



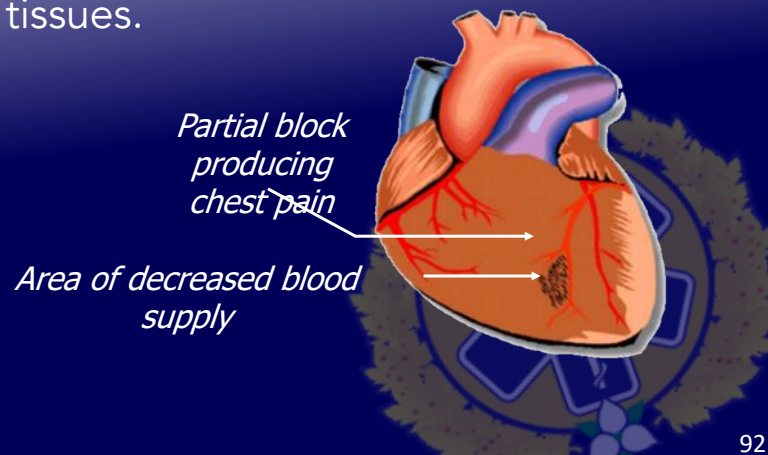
Emergency Medical Responder

CIRCULATION



Angina

- Narrowing of an artery causing insufficient blood flow to the underlying tissues.

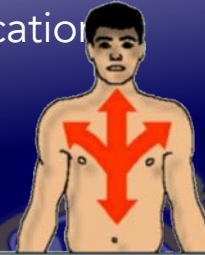


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Signs of Angina

- Often brought on by exertion
- Relieved by rest or medication
- Previous history
- Central chest pain
 - May radiate to arms
 - Jaw
 - Back
 - abdomen



Chest pain
that persists
Suspect
Heart Attack !

93



Intervention for angina

- Comfort
- Monitor
- Reassure
- Oxygen to maintain sats over 94%
- Assist with **Nitroglycerine**
- Suggest 1 regular strength or 2 low-dose **Aspirin®** if the casualty has no allergies to Aspirin or Active Bleeding Disorders
- *Be prepared to resuscitate*

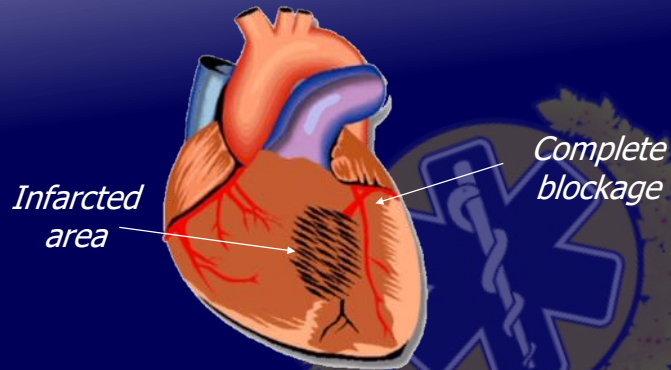


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Heart Attack

- A complete blockage in a coronary artery resulting in death of heart tissue



95



Recognizing heart attacks

- May have no previous history
- Does not ease with rest
- Persistent chest pain
 - May radiate to arms, jaw, lower back and abdomen
- Breathlessness
- Complaints of indigestion
- Giddiness
- May feel faint, and collapse without warning

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Intervention for heart attack

- Comfort
- Monitor
- Reassure
- Oxygen to maintain sats above 94%
- Assist with **Nitroglycerine**
- Suggest 1 regular strength or 2 low-dose **Aspirin®** if the casualty has no allergies to Aspirin or Active Bleeding Disorders
- *Be prepared to resuscitate*

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Stroke

Cerebral Thrombosis

Build up of clot causing blockage

Cerebral Embolism

Embolus swept into artery causing blockage

Haemorrhage

Burst artery

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Signs & Symptoms of Stroke

- Sudden, severe headache
- Blurred, double vision
- Dizziness and/or confusion
- Weakness on one side of the body
- Nausea and vomiting
- Loss of responsiveness
- Seizure



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- Assessing stroke:
 - _Facial Droop
 - _Arm Drift
 - _Speech
 - _Time



© American Heart Association

101



Transient Ischemic Attack

- A mini-stroke like event
 - Caused by a brief disruption of blood flow to an area of the brain
 - Symptoms usually resolve within minutes, or up to 24 hours
 - Assess using FAST
 - Warning signs of an impending stroke
 - Provide the same treatment as a stroke

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Interventions for stroke/tia

- Early recognition
- ACAB management
- Oxygen to maintain sats > 94%
- Monitor
- Keep the patient rested and relaxed
- Establish when the event took place
- Lateral Recumbent Position if unresponsive

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Cardiac arrest

To ensure best chances of survival,
cardiac arrest patients need:

- 1) Immediate CPR
- 2) Advanced medical care, including defibrillation within 8-10 minutes of collapse

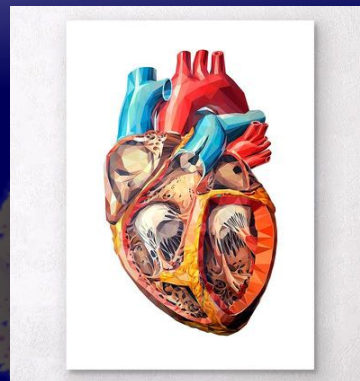


Anatomy Review

The heart consists of four chambers.

Two upper - left atrium
- right atrium

Two lower - left ventricle
- right ventricle





The Circulatory System consists of:

- 1) the heart
- 2) the arteries
- 3) the veins
- 4) the capillaries
- 5) blood



Chain of Survival

Clinical Death - When a patient is in respiratory arrest (not breathing) and cardiac arrest (heart not beating).

Immediate CPR may

- 1) Reverse clinical death
- 2) Restore the patient without damage

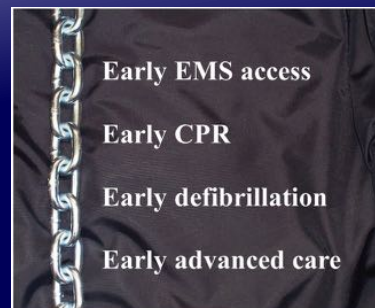


Figure 8-2 Adult Chain of Survival.

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Assessment

Proper assessment of the patient is critical to survival

Airway
Breathing
Circulation



Pulse Checks

Exercise:

Locate and palpate your carotid artery.



SUPERIOR EMS

Basic CPR Intervention




Figure 8-7a Determine that the patient is both unconscious and breathless. Then provide artificial ventilation with two effective one-second breaths.

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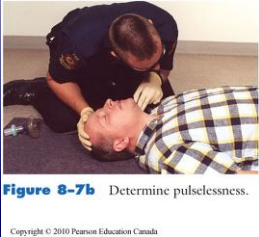


Figure 8-7b Determine pulselessness.

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Figure 8-7c Locate proper hand position.

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Figure 8-7d Perform chest compressions and ventilations at a ratio of 30:2 at a rate of 100 per minute.

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SUPERIOR EMS



Figure 8-8a The ventilation rescuer provides artificial ventilation while the compression rescuer locates the compression site.



Figure 8-8b The ventilation rescuer determines pulselessness as the compression rescuer gets into position.



Figure 8-8c Perform compressions and ventilations at a ratio of 30:2 at a rate of approximately 100 per minute.

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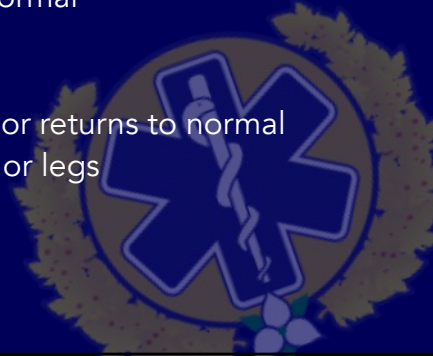
Figure 8-8d Stop CPR to assess the carotid pulse after five cycles and every two minutes thereafter.

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Successful CPR

- 1) When sternum is compressed, you feel a pulse in the carotid artery
- 2) Chest rises and falls with each ventilation
- 3) Pupils react or appear to be normal
- 4) Heartbeat returns
- 5) A spontaneous gasp occurs
- 6) Patient's skin colour improves or returns to normal
- 7) Patient moves his or her arms or legs
- 8) Patient tries to swallow

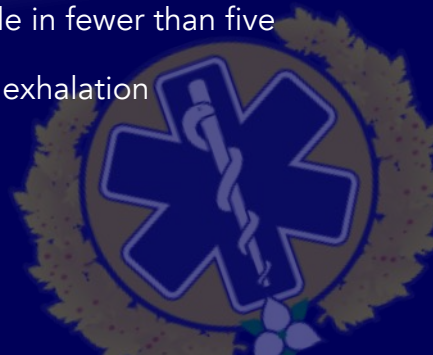


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Common CPR Errors

- 1) Failing to maintain adequate head tilt
- 2) Failing to maintain adequate seal around the patient's mouth, nose, or both
- 3) Failing to release seal when patient exhales
- 4) Completing a two rescuer cycle in fewer than five seconds
- 5) Failing to watch and listen for exhalation
- 6) Not giving full breaths
- 7) Providing breaths too rapidly





Complications of CPR

- 1) Sternum fracture
- 2) Pneumothorax
- 3) Hemothorax
- 4) Cuts and bruises to the lungs
- 5) Lacerations to the liver

But don't forget - he's already dead!



CHILD CPR



Figure 8-12a Determine unresponsiveness by flicking the feet and shouting. Activate EMS system.
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Figure 8-12b Gently open the airway to the sniffing position.
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Figure 8-12c Determine breathlessness.
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Figure 8-12d Cover the infant's mouth and nose with a pocket mask. Then ventilate.
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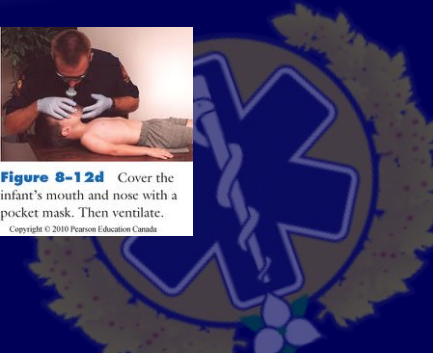





Figure 8-12e Determine pulselessness at the brachial artery.

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Figure 8-12f Locate the correct hand position.

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Figure 8-12g Compress the sternum at a rate of at least 100 per minute.

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Figure 8-12h Two one-second rescue breaths are given after every 30th compression.

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Figure 8-12i Performing CPR while carrying the patient.

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Defibrillation

There are two types of defibrillation you will encounter in the field:

- 1) Manual defibrillation – used by paramedics
- 2) Semi-automated – used by EMRs and Public Access Defibrillation programs.



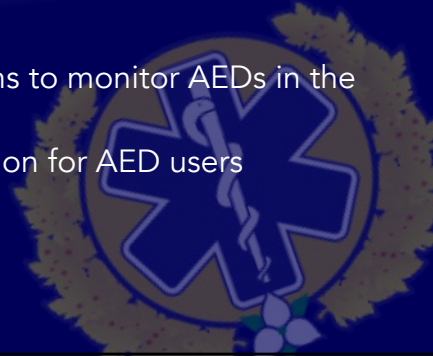
Figure 9-1b Example of a semi-automated external defibrillator.

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EMS systems that allow EMRs to use AEDs should have the following:

- 1) All EMS links to Chain of Survival
- 2) Medical Direction
- 3) Quality improvement programs to monitor AEDs in the field
- 4) Mandatory continuing education for AED users



Operating an AED

- 1) Become familiar with AED you are using
- 2) Ensure batteries are fully charged
- 3) Follow local AED protocols
- 4) Ensure no one touches patient while AED is analyzing heart rhythm or delivering shock
- 5) Do not apply AED to patient with pulse





Figure 9-5a Determine that the patient is breathless and pulseless.

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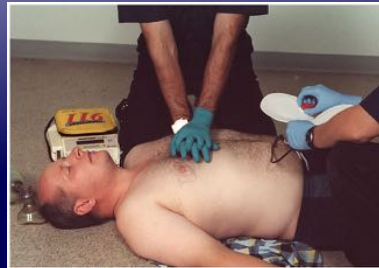


Figure 9-5b One rescuer initiates CPR, while the other prepares the AED.

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Figure 9-5c Place adhesive pads on the patient's chest.

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Figure 9-5d Turn on the AED.

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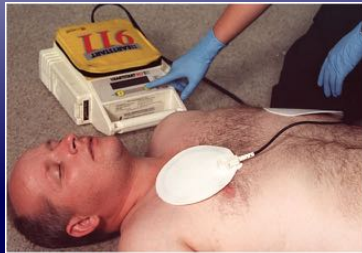


Figure 9-5e Stop CPR and get clear of the AED as it analyzes the heart rhythm.

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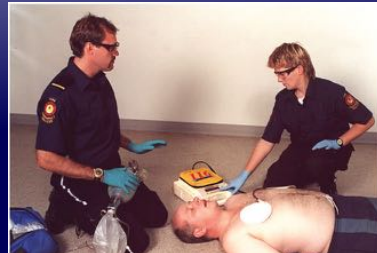


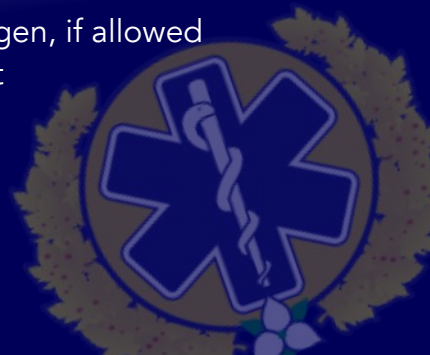
Figure 9-5f If a shock is advised, clear all others from the patient and deliver the shock.

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Post Resuscitation Care

- 1) Monitor pulse
- 2) Ventilate as necessary
- 3) Place in recovery position, if patient is uninjured and has a pulse
- 4) Apply high concentration oxygen, if allowed
- 5) Keep AED attached to patient
- 6) Continue to assess





CHECKING THE MACHINES

AUTOMATED DEFIBRILLATOR: OPERATOR'S SHIFT CHECKLIST			
Date _____	Shift _____	Location _____	
ID# _____		Serial No. or Facility ID No. _____	
At the beginning of each shift, inspect the device, indicate whether all components have been met. Note any corrective actions taken. Sign this form.			
1. Inspectations Unit		OK or Fixed	Corrective Action/Remarks
<p>Count, no signals, close of objects on mat, cutting noise</p> <p>2. Cables/Connectors</p> <ul style="list-style-type: none"> • Inspect for cracks, broken wires, or damage • Connectors engage assembly 			
<p>3. Stencils</p> <ul style="list-style-type: none"> • Two sets of pads in sealed • Two pads, with no expirational date • Screens • Displays • Absorbent sponges • Monitoring electrodes 			
<p>4. Power Supply</p> <ul style="list-style-type: none"> • Battery-powered unit • (1) Under 100 charge battery in place • (2) Spare charge battery available • (3) Emergency recharge battery available per manufacturer's instructions • (4) Recharge battery indicator • (5) Properly labeled and connected to battery charge • (6) Test on battery power and reconnect to line power 			
<p>5. Indicators/ECG Display</p> <ul style="list-style-type: none"> • (1) Battery charging, low, memory • (2) Insufficient, low or weak card • (3) Power in display • (4) Set on low • (5) Monitor display functional 			
<p>6. ECG Recorder</p> <ul style="list-style-type: none"> • Adequate ECG paper 			
<p>7. Charge/Display Cycle</p> <ul style="list-style-type: none"> • (1) Document all plug-in battery • (2) Temporarily • (3) Read to discharge • (4) Detects charges, and delivers shock for "AED" • (5) Recharge promptly to non-sharable machine 			
<p>8. Maintenance</p> <ul style="list-style-type: none"> • Power outlet cable intact • (1) Inspect per manufacturer's recommended guidelines • (2) Check for vibration • (3) Replace sensitive time module, and/or memory card 			
<p><input type="checkbox"/> Major problem(s) identified (OUT OF SERVICE)</p> <p>*Appropriate only if it was the supply or capability</p>			
Signature: _____			

Figure 9-6 Operator's shift checklist for an AED. (Courtesy of Laerdal)



Call Review

After AED use, the call should be reviewed by a quality improvement committee.

