe or cough, then stand by and encourage them to cough.
3. If they cannot speak, breathe or cough – Identify yourself and ask, “Can I help?” to gain consent
4. Give **5 Back Blows**
 - Stand behind victim, slightly lean the victim forward
 - Place the heel of your hand between the shoulder blades of the victim, and give up to 5 forceful blows
5. Give **5 Chest thrusts**:
 - Stand/kneel behind victim and wrap arms around chest
 - Your arms should be under victim’s arms
 - Place fist in the middle of the breastbone
 - Pull in on chest
3. Repeat back blows and chest thrusts until the victim’s airway is clear or they become unconscious.
4. If a bystander is present, send them to activate E.M.S.

Infants

1. Hold infant face down on your forearm.
2. With the heel of your free hand, give 5 backslaps between the infant’s shoulder blades
3. Turn infant onto their back. With your free hand, using 2 fingers on the breastbone, give 5 chest thrusts.
4. Alternate giving 5 backslaps and 5 chest thrust until the object is removed, the infant can breathe, cough or cry, or if the infant becomes unconscious.

Self-Rescue

1. Try not to panic.
2. Call E.M.S./911.
3. Use phone receiver (book, bottle, back of chair) to apply abdominal thrusts.
4. Repeat 6 to 8 times – if ineffective then try to attract someone’s attention.
5. Unlock front door if possible.
6. If in apartment/condominium pull the fire alarm.

Unconscious Obstructed Airway

Signs and Symptoms

- Witnessed victim choking.
- Unresponsiveness.
- Cyanotic (blush lips, ears, grey face).
- Attempt to establish an airway fails.

Management – Adult /Child/INFANT

1. Scene Survey.
2. Primary Survey
3. Check Airway - Open airway: Head tilt, chin lift
4. Check for breathing up to 5 seconds – Look, listen and feel.
5. If not breathing, proceed with 30 chest compressions for an adult/child/infant to expel the object.
 - **ADULT:** Position yourself to one side of the victim. Put the heel on one hand to the centre to the sternum with the other hand on top. Push down on the victim's chest 2 inches in depth 30 times.
 - **CHILD:** Position yourself to one side of the victim. Place one or two hands on the lower half of the breastbone. Push down on the victim's chest 1/3 chest depth 30 times. Maintain head tilt while giving compressions for a child.
 - **INFANT:** Position yourself to one side of the victim. Place one or two fingers on the lower half of the breastbone. Push down on the victim's chest 1/3 chest depth 30 times. Maintain head tilt while giving compressions for an infant.
6. After each set of chest compressions, open the mouth by lifting the jaw and LOOK for an obstruction in the back of the throat.
7. Only if you see an object, remove it.
8. Give a breath - 1 second per breath (ADULT/CHILD/INFANT). Watch for chest to rise.
 - If first attempt fails, then reposition head (tilt further back)
 - Give a 2nd breath – if breath does not enter, begin CPR.
9. Repeat steps 4 through 8 until you can breathe into the victim or until EMS arrives.

IF BREATH GOES IN, CHECK BREATHING! IF THE VICTIM IS STILL NOT BREATHING START CPR!!!

Secondary Survey

The secondary survey follows the primary survey and any life-saving first aid already given to the casualty. It is a step-by-step way of gathering further information of the victim's condition.

The process of a secondary survey involves the following steps:

- Questioning the casualty and witnesses to the incident
- Continuing to check the casualty's vital signs
- Conducting a head-to-toe examination
- Providing first aid for injuries and illnesses found.

History of the casualty

First aiders should question the casualty and witnesses about the incident and more specifically about:

- Allergies (especially to any medication)
- Medication (over the counter, prescribed, 'recreational')
- Past Medical History (health problems, previous surgery)
- Last food and drink
- Events leading up to the situation ("How have you been recently?")

Vital Signs

This involves repeating ABCs, obtaining accurate figures for each component. This should be done and recorded at least every 10-15 minutes on a conscious patient, more frequently if there is cause for concern.

Levels of Consciousness (LOC)

- Alert
- Verbal
- Pain
- Unconsciousness

Airway

- Open?

Breathing

- Rate
- Regularity
- Depth

Circulation

- Pulse rate/strength
- Color

Head-To-Toe Survey

Head

- Visual/verbal check. Ask: "What day is it?" "Where are they?"
- Memory/recall
- Check pupils – same size – ask if they can see clearly
- Check for blood/fluids from ear/nose/mouth
- Feel gently around back of head and through hair for swelling/bleeding

Neck/Shoulders

- Is there any pain, numbness, tingling
- Check hidden areas for bleeding

Chest

- Any pain? ... kind of pain ?
- Have victim take a deep breath – pain could indicate injury to ribs, lungs

Abdomen

- Any pain? Discoloration?
- Check for discomfort, pain, tenderness and rigidity by gently palpating the organs

Hips

- Any pain? Look for swelling, bruising

Back

- Any pain?
- Check hidden areas for bleeding
- Have victim squeeze your hands – equal strength?

Arms

- Any numbness? Deformity?
- Check hidden areas for bleeding

Legs

- Any numbness? Deformity?
- Check hidden areas for bleeding

Toes

- Wiggle your toes?
- Numbness? Tingling?
- Have victim extend both feet against your hands – equal strength?

Musculoskeletal Injuries

Structures of the musculoskeletal system are subject to injury in the form of fractures, dislocations, sprains and strains.

Signs and Symptoms

- Deformity
- Swelling
- Loss of function
- Numbness/tingling
- Pain/tenderness
- Contusion (bruising)
- Crepitus (sound of broken bones rubbing together)



Management

OPEN FRACTURES	CLOSED FRACTURES
<ol style="list-style-type: none">1. Scene Survey2. Primary Survey3. Secondary Survey and ask the Three 'H' Questions4. Cover open wound with sterile dressing to control the bleeding and to keep the wound as clean as possible5. Pad both sides of exposed bone to immobilize and provide support6. Bandage and/or tape the padding7. If splint is applied, check Signs of Circulation (colour, temperature, nail bed) at extremities8. Activate E.M.S9. Ongoing care and treat for shock	<ol style="list-style-type: none">1. Scene Survey2. Primary Survey3. Secondary Survey and ask the Three 'H' Questions4. Apply ice – if possible5. Allow victim to tell you what position is most comfortable and supply support if possible (ie. sling)6. If splint is applied, check Signs of Circulation (colour, temperature, nail bed) at extremities7. Activate E.M.S8. Ongoing care and treat for shock

DO NOT TRY TO PUT THE EXPOSED BONE BACK INTO POSITION!!

Muscles & Joint Injuries

Muscle and joint injuries are known as strains, sprains and dislocations. When in doubt about the severity of the injury, treat it as a fracture.

Strains

- Muscles and tendons are stretched or torn beyond their natural range of motion

Sprains

- Stretching or tearing of a ligament supporting a joint

Dislocations

- The bones at the joint lose proper contact causing the capsule that holds the joint together to stretch and tear.

Signs and Symptoms

- Swelling
- Muscle cramps
- Discoloration
- Stiffness
- Loss of function
- Pain around the injured area
- Deformity

Management (R.I.C.E)

- | | |
|---------------------|---|
| • R Rest | Make victim comfortable |
| • I Ice | Apply ice to area – 20 minutes on, 20 minutes off |
| • C Compress | Apply gentle pressure with tension bandage |
| • E Elevate | Elevate injured area, if possible |

Splinting

Splints can be made from wood, cardboard, wire, plastic, tree branches, canoe paddles, rolled up newspaper and blankets. Any item that can immobilize a fractured bone and the joints above (proximal) and below (distal) may be used as a splint.

Management

1. Make sure the splint is long enough to cover the joints above and below the injured area.
2. Pad the splint and tie it to the injured limb
3. Tie bandages to the joints above and below and tie the bandages just above and below the fracture. Make sure bandages are tied off on the splint.
4. Always splint in the area of most comfort to the victim provided there is adequate circulation. (Elevate if possible)
5. Monitor vital signs and treat for shock.
6. On-going care.



Slings

A sling is a triangular bandage used to support the shoulder and arm. You can use a commercial sling or you can make a sling from clothing, towels, sheets and blankets.

Management

1. Take a triangular bandage and turn it sideways so that the base of the triangle is vertical.
2. Place the bandage on the victim's chest with the apex (point) extending beyond the injured limb's elbow.
3. The top of the base should be on the opposite shoulder of the victim.
4. Take the bottom of the base and bring it up and over the injured limb to the shoulder on the same side.
5. Tie the ends of the base around the neck, but make sure the knot is not resting on the back of the neck or in the injured shoulder.
6. Place padding under the knot and make sure the fingers are exposed to detect any colour or skin temperature changes.
7. Fold the apex of the bandage at the elbow and pin it to the bandage or twist it and tuck it in. This will form a pocket for the victim's elbow.

Upper Extremities

Clavicle (Collar Bone), Shoulder, and Scapula (Bent Position)

- Apply a sling
- Apply padding between the arm and the chest
- Take a broad bandage and tie around the chest and the injured arm, over the sling. Tie the knot on the uninjured side underneath the arm. This is called a **swathe**.
- If victim cannot bend arm, bind the injured arm to the body with bandages. Make sure to pad between arm and body.
- Treat for shock



Clavicle (Straight Position)

- Tie two bandages together to make one long bandage.
- With one end of the bandage in the middle of the back, slide the rest of the bandage over injured collarbone and down on front side of the victim.
- Slide the bandage under the armpit and bring back up over the start of the bandage and up over the uninjured shoulder sliding down over the front and under the armpit. The two ends should meet in the middle of the back and tie together to bring the shoulders back so the shoulders are immobilized.

Upper Arm, Humerus

- If the fracture is at proximal or distal ends of the humerus then apply a sling and use the above procedure for Bent Position.
- If there is a fracture of the shaft, then use a splint.
- Select a padded splint long enough to extend from the shoulder to past the elbow.
- Place a roll of bandage in the victim's hand to keep it in a position of function.
- Place a splint on the lateral side of the arm if possible.
- Secure splint with bandages.
- Pad between arm and chest and apply a wrist sling and swathe.
- If victim cannot bend arm, bind injured arm to body with bandages. Make sure to pad between arm and body and tie bandages off on uninjured side of the torso.
- Check for distal pulse at wrist.
- Treat for shock.

Elbow (Bent Position)

- Use padded splint to extend over arm and wrist.
- Tie splint to arm just below shoulder and to the wrist.
- Splints should not be touching elbow area.
- Tighten splints with bandage in the middle.
- Apply wrist sling (keep elbow exposed) and apply swathe if possible.

Elbow (Straight Position)

- Apply padded splint from under the armpit to past the fingertips – make sure to pad armpit first (can use torso as splint).
- Place a roll of bandages in victim's hand to maintain a position of function.
- Secure splint with bandages at wrist, just below the elbow, above the elbow and at the top of the arm (by armpit).
- Pad between victim's arm and side of body.
- Secure splinted limb to body with bandages around the limb and body avoiding the injury site.
- Check distal pulse.
- Treat for shock.

Forearm, Radius/Ulna, Wrist and Hand

- Apply padded splint from elbow to beyond fingertips.
- Place roll of bandages in victim's hand to maintain a position of function.
- Secure splint with bandages above and below the injured area as well as joints (if possible).
- Apply a sling and a swathe.
- Check distal pulse and/or fingertips for circulation.
- Treat for shock.

Fingers

- An injured finger can be splinted to an uninjured finger and/or to a tongue depressor.

Lower Extremities

Thigh and Femur

- Slide bandages under ankles, calves, knees, thighs and above and below the injured site.
- Pad between legs with extra padding in the “natural hollows” – above/below knees, above ankles.
- Tie ankles in a “figure 8”.
- Tie broad bandages at ankles, calves, knees and thighs. Tie off on uninjured leg.
- Tie narrow bandages below and above the injured site.
- Check distal circulation.
- Secure victim to spinal board.
- Treat for shock.

<p>HIP FRACTURES ARE FRACTURES TO THE HEAD OF THE FEMUR, NOT THE PELVIS!</p>

Knee

The knee is a joint. Fractures can occur to the distal femur, proximal tibia, and fibula and to the patella (kneecap).

Straight Knee Injury

- Use a padded splint that extends from the buttock to beyond the heel.
- Pad natural hollows.
- Tie bandages around splint and injured leg at thigh, calf and ankle.
- Secure foot to splint by using the “figure 8”.
- If no splints are available, apply the same method using the uninjured leg as the splint.
- Elevate, if possible.
- Check distal circulation.
- Secure victim to spinal board.

Bent Knee Injury

- Do not straighten knee.
- Use two splints if possible.
- Splints should extend beyond mid-thigh and mid-calf.
- Place padded splints inside and outside
- Tie two bandages around thigh and splints and two bandages around calf and splints.
 - Tie a singular bandage to both splints under injured knee.
- Check distal (circulation) pulse.
- Secure the victim to spinal board, if possible.
- Treat for shock.

Tibia/Fibula

- Use two padded splints.
- Make sure splints extend beyond the knee and ankle.
- Tie bandages to splints at the ankle, knee and above and below the injured site.
- Tie a “figure 8” to secure foot to the splints.
- If no splints are available, apply the same method using the uninjured leg as the splint.
- Pad the natural hollows and tie the bandage at the thigh.
- Check distal pulse.
- Treat for shock.

Ankle/Foot

- Use a soft splint (i.e. pillow, blanket)
- Only remove victim’s shoe if there are injuries requiring immediate treatment. If not, then only loosen laces, Velcro or straps.
- Wrap injured ankle/foot in a pillow or blanket and secure with a “figure 8” bandage.
- Treat for shock.

Eye Injuries

The most common eye injuries involve the surface the transparent dome on the front surface of the eye (cornea). They include scratches (abrasions) and foreign bodies. Foreign bodies in the cornea leave abrasions behind after they are removed. Most of these injuries are minor.



General Eye Injury

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the Three 'H' Questions (Happened, Hurt, History)
4. Treat the eye injury, seek medical help or activate 9-1-1
5. Monitor vital signs and treat for shock
6. On-going care

Avulsed Eye

- Do not attempt to put the eye back in the socket
- Cover the avulsed eye with moist, sterile soaked dressings
- Secure the eye using a cone or cup over the avulsed eye and bulky sterile dressings positioned to
- Stabilize the eye and prevent movement of the eye
- Cover both eyes to limit movement

Embedded Objects in the Eyes (Superficial)

Objects such as eyelashes and dirt particles. May be easily removed from the eye, stuck on the eye surface or under the eyelid.

- If the foreign body is superficial and non-sharp, flush by flowing water from the corner closest to the patient's nose surface of eye; hold patient's lids open
- If the foreign object is under the upper lid, have victim look down and pull the upper lid away from the eyeball by gently grabbing the eyelashes
- Press a cotton-tipped swab down on the skin surface of the upper eyelid and pull it up and toward the brow to invert the upper lid
- Moisten the tip of a swap or a cotton pad with water
- Gently try to touch the speck with the tip. Carefully pass the tissue over the speck which should cling to the tip
- Do not rub the eye or use tweezers or anything sharp to remove a foreign object

Embedded Objects in the Eyes (Penetrating)

- Leave object in the eye
- Stabilize object by packing gauze around it or place an eyecup over object
- Cover both eyes to limit movement

Blunt Injury, Black Eye or Contusion

A black eye is often a minor injury, but it can also appear when there is significant eye injury or head trauma. A black eye or blurred vision could cause internal eye damage.

- Put a cold compress over the injured area right away. Do this for 20 minutes, every hour, for 48 hours

Eye Burns

- Thermal burns
 - Cover eyes with loose, moist dressings
 - DO NOT apply burn ointment
- Light burns—snow blindness and welder’s blindness, for example
 - Close the eyelids
 - Apply dark or opaque patches to both eyes and bandage them in place
- Chemical burns
 - Possibly cause rapid, severe damage
 - Treat as per Poisoning and Burns Guidelines
 - Avoid contaminating other parts of the patient, including other eye
 - Remove contact lenses if the patient is wearing them
 - Use water only to flush the eyes, Flush with water for at least 20 minute
 - Do not use any chemical antidotes or neutralizing agents
 - Irrigate under the eye lids
 - Direct the stream of water away from the uninjured eye or other parts of the patient's body
 - Apply loose, moist dressings

Poisons

A poison is any substance that can harm the body. Different people react differently to various poisons. The actual effect and the extent of damage is dependent on the nature of the poison, its concentration and how it effects the body.

Prevention

- Read label instructions before using, and follow the directions
- Keep products stored in original containers.
- When working with chemicals, ensure that the area is well ventilated
- Prevent medication poisonings by following the 5 rights of medication
- Destroy food that you believe is contaminated



Types of Poisons

Ingested Poisons

Includes common household and industrial chemicals, medications, foods, plants and petroleum products.

Signs and Symptoms

- Breath odor, body odor, or odor on victim's clothing
- Burns/stains around patient's mouth
- Foaming at mouth
- Abdominal pain
- Nausea/vomiting
- Pain in mouth, throat or when swallowing
- Diarrhea

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Call the **Poison Control Centre** and consult **MSDS** sheets, if applicable
5. **DO NOT** induce vomiting unless instructed by the **Poison Control Centre**
6. Wipe victim's face to remove residue
7. If instructed by the **Poison Control Centre** – call E.M.S. (911)
8. Monitor vital signs
9. Treat for shock

**IF POISON CONTROL CENTRE HAS A BUSY SIGNAL,
HANG UP AND CALL 911!!**

Inhaled Poisons

Includes gases, vapors, sprays (i.e. carbon monoxide from car exhaust)

Signs and Symptoms

- Laboured breathing
- Coughing
- Burning eyes
- Change in level of consciousness
- Cyanosis (blue lips and nail beds)
- Headache and/or dizziness
- Burning sensation in mouth, throat, chest
- Respiratory, cardiac arrest

**Carbon Monoxide (CO)
detectors should
be installed in all dwellings!**

Management

1. Scene Survey! Remove the victim from the source of the inhaled poison.
2. Primary Survey
3. Monitor vital signs – if you must rescue breathe, use face mask/shield with a one-way valve if possible.
4. Activate E.M.S. (911)
5. Ongoing care and treat for shock

Absorbed Poisons

Includes insecticides, corrosive chemicals and contact with certain plants

Signs and Symptoms

- Skin reaction
- Itching
- Headache
- Irritation of the eyes

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Flush affected area of the body with copious amounts of cool water.
 - If powdered chemical, then brush off before flushing
 - Remove clothing and jewelry that has been in contact with the poison
5. Wash the affected area with soap and water
6. Treat for shock

Injected Poisons

Includes snakes, spiders, insects, drugs administered with a hypodermic needle, compressed gases, hydraulic lines, high pressure hoses.

Signs and Symptoms

- Noticeable stings, bites on the skin
- Puncture marks
- Numbness
- Swelling
- Weakness, profuse sweating
- Headaches, dizziness
- Muscle cramps
- Nausea, vomiting

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Keep affected area below the heart
5. If stung, scrape stinger away with a card and apply ice bag/cold pack over the stung area
 - **DO NOT** squeeze stinger
 - If stung in mouth – give victim an ice cube to suck on and activate E.M.S. (911)
6. Locate their medication – if they have any
7. If bite is on a limb – tie a broad bandage (2-3 inches wide) above the bite, but not on a joint
8. **DO NOT** tie the bandage too tight – should be able to slide a couple of fingers underneath (check nail bed for continued circulation)
9. Ongoing care and Treat for shock

IF VICTIM IS UNRESPONSIVE, CALL E.M.S. – 911 IMMEDIATELY!

Canada does not have a national poison control centre phone number. So here is a list of the Poison Control Centres across Canada to keep handy:

- Ontario : 1-800-268-9017
- Saskatchewan: 1-866-454-1212
- Alberta: 1-800-332-1414
- British Columbia : 1-800-567-8911
- Manitoba: (204) 787-2591
- New Brunswick: 911
- Newfoundland: 1-866-727-1110
- Nova Scotia: 1-800-565-8161
- PEI: 1-800-565-816
- Quebec: 1-800-463-5060
- Yukon Territory: (867) 393-8700

Heat Illness

A certain amount of heat is needed to maintain a normal body temperature of 37°C or 98.6°F. Any heat that is not needed to maintain this temperature must be lost from the body. If the temperature gets too high, then the body's chemical activities cannot function properly.

Types of Heat Illness

1. Heat Exhaustion

Victim has been exposed to excessive heat while working or exercising. Fluid loss is the main problem. This condition may lead to a heat stroke.

2. Heat Stroke

When a victim's temperature-regulating mechanism fails and the body is unable to rid itself of excessive heat. This is very serious and can be life threatening.

These two illnesses are prominent in the summer, usually during prolonged "heat waves".

Prevention

- Always replenish the body with fluids when in a hot environment
- Avoid over-exposure
- Wear hat/clothing to protect the body from exposure to ultraviolet rays.

Signs and Symptoms

<u>Heat Exhaustion</u>	<u>Heat Stroke</u>
<ul style="list-style-type: none">• Excessive sweating• Dizziness• Headache• Nausea• Weak	<ul style="list-style-type: none">• No longer sweating• Dry, hot skin• Nausea• Weak and Dizzy• Reflexes will often not function• Change in consciousness

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Activate E.M.S. (911), if applicable
5. Remove victim from harmful (too hot) environment
6. Remove excessive clothing and begin cooling process
7. Monitor vital signs
8. Ongoing care and treat for shock

Heat Exhaustion

- Give plenty of a salt-containing beverage if possible.
- Casualties should be removed from the hot environment if possible and/or cooled with a fan, ice bags, or water spray.

Heat Stroke

- E.M.S. has been activated
- If possible, immerse the casualty in water as cold as possible up to the chin.
- If water immersion is not possible, cover casualty with wet sheets or sponge bath victim with cool water, especially in the armpits, neck and groin areas.
- DO NOT give any fluids at this point.

Cold Injuries and Illness

If the environment is too cold, the body will lose heat faster than the body can regenerate it.

FROSTNIP (Superficial) & FROSTBITE (Deep)

Ice crystals form at the capillary level underneath the skin, causing local tissue damage.

Prevention

- Wear layers of clothing
- Protect the head, hands and feet
- Wear a hat, mitts and insulated boots
- Wear a windproof shell
- In severe cold temperature – protect all skin from the elements

Signs and Symptoms

- Numbness and tingling
- Affected area will redden and then go white and shiny looking (like candle wax)
- Affected area feels frozen
- As cells and tissue die, skin will turn black or grey in color

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** – activate E.M.S. (911) if necessary
4. Remove the victim from the cold
5. **DO NOT** allow the victim to smoke – decreases circulation in affected area
6. **DO NOT** rub the area
7. Gradually warm the affected areas by blowing on it with your breath or by placing it in armpits or groin
8. Consider the extent of the frostbite and re-warm on the advice of medical aid

9. Protect from further freezing and damage (try to prevent re-freezing after being thawed)
10. Monitor victim and treat for shock if necessary

Hypothermia

This condition occurs when the body is exposed to cold temperatures, immersed in cold water or wearing wet clothing in a cold environment. The body's temperature (37°C) starts dropping and to compensate the core of the body takes heat from the extremities to protect the vital organs. The body will start shivering to try and generate heat. Unfortunately, as hypothermia progresses, the body loses its function to generate heat even if removed from the elements. If the body temperature drops **below 31°C or 88°F permanent damage and/or death can occur.**

Signs and Symptoms

Mild	Moderate	Severe
<ul style="list-style-type: none"> • Shivering • Numbness • Slurred speech 	<ul style="list-style-type: none"> • Shivering decreases • Dizziness • Confused/Sleepy • Lack of coordination • Muscular rigidity 	<ul style="list-style-type: none"> • Shivering has stopped • Unconscious • Reflexes will not function

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey
4. Remove the victim from the cold. Activate E.M.S. (911)
5. Remove any wet clothing and replace with dry clothing or blankets.
6. Apply heat to victim's body gradually with blankets and body heat
7. Use care when re-warming: **avoid re-warming the limbs, apply heat to the trunk of the body, groin, and armpits**
8. If victim is alert – slowly give them warm liquids
9. Keep victim at rest and Monitor vital signs
10. Treat for shock

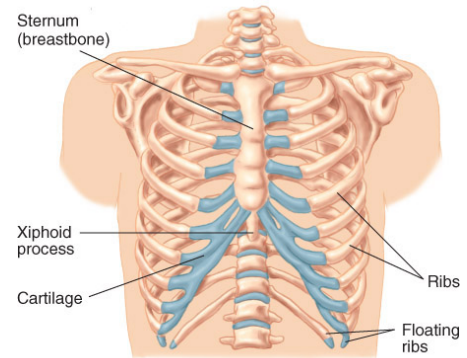
Chest & Rib Injuries

Causes

Blunt trauma, penetrating objects

Signs and Symptoms of Chest Injuries

- Pain at injury site
- Difficulty breathing
- Rapid/weak pulse
- Coughing up blood
- Failure of chest to expand/contract normally
- Uneven chest wall movement



Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the **Three 'H' Questions** (Happened, Hurt, History)
4. Activate E.M.S.
5. **Do not open wound** to determine depth
6. Seal wound immediately with **occlusive dressing (plastic)** – use hand if there is nothing available.
7. Tape **3 of the 4 sides** closed – untaped side is the “flutter valve”. Flutter valve helps to prevent a tension pneumothorax. Monitor dressing as flutter valve may stick to chest
8. Have victim sitting in a semi-sitting position and make them as comfortable as possible.
9. Ongoing care and treat for shock

Signs and Symptoms of Ribs Injuries

- Pain at injury site – especially when victim moves, coughs or breathes deeply
- Labored breathing
- Deformity/bruising
- Coughing up blood
- Unequal chest movement when it expands/contracts
- There may be a wound

Management

1. Scene Survey
2. Primary Survey
3. Secondary Survey and ask the Three 'H' Questions (Happened, Hurt, History)
4. Put victim in semi-sitting position if possible
5. Support the injured area (fracture) by putting the injured side's arm in a sling and secure sling to the body with 2 broad bandages
6. Monitor vital signs
7. Ongoing care and treat for shock
8. If several ribs are broken:
 - Will have entrance wound and may or may not have an exit wound
 - Pathway between entrance wound and exit wound is seldom in a straight line
 - Bullet may deflect or explode in body, sending pieces in many directions, causing serious damage, but no exit wound

Flail Chest

- Place victim in semi-sitting position leaning towards the injured site.
- Bandage a pillow or foam pad over the injured area.
- Place arm across injury and secure it to body with a broad bandage
- Treat for shock
- If unconscious, place victim in recovery position with injured side down.

Sucking Chest Wound

- Identify yourself and ask the **Three 'H' Questions** (Happened, Hurt, History)
- Check breathing
- Place victim in a comfortable position with injured side up so breathing is easier
- Seal the wound with airtight material on three sides
- Fourth side acts as a flutter valve – stops air from going into wound when victim inhales and allows air to escape when victim exhales
- Monitor vital signs
- Ongoing Care and treat for shock
- **DO NOT** open wound to determine its depth!

Rescue Carries

ONE RESCUER CARRIES

1. Drag

- Stand at victim's head, facing their feet.
- Bend down and ease your hands under the victim's shoulders and grab their clothing
- Support the victim's head between your forearms and drag backwards

2. Piggy Back

- Bend down but keep back straight
- Victim wraps arms around your neck
- Wrap your arms around the victim's knees
- Lift, keeping your back straight

3. Cradle Carry

- Kneel on one knee beside victim
- Wrap victim's arms around your neck
- Place your one arm around their back and your other arm around their knees
- Lift keeping your back straight

4. Crutch

- Stand beside victim (on injured side) and wrap victim's arm around your shoulder and hold onto wrist
- Put your other arm around their waist
- As you walk, your leg will act as the victim's other leg.

TWO RESCUER CARRIES

1. Fore-Aft

- One rescuer passes hands under the victim's armpits and grasps the victim's wrists.
- Second rescuer bends down between victim's knees facing the victim's feet.
- Second rescuer wraps their arms around the victim's knees and both rescuers pick the victim up on a count, keeping their backs straight.

2. Chair Carry (Excellent for going up and down stairs!)

- With victim in a chair, both rescuers carry the chair – one rescuer at the front and one at the back with both rescuers facing the victim.
- Rescuer at the front holds on to the legs of the chair and the rescuer at the back holds on to the back of the chair – victim is secured with bandages.

3. Crutch

- Rescuers stand on either side of the victim.
- Wrap victim's arms around shoulders and have the rescuer hold onto the victim's wrists.
- Rescuers wrap their other arms around the victim's waist.
- Legs of the rescuers act as victim's injured leg when walking.

4. Four-Handed Seat

- Each rescuer grabs his/her own left wrist with his/her right hand and then grasps the right wrist of the other rescuer with his/her left hand to make a seat.
- Rescuers bend at the knees to allow victim to sit on their hands.
- Victim wraps their arms around the shoulders of both rescuers.
- Rescuers lift, keeping their backs straight.

Motor Vehicle Collisions (MVCs)

One Rescuer Carry

- Move the victim's feet toward the exit
- Slip your forearm under the victim's armpit and extend your hand up and under their chin for support
- Slip your other arm around the victim's back and under the other armpit – reach around and grasp the victim's wrist that is nearest the exit
- Swing yourself and the victim around and drag the victim from the vehicle to a safe distance

Management

- Scene Survey
- Make sure traffic is under control (use bystanders, flares)
- Check for: victim's ejected from the vehicle, bicycle(s), pedestrian(s)
- Activate E.M.S.
- Identify yourself / consent
- Upon entering the vehicle – be aware that **deployment of airbags could happen at any time! (Some vehicles have side door air bags!)**
- Turn vehicle off
- Primary Survey
- Breathing and bleeding
- Secondary Survey
- Three Questions
- Head to toe Survey
- Always assess quiet victims first
- Only move the victim if their life is in danger or if **CPR** must be performed.

Water Accidents

Common sense around water is very important. Personal Floatation Devices (P.F.D.s) should be worn by all persons in a boat and during all water sports. **Know the LAW of the water in your Province.** Children should be supervised at all times when close to water. **Only trained people should attempt water rescues.**

Management

1. Scene Survey
 2. Activate 911
 3. Identify yourself, and ask **Three Questions** if conscious:
 4.
 - **REACH** Use a reaching device (i.e. pole)
 - **THROW** Throw a floatation device with a rope
 - **ROW** Paddle to the victim by boat
 - **TOW** Tow the victim to safety to continue ongoing care
 - **GO** Only go in water as a last resort. Victim should be **unconscious**. If **conscious**, victim may pull you under with them.
1. If victim is unconscious, suspect a neck/spinal injury
 2. Support head and neck
 3. Check breathing
 4. If breathing, maintain airway
 5. Not breathing – begin rescue breathing while in water
 6. If victim has no signs of circulation – remove them from the water on to a flat surface and begin **CPR immediately**.



**LIFESAVING COURSES ARE HIGHLY RECOMMENDED
FOR WATER SAFETY AND RESCUE**

Critical Incident Stress

After experiencing a critical incident, such as providing first aid assistance to a victim, you may find that you experience some reactions that last beyond the incident itself. Some things to try within the first 24 to 48 hours:

- Try to maintain a normal lifestyle as much as possible
- Get some sort of physical exercise
- Cut down on caffeine and tobacco
- Eat regular meals, even if you do not feel hungry
- Reduce or limit sugar intake
- Get up and do something if sleep is disrupted

It is important to talk with other members of the response team after a traumatic event, often they are experiencing similar feelings.

With the understanding and support of family and friends, stress reactions usually pass quickly. However, the traumatic event may require the assistance of a Critical Incident Stress Debriefing Team. Your local yellow pages telephone directory will be able to provide you with a list of community services in your area that provide Critical Incident Stress Debriefing.

**REMEMBER: EMOTIONAL RESPONSES ARE A NORMAL REACTION
TO AN ABNORMAL EVENT!**

Post Incident Report Form

Company Name: _____

Date of Incident: _____ Time of Incident: _____

Patient Information

Location of Patient: _____

Name: _____ Age: _____ Male/Female

Does the patient have a history of heart problems? (circle one)
Yes No Unsure

Did the patient complain of any of the following before collapse? (circle all that apply)
Felling Unwell Chest Pain Trouble Breathing
Nausea/Vomiting Dizzy No Complaints
Unknown

Was the collapse: (circle one)
Witnessed Unwitnessed Unknown

If the collapse was unwitnessed, how many minutes do you estimate that the patient was unconscious before he/she was discovered?

_____ Minutes Unknown

Was an AED used on this patient? Yes No
If yes, number of shocks: _____

Was suction required to clear the airway? Yes No

Was there a return of a pulse at any time? Yes No

Did the patient have a pulse when E.M.S. arrived? Yes No

Did the patient start to breathe on their own after a pulse was felt? Yes No

Did E.M.S. discontinue resuscitation on the scene? Yes No

AED Provider Names: _____

Blended Learning – Voice Transcripts

Sample E.M.S. (Emergency Medical Service – 911) Call

Audio: 911 operator – Nine-One-One Operator, What is your emergency?
Caller – I have an unresponsive adult casualty and need medical assistance
911 operator – What is your location?
Caller – 245 Riviera Dr, Unit 8, Markham.
911 operator – Is your number, 905-474-0770
Caller – Yes
911 operator – What is your name?
Caller – Bob Smith
911 operator – Help is on its way Bob. Do you know what happened?
Caller – No, I found the casualty unresponsive when I walked into his office.
911 operator – Is the casualty breathing?
Caller – No
911 operator – Is anyone trained in CPR?
Caller – Yes. I have taken a CPR course before and I know how to do CPR
911 operator – I want you to hang-up the phone and start CPR, Okay?
Caller – Okay
911 operator – Help is on the way. If any thing changes, please call back.
Caller – hang up

Head, Spinal & Pelvic Injury – Video Audio

VIDEO: Check the scene for safety. Identify yourself as a first aider and get consent. Primary Assessment. Activate E.M.S. (911) immediately. Check the A.B.C.'s – if airway must be maintained. Control bleeding – do not apply pressure, use loose dressing and allow flow of blood and/or cerebrospinal fluid from ears/nose. Place your hands on either side of the head to prevent further movement. Any movement could cause the injury to worsen, causing paralysis or even more importantly, impair breathing. Ongoing care and Treat for shock.

Shock – Script Animation

AUDIO: Shock may results from one of 3 cases:

Pump Failure

Cardiogenic shock is a disease state where the heart is damaged enough that it is unable to pump enough blood for the needs of the body. If a person has a heart attack, their heart may slow down and it may not contract as efficiently, resulting in a drop in blood pressure. In this case, oxygen supply is compromised as a result of low pressure. Cardiogenic shock can be caused by disorders of the heart muscle, the valves, or the heart's electrical conduction system.

Low Blood and/or Fluid

Hypovolemic shock is an emergency condition in which severe blood and fluid loss makes the heart unable to pump enough blood to the body. Causes for hypovolaemic shock, all of which are as a result of rapid fluid loss, include: severe or long-standing bleeding; dehydration due to severe vomiting or diarrhea; inflammation of the pancreas which is also known as pancreatitis;; extensive burns; blockage in the intestine; and diseases which cause excess urination such as diabetes insipidus, diabetes mellitus, and kidney failure.

Changes in Blood Vessels

Neurogenic shock is the loss of vascular control by the nervous system. This occurs when the autonomic nervous system loses control over vasoconstriction. The veins and arteries quickly dilate, thus expanding the volume of the circulatory system, thereby causing a drop in blood pressure. Neurogenic shock can result from severe central nervous system, brain and/or spinal cord damage.

Recovery Position – Video Audio

VIDEO

Recovery Position

If the victim is unresponsive, but is breathing normally and has visible signs of circulation, place the victim in the recovery position to keep the airway open and allow fluids to drain from the mouth.

1. Kneel down beside the Casualty
2. Put their arm closest to you above their head
3. Put their other arm over their abdomen
4. Bend their leg furthest away from you at the knee
5. Put your hand closest to their knee on top of their knee
6. Put your other hand on the Casualty's shoulder
7. Pull the Casualty towards you by the knee and shoulder
8. Once the Casualty is on their other side, take the back of your hand and put it in front of their nose and mouth and monitor their breathing
9. Continue ongoing care of the victim.

Broad and Narrow Bandages – Script Animation

AUDIO

To make a broad bandage, open a triangular bandage to its fullest extent. Fold the point to the center of the base and then in half again to form a broad bandage. Use this to hold splints in place.

A narrow bandage is simply a broad bandage folded once more in half. Use this to secure dressings, secure a splint in place, deal with small injuries, and apply pressure.

Medical Conditions: Using and EpiPen – Video Audio

VIDEO

When the signs and symptoms of anaphylaxis present itself, activate EMS, and help in the aid of administering the Casualty's EpiPen.

The EpiPen® is a self-injection that delivers a dose of epinephrine, which constricts blood vessels, stimulates the heartbeat, and reduces hives and swelling. The effects of epinephrine usually last 10 to 20 minutes. To help administer the EpiPen®:

- *Remove the grey safety cap*
- *Hold the EpiPen® (firmly) with the black tip against the thigh*
- *Apply moderate pressure and hold for 10 seconds*
- *Remove, and carefully re-insert the carrying unit.*
- *Write down time of administration*
- *After Using EpiPen®, treat for shock until medical help arrives. Watch for relapse as severe symptoms, which may occur after apparent recovery.*

Anatomy and Physiology of the Heart & Lungs – Script Animation

AUDIO

The heart is about the size of an average fist. It is a hollow, cone-shaped structure that typically weighs 250 to 300 grams. It is located between the breastbone (sternum) and the backbone (spinal column). There are four chambers in the heart. The upper chambers are called the right and left atrium. They are chambers that receive blood. The lower chambers are the right and left ventricles. These chambers pump blood out of the heart. Valves in the heart keep blood flowing through the chambers in the correct directions.

The heart is actually two side-by-side pumps, each serving a separate blood circuit. The blood vessels that carry blood to and from the lungs are called the pulmonary circuit. This circuit strictly serves as the site of the gas exchange of carbon dioxide and oxygen. The blood vessels that carry blood to and from all body tissues constitute the systemic circuit

The lungs are clusters of air sacs (called alveoli) that are surrounded by capillaries. The alveoli transfer oxygen to the blood in the capillaries. From the alveoli, the carbon dioxide produced by the body cells is breathed out.

Air enters the airway through the nose and/or mouth. It passes along the throat, past the voice box (or larynx), down the windpipe (or trachea) and through the two main branches of the lungs, called the bronchi.

Air that enters the lungs contains about 21% oxygen and very little carbon dioxide. Air that is breathed out contains 16% oxygen and about 5% carbon dioxide. The air we breathe out has enough oxygen to help a person who has stopped breathing.

Cardiopulmonary Resuscitation (CPR) – Video Audio

VIDEO

There are several important steps to remember when aiding a casualty in CPR:

- Make sure the scene is safe.
- Kneel beside the victim. Identify yourself as a first aider. Check for responsiveness by tapping the victim's shoulder and shouting.
- If the victim does not respond, activate E.M.S., either by sending a bystander to call or if alone, leave the victim and call E.M.S.
- Begin the Primary Assessment by opening up the airway with a head-tilt/chin-lift. Place one hand on the forehead; Place the other hand on the bony part of chin; Push back on forehead and lift the chin at the same time
- Check for breathing for up to 10 seconds. Put your ear next to the victim's mouth and nose, listen for breathing sounds, look to see if the chest rises and feel for breaths on your cheek.
- If the casualty is not breathing, start compressions. Give 30 chest compressions at the rate of 100 per minute. Push down on the Casualty's chest 2 inches (5 cm) in depth on the center of the sternum. Push hard; push fast; let chest return to normal between compressions.
- Then opening up the airway with a head-tilt/chin-lift. using a barrier device, give 2 breaths (1 second each), watch to ensure the chest is rising as you breathe into the victim.
- Continue to give 30 compressions and 2 breaths until E.M.S arrives and takes over, the victim starts to move, an AED arrives, or another trained rescuer takes over.

Conscious Choking – Video Audio

VIDEO

Video footage of back-blows and abdominal thrusts choking.

Choking occurs when an object gets lodged in the throat and prevents air from entering or exiting the airways. The victim may exhibit difficulty in breathing and may show respiratory distress. Choking can occur suddenly and unexpectedly and can become an medical emergency

Ask the Casualty, “Are you choking?” If they can speak, breathe or cough, then stand by and encourage them to cough. If they cannot speak, breathe or cough – Identify yourself and ask permission to help. Once permission is obtained, stand behind the Casualty.

Give **5 Back Blows**, by standing behind victim, and place the heel of your hand between the shoulder blades of the victim. Give up to 5 forceful back blows

Then give **5 abdominal Thrusts**, by wrapping your arms around the victim’s waist. Make a fist with one hand, with thumb on the outside and place thumb side of fist towards abdominal area just above the navel. Grasp your fist with the other hand and pull inward and upward. Give up to 5 abdominal thrusts.

Repeat back blows/ abdominal thrusts combination until the victim’s airway is clear or they become unconscious.

If a bystander is present, send them to activate 911 (E.M.S.).

Video footage of back-blows and chest thrust choking.

When dealing with a Casualty who is pregnant, obese, or in a wheelchair use the Backblow and Chest Thrust technique.

Give **5 Back Blows**, by stand or kneel behind Casualty, and place the heel of your hand between the shoulder blades of the victim. Give up to 5 forceful back blows

Then give **5 Chest Thrusts** by placing your arms under the victim's armpits encircling the chest. Grasp one fist with your other hand and place thumb side of your fist in the middle of the victim's breastbone and pull in on the chest.

Repeat back blows/ abdominal thrusts combination until the victim’s airway is clear or they become unconscious.

If a bystander is present, send them to activate 911 (E.M.S.).

Unconscious Choking – Video Audio

VIDEO

As a first aider you need to know how to manage an unconscious choking victim.

- Check the scene for safety.
- Kneel beside the victim. Identify yourself as a first aider. Check for responsiveness by tapping the victim's shoulder and shouting.
- If the victim does not respond, activate E.M.S., either by sending a bystander to call or if alone, leave the victim and call E.M.S.
- Begin the Primary Assessment by opening up the airway with a head-tilt/chin-lift.
- Check for breathing for up to 10 seconds. Put your ear next to the victim's mouth and nose, listen for breathing sounds, look to see if the chest rises and feel for breaths on your cheek.
- If the casualty is not breathing, give 30 chest compressions. Push hard; push fast; let chest return to normal between compressions
- After each set of chest compressions, open the victim's mouth and LOOK for the obstruction. Only if you see an object, remove it with your fingers.
- Using a barrier device, attempt to give a breath. If the first attempt fails, then reposition head (tilt further back), give a 2nd breath. If breath the 2nd breath does not enter, give another 30 chest compressions
- Repeat steps until you can breathe into the Casualty or until EMS arrives and takes over.

Burns: Recognition - Script Animation

AUDIO

The skin is the largest organ of the human body and protects us from germs and bacteria in our environment. Exposure to extreme heat, radiation, electrical shock or chemical agents can burn the skin causing pain, blistering and in severe cases, irreversible damage. The skin is comprised of two layers that cover a third fatty layer. These three layers differ in function, thickness, and strength. The epidermis is the outermost layer of the skin, and protects the body from the environment. The second layer is called the dermis. The dermis's main function is to regulate temperature and to supply the epidermis with nutrient-saturated blood. Under these two skin layers is a fatty layer of subcutaneous tissue, which functions as an insulator and protector for the inner organs. Depending on the amount of body surface involved, depth of the burn, body part affected, victim's age and health of the victim, burns are classified as first, second or third degree.

A **first degree** burn causes damage to the epidermis. These burns cause pain, redness and some swelling and will typically heal without scarring.

A **second degree** burn causes damage to the epidermis and the dermis, usually resulting in pain, redness and blistering.

The most severe type of burn is a **third degree** burn. Third degree burns are dangerous because the tissue damage extends beyond the outer layers of the skin to the more sensitive subcutaneous layer. These burns destroy nerves, blood vessels and other dermal components. Extensive third degree burns increase the risk of infection and can even be fatal. In fact, bacterial infection is the leading cause of death in burn victims.

Burns: Classifying the Severity of Burns- Script Animation

AUDIO

We can classify burns according to their severity as minor, moderate or critical.

Minor burns generally involve 3rd degree burns to less than 2% of the body excluding the face, hands, feet, groin and major joints; second degree burns that involve less than 15% of the body; and first degree burns that involve less than 20% of the body.

Moderate burns include third degree burns that involve less than 10% of the body excluding the face, hands, feet, groin and major joints; second degree burns that involve 15% to 30% of the body; and first degree burns that involve 50% to 75% of the body.

A **critical burn** includes second and third degree injuries involving the face, hands, feet, groin and major joints; third degree burns involving more than 10% of the body; second degree burns involving more than 30% of the body; and first degree burns involving more than 75% of the body.

Muscle and Joint Injuries – Video Script

VIDEO: When a muscle and/or a joint injury occurs, use the R.I.C.E method.

R stands for rest. Make the Casualty rest comfortably.

I stands for ice. Apply ice to the injured area - 20 minutes on, 20 minutes off.

C stands for compress. Apply gentle pressure with a tension bandage.

E stands for elevate. Elevate the injured area, if possible.

Creating a sling – Video Script

VIDEO There are 7 steps to follow when creating a sling.

1. Take a triangular bandage and turn it sideways so that the base of the triangle is vertical.
2. Place the bandage on the Casualty's chest with the apex (or point) extending beyond the injured limb's elbow.
3. The top of the base should be on the opposite shoulder of the Casualty.
4. Take the bottom of the base and bring it up and over the injured limb to the shoulder on the same side.
5. Tie the ends of the base around the neck, but make sure the knot is not resting on the back of the neck or on the injured shoulder.
6. Place padding under the knot and make sure the fingers are exposed to detect any colour or skin temperature changes.
7. Fold the apex of the bandage at the elbow and pin it to the bandage or twist it and tuck it in. This will form a pocket for the Casualty's elbow.

Notices & Acknowledgements

Notice of Liability

Rescue 7 Inc., its authors or publishers shall not be liable to any party with respect to damages or loss caused or alleged to be caused directly or indirectly by the instructions contained in this manual.

Acknowledgements

A wide variety of sources and individuals were consulted in conjunction with the creation of this manual to ensure material accuracy. Great care has been taken to trace ownership of copy written material and provide reference/credit to the appropriate individuals or organizations. Rescue 7 Inc. invites information that will enable them to rectify any reference/credit errors or omissions in future editions of this manual.

Special Thanks To:

- Heart & Stroke Foundation of Canada
- American Heart Association
- Dr. Jay McDonald- Medical Advisor
- John Collie, Contributing reviewer – Toronto Fire Services, AED/CPR/First Aid Instructor-Trainer
- Ray Chapman, Contributing reviewer – AED/CPR/First Aid Instructor-Trainer
- Michele McCabe, Contributing reviewer – AED/CPR/First Aid Instructor-Trainer

Additional bibliographical information available at Rescue 7 Inc.

Notices & Acknowledgements

Notice of Liability

Rescue 7 Inc., its authors or publishers shall not be liable to any party with respect to damages or loss caused or alleged to be caused directly or indirectly by the instructions contained in this manual.

Acknowledgements

A wide variety of sources and individuals were consulted in conjunction with the creation of this manual to ensure material accuracy. Great care has been taken to trace ownership of copy written material and provide reference/credit to the appropriate individuals or organizations. Rescue 7 Inc. invites information that will enable them to rectify any reference/credit errors or omissions in future editions of this manual.

Special Thanks To:

- Heart & Stroke Foundation of Canada
- American Heart Association
- Dr. Jay McDonald- Medical Advisor
- John Collie, Contributing reviewer – Toronto Fire Services, AED/CPR/First Aid Instructor-Trainer
- Ray Chapman, Contributing reviewer – AED/CPR/First Aid Instructor-Trainer
- Michele McCabe, Contributing reviewer – AED/CPR/First Aid Instructor-Trainer

Additional bibliographical information available at Rescue 7 Inc.