

# Community CPR & AED



# INTRODUCTION TO EMERGENCY CARE

## Lesson 1



# Learning Outcomes (1 of 2)

- Recognize the significance of injuries and medical emergencies.
- Define first aid.
- Describe basic life support.
- Identify legal considerations when providing emergency care.

# Learning Outcomes (2 of 2)

- Provide examples of conditions when emergency medical services (EMS) should be called.
- Identify questions a dispatcher is likely to ask when you call 9-1-1.
- Describe steps you can take to prevent disease transmission during first aid.



# Lesson 1 Overview

- Knowing What to do Matters
- Basic Life Support
- Emergency Care and the Law
- Recognizing an Emergency
- Taking Action
- Staying Safe from Disease



# Knowing What to do Matters

- Can save lives and reduce consequences of injuries and medical emergencies.
- First aid is the immediate care provided to an ill or injured victim.
- Know when to call 911
- Know what care to give immediately
- Know what continued care to provide.



# Basic Life Support Skills

- Clearing airway obstruction
- Cardiopulmonary Resuscitation (CPR)
- Automated External Defibrillation (AED)



# Emergency Care & the Law

- Good Samaritan Laws
  - Protection for providers acting in good faith
- Duty to Act
  - Job defined requirement to respond
- Consent
  - Actual or implied acceptance to receive care
- Abandonment
  - Leaving without ensuring continued proper care
- Negligence
  - Failure to follow reasonable care standard





# Recognizing an Emergency

- Smoke/fire
- Screaming
- Screeching tires
- Sounds of collision
- Collapsing structure
- Downed electrical wires
- Strong / Unusual odors
- Victim collapsing

# Taking Action

- Factors that keep people from acting:
  - Assuming others will act
  - Fear of making a mistake / lawsuit
  - Fear of disease transmission
  - Uncertainty about the care to provide or need to call for help



# When to Call for Medical Help (1 of 3)

- 9-1-1 is the number in most areas in America.
- Can you identify examples of when you would call 9-1-1 for medical care?



# When to Call for Medical Help (2 of 3)

- Call 9-1-1 for any of these:
  - Loss of consciousness
  - Difficulty breathing
  - Seizure
  - Chest or abdominal pain/pressure
  - Serious bleeding
  - Serious burns
  - Vomiting blood
  - Serious head, neck, back injury
  - Stroke
  - Broken bones

# When to Call for Medical Help (3 of 3)

- The dispatcher often asks:
  - Your name and phone number
  - Location of the victim
  - What happened
  - How many people need help
  - Victim's condition
  - What care is being provided



# Staying Safe From Disease

- Though your risk is low, following Standard Precautions further protects against exposure to any bodily fluids.



# Specific Diseases of Concern

- Bloodborne Transmission
  - Hepatitis B
  - Hepatitis C
  - Human Immunodeficiency Virus (HIV)
- Airborne Transmission
  - Tuberculosis
  - Measles



# Standard Precautions

- Measures put in place to reduce the risk of disease transmission:
  - Hand washing
  - Engineering controls
  - Work practice controls
  - Personal Protective Equipment (PPE)





# Personal Protective Equipment

- PPE helps responders maintain an effective barrier during care and includes:
  - Medical exam gloves
  - Breathing devices
  - Eyewear (goggles, glasses with shields)
  - Gowns
  - Antiseptic solution



# Safety During First Aid

- Use barriers to avoid blood
- Use breathing masks if available
- Do not eat or drink while rendering care
- Avoid touching your mouth, nose, or eyes while rendering care
- Wash thoroughly after care
- Do not touch items soiled with bodily fluids
- Clean surfaces properly with a mixture of 1 part bleach and 9 parts water
- Dispose of all soiled items properly.



# Handling an Exposure

- If an exposure occurs:
  - Clean skin thoroughly
  - Flush eyes if needed
  - Document the event
  - Report the event to your job supervisor
  - Follow your company's exposure control plan



# Discussion (1 of 2)

- Can you provide examples of emergency situations?
- Can you list some conditions that would require a call to 9-1-1?
- What are some basic legal considerations that apply to emergency care?



# Discussion (2 of 2)

- Can you name several diseases that pose a risk of transmission during first aid?
- What precautions can you take to help prevent disease transmission during first aid?



# ASSESSING THE SCENE AND THE VICTIM

## Lesson 2



# Learning Outcomes

- Identify dangers at the scene of an emergency.
- Describe the purpose of the primary check when assessing a victim.
- Describe the purpose of the secondary check when assessing a victim.
- Demonstrate how to assess a responsive and unresponsive victim using the primary and secondary check.



# Lesson 2 Overview

- Scene Check
- Primary Check
- Secondary Check





# Scene Check

- Unsafe scenes can include:
  - Traffic
  - Fire/Smoke
  - Downed electrical wires
  - Unsafe structures
  - Chemical spills / Poisonous gas
  - Active assailant



# Primary Check

- A check for immediate life threats
  - Responsiveness
  - Breathing
  - Heartbeat
  - Severe bleeding



# Primary Check Steps

- Check responsiveness
  - Tap and shout
- Call 9-1-1 if needed
- Check breathing
  - Look and listen
- Check for severe bleeding



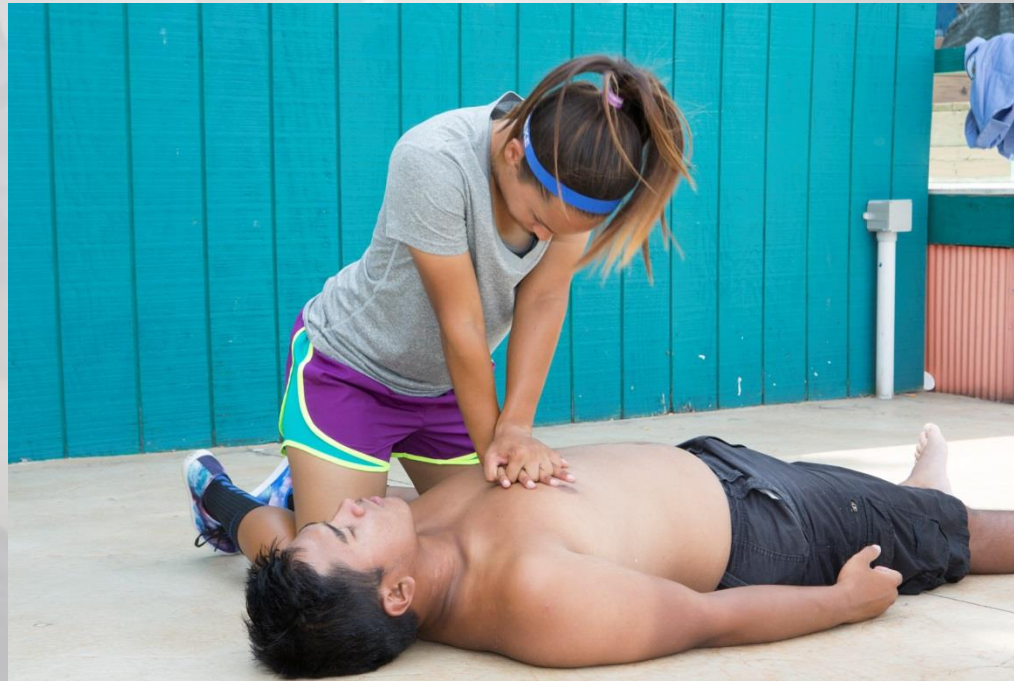
# If Unresponsive and Vomiting

- Position the victim on the side
  - Keeps the airway clear



# If Unresponsive and Not Breathing

- Provide CPR



# Secondary Check

- Only done once life threatening problems are resolved
- Two parts:
  - *Gather information* about the victim's condition.
  - *Physical exam* for conditions that could need care or become more serious if left uncared for.

# Gathering Information

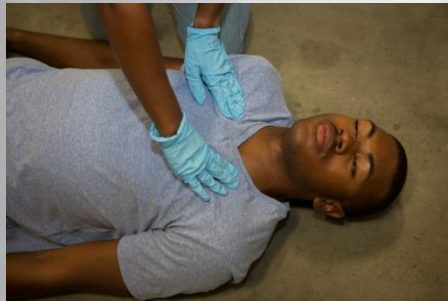
- Use SAMPLE to gather information
  - Signs and symptoms
  - Allergies
  - Medications
  - Past medical history
  - Last intake
  - Events leading up to the problem

# Physical Exam

- Use DOTS
  - Deformity
  - Open wound
  - Tenderness
  - Swelling
- Complete head – to – toe check when uncertain of all potential problems



# Checking Head – to - Toe



# Physical Exam

- Consider skin condition (temperature and moisture).
- Look for medical identification bracelet that could help determine the problem.



# Discussion (1 of 2)

- Can you describe situations that would make a scene unsafe to provide care?
- What is the purpose of the primary check?
- How do you conduct a primary check?
- When is the secondary check performed?



# Discussion (2 of 2)

- What are the steps of the secondary check?
- What is the difference between a sign and a symptom?
- What do the mnemonics SAMPLE and DOTS stand for?



# BREATHING EMERGENCIES

## Lesson 3



# Learning Outcomes (1 of 2)

- Identify causes of breathing emergencies.
- Describe how to recognize someone having breathing difficulty.
- Describe how to care for a victim experiencing breathing problems.

# Learning Outcomes (2 of 2)

- Describe how to care for someone who stops breathing.
- Demonstrate how to care for a responsive choking adult, child, and infant.
- Describe how to care for an unresponsive choking victim.



# Lesson 3 Overview

- The Breathing Process
- Causes of Breathing Problems
- Recognizing Breathing Problems
- Caring for Breathing Problems
- Airway Obstruction in a Responsive Adult or Child
- Airway Obstruction in a Responsive Infant
- Airway Obstruction in an Unresponsive Victim





# The Breathing Process (1 of 3)

- Delivers oxygen to the lungs during inhalation
- Removes waste products, such as carbon dioxide, during exhalation



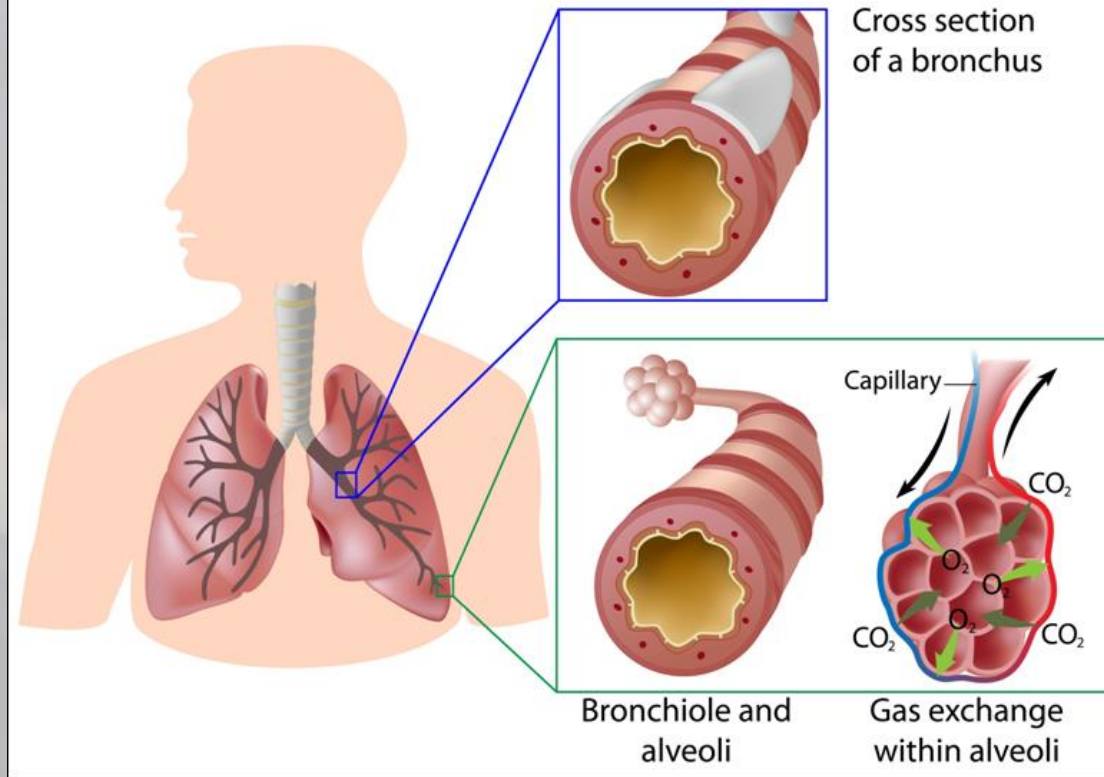
# The Breathing Process (2 of 3)

- Trachea
  - Windpipe leading to the lungs
- Bronchi
  - Two main branches off the trachea
- Bronchioles
  - Smaller branches off the bronchi
- Alveoli
  - Small air sacs at the end of the bronchioles
  - Oxygen and carbon dioxide are exchanged within tiny blood vessels (capillaries)



# Respiratory System

## Human Lung Anatomy and Function



# Causes of Breathing Problems

- Airway obstruction
- Inhaling smoke or other chemicals
- Asthma
- Lung infections
- Drowning / Suffocation
- Chest trauma
- Narcotic overdose
- Electrocutation
- Heart attack / cardiac arrest

# Recognizing Breathing Problems

- Signs and symptoms include:
  - Labored or noisy breathing
  - Slow or fast breathing
  - Irregular breathing
  - Deep or shallow breathing
  - Changes in skin color
  - Restlessness, confusion
  - Changes in consciousness
  - Chest discomfort



# Agonal Breaths

- Infrequent gasping breaths
  - As few as 1 or 2 breaths over several minutes
  - Seen during cardiac arrest
  - Do not confuse with adequate breathing



# Care for Breathing Problems

- To care for breathing problems
  - Rest in a position that makes breathing easier
  - Assist with any prescribed medications
  - Call 9-1-1
  - Provide comfort and reassurance
  - Keep the airway clear
  - If the victim stops breathing and is unresponsive, start CPR



# Airway Obstruction in a Responsive Adult or Child (1 of 2)

- Often results from food, becoming lodged in the throat
- Clutching the throat is the universal distress sign of choking
- Unable to cough, speak, cry, or breathe





# Airway Obstruction in a Responsive Adult or Child (2 of 2)

- Provide the Heimlich Maneuver
  - Position yourself behind the victim.
  - Place your fist just above the navel.
  - Grasp your fist with the other hand
  - Give inward and upward abdominal thrusts
  - Repeat these steps until the obstruction is removed or the victim becomes unresponsive



# Airway Obstruction in a Large or Pregnant Person

- Give chest thrusts instead of abdominal thrusts



# Airway Obstruction in a Responsive Infant

- Support the jaw and place the infant face down on arm and leg
- Give 5 back slaps
- Give 5 chest thrusts
- Look in the mouth and remove any object visible
- Repeat steps until object is expelled or the infant becomes unresponsive



# Obstructed Airway in an Unresponsive Person

- Provide 30 chest compressions
- Look in the mouth for any object, and sweep the object out if it is visible
- Attempt 2 breaths
- Repeat this process until chest rise is obtained



# Discussion (1 of 2)

- Can you describe the breathing process?
- What are the causes of breathing problems?
- What are the signs and symptoms of breathing problems?



# Discussion (2 of 2)

- Can you describe how to care for a victim having a breathing problem?
- How should you provide care for airway obstruction in a responsive adult/child or infant?
- How should you provide care for airway obstruction in any unresponsive victim?



# CARDIOVASCULAR EMERGENCIES

## Lesson 4



# Learning Outcomes (1 of 2)

- Describe how the circulatory system works.
- Identify the risk factors of cardiovascular disease.
- Describe how to recognize a heart attack.
- Describe how to care for a person experiencing a heart attack.
- Describe how to recognize a stroke.





# Learning Outcomes (2 of 2)

- Describe how to assess and care for a person experiencing a stroke.
- Demonstrate how to provide cardiopulmonary resuscitation (CPR) for an adult, child, and infant.
- Demonstrate how to relieve airway obstruction or an unresponsive adult, child, and infant.



# Lesson 4 Overview

- The Circulatory System
- Understanding Cardiovascular Disease
- Heart Attack
- Stroke
- Cardiac Arrest
- Cardiopulmonary Resuscitation (CPR)



# The Circulatory System (1 of 2)

- Comprised of the heart and blood vessels
- Delivers oxygen and nutrients throughout the body, and removes waste products
- Two upper chambers - the atria
- Two lower chambers - the ventricles

# The Circulatory System (2 of 2)

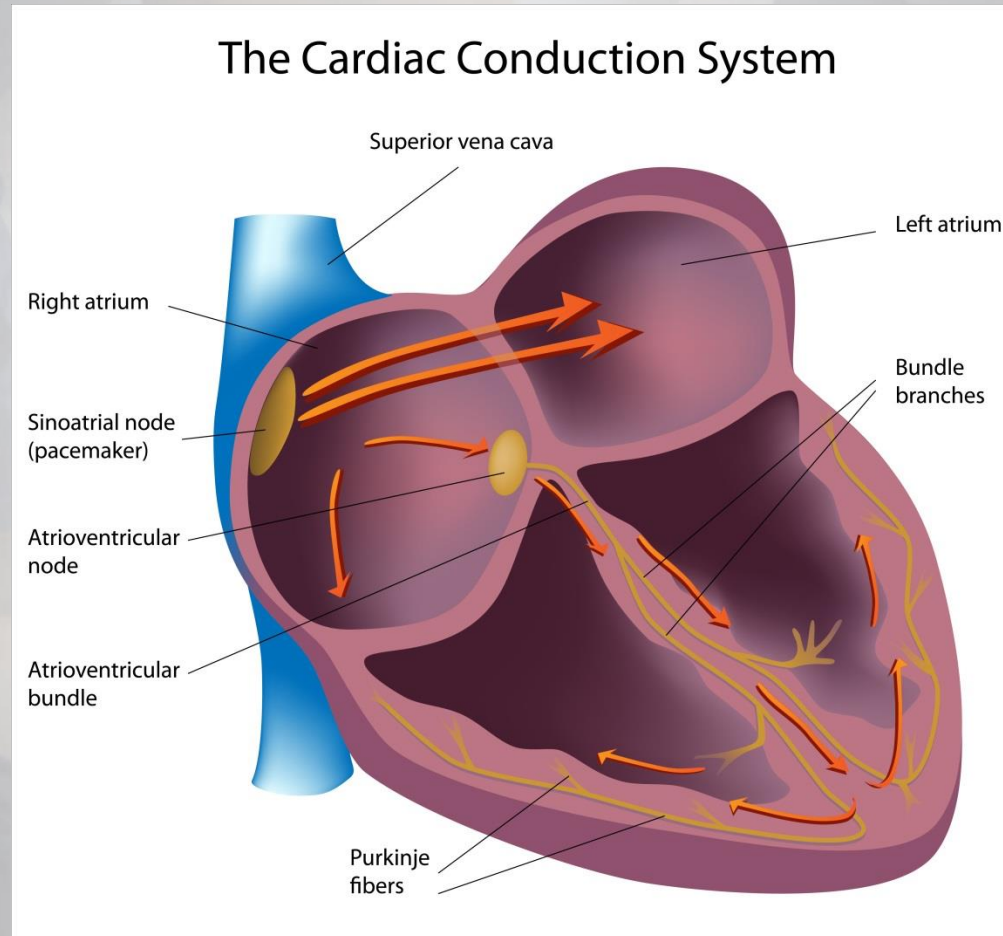
- Right Atria and Right Ventricle
  - Receive oxygen-poor venous blood from the body.
  - Pump it to the lungs.
  - Waste products are removed & oxygen picked up.
- Left Atria and Left Ventricle
  - Accept the oxygen-rich blood.
  - Pump it to all parts of the body through arteries.

# Electrical Activity of the Heart (1 of 2)

- The heart creates its own electrical impulses automatically
- Impulses move along an electrical conduction system in a wavelike pattern
- When impulses reach specialized muscle cells, the chambers of the heart contract and then relax
- This activity can be seen on an ECG



# Electrical Activity of the Heart (2 of 2)



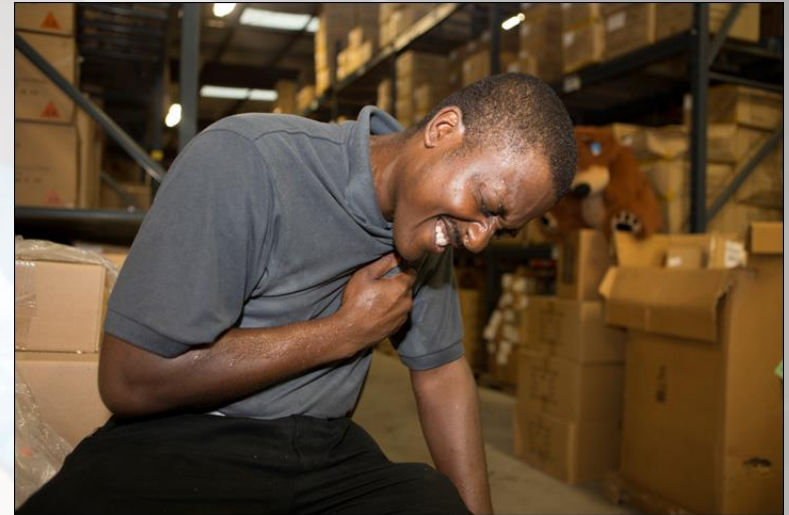
# Cardiovascular Disease (1 of 2)

- #1 killer in America
- Coronary heart disease (CHD) involves the narrowing of the coronary arteries
- Usually caused by atherosclerosis
  - Plaque (cholesterol substances).



# Cardiovascular Disease (2 of 2)

- Types of cardiovascular disease include:
  - Arrhythmias
  - Heart valve problems
  - Heart failure
  - Stroke





# Cardiovascular Disease

## Risk Factors (1 of 2)

- 5 Controllable factors
  - High cholesterol
  - High blood pressure
  - Overweight
  - Smoking
  - Diabetes



# Cardiovascular Disease

## Risk Factors (2 of 2)

- 3 Uncontrollable factors
  - Gender
  - Heredity
  - Age



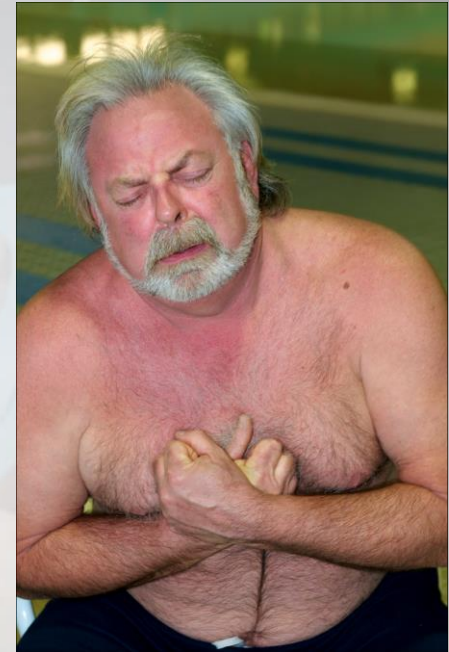
# Heart Attack

- Blood supply to part of the heart blocked
- Portions of heart muscle tissue die from lack of oxygen



# Recognizing Heart Attack

- Signs & symptoms include:
  - Chest pain /discomfort
  - Difficulty breathing
  - Profuse sweating
  - Nausea and vomiting
  - Cool, pale skin
  - Unusual weakness / fatigue
  - Dizziness / fainting
  - Irregular heart beat



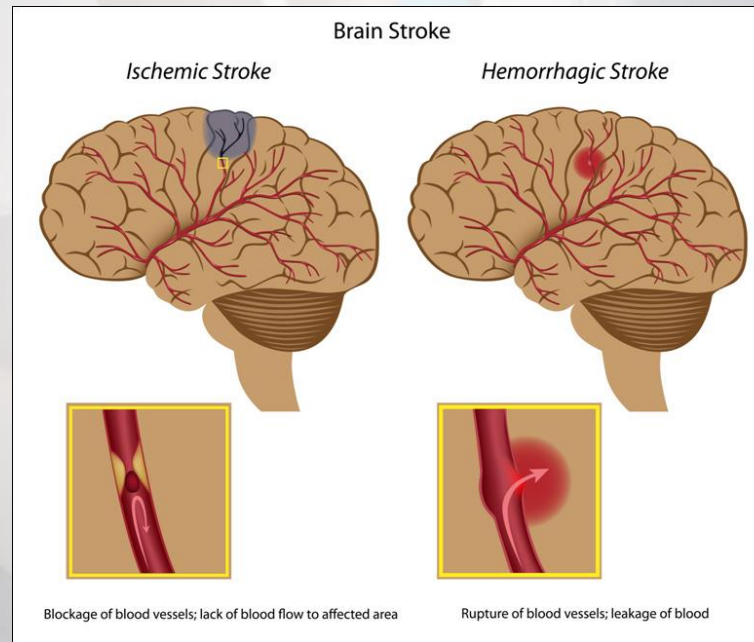
# Care for Heart Attack

- To care for a heart attack
  - Stop activity and rest
  - Call 9-1-1.
  - Loosen any restrictive clothing
  - Assist with prescribed heart medication (e.g. nitroglycerin)
  - Provide aspirin (1 regular or 2 low dose) with caution



# Stroke (Brain Attack)

- Blood vessel in the brain becomes blocked or ruptures



# Recognizing Stroke (1 of 2)

- Signs and symptoms include:
  - Numbness, weakness, or paralysis of the face, arm, or leg on one side
  - Difficulty speaking
  - Difficulty understanding
  - Dizziness
  - Blurred or decreased vision in one eye
  - Sudden, severe headache
  - Unequal pupils



# Recognizing Stroke (2 of 2)

- Use the F.A.S.T stroke action plan to quickly recognize stroke
  - **F**acial droop
  - **A**rm weakness
  - **S**peech difficulty
  - **T**ime to get help





# Care for Stroke

- To care for stroke:
  - Stop activity and rest
  - Call 9-1-1



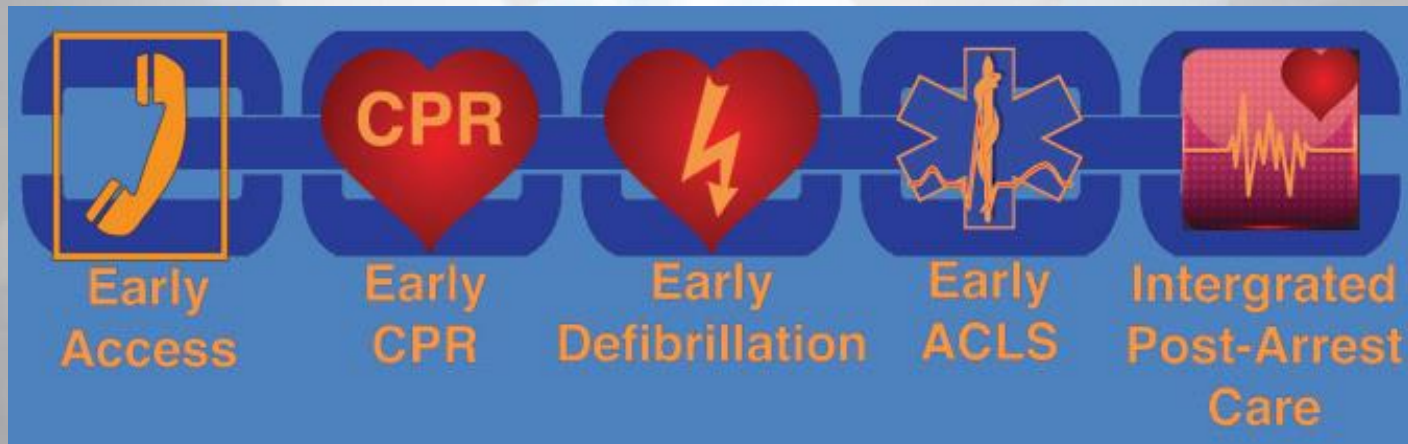
# Cardiac Arrest

- Heart muscle severely damaged
- Person will become unresponsive, non-breathing, and heart stops
- Care involves calling 9-1-1, CPR, and AED.



# Chain of Survival

- 5 actions that are linked together to provide the best care and chance of survival for a person in cardiac arrest.



# Cardiopulmonary Resuscitation (CPR)

- Provided to anyone in cardiac arrest.
- Involves chest compressions and ventilations
- Helps circulate blood and oxygen to vital organs throughout the body



# Providing CPR

- Effective CPR requires:
  - Victim positioned on the back, on a hard surface.
  - Compressions in the center of chest
  - Compress fast (approximately 110 compressions per minute - Range of 100-120/min)
  - Push deep (2 -2.4inches for adults)
  - Push rhythmically
  - Allow for complete recoil of the chest (Do not lean)
  - Minimize interruptions



# Rescue Breaths

- Process of breathing for an unresponsive, non-breathing victim
  - Follows 30 chest compressions
  - Requires proper positioning of the airway
  - Provide 2 breaths of 1 second each until chest rises



# Opening the Airway

- Tilting the head and lifting the chin displaces the tongue for rescue breaths
- Provides an open path for air to the lungs



# Disease Protection During Rescue Breathing

- Use a barrier device (e.g. face shield)





# If Breaths Fail to Make the Chest Rise

- Reposition the head and reattempt ventilation
- If still unsuccessful, provide 30 chest compressions
- Check the mouth and remove any object visible
- Reattempt breaths



# Performing Adult CPR

- To perform adult CPR:
  - Determine unresponsive, not breathing.
  - Use 2 hands,
  - Compress 30 times
  - Give 2 breaths
  - Continue compressions & breaths until a defibrillator is available or the victim shows signs of life.



# Performing Child CPR

- To perform child CPR:
  - Determine unresponsive, not breathing
  - Use 1 or 2 hands
  - Compress 30 times
  - Give 2 breaths
  - Continue compressions & breaths until a defibrillator is available or the child shows signs of life



# Compression-Only CPR

- Acceptable alternative to traditional CPR if unable or unwilling to provide breaths
  - Vomiting
  - Blood in mouth
  - Uncertainty of skill



# Suspected Opioid Overdose

- Causes central nervous system depression
- can lead to the stoppage of breathing and ultimately cardiac arrest.
- Nalaxone reverses effects for those in respiratory arrest
  - Intranasal injection
  - Intramuscular injection



# Suspected Opioid Overdose

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  - Intramuscular injection



# Discussion (1 of 2)

- Can you describe how the circulatory system functions?
- What are the risk factors of cardiovascular disease?
- What are the signs and symptoms of a heart attack?
- Can you describe how to care for a person experiencing a heart attack?



# Discussion (2 of 2)

- Can you identify the signs and symptoms of a person experiencing a stroke?
- How should you provide care for a person experiencing a stroke?
- How is CPR performed for an adult, child, and infant in cardiac arrest?
- How do you clear an airway obstruction in an unresponsive victim?





# AUTOMATED EXTERNAL DEFIBRILLATION (AED)

## Lesson 5



# Learning Outcomes (1 of 2)

- Explain the electrical conduction system of the heart.
- Explain the two abnormal heart rhythms that the AED can correct.
- Identify the elements common to all AEDs.
- Describe how an AED works to help a victim in cardiac arrest.



# Learning Outcomes (2 of 2)

- Describe special considerations when using an AED.
- Describe how to maintain an AED in proper working condition.
- Demonstrate how to use an AED.

# Lesson 5 Overview

- The heart's Electrical Conduction System
- About AEDs
- Using an AED
- Special Considerations
- AED Maintenance

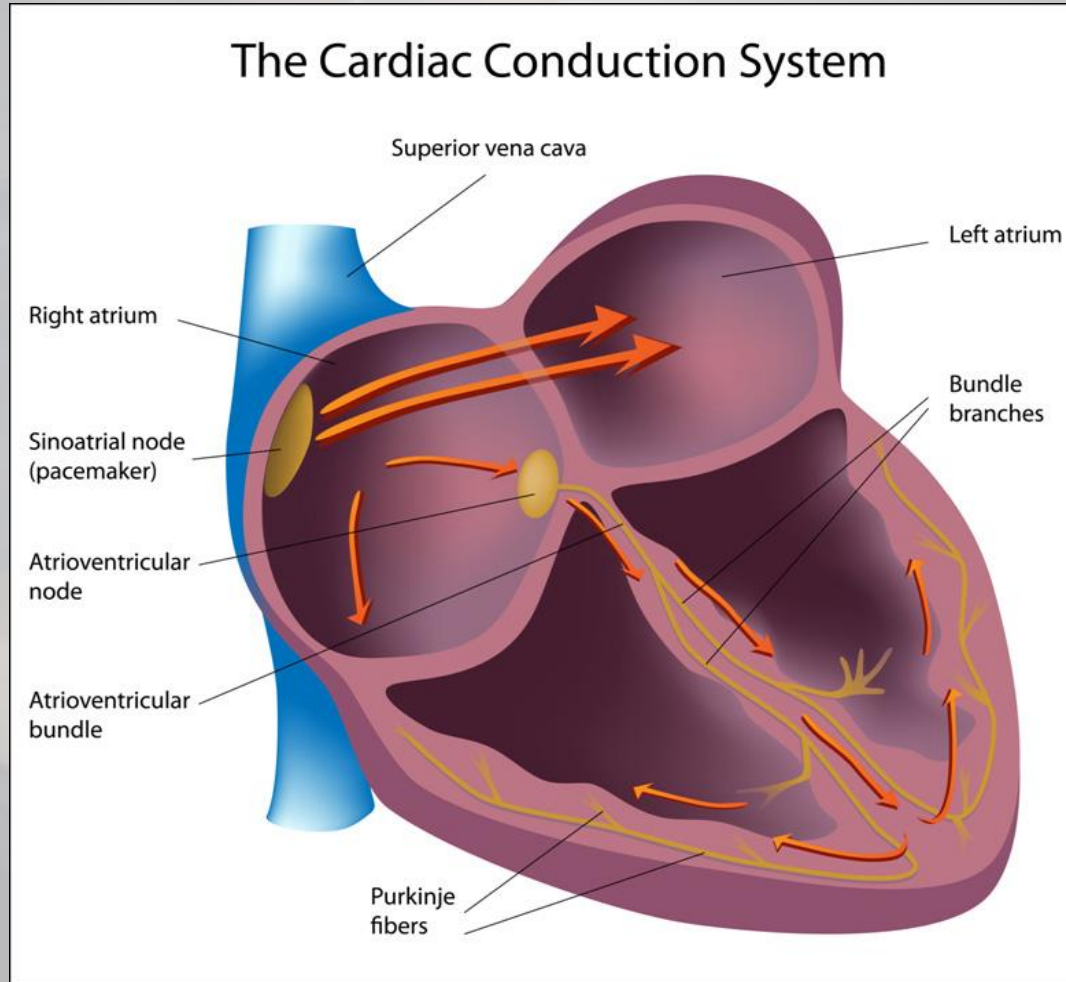


# Heart Electrical Conduction System (1 of 2)

- Normal electrical impulses originate in the upper right side of the heart
- Waveform moves through the heart to the ventricles
- Heart muscle contraction occurs



# Heart's Electrical Conduction System (2 of 2)



# Cardiac Dysrhythmias

- Electrical disturbances due to the interruption of normal electrical activity
- 2 common life-threatening dysrhythmias:
  - Ventricular fibrillation (V-fib)
  - Ventricular tachycardia (V-tach)

# Ventricular Tachycardia

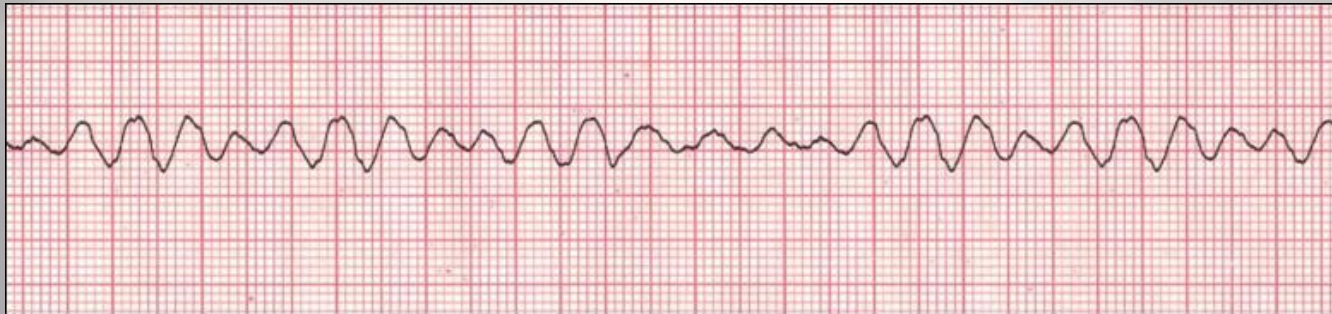
- Originates in the ventricles
- Ventricles beat far too fast
- The chambers cannot fill properly or pump blood effectively





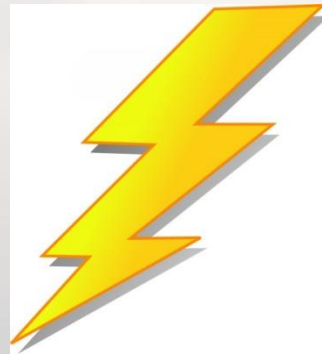
# Ventricular Fibrillation

- Originates in the ventricles
- Chaotic, disorganized electrical activity
- Blood is not pumped out of the heart
- Person is pulseless



# Caring For V-Fib & V-Tach

- Both electrical disturbances respond to defibrillation
  - Delivering an electric shock to the heart to correct these two dysrhythmias
- Time matters. Chance of survival decreases about 7% for every minute until shock.



# About AEDs (1 of 2)

- Used in conjunction with CPR for cardiac arrest
- Portable device
- Guides the user
- Analyzes heart rhythm
- Delivers defibrillatory shock if needed



# About AEDs (2 of 2)

- Features of all AEDs:
  - Battery operated
  - Self maintained
  - Power on/off
  - Voice prompts
  - Cable and electrodes
  - ECG Analysis
  - Defibrillation capability



# Using an AED (1 of 3)

- Turn on the AED
- Follow the prompts:
  - Prepare the chest
  - Attach the electrode pads
  - Do not touch person
  - Allow for analysis
  - Deliver shock if needed
  - Provide CPR
  - Reanalyze



# Using an AED (2 of 3)

- Precaution
  - Stand clear when analyzing and shocking



# Using an AED (3 of 3)

- AEDs and CPR
  - Provide 2 minutes of CPR between every AED analysis / shock as long as cardiac arrest continues



# Special Considerations (1 of 5)

- Medication patches
  - Remove if in the way of either patch
  - Wipe the chest dry
  - Apply the electrode pads





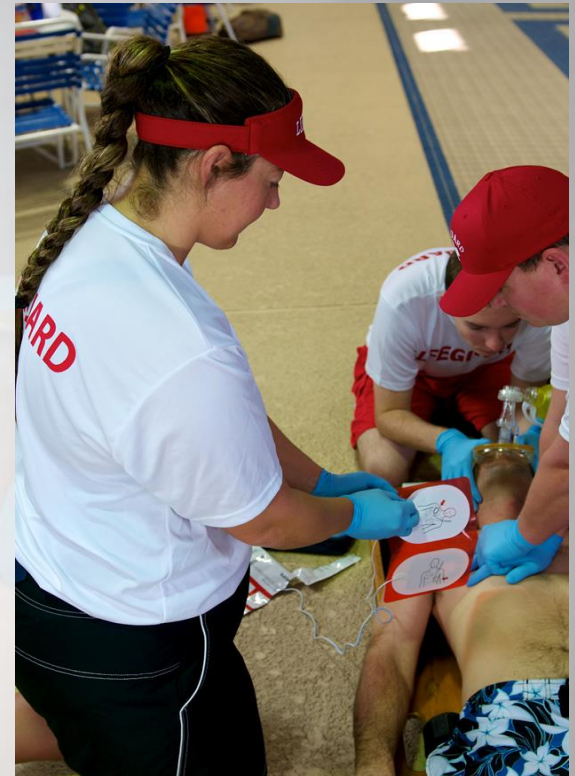
# Special Considerations (2 of 5)

- Children and Infants (Age 8 and under).
  - Special pediatric pads or key reduce energy.
  - Use adult pads if pediatric pads are not available.
  - Apply electrode pads according to manufacturer instructions.



# Special Considerations (3 of 5)

- Water
  - Remove the person from free standing water
  - Dry the chest
  - Apply the electrode pads



# Special Considerations (4 of 5)

- Implanted Devices
  - Pacemaker
  - Internal cardioverter defibrillator (ICD)
  - Avoid placing electrode pads over top device
  - If an ICD is administering shocks, wait until it is done to apply and use your AED



# Special Considerations (5 of 5)

- Piercings and Jewelry
  - Rarely an issue
  - Apply electrode pads so not in contact with piercings or jewelry.
  - Remove only if in the way of the electrode pads.



# AED Maintenance

- Periodic inspection is needed
  - Verify good working condition
  - Verify up-to-date supplies
  - Device provides visual and audible warnings if something is wrong



# Discussion (1 of 2)

- Can you explain the electrical conduction system of the heart?
- What are the two abnormal heart rhythms that an AED can correct?
- What elements are common to all AEDs?
- Can you list steps for the use of an AED?



# Discussion (2 of 2)

- What special considerations should you be aware of when using an AED?
- How should an AED be maintained to insure proper working condition?

