

# CPR & AED Course

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**Canadian Group Emergency Training Inc**

# Classroom Safety

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- **Washrooms**
- **Emergency Exits**
- **Safety Equipment**
  - First Aid Kit & AED
  - Fire extinguisher
- **Emergency Procedures**

Follow directions from your instructor.





# Notice on Care Procedures

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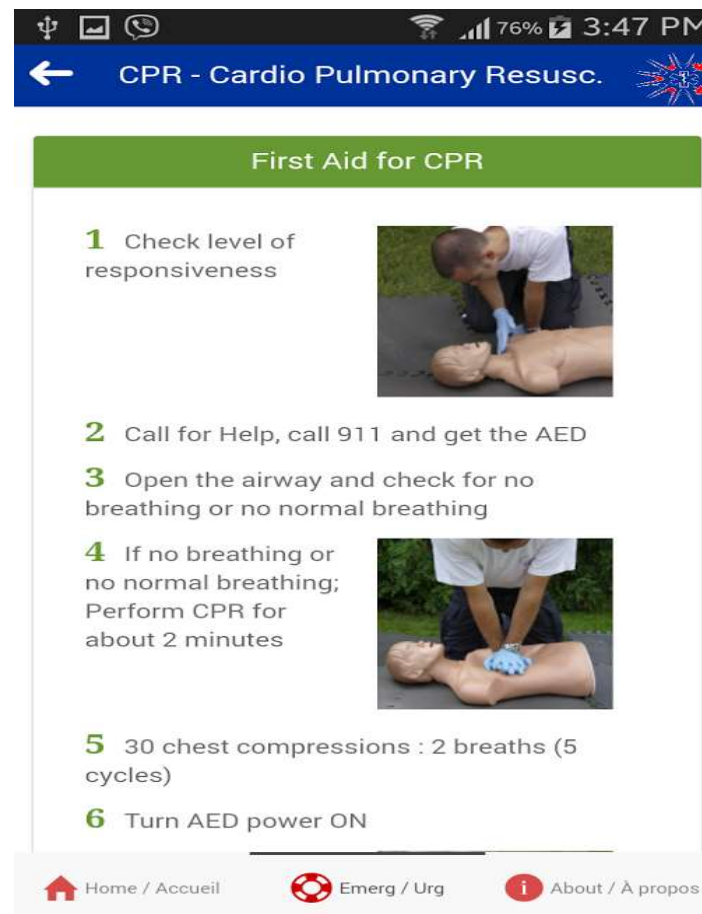
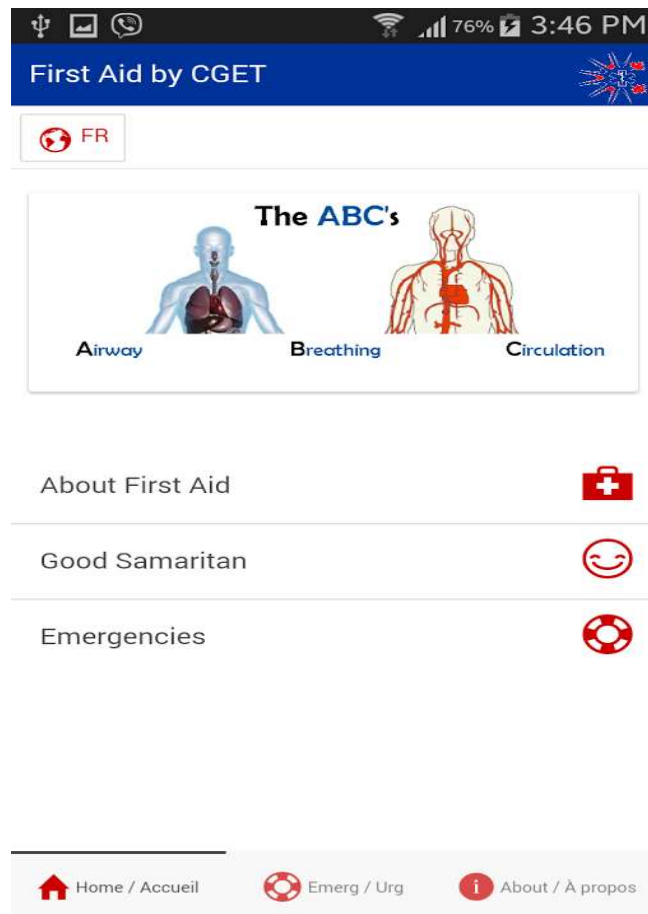
- Any procedures described in this slide presentation should be applied by persons who have received formal training.
- Every effort has been taken to ensure the accuracy of the information presented and also to describe generally accepted basic emergency care. However, the author of this presentation and external reviewers cannot accept any responsibility for any errors or omissions, or for any consequences that may arise from improper use of the information in this slide presentation.
- Finally, if you are participating in a CPR & AED course, you may be subjected to some physical activity. Therefore, it is important to understand that CPR is indeed hard work. If for any reason, your physician has recommended that you avoid strenuous activity or that your activity be limited in any way, please advise your instructor if you require any assistance or if there are any physical restrictions that may hinder your participation during the course.





# Smart Phone & Tablet App

## Name of the app: First Aid by CGET





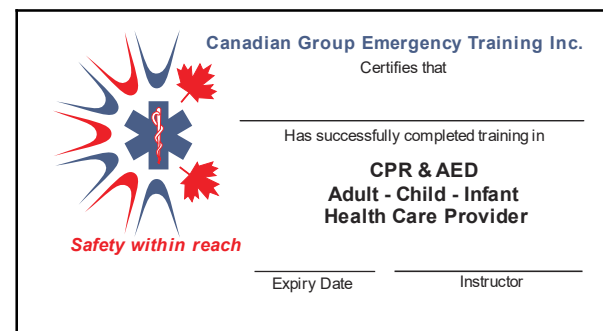
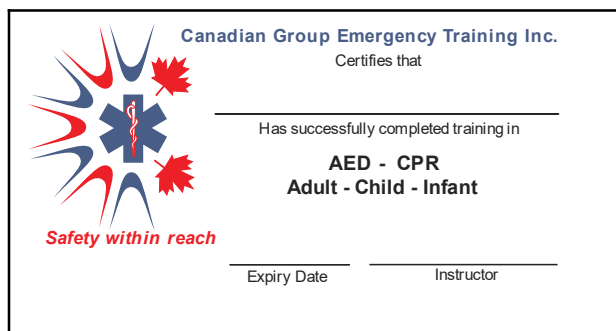
# CPR & AED Accreditation

## Meet guidelines of:

International Liaison Committee on Resuscitation

## Meet guidelines of:

Provincial & Federal First Aid Regulations





# Certification

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## Certified CPR & AED Provider

A Certified CPR-AED Provider is the classification assigned to a participant who has successfully complete the CPR-AED training course in accordance with all applicable guidelines and medical directives.

*“Employer must ensure the BLS (Basic Life Support) providers must successfully complete a certification or recertification course annually.”*



# Course Schedule

- Introduction
- Certification
- Legalities
- Safety First !
- Disease transmissions
- Rescuer safety
- The ABC's
- Airway Obstructions
- Cardiovascular diseases
- CPR (Adult/Child/Infant )
- Cardiovascular anatomy
- Cardiac arrhythmias
- Treatment protocols & scenarios
- Use of AED units
- AED operating procedures
- Written exam & course evaluation





# Provincial Legalities

## Ontario

*“The Act protects anyone who, in good faith, uses a defibrillator on a person in an emergency from liability, unless he or she is grossly negligent [Sec. 2(1)]. It also exempts from liability “any person who owns or occupies premises where a defibrillator is made available for use and who acts in good faith with respect to the availability or use of the defibrillator”. [Sec. 3(1)].*

## Quebec

*“if a first responder or ambulance technician isn’t present, any person may use an AED during cardio pulmonary resuscitation. [Regulation respecting the professional activities that may be engaged in within the framework of pre-hospital emergency services and care.”(Sec. 2).*







# Federal Legalities

## 16.4 Specialized First-aid Training – Federal Government

- 16.4.2. *“When a recommendation is made by a health and safety committee to an employer to purchase automated external defibrillators (AEDs hereafter), the employer will evaluate its feasibility. Any report or study will then be shared with the health and safety committee.*
- *Any cardiopulmonary resuscitation program, including the provision of AEDs when required, will be subject to the participation of the appropriate health and safety committee. When an employer provides AEDs, it will ensure the provision of appropriate training for a sufficient number of employees.*

Reference: Canada Occupational Health and Safety Regulations SOR/2000-328, s. 2.





# Legalities

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**In any event, any first aider who initiates CPR should continue until:**

- The person's breathing and signs of circulation have been restored and;
- Care is transferred to another trained person who continues CPR or;
- Care is transferred to EMS personnel or to a licensed physician or;
- The first aider is too exhausted to continue resuscitation or;
- The first aider life is in danger.





# Communicable Diseases

- HIV, AIDS, Hepatitis A, B, C, Tuberculosis, Meningitis and etc..

## Diseases enter four ways:

- Direct contact
- Indirect contact
- Airborne
- Vector-borne

## Safety - Personal Protective Equipment (PPE)

- Medical gloves
- Barrier device (pocket mask with one-way valve)
- Proper disposal of gloves/barrier device
- Washing hands
- Immunization





# Anti-Contamination Procedures

## CPR Mask use

- Using a one way valve barrier device or CPR mask and wearing medical gloves is recommended when performing rescue breathing.

## After CPR Mask use:

- Dispose of face shield after use, CPR mask should be decontaminated.
- It is not recommended to use a CPR pocket mask or face shield on multiple casualties unless decontamination procedures are performed.



## Gloves

When you remove your medical gloves after treating an injured person; You should do the following:

1. Pinch the medical glove at the wrist area (outside surface).
2. Pull the medical glove downward motion and remove it.
3. Form the medical glove in a ball and hold it in the other hand.
4. Then, insert your thumb under the inside rim of the other glove.
5. Push the glove inside out and down.
6. Throw out gloves after use in garbage.
7. Always wash your hands after removing gloves.



# Safety First !

## Check for hazards such as:

- Fire
  - Electrical wire
  - Broken glass
  - Chemical spills
  - Traffic
  - Violence
- 
- Is it safe to approach the injured person ?
  - Are there any hazards ?
  - Does the first aider need any help ?
  - History of the incident ?
  - Signs and symptoms of the casualty?
  - Number of casualties ?
  - Treatment priorities ?
  - Bystanders ?
  - Mechanism of injury ?



**Always be aware of potential hazards and dangers !**





# Emergency Scene Assessment

**Source of assistance in an emergency situation are:**

1. Bystanders
2. Emergency Medical Services (EMS)
3. EMS Dispatch-assisted CPR
4. Police and Fire Service
5. Medical Help (physician, nurse and etc..)



**Source of mobile technology in an emergency situation are:**

1. Phone App for AED locations
2. Phone App for First Aid & CPR skills



*How do you call for help ?*





# Emergency Scene Assessment

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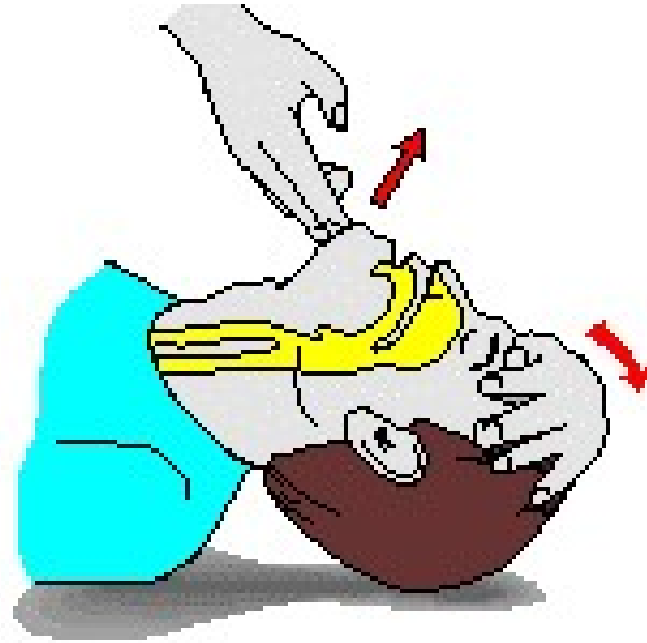
1. **STAY SAFE** don't venture into an unknown situation without first knowing if it is safe.
2. **STAY CALM** don't panic.
3. **TAKE CHARGE** be assertive, yet compassionate.
4. **LOOK** for witnesses.
5. **DETERMINE** unresponsiveness
6. **CALL 911**
7. **CHECK** for breathing
8. **CHECK** for major bleeding and stop major bleeding
9. **START** CPR or First Aid



# the ABC's



closed airway



**Head-tilt-chin-lift**

open airway





# Choking

## Good Air Exchange

- Mild obstruction

The person will be able to **speak, breathe and cough.**

## Poor Air Exchange

- Severe obstruction

The person will have **extreme difficulty speaking, breathing and coughing.**



## No Air Exchange

- Completely blocked

The person is **not able to speak, not breathing.**





# Causes of choking

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## Foreign objects

- Infants & Children: food, toys, buttons, coins, etc.
- Adults: food, liquids, etc.

## Unconscious Casualty

- Tongue falls to the back of the throat.
- Saliva, blood, or vomit pools in the throat.



# Choking Techniques

## 1. Ask “Are you choking?”

- Call for help!
- Get someone to call 911 !



## 2. Clear the obstruction

- Give five back blows & five abdominal thrusts
- *To be performed until either the obstruction is cleared or the person becomes unconscious.*

### Signs & Symptoms of choking

- Visibly distressed
- Suddenly unable to speak
- Unable to cough
- Unable to breathe
- Wheezing or gasping
- Casualty may grasp their throat which is the universal sign for choking

5x



5x



# Choking Techniques



**Give 5 Back Blows  
then 5 Chest Thrusts for  
pregnant or corpulent  
casualty**



**Give Seated Chest Thrusts**



**Self-Administer Thrusts**



Always have the door open for EMS and call 911.



# Infant/Child Airway Obstruction

## Child with an Airway Blockage Signs and Symptoms

- Respiratory distress
- Weak cough
- Weak cry
- Panic
- Bluish lips & bluish skin
- High-pitched noisy breathing
- May demonstrate the choking sign





# Infant Airway Obstruction

Call for help and get someone to call 911 !

Give 5 back blows



Give 5 chest thrusts



Repeat the 5 back blows and 5 chest thrusts  
until the obstruction is cleared or infant goes unconscious.

Always have the door open and accessible for EMS.





# Choking Techniques

## If a choking casualty becomes unresponsive

- Call for help, have someone call 911
- For an adult casualty, if no one is available, call 911
- Start the steps of CPR
  
- For a child casualty, if no one is available to call, start the steps of CPR for 2 minutes.
- Call 911

## If a casualty is found unresponsive

- Safety Check
- Determine Unresponsiveness
- Call for help, have someone call 911
- Open the airway
- Quick visual check for breathing
- For an adult casualty, if no one is available, call 911
- Start the steps of CPR
- For a child casualty, if no one is available to call, start the steps of CPR for 2 minutes.
- Call 911





# Infant Airway Obstruction

## If a choking infant becomes unresponsive

- Call for help and get someone to call 911
- If no one is available to call, start the steps of CPR for 2 minutes then call 911.
- 30 compressions
- Open the airway
- Look for obstruction
- 2 breaths
- If the first breath does not go in, re-tilt the head and attempt second breath.
- Continue CPR

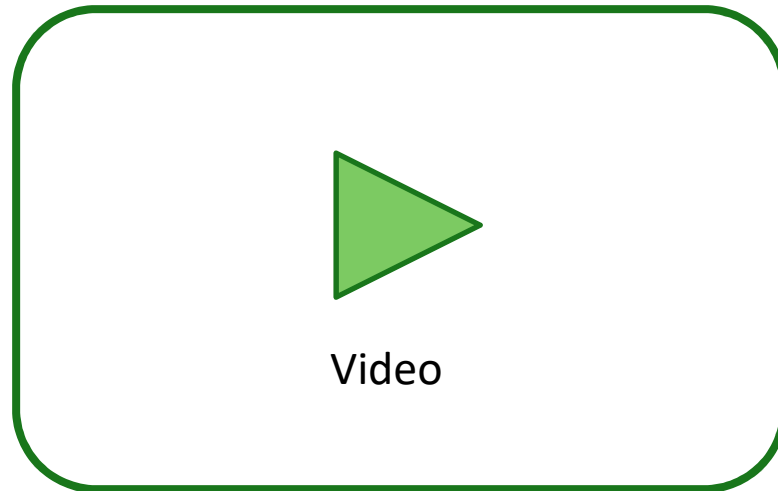






# Adult Choking Rescue Video

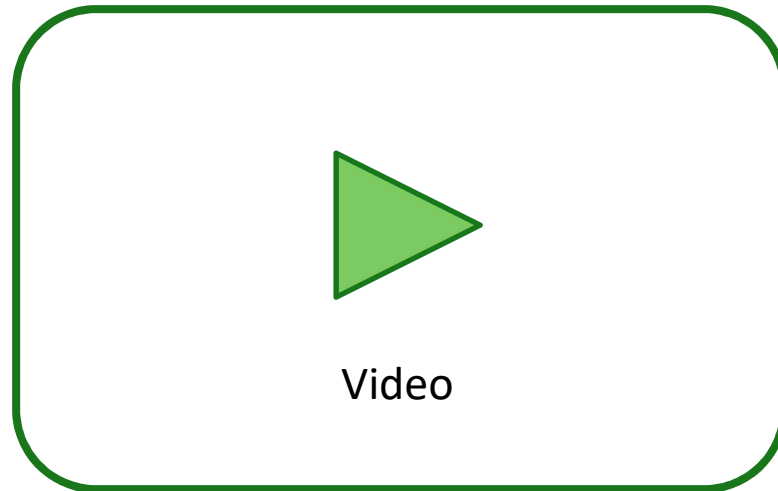
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# Infant/Child Choking Rescue Video

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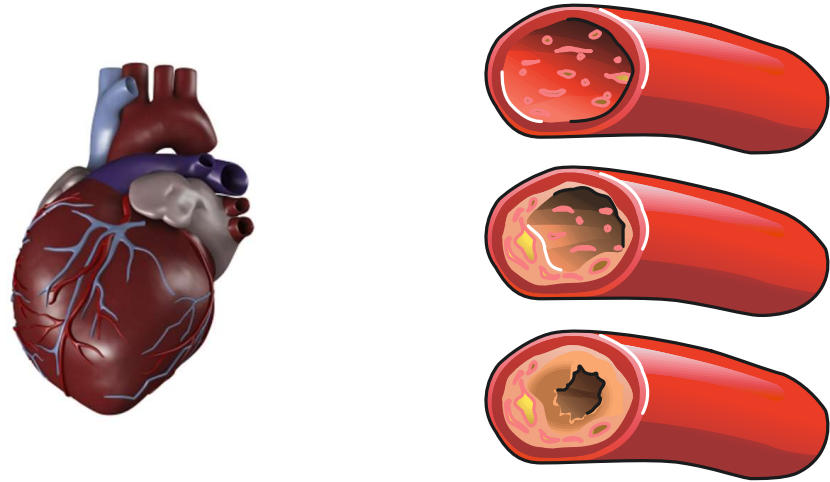




# Cardiovascular Diseases (CVD)

Progressive narrowing of blood vessels because of deposits.

- **Hypertension**
- **Cholesterol**
- **Stress**



- **Atherosclerosis:** presence of fatty lipid deposit in the lining of the artery.
- **Arteriosclerosis:** Hardening and thickening of the walls of the arteries.





# Cardiovascular Emergencies

## Angina attack (angina pectoris)

Angina is a progressive narrowing of the heart's arteries (blood flow is reduced).



## Heart Attack (Myocardial Infarction - MI)

When the delivery of oxygen to the heart muscle is decreased over a long period of time, the damage to the heart muscle often becomes irreversible.

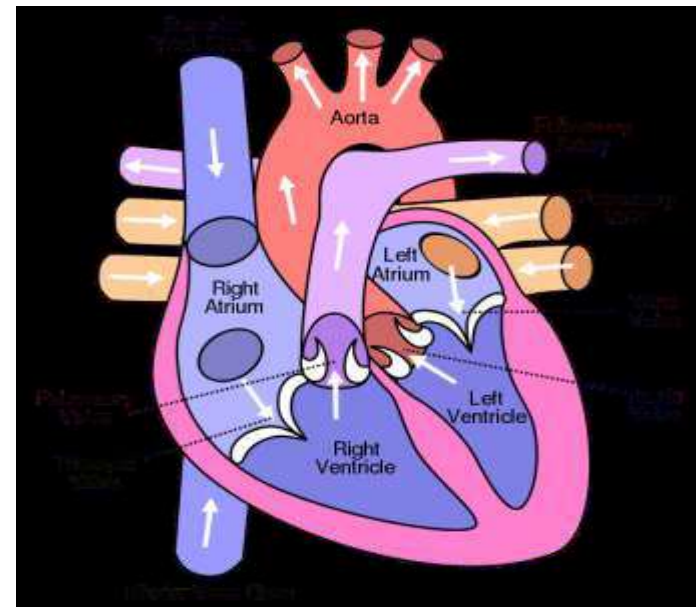
The affected heart muscle cells eventually die.





# Cardiovascular Emergencies

- **STEMI** is an acronym meaning “**ST segment elevation myocardial infarction**” which is a type of heart attack. This is determined by an electrocardiogram (ECG) test. The coronary artery is completely blocked off by a blood clot.





# Cardiovascular Emergencies

## General Signs & Symptoms

- **Tightness or squeezing sensation in the chest behind the breastbone:**
- **Crushing, vice-like pressure in the chest**
- **Sore, aching jaw or arm**
- Nausea, heartburn and indigestion
- Denial
- Fear and anxiety
- Pale, cool and sweaty skin
- General feeling of fatigue and weakness
- Shortness of breath
- Fainting



## Signs & Symptoms can be different for women

- **Swelling of the feet, ankles, and lower legs**
- **Pain in the lower jaw**
- **Pain or discomfort in the back, usually along the bra line**
- Clammy skin
- Sudden weakness, fatigue, or dizziness
- Very fast pulse
- Anxiety
- Stomach or abdominal pain
- Nausea and vomiting

**43% of female patient do not have chest pain.**





# First Aid for Angina & Heart Attack

1. Assess level of responsiveness
2. Call 911
3. Assess the ABC's
4. Ask the person to sit in a comfortable position
5. Assist the person take his/her medication such as two 81mg ASA (Aspirin®) and nitroglycerin medication (1)
6. Treat for shock & ongoing care until EMS arrives on scene

## Right to assist with medications:

Right patient, Right drug, Right dose, Right time, Right route, Right documentation.

## Ask the following questions?

- Where is the pain located ? Severity of the pain (1 to 10) ?
- Last meal (indigestion) ? Past medical history ?

## Warning

1. Do not give ASA (acetylsalicylic acid), to a person with the following conditions: allergy to aspirin, asthma, ulcers, bleeding disorder, head injury and CVA. Person may chew 1 adult (325mg) or 2 low-dose aspirin while waiting for EMS assistance to arrive.
2. Do not give nitroglycerin to a person who has taken erectile dysfunction medication within the last 48hrs.



**Follow medical directions from a Health Care Professional on the use of ASA & Nitroglycerin.**



# Stroke/TIA

## Stroke

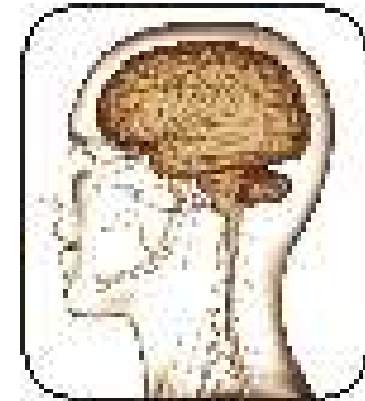
Part of the brain is not getting enough blood & oxygen to function properly.

## TIA (transient ischemic attack)

Part of the brain is not getting enough blood & oxygen temporarily to function properly.

## Signs & Symptoms

- Paralysis of facial muscles on one side
- Facial drooping & drooling
- Slurred speech, difficulty swallowing
- Numbness, weakness and tingling sensation in the arms or hands (mostly on one side)
- Nausea & indigestion
- Dizziness & lack of coordination
- Fear and anxiety
- Pale, cool and sweaty skin
- Decreasing level of consciousness
- Massive headache
- Blurred vision & unequal pupil size







# Stroke

## FAST check

- **F**acial droop – one side of face
- **A**rm drift – movement different in one arm
- **S**peech – impairment
- **T**ime – call 911





# First Aid for Stroke

1. Assess level of responsiveness
2. Call 911
3. Assess the ABC's
4. Ask the person to lay or sit in a comfortable position.
5. Ask the person to smile and to squeeze both your hands.  
Also ask them to touch their nose with one finger of each hand, one at a time to assess for lack of coordination.
6. Treat for shock & ongoing care until EMS arrives on scene.



## Right to assist with medications:

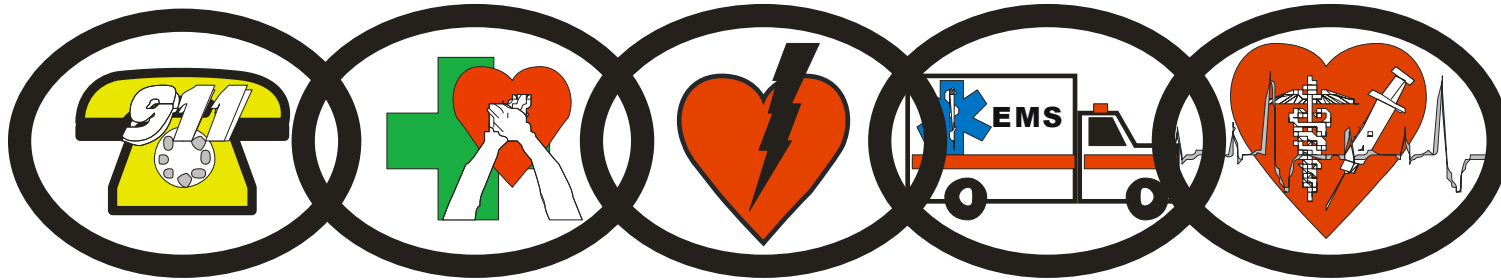
Right patient, Right drug, Right dose, Right time, Right route, Right documentation.

## Warning

Do not give ASA (aspirin) since this may increase the chance of bleeding & follow directions of the medical doctor.



# Chain of Survival®



The links in the “chain” establish critical steps that can give a person the greatest chance of survival from the time of the injury or event to the treatment received on the way to the hospital.

- **Activation of EMS**
- **Early CPR**
- **Rapid defibrillation**
- **Effective Advanced Life Support**
- **Hospital (Integrated Post Cardiac Arrest Care)**

The Chain of Survival is a registered trademark of the Heart and Stroke Foundation of Canada. ®





# Signs of Cardiac Arrest

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## Signs of Cardiac Arrest

- Unconscious (unresponsive)
- Pupils are fixed & dilated
- No breathing or agonal (abnormal) breathing
- No signs of circulation

## Potential Brain & Vital Organs Damage

(if CPR is not performed within 4 minutes of cardiac arrest)

- 4 minutes: potential brain & organ damage
- 6 to 10 minutes: brain & organ damage likely
- 10 minutes+ : permanent brain and organ damage





# CPR - Cardio Pulmonary Resuscitation

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## Why Push Hard & Push Fast !

- Deeper compressions increase blood flow to the brain and vital organs such as the heart, lungs, kidneys and liver.
- Decreases the risk of blood coagulation (clotting).
- Extend heart fibrillation.

*Interruptions in chest compressions should be minimized.*





# Notice on Care Procedures - CPR

## Student Safety !

- You may be subjected to some physical activity.
- Therefore, it is important to understand that CPR is indeed hard work.
- If for any reason, your physician has recommended that you avoid strenuous activity or that your activity be limited in any way, please advise your instructor if you require any assistance or if there are any physical restrictions that may hinder your participation during the course.



## Adult – Child – Infant CPR

30 compressions : 2 breaths x 5 times



If a second rescuer is present, one rescuer performs the compressions while the other performs the ventilations. The two-person bag-valve-mask (BVM) technique is preferred. A single rescuer providing ventilations should use the mouth-to-mask ventilations.





# Adult CPR

- Survey the area & safety check
- Determine unresponsiveness
- Call for help and call 911
- Open the airway & check for breathing.
- Visual landmark for chest compressions
- Begin 30 compressions
- Open the Airway and give 2 breaths
- 30 :2 x 5 cycles
- Assess breathing
- Continue until EMS arrives on scene

**If not breathing:** repeat CPR until a rescuer brings an AED or EMS arrives.

**If breathing:** place the casualty in the recovery position and monitor vital signs until EMS arrives.





# Child CPR

- Survey the area & safety check
- Determine unresponsiveness
- Call for help
- If you are all alone, start CPR
- Open the airway & check for breathing.
- Visual landmark for chest compressions
- Begin 30 compressions
- Open the Airway and give 2 breaths
- 30 :2 x 5 cycles
- Call 911 after 5 cycles of CPR
- Continue until EMS arrives on scene



# Infant CPR

- Survey the area & safety check
- Determine unresponsiveness
- Call for help
- If you are all alone, start CPR
- Open the airway & check for breathing.
- Visual landmark for chest compressions
- Begin 30 compressions
- Open the Airway and Give 2 breaths
- 30 :2 x 5 cycles
- Call 911 after 5 cycles of CPR
- Continue until EMS arrives on scene

**If not breathing:** repeat CPR until a rescuer brings an AED or EMS arrives.

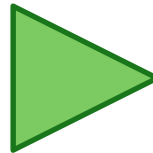
**If breathing:** place the casualty in the recovery position and monitor vital signs until EMS arrives.





# Adult CPR Video

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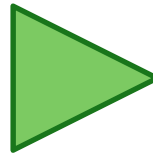
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# Child CPR Video

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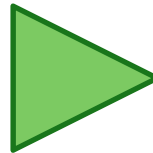
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# Infant CPR Video

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Click to start  
Video



# Cardiac Arrhythmias

## What are the Main Causes of Cardiac Arrhythmias?

- Heart attacks (Myocardial Infarctions)
- A generalized lack of oxygen
- Heart failure from water retention
- Pneumonia
- Pulmonary Embolism
- Chronic heart failure
- Drug intoxication
- Poisoning
- Brain Damage
- Electrocution
- Near Drowning
- Hypothermia, etc..



## What is defibrillation ?

**Defibrillation is the process by which a controlled electrical current is delivered to a cardiac arrest person by means of conductive pads, which are applied to the exterior of the chest wall of the casualty.**

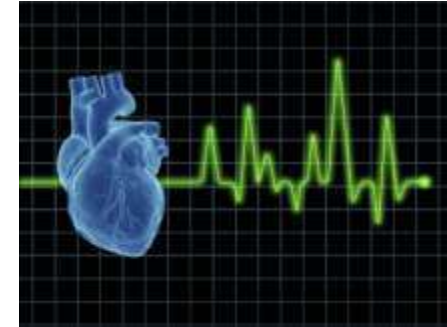




# Normal & Abnormal Rhythms

**Normal Sinus Rhythm (NSR)** : Normal heart beat conduction

**Ventricular Fibrillation (VF)** : Heart quivers, not able to pump blood and no pulse



**Ventricular Tachycardia (VT)** : Very fast heart rate (190/min +)

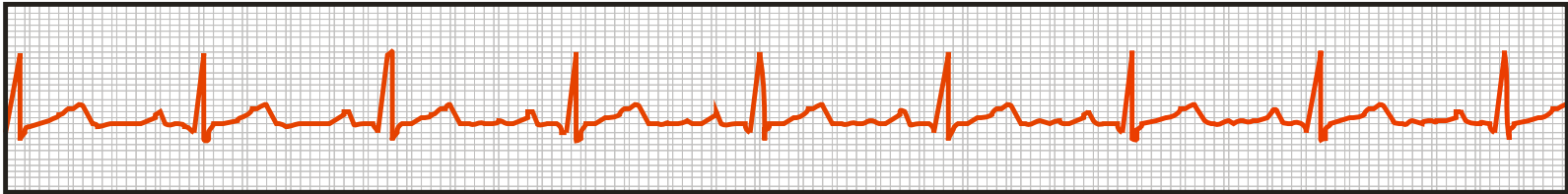
**Asystole -Ventricular Standstill** : No electrical activity and “Flat line” on an ECG

**Pulseless Electrical Activity (PEA)** : Looks like normal rhythm but no pulse



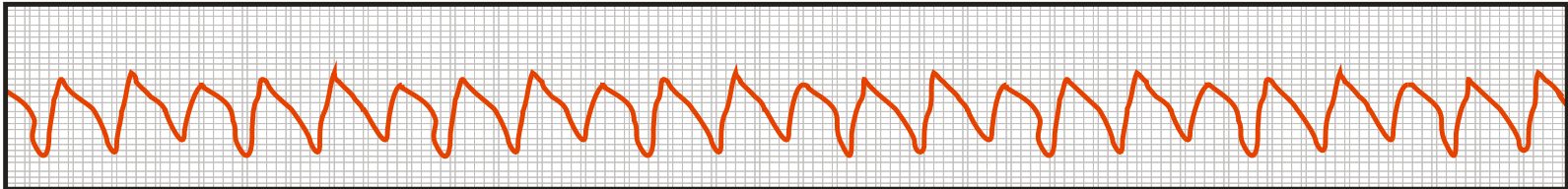
# Electrocardiogram

## Normal Sinus Rhythm



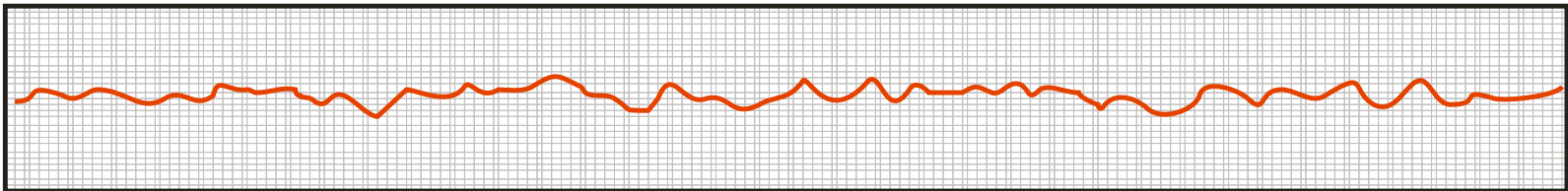
Electrocardiogram : Normal Heart Beat Conduction

## Ventricular Tachycardia



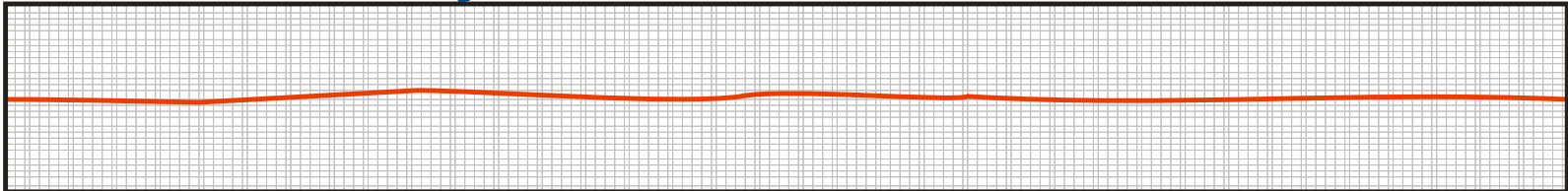
Electrocardiogram : Abnormal Heart Beat Conduction

## Ventricular Fibrillation



Electrocardiogram : Abnormal Heart Beat Conduction

## Asystole - Ventricular Standstill



Electrocardiogram : No Heart Beat Conduction







# Successful Defibrillation

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- Defibrillation is the application of a preset electrical current across the myocardium to cause synchronous depolarization of the cardiac muscle with the aim of converting a dysrhythmia into normal sinus rhythm.
- Successful defibrillation depends on delivery of the electrical charge to the myocardium. Only part of the total current delivered flows through the heart. The rest is dissipated through the resistance of the skin and the rest of the body.

**AED will only shock when VT or VF is present.**

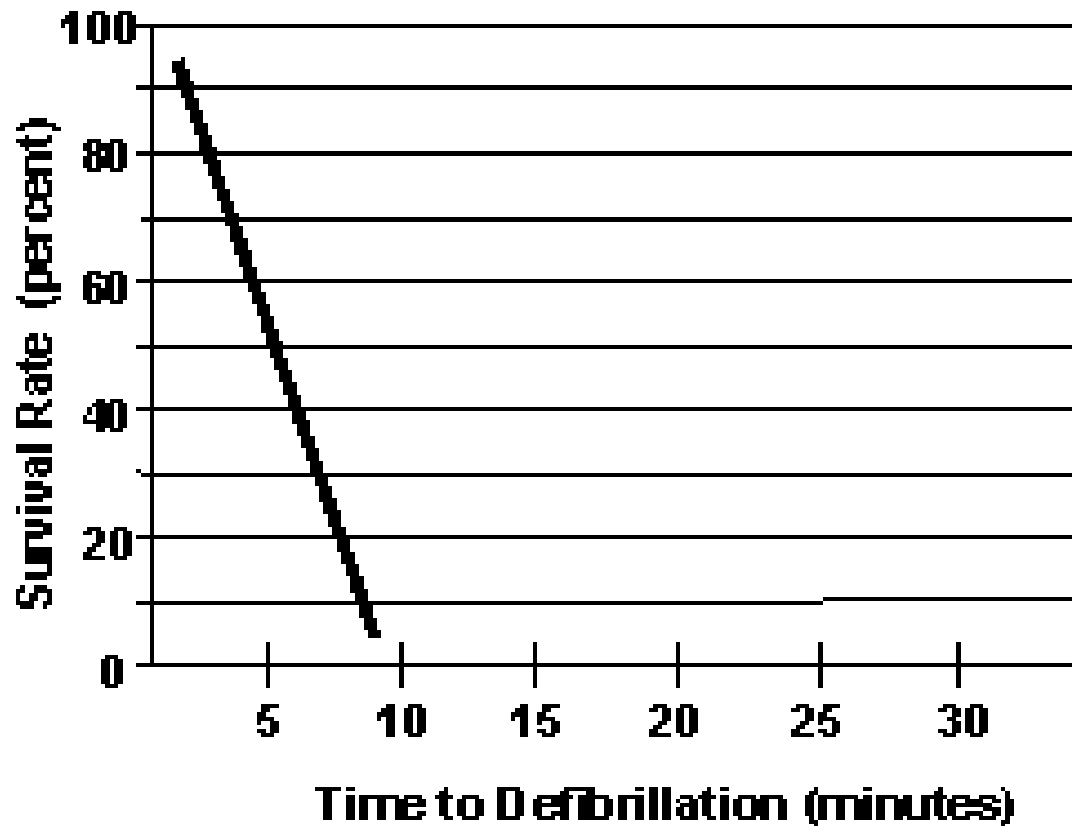
**AED will not shock normal heart beat , PEA or asystole.**





# TIME is the Crucial Factor

CPR/Defibrillation should be started within 4 minutes.



Survival is reduced by 10% for each minute defibrillation is delayed





# AED Use

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## **AED can be used if casualty :**

- is over 1 year old.

(child pads if < 55 lbs.) is non responsive, with no breathing and no signs of circulation.

## **AED should not be used if casualty:**

- is less than 1 year old.
- has severe traumatic injuries or conscious.



# AED Safety Protocol

## If casualty is:

### Lying on wet surface

- Remove from wet surface, dry casualty's chest

### Lying on a metal surface

- Remove from metal surface

### Wearing a pacemaker

- Do not place electrode pads directly on pacemaker

### Pregnant

- Proceed with normal algorithms and place a wedge under right hip.



# AED Safety Protocol

## If casualty is:

### Fitted with an implanted defibrillator

- Do not place pads on implant site. If device triggers, wait up to 20 seconds before using the AED.

### Wearing a patch medication

- Remove patch and wipe area clean.

### Hypothermic

- Delivery up to 1 shock only.  
If unsuccessful, continue CPR.

### Vomit

- Administer shock if AED unit is ready to shock the casualty. Deal with the vomit during CPR protocol.

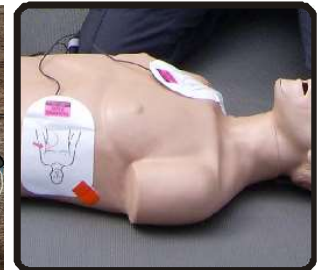
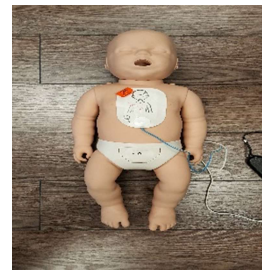
### Oxygen

- Remove oxygen mask or nasal prongs from casualty and well clear of the area before administering a shock. Slight chance of fire if oxygen is not removed.



# CPR/AED Rescue Steps

- Make sure the scene is safe
- Check for level of responsiveness
- Call for help and activate 911
- Check for breathing or agonal breathing
- Perform CPR = 30 compressions x 2 breaths: 5 cycles
- Turn on AED unit
- Follow verbal instructions
- Place the pads on the casualty bare chest  
(if needed, shave and dry off the chest area)
- Analyse mode (do not touch the casualty)
- Shock mode (do not touch the casualty)
- Make sure everyone including the rescuer is clear from  
the casualty before giving a shock
- Press the flashing shock button
- Follow AED verbal instructions



# CPR & AED Course

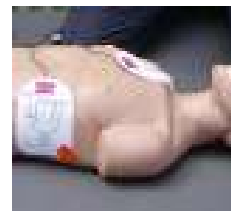
**If the patient does not have a pulse and the AED indicates that no shock is advised:**

- Continue CPR at 30:2 for five cycles and then reassess the signs of circulation.
- Continue CPR until EMS is on the scene.



**If the patient does not have a pulse and the AED indicates that shock is advised.**

- Clear the patient.
- Press the flashing shock button to deliver the shock.
- Resume CPR at 30:2 for five cycles and then reassess the signs of circulation.
- Continue CPR/AED protocols.
- Continue until EMS is on the scene.





# CPR & AED Course

**If AED indicated to assess the ABC's after the shock:**

Then rescuer should check breathing.

Breathing = Yes = go to step # 1

Breathing = No = start rescue breathing



**Step # 1: Caring for a casualty who has regained breathing/circulation after a shock has been delivered:**

- Proper airway management
- Supplemental oxygen (if available and trained)
- Appropriate airway clearance if vomit occurs
- Continued monitoring of vital signs
- Do not turn off the AED unit (Patient may re-arrest & EMS will turn off unit)
- Continue monitoring the vital signs until EMS arrives





# Documentation

## Rescuer Report should include:

- Date of Incident
- Time of incident
- Location of incident (address & phone number)
- Name of Patient
- Past medical history (if known)
- Amount of time lapsed from patient collapse to arrival of EMS
- Amount of time lapsed from patient collapse to initiation of citizen CPR (if known)
- Time of each defibrillation
- The effect of the defibrillation on the patient (rescuer observation)
- Other pertinent information



# AED Maintenance

- Data Collection and Management
- Data Review and Storage
- Battery Insertion Self-test
- Periodic Maintenance
- Temperature



# Restocking After AED Use

**After using an AED, you must restock:**

- Electrode pads
- Replace the batteries
- PC cards
- Safety kit ( gloves, scissor, antiseptic swabs, towel, razor, CPR mask).





# Quiz & Evaluation

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## Multiple choice quiz

**Do not write on the quiz / please use the answer sheet provided**

**Please ask the instructor, If you need any help with the quiz.**

**GOOD LUCK !**



# Certification expiry date

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CPR-AED certification valid for 1 year from the date of issue.



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# CPR-AED Information

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Heart and Stroke Foundation of Canada  
[www.heartandstroke.ca](http://www.heartandstroke.ca)

Sudden Cardiac Arrest Association  
[www.suddencardiacarrest.org](http://www.suddencardiacarrest.org)

American Heart Association  
[www.heart.org](http://www.heart.org)



International Liaison Committee on Resuscitation  
[www.ilcor.org](http://www.ilcor.org)





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