Cardiac Arrest

Pea Ridge Fire Department

EMS Refresher

Introduction

- The role of the paramedic was created to provide early treatment for patients with acute myocardial infarction (AMI).
- AMI occurs when sudden narrowing or complete occlusion of a coronary artery causes myocardial tissue necrosis
- One person has an AMI in the United States about every 40 seconds.

Introduction

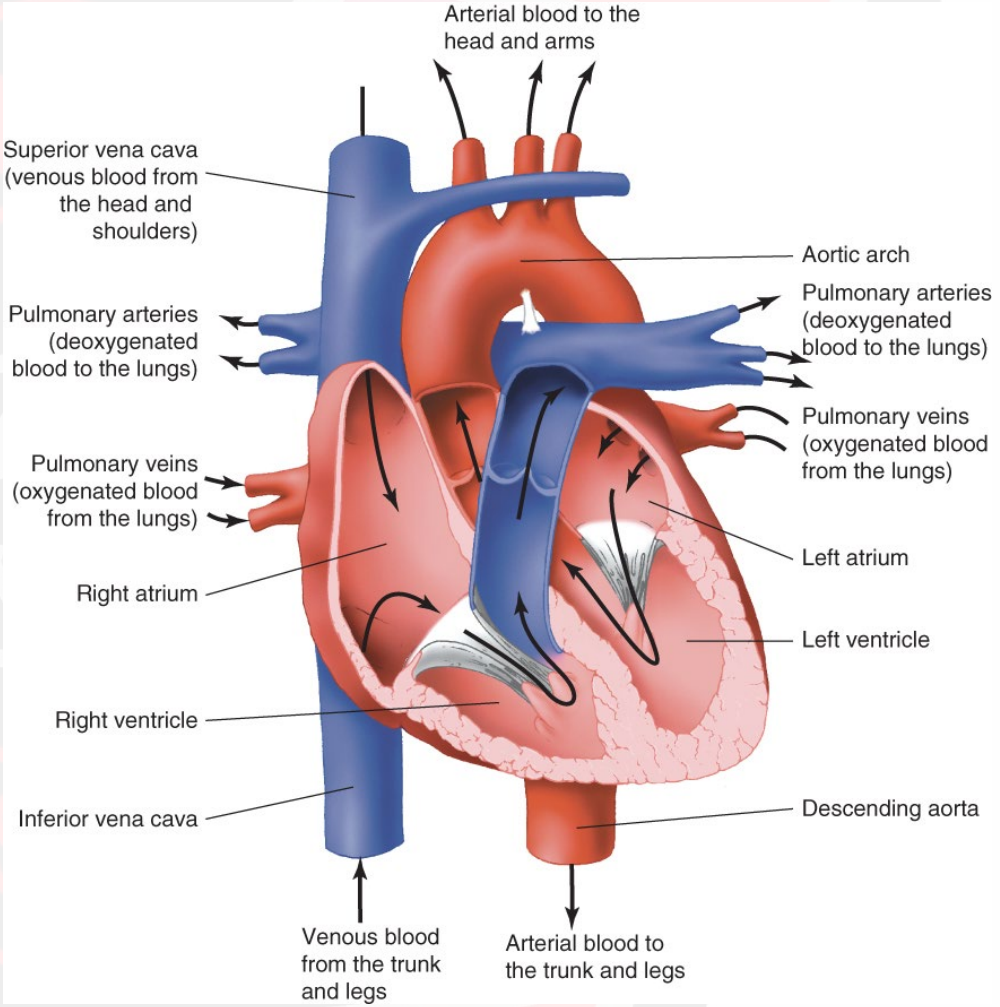
- Cardiac arrest is the cessation of cardiac mechanic activity.
- In the United States, emergency medical services (EMS) personnel treat about 60% of out-of-hospital cardiac arrests each year.

Anatomy and Physiology Review

- Structure and function
  - Cardiovascular system
    - Composed of heart and blood vessels
    - Delivers oxygenated blood and nutrients to cells
    - Delivers chemical messengers (hormones)
    - Transports waste products to disposal sites

The Heart

- The heart has four chambers
  - Right atrium
  - Left atrium
  - Right ventricle
  - Left ventricle



The Heart

- Right atrium
  - Receives blood low in oxygen from the superior vena cava, inferior vena cava, and the coronary sinus
- Left atrium
  - Receives oxygenated blood from the lungs via the right and left pulmonary veins

The Heart

- Right ventricle
  - Pumps deoxygenated blood to the lungs
- Left ventricle
  - Pumps oxygenated blood throughout the body

The Heart

- The septa separate the heart into two functional pumps
  - Right heart: the right atrium and right ventricle
    - A low-pressure system (pulmonary circulation)
  - Left heart: the left atrium and left ventricle
    - A high-pressure system (systemic circulation)

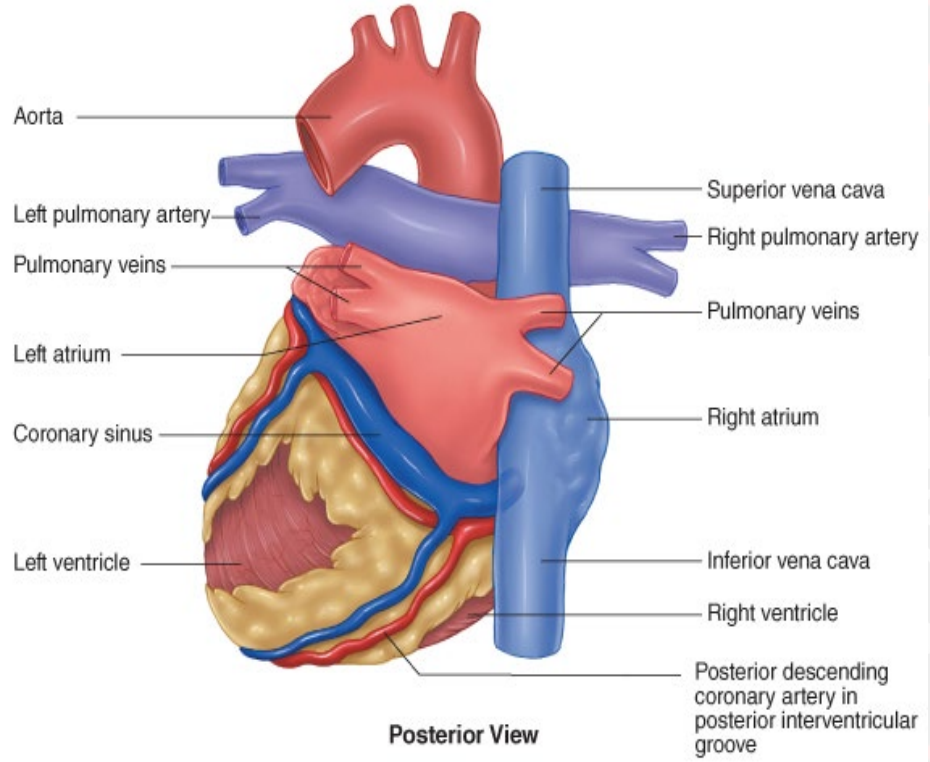
The Heart

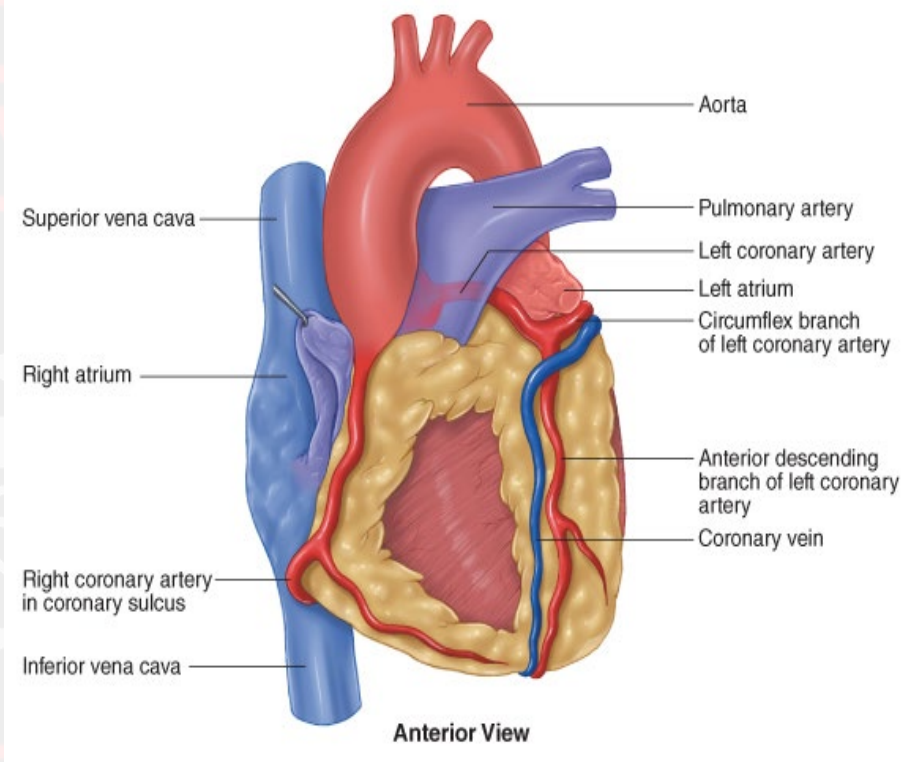
- The myocardium is the middle layer of the heart wall.
  - Composed of thick muscle tissue
  - Responsible for:
    - Cardiac contraction
    - Efficient ejection of blood from the heart

The Heart

- Coronary arteries
  - The left main coronary artery supplies:
    - Left ventricle
    - Interventricular septum
  - The right coronary artery (RCA) supplies:
    - Right atrium
    - Right ventricle
    - Part of the left ventricle
    - Portions of the conduction system

The Heart





The Heart

- Cardiac cells have four properties that help the heart function:
  - Automaticity
  - Excitability
  - Conductivity
  - Contractility

The Heart

- The cardiac conduction system comprises six parts:
  - Sinoatrial (SA) node
  - Atrioventricular (AV) node
  - The bundle of His
  - Right and left bundle branches
  - The Purkinje fibers

Primary Survey

- The order of primary survey steps varies.
  - Normally ABCDE (assess airway, breathing, and then circulation, disability, and exposure)
- If the patient is unresponsive and is suspected of being in cardiac arrest:
  - Order is CABDE (assess circulation, then airway, breathing, disability, and exposure)

History Taking

- Ask about medications
  - Prescription (particularly cardiac)
  - Over-the-counter drugs
  - Herbal supplements
  - Recreational drugs

History Taking

- Determine if the patient has been diagnosed with diseases such as:
  - Coronary artery disease (CAD)
  - Atherosclerotic heart disease
  - Valvular disease
  - Aneurysm
  - Pulmonary disease
  - Diabetes

Physical Exam

- Monitoring devices
  - Cardiac monitor
  - Waveform capnography
  - Pulse oximeter
- Pulse findings
  - Pulse deficit
  - Pulsus paradoxus
  - Pulsus alternans

Reassessment

- Reassessment should be done on the way to the hospital.

Electrophysiology

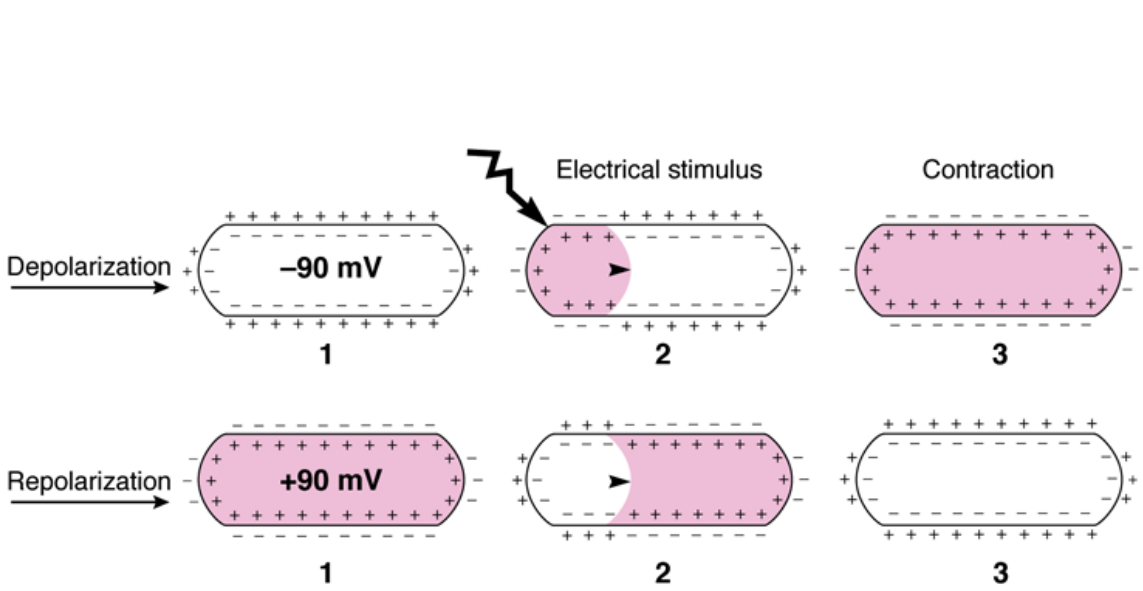
- Depolarization: Muscle fibers are stimulated to contract.
  - Occurs through changes in concentration of electrolytes across cell membranes

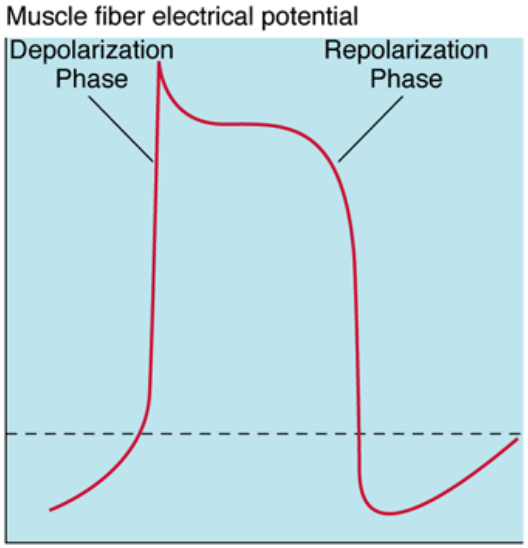
Electrophysiology

- Depolarization (cont'd)
  - The cell receives stimulus from conduction.
    - The permeability of the cell wall changes to allow sodium ions in.
    - Calcium ions also enter.
  - Depolarization spreads, causing a mechanical contraction.

Electrophysiology

- Repolarization begins with the closing of sodium and calcium channels.
  - Sodium ions pumped out and potassium ions pumped in

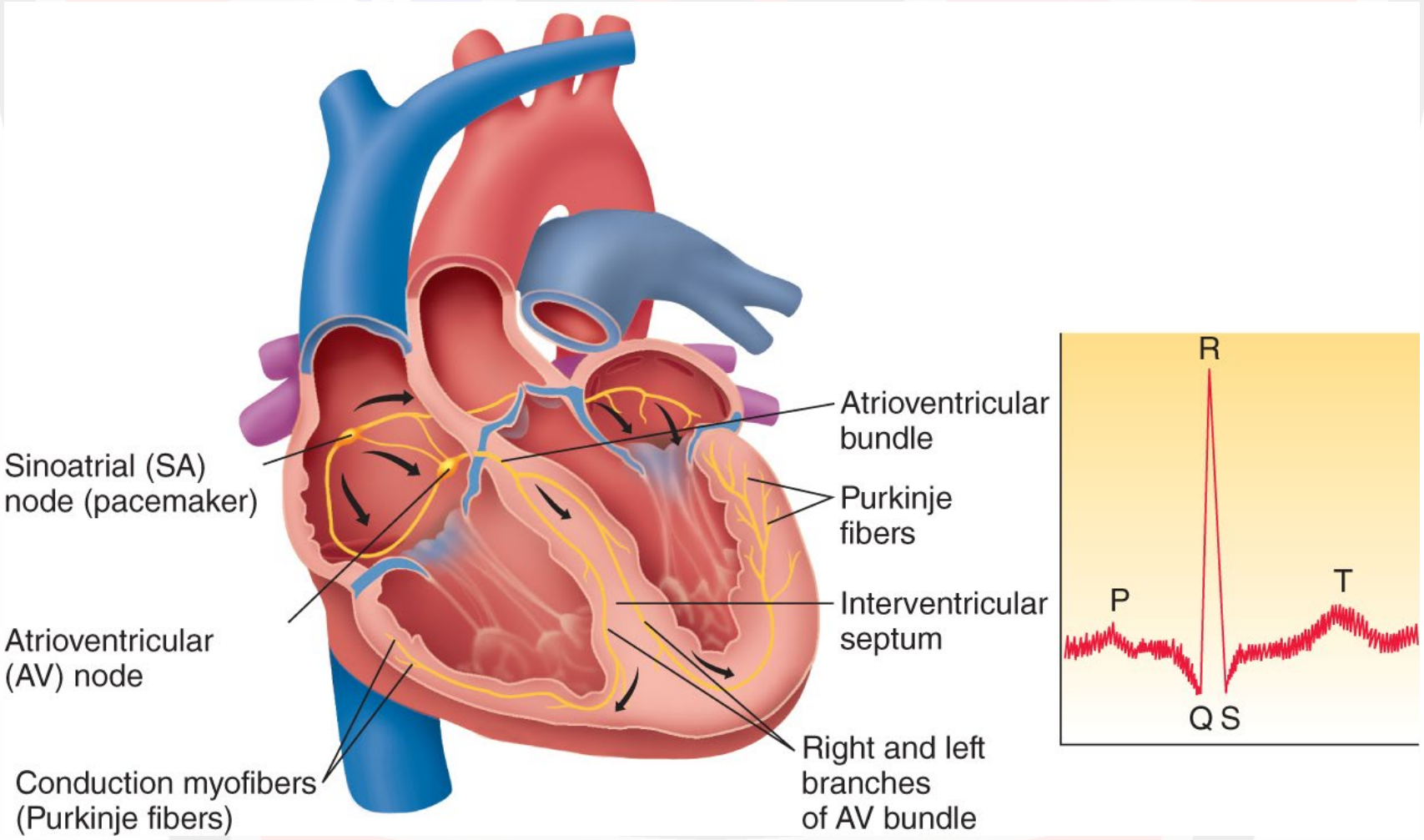




The Electrical Conduction System

- AV node:
  - Electrical impulses move from the SA node to the AV node.
    - Impulse conduction is delayed so the atria will empty into the ventricles.

The Electrical Conduction System



The Electrical Conduction System

- AV node (cont'd):
  - If the atrial rate becomes rapid, not all impulses go through the AV junction.
  - Impulses then normally pass into the:
    - Bundle of His
    - Right and left bundle branches
    - Purkinje fibers

The Electrical Conduction System

- Secondary pacemakers
  - Any conduction system component can act as a secondary pacemaker if the SA node is damaged.

Table 17-2 Pacemaker Intrinsic Rates

Pacemaker	Rate (beats/min)
SA node	60–100
AV junction	40–60
Purkinje network	20–40

Abbreviations: SA, sinoatrial; AV, atrioventricular

Causes of Cardiac Dysrhythmia

- Cardiac dysrhythmia
  - Evaluate in context with overall condition

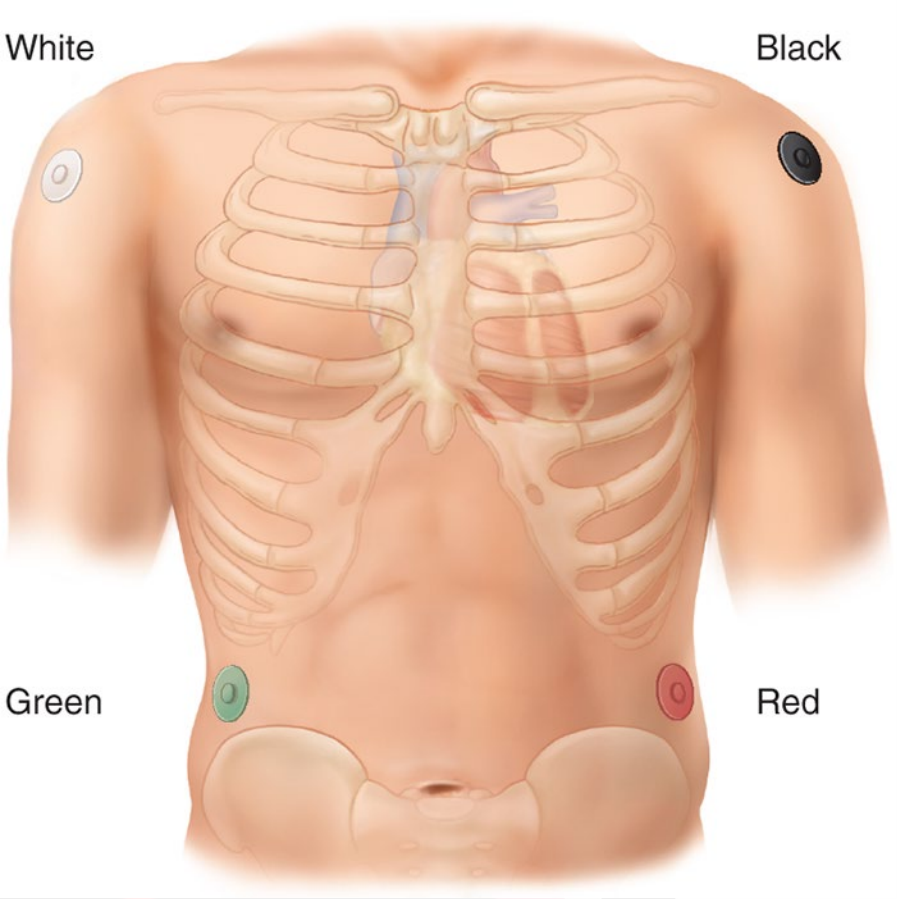
Table 17-3	Causes of Cardiac Dysrhythmias
Acid-base disturbance	
ANS imbalance	
Central nervous system damage	
Certain poisons (eg, organophosphate insecticides)	
Cor pulmonale (right ventricular failure caused by pulmonary disease)	
Distention of cardiac chambers (as in heart failure)	
Drug effects (phenothiazines, tricyclic antidepressants, and drugs used to treat dysrhythmias)	
Electrolyte disturbances, especially those involving potassium, calcium, or magnesium	
Endocrine disorders (hyperthyroidism, hypothyroidism)	
Hypothermia	
Hypoxemia from any cause	
Increased sympathetic output	
Increased vagal (parasympathetic) tone	
Myocardial ischemia or infarction	
Normal variation	
Rheumatic heart disease	
Trauma (eg, cardiac contusion)	

The Electrocardiogram

- Three standard limb leads:
  - Lead I
  - Lead II
  - Lead III
- Provides detailed information about the heart's conduction system

Electrode Placement

- Predetermined spots
- Usually adhesive with gel center



Electrode Placement

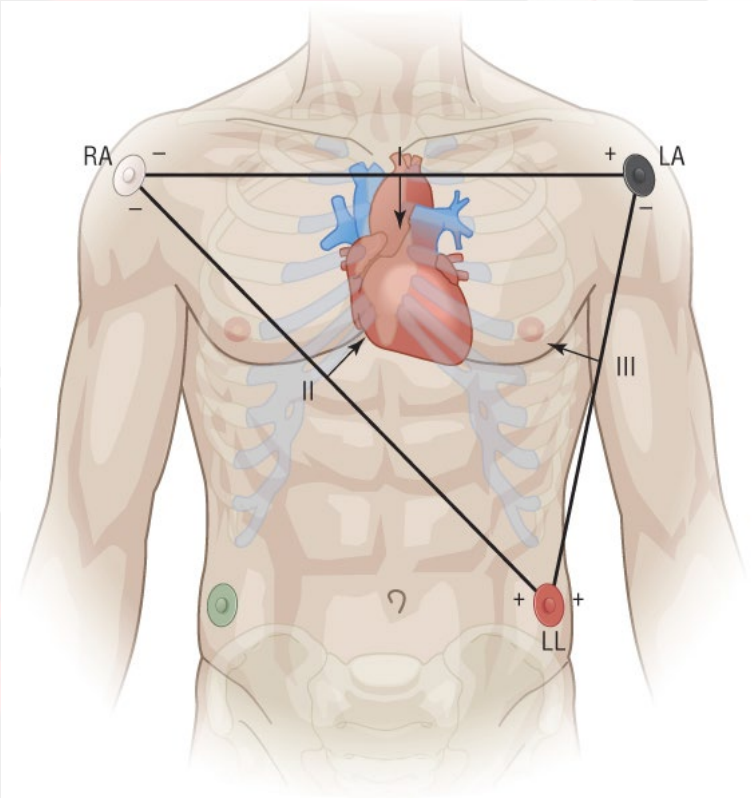
- Basic principles:
  - Shave body hair, if necessary.
  - Rub the site briskly with a dry gauze pad.
  - Attach the electrodes to the ECG cables before placement and confirm correct location.
  - Turn on the monitor and print a sample strip.

The Leads

- Two main groups:
  - Limb leads
    - I, II, III, aVR, aVL, and aVF
  - Precordial leads (chest leads)
    - V_1 to V_6

The Leads

- Limb leads
  - Einthoven's theory: Every time the heart contracts, electrical energy is emitted.
    - Lead I—attached to right and left arms
    - Lead II—runs between right arm and left leg
    - Lead III—runs between left arm and left leg



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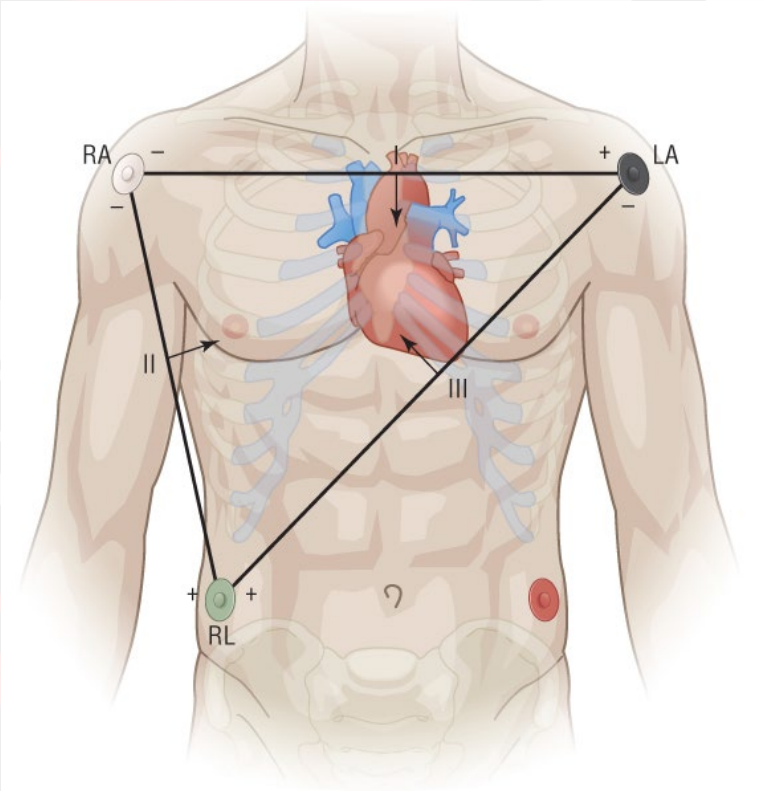
The Leads

- Limb leads (cont'd)
  - Leads I, II, and III are bipolar leads.
    - Contain a positive and negative pole
    - Measure the difference in electrical potential



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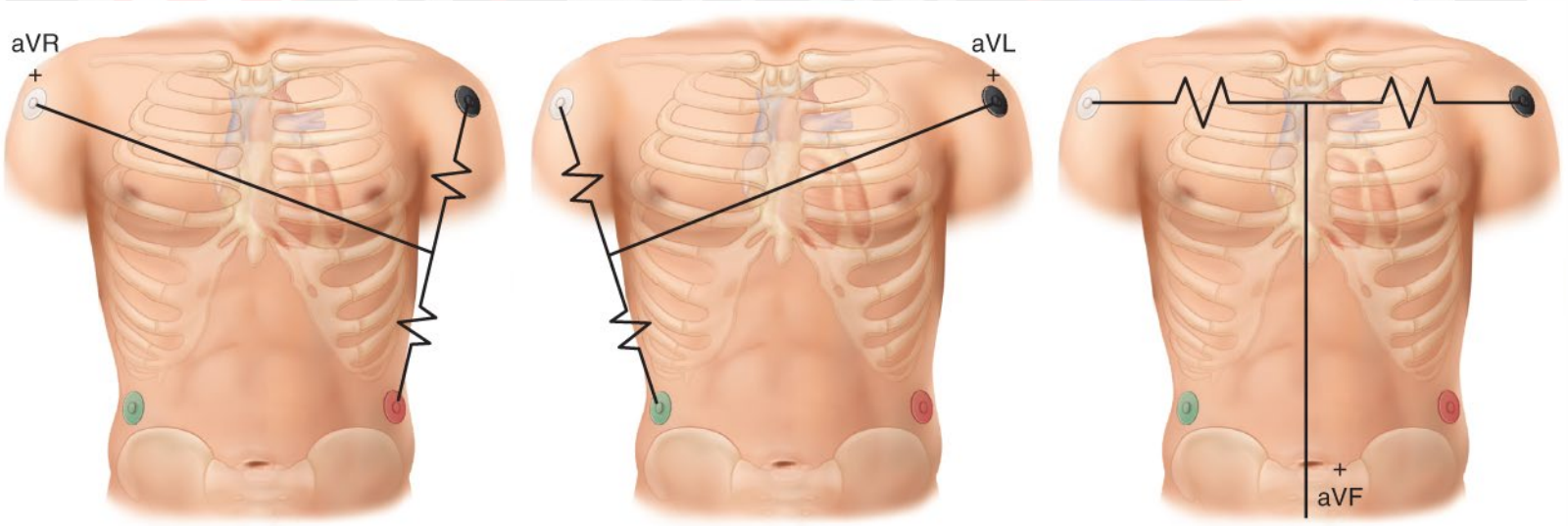
The Leads

- Limb leads (cont'd)
  - Augmented voltage (aV) leads are created using four limb electrodes
    - Leads aVR, aVL, and aVF: combine two limb leads and use the other lead as the other pole.



The Leads

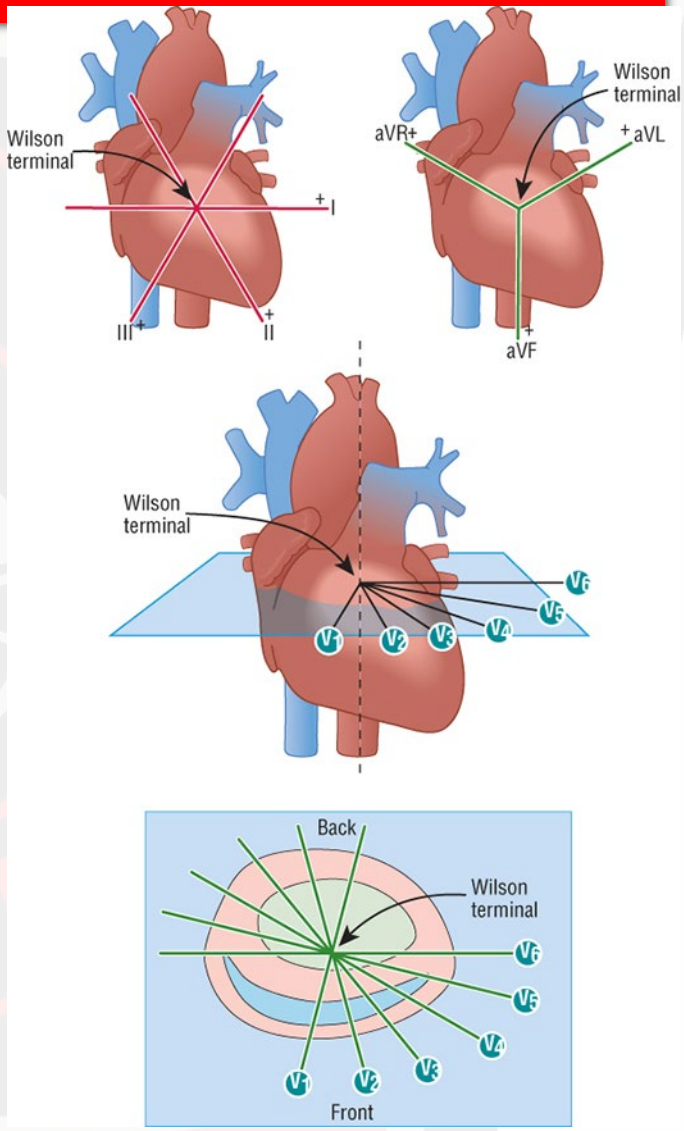
- Limb leads (I, II, III, and aVR, aVL, aVF)
  - For continuous monitoring:
    - White—right upper chest near shoulder
    - Black—left upper chest near shoulder
    - Red—left lower abdomen
    - Green—right lower abdomen

The Leads

- Limb leads (cont'd)
  - For 12-lead ECG:
    - White—right wrist
    - Black—left wrist
    - Red—left ankle
    - Green—right ankle

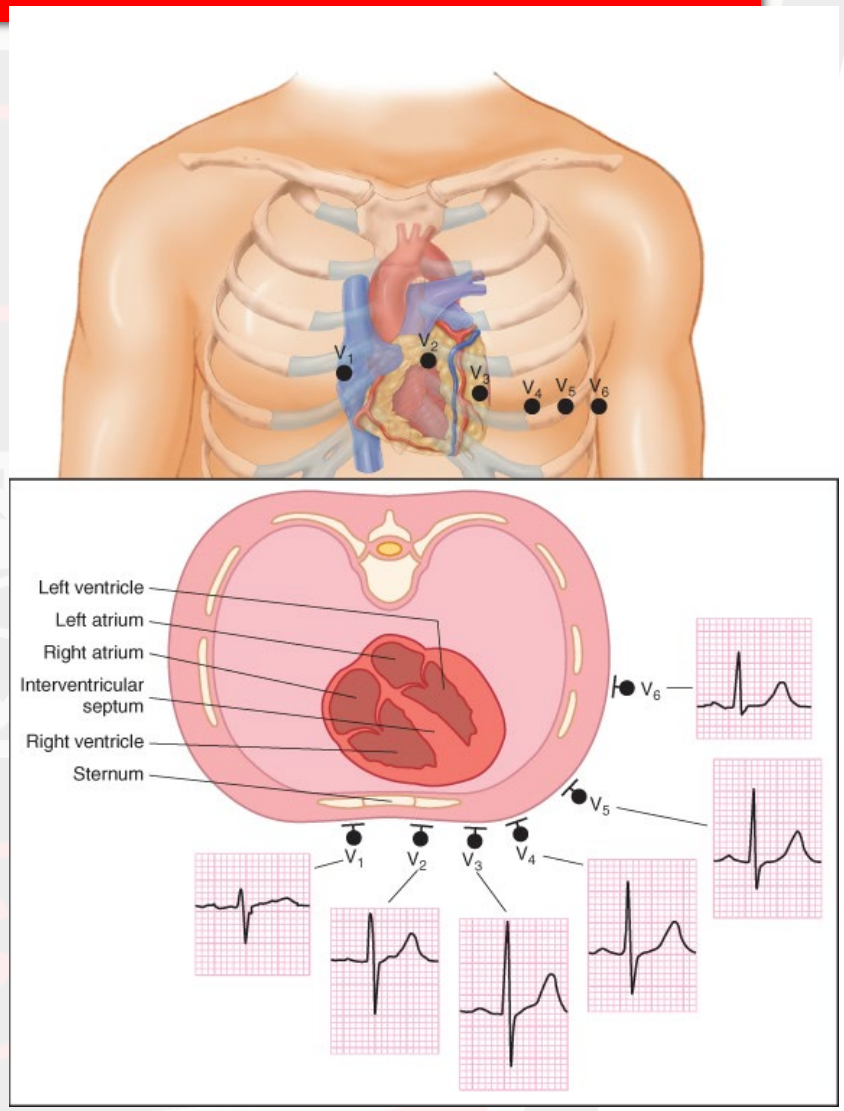
The Leads

- Precordial leads
  - V1 to V6
  - Unipolar, referenced against a calculated point: the Wilson central terminal



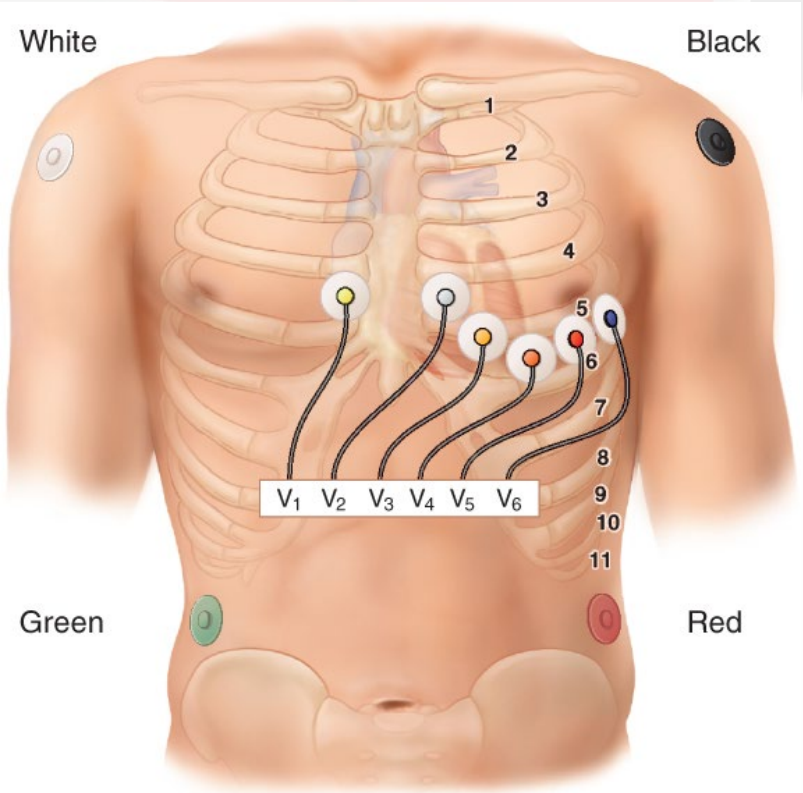
The Leads

- Precordial leads (cont'd)
  - Depict the heart in the horizontal plane



The Leads

- Precordial electrodes must be placed correctly and consistently.



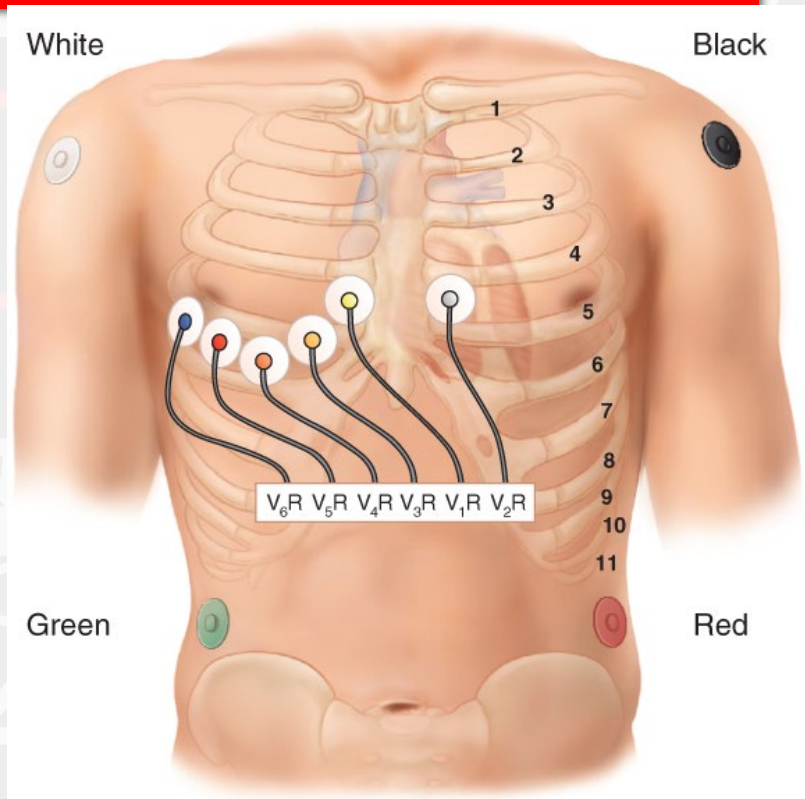
Lead	Location	View
V_1	4th intercostal space, right sternal border	Ventricular septum
V_2	4th intercostal space, left sternal border	Ventricular septum
V_3	Between V_2 and V_4	Anterior wall of left ventricle
V_4	5th intercostal space, midclavicular line	Anterior wall of left ventricle
V_5	Lateral to V_4 at the anterior axillary line	Lateral wall of left ventricle
V_6	Lateral to V_5 at the midaxillary line	Lateral wall of left ventricle

The Leads

- Contiguous leads
  - Leads that view geographically similar areas of the myocardium

The Leads

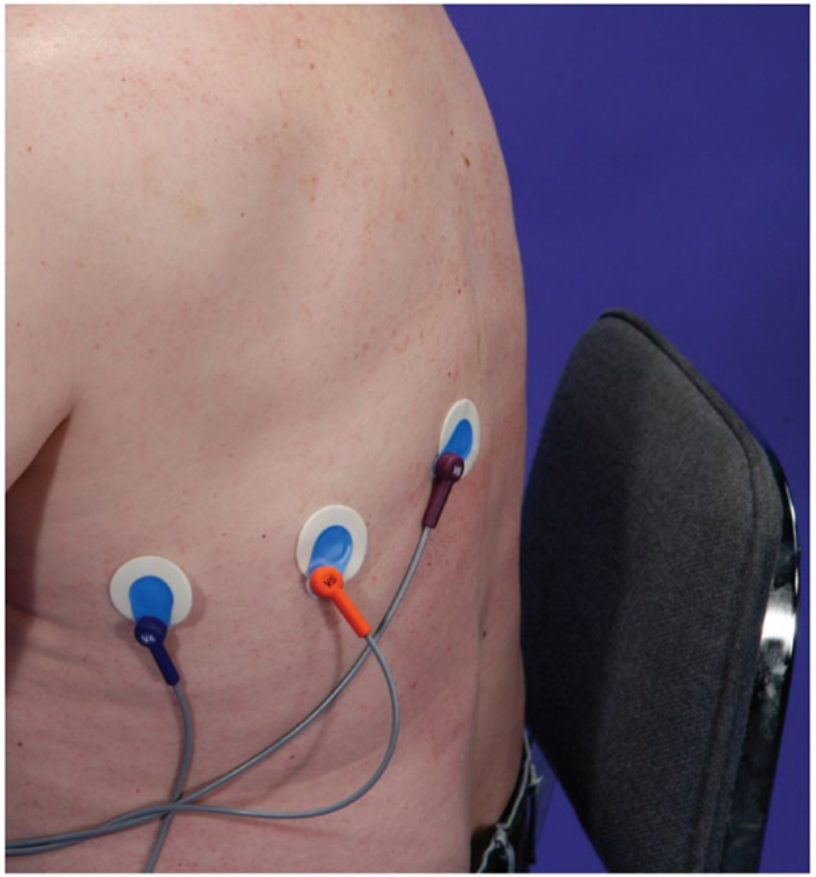
- Right-sided leads
  - Used to evaluate the electrical activity of the right ventricle
  - Precordial leads are placed on the right anterior thorax



Lead	Location	View
V_1R	Left of sternum, 4th intercostal space (ICS)	Ventricular septum
V_2R	Right of sternum, 4th ICS	Ventricular septum
V_3R	Precisely between V_2 and V_4	Right ventricle
V_4R	Right midclavicular, 5th ICS	Right ventricle
V_5R	Precisely between V_4 and V_6	Right ventricle
V_6R	Right midaxillary, 5th ICS	Right ventricle

The Leads

- Posterior leads
  - Evaluate left ventricle posterior wall electrical activity
  - Three precordial leads placed on left posterior thorax



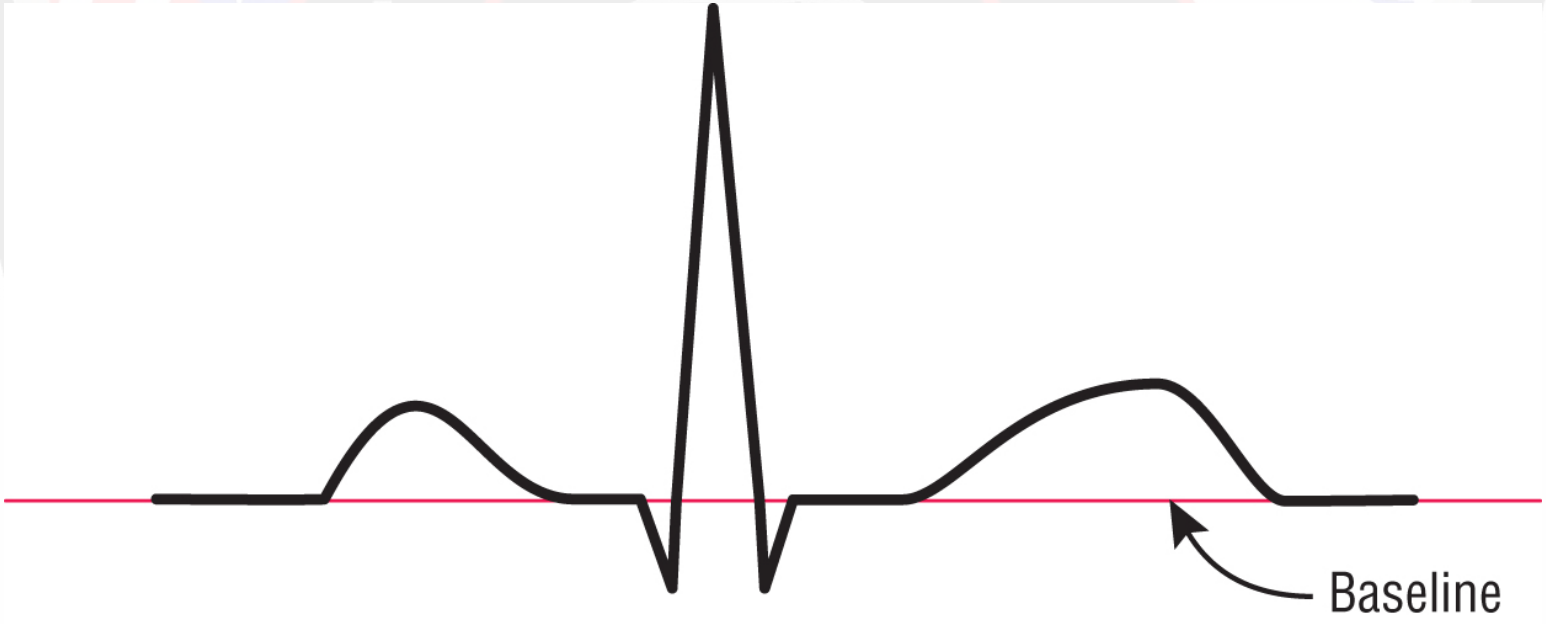
Lead	Location	View
V_7	Between V_6 and V_8, 5th intercostal space	Posterior wall of left ventricle
V_8	Midscapular, 5th intercostal space	Posterior wall of left ventricle
V_9	Just to the left of the spine, 5th intercostal space	Posterior wall of left ventricle

The Leads

- 15-lead ECG: standard 12-lead ECG plus leads V_4R, V_7, and V_8
  - Allows view of right ventricle and posterior wall of left ventricle
- 18-lead ECG: standard tracing plus leads V_4R through V_6R and V_7 through V_9

ECG Concepts

- ECG baseline represents electrical silence in the myocardium.
  - Generally a flat, straight, horizontal line



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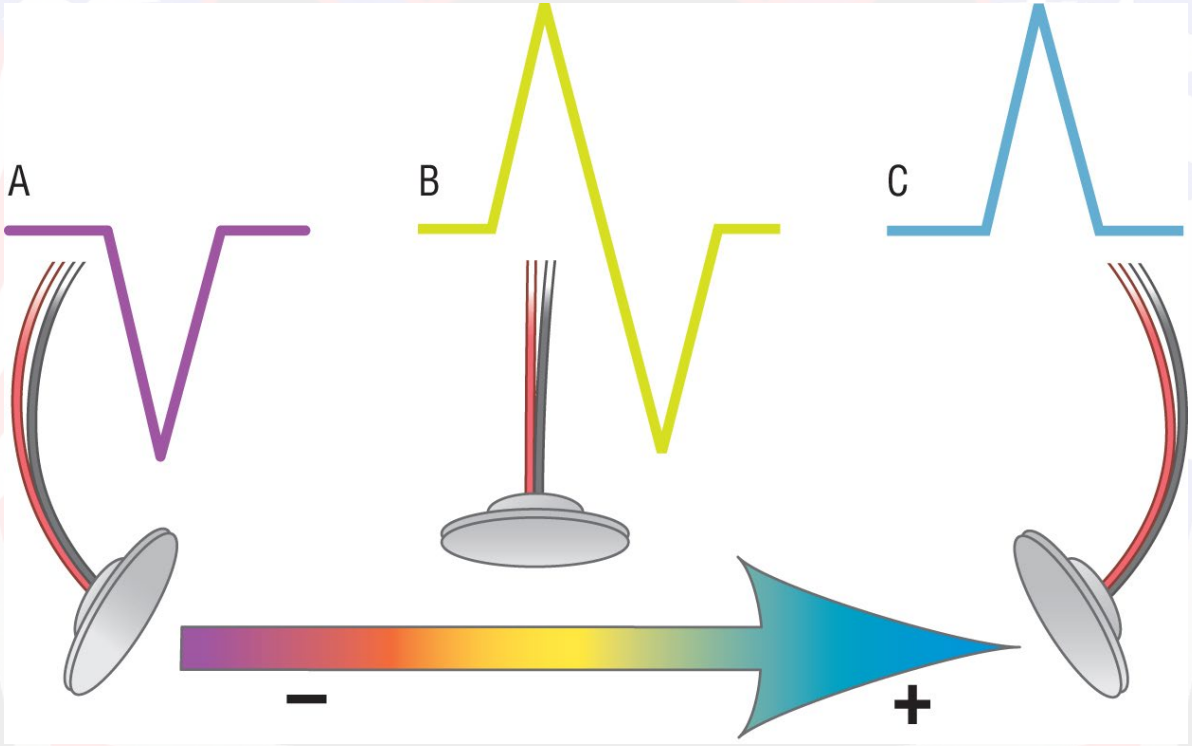
ECG Concepts

- Electrical impulse moving toward a positive electrode produces a deflection above baseline
- Electrical impulse moving toward a negative electrode produces a deflection below baseline

ECG Concepts

- Biphasic waves: waveforms with positive and negative components



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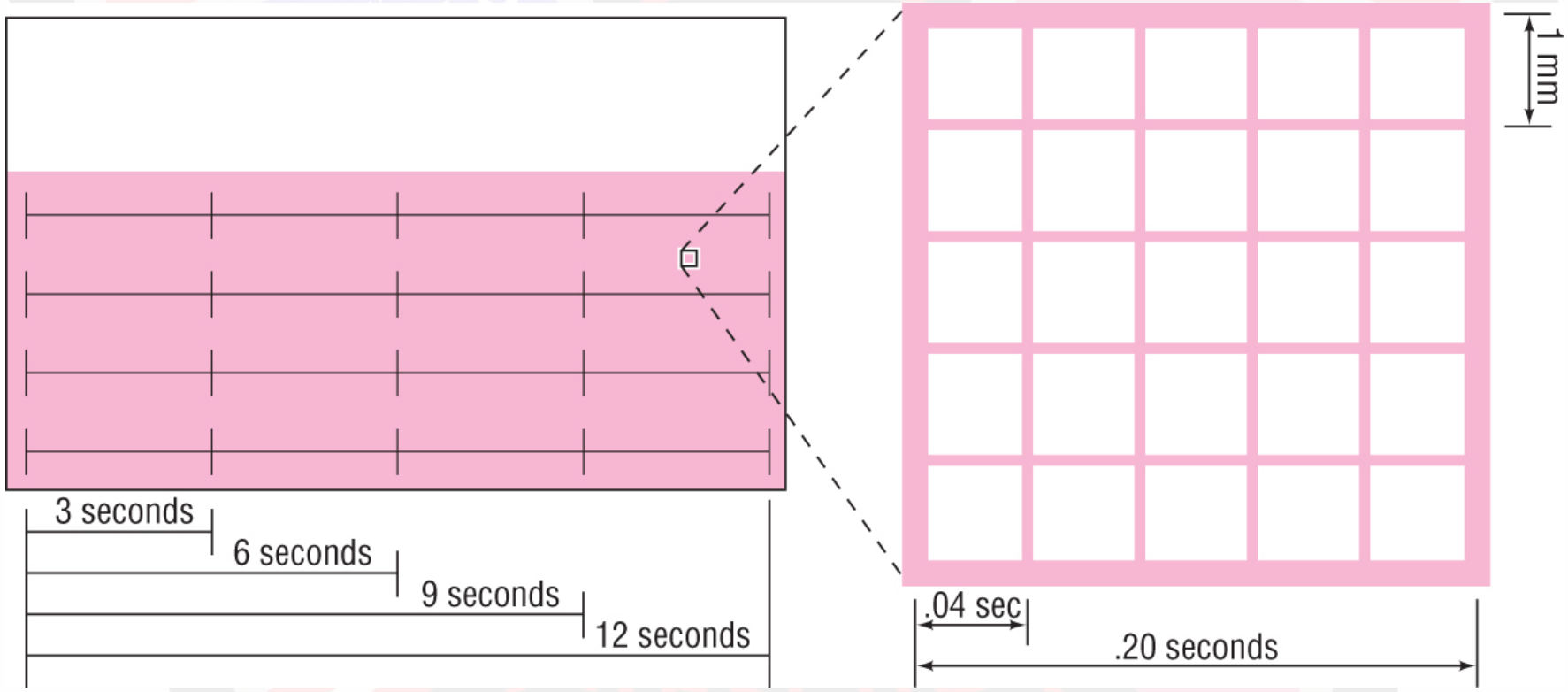
ECG Paper

- Graph paper moves past stylus at 25 mm/s
  - One 1-mm box — 0.04 second
  - One large box — 0.20 second
  - Vertical axis — amplitude
    - Standard amplitude calibration — 10 mm/mV

ECG Paper



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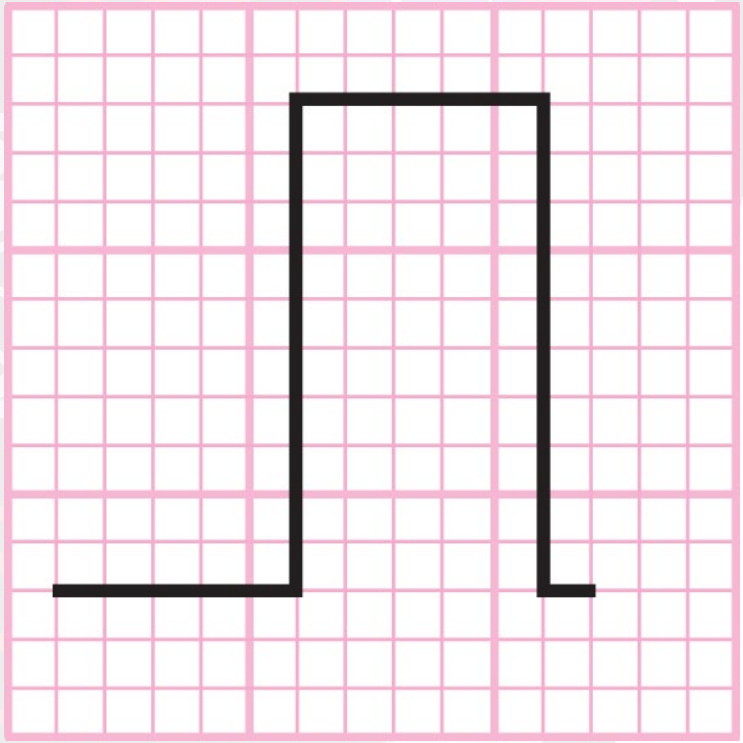
ECG Paper

- A calibration box printed at the beginning of all 12-lead ECGs informs the paramedic about:
  - Paper speed
  - Amplitude



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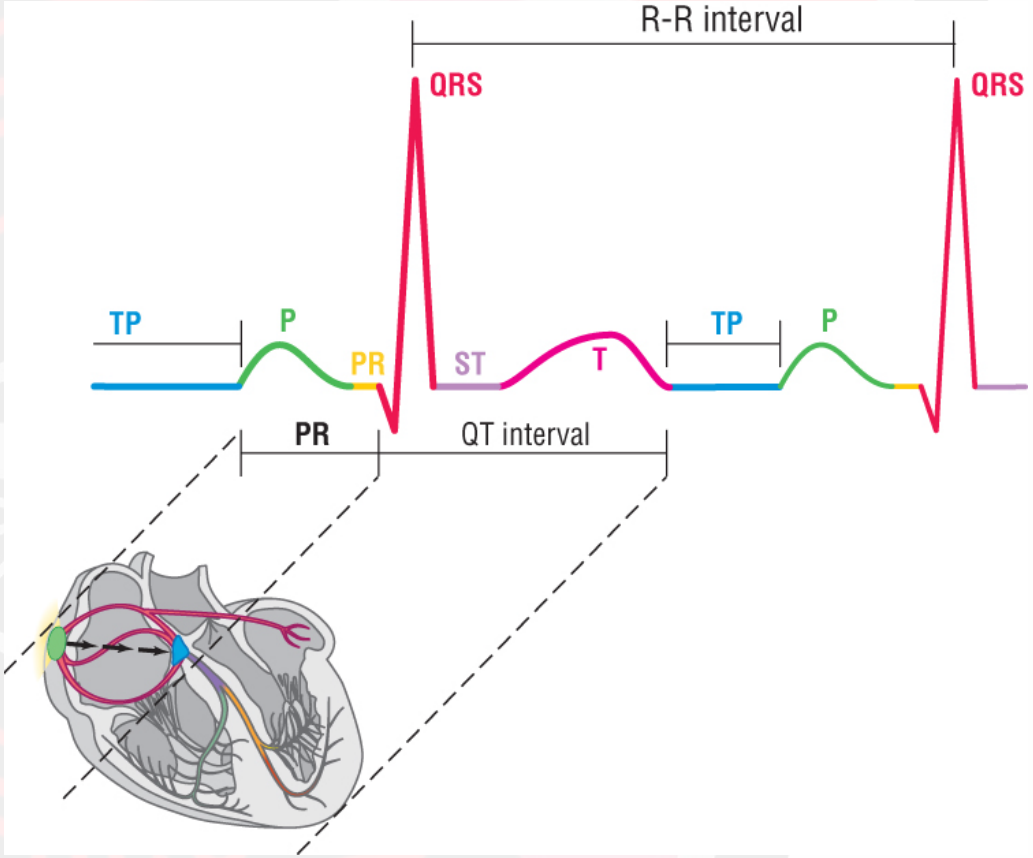
ECG Components

- The ECG components correspond to electrical events in the heart.



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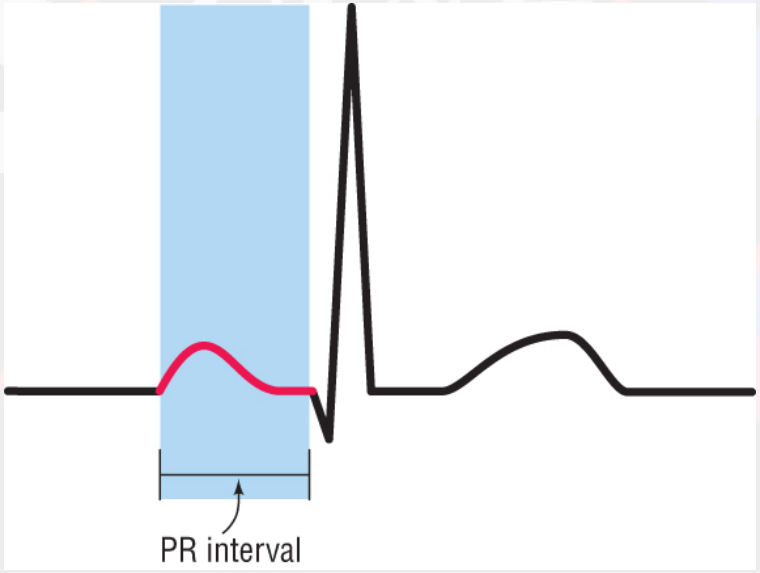
ECG Components

- P wave: represents atrial depolarization
  - Smooth, round, upright shape
  - Normal duration of less than 0.11 seconds
  - Amplitude less than 2.5 mm tall

ECG Components

- PR interval (PRI):
  - Represents the time required for an impulse to traverse the atria and AV junction
  - Normal duration of 0.12 to 0.20 seconds



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ECG Components

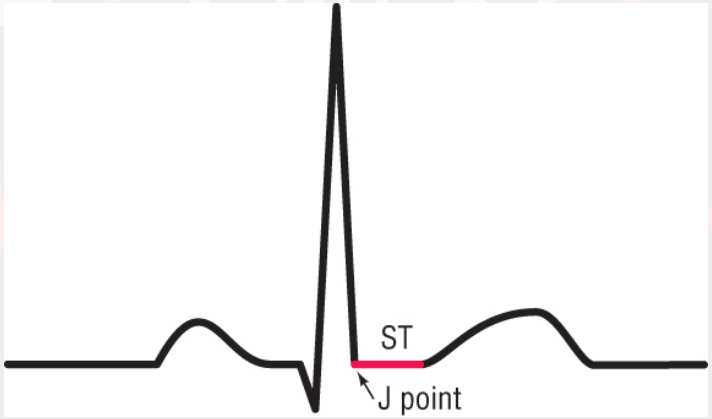
- QRS complex: three waveforms representing ventricular depolarization
  - From beginning of Q wave to end of S wave
  - Narrow in healthy people, less than 0.11 seconds
  - Indicates that impulse has proceeded normally

ECG Components

- QRS complex (cont'd)
  - Q wave: First negative deflection
  - R wave: First upward deflection
  - S wave: Downward deflection after the R wave

ECG Components

- J point: where QRS complex ends and ST segment begins
  - End of depolarization and beginning of repolarization
- ST segment: begins at J point and ends at T wave



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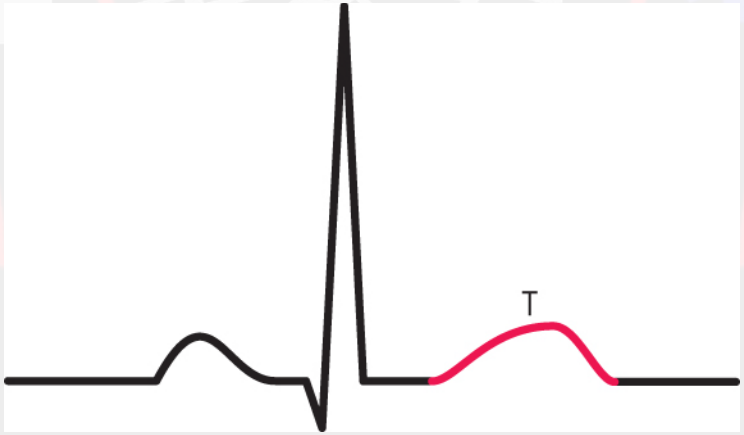
ECG Components

- T wave: represents ventricular repolarization
  - Should be asymmetric
  - Less than half overall QRS complex height
  - Oriented in same direction as QRS complex



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ECG Components

- T wave (cont'd)
  - Very large: may indicate myocardial ischemia, injury, and infarction
  - Tall, pointed (peaked): may indicate hyperkalemia
  - Deeply inverted: acute CNS events

ECG Components

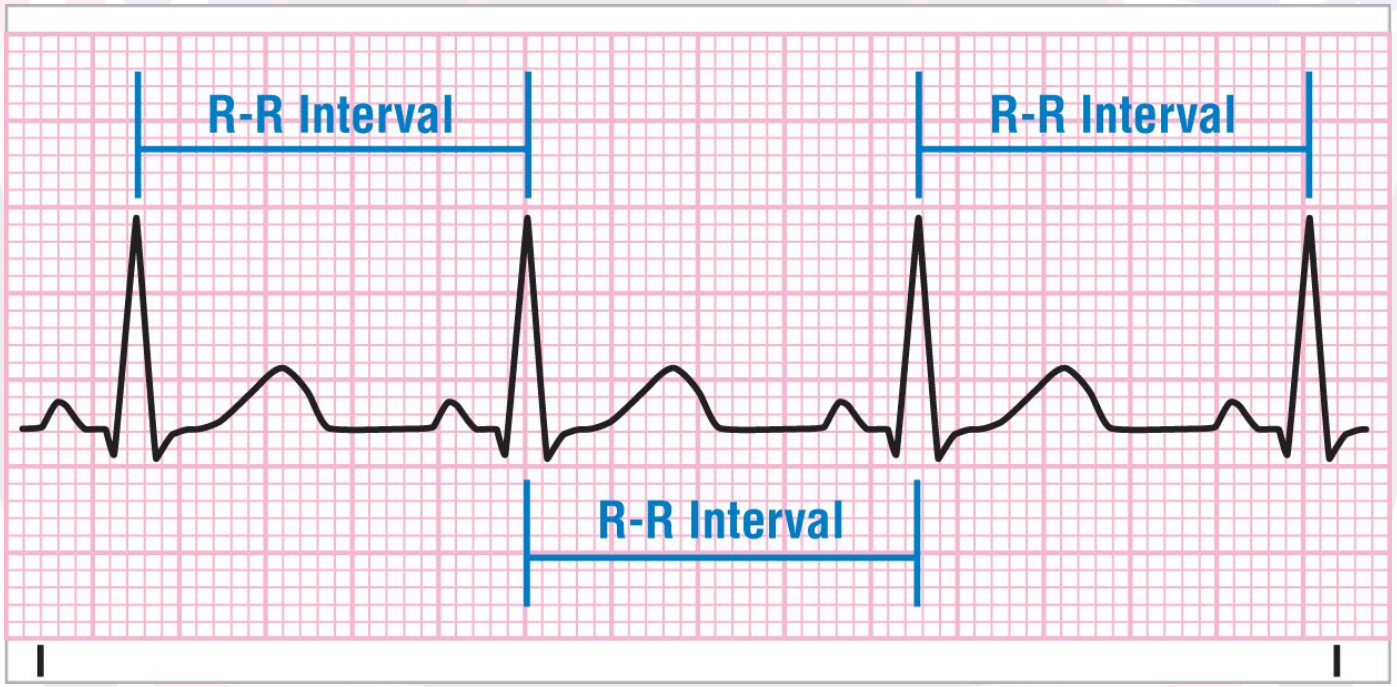
- QT interval: represents all electrical activity of one completed ventricular cycle
  - Begins at the onset of the Q wave.
  - Ends at the T wave.
  - Normally lasts 390 to 460 ms.
  - Long QT intervals can lead to ventricular dysrhythmias and sudden cardiac arrest.

Approach to Dysrhythmia Interpretation

- Method to interpret dysrhythmias:
  - Identify the waves (P-QRS-T).
  - Measure the PRI.
  - Measure the QRS duration.
  - Determine rhythm regularity.
  - Measure the heart rate.

Rhythm Regularity

- Measure the distance between R waves
  - Regular: the distance between R waves is the same



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Rhythm Regularity

- Measure distance between R waves (cont'd)
  - Irregularly irregular: no two R waves equal
  - Regularly irregular: R waves irregular but follow a pattern

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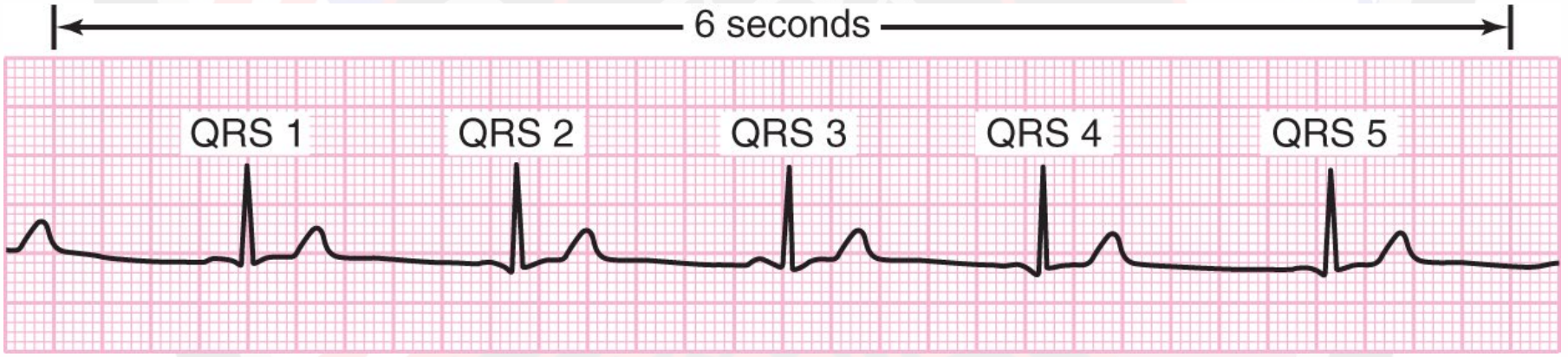
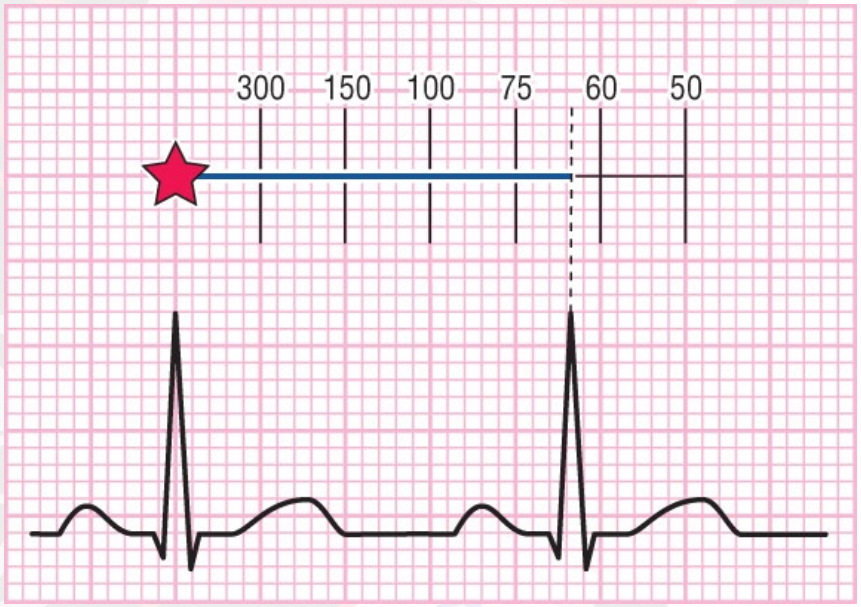
Determining Heart Rate

- 6-second method
  - Count the number of QRS complexes in a 6-second strip and multiply by 10.



Determining Heart Rate

- Sequence method
  - Find R wave; count off above sequence until next R wave.
    - If the interval spans fewer than three boxes, the rate is greater than 100.
    - If it is more than five boxes, the rate is less than 60.



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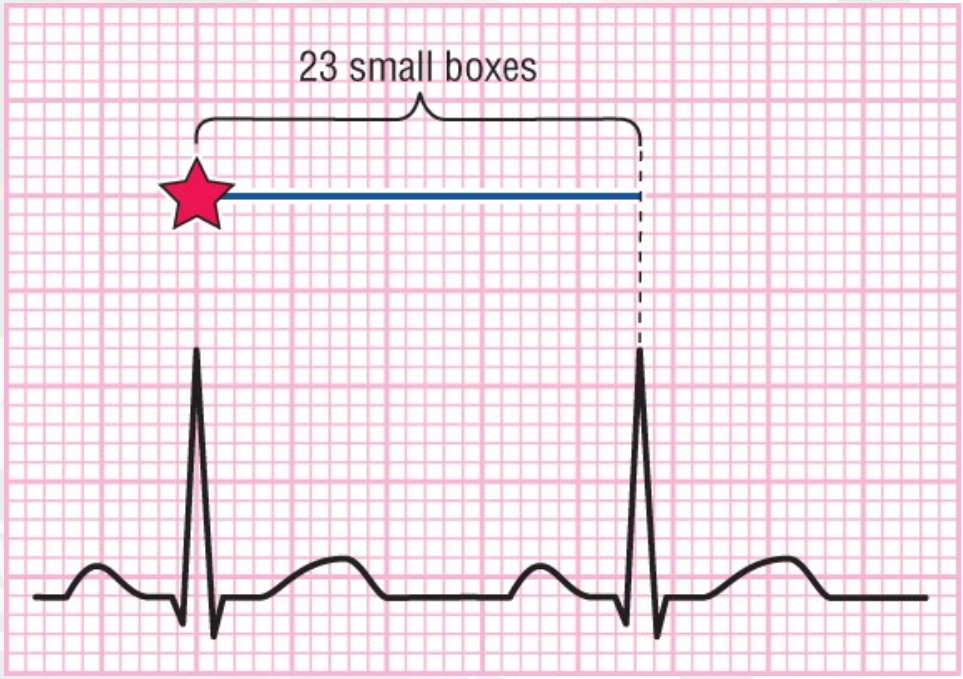
Determining Heart Rate

- 1,500 method
  - Count the number of small boxes between any two QRS complexes.
    - Divide by 1,500



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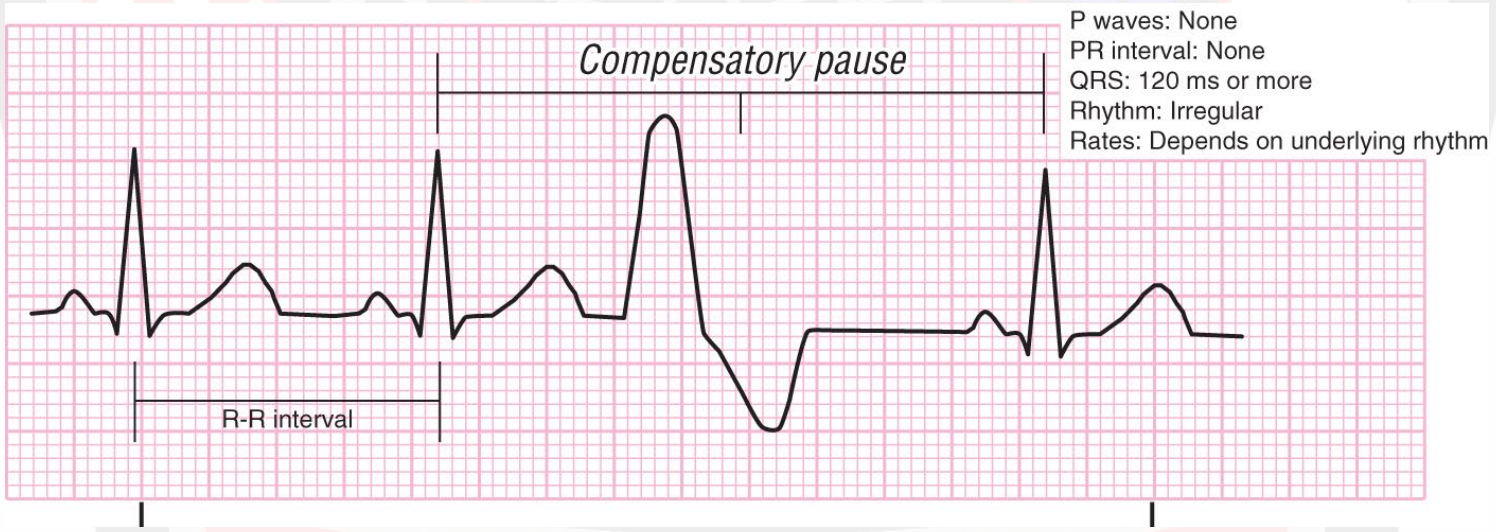
Rhythms Originating in the Ventricles

- Premature ventricular complex (PVC)
- Particular complex within another rhythm
  - Occurs earlier than expected, causing an R-R interval between it and the previous complex



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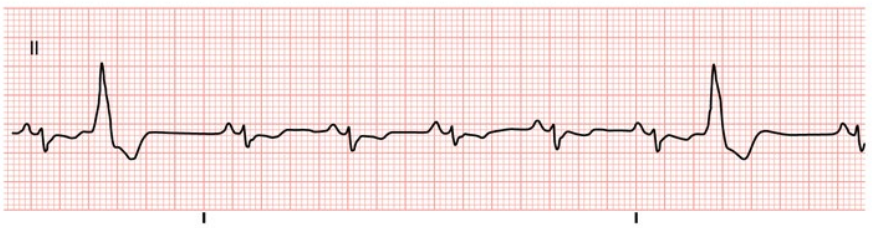
Rhythms Originating in the Ventricles

- Premature ventricular complex (cont'd)
  - Unifocal: from the same spot within the ventricle
  - Multifocal: two premature complexes with different appearances



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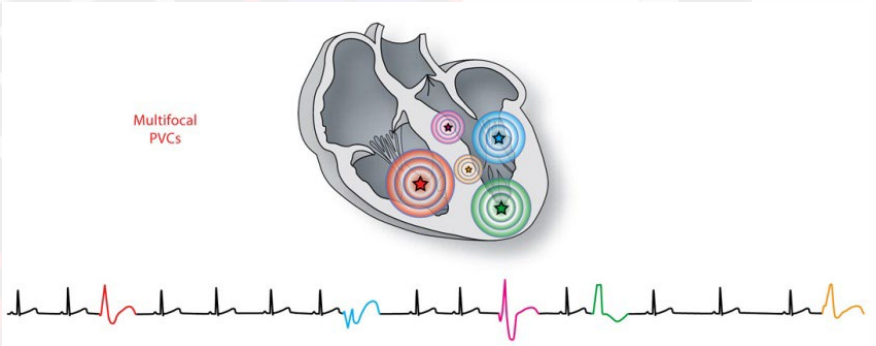

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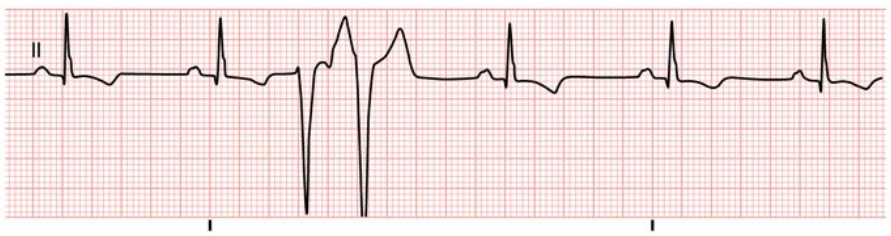
Rhythms Originating in the Ventricles

- Premature ventricular complex (cont'd)
  - Couplet: Two PVCs occur together.
  - Salvos: Three or more PVCs occur in a row.
  - Bigeminy: PCVs alternate with normal complexes.
  - Trigeminy: The third beat is a PVC.



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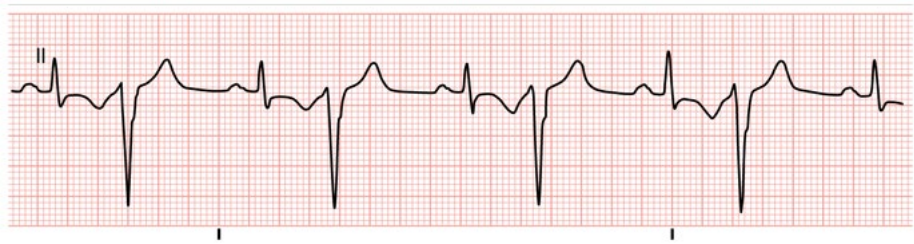

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Rhythms Originating in the Ventricles

- Idioventricular rhythm
  - Occurs when SA and VA nodes fail
  - May or may not result in a palpable pulse
  - Treatment: improving the CO

ythmia Recognition: The Art of Interpretation, courtesy of Tomas B. Garcia, MD.

Rhythms Originating in the Ventricles

- Accelerated idioventricular rhythm (AIVR)
  - Occurs when an IVR exceeds 40 beats/min but less than 100 beats/min
  - Rarely treated in the prehospital setting

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Rhythms Originating in the Ventricles

- Ventricular tachycardia (VT)
  - Occurs when SA and AV nodes fail, and the rate exceeds 100 beats/min
  - QRS complexes usually have uniform tops and bottoms (monomorphic).

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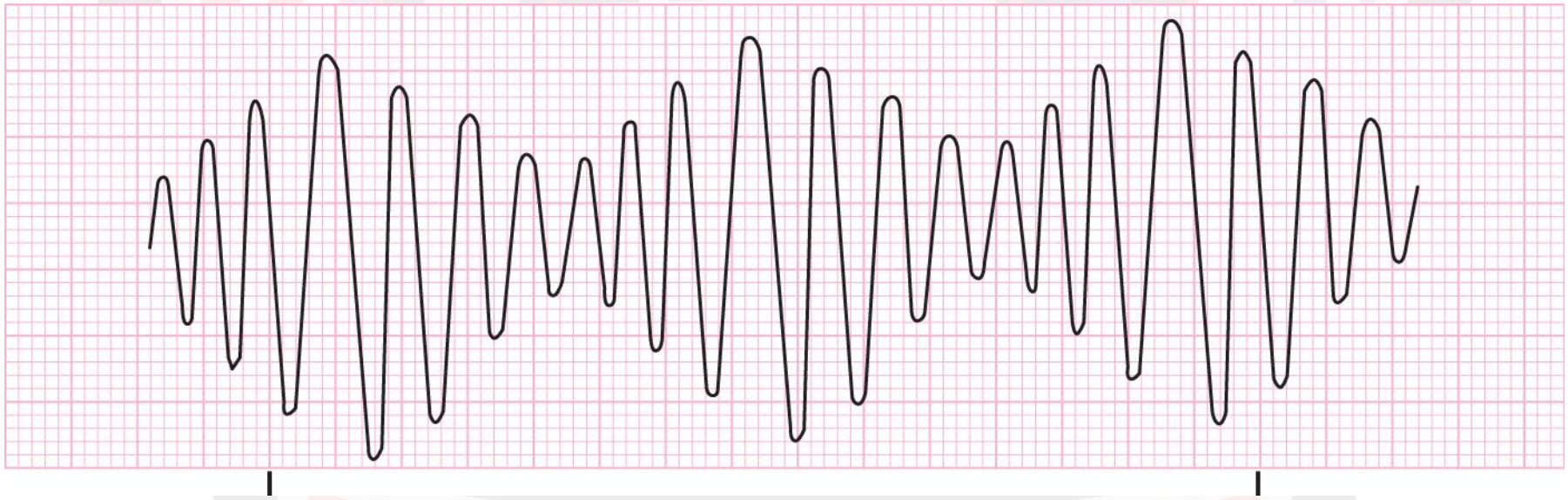
Rhythms Originating in the Ventricles

- Ventricular tachycardia (cont'd)
  - Occasionally the QRS complex will vary in height.
    - Torsades de pointes
  - Requires treatment to maintain adequate CO



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Rhythms Originating in the Ventricles

- Ventricular fibrillation (VF)
  - Rhythm in which the entire heart is fibrillating without a discernable pattern
  - Occurs when many different heart cells become depolarized independently

Rhythms Originating in the Ventricles

- Ventricular fibrillation (cont'd)
  - Coarse (early stages): waves are greater than 3 mm in amplitude
  - Fine: waves are less than 3 mm in amplitude

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Defibrillation

- Process by which a surge of electrical energy is delivered to the heart
- Effective for:
  - VF
  - Pulseless VT
- Types
  - Automated external defibrillator (AED)
  - Manual defibrillator

Defibrillation

- AEDs and manual defibrillators deliver energy in waveforms.
  - Monophasic defibrillators
  - Biphasic defibrillators

Defibrillation

- Wearable cardioverter-defibrillators
  - For patients who:
    - Are at risk of sudden cardiac death, but who
    - Are not immediate candidates for therapy with an implantable cardioverter-defibrillator

Rhythms Originating in the Ventricles

- Asystole (flat line)
  - Entire heart no longer contracting.
  - Heart cells no longer have energy.
  - There is a complete absence of electrical activity.
  - Generally considered a nonshockable cardiac arrest rhythm.

Pulseless Electrical Activity

- Organized cardiac rhythm not accompanied by a detectable pulse
  - Heartbeat weak from:
    - Cardiogenic or hypovolemic shock
    - Cardiac tamponade
    - Massive pulmonary embolism
    - Electrolyte imbalance disturbances
    - Drug overdose

Pulseless Electrical Activity

- The key to treatment is identifying the cause.
- A nonshockable cardiac arrest rhythm.

Management of Adult Cardiac Arrest

- Although prior heart disease is a major risk factor for cardiac arrest, it can also occur with:
  - Asthma, anaphylaxis
  - Drug overdose
  - Electrocution, drowning, or other trauma
- Cardiac arrest management requires a systematic approach that is rehearsed.

Management of Adult Cardiac Arrest

- As you approach the scene, bring:
  - Defibrillator
  - Portable oxygen cylinder
  - Airway management equipment
  - Intubation kit
  - IV equipment
  - Drug box

Management of Adult Cardiac Arrest

- The goals of emergency medical care include:
  - The return of spontaneous circulation (ROSC)
  - The preservation of neurologic function
- Begin emergency care immediately upon discovering pulselessness.

Management of Adult Cardiac Arrest

- Withholding CPR is appropriate when:
  - Attempts place rescuers at risk.
  - There are obvious clinical signs of irreversible death.
  - Physician order for life-sustaining treatment is not desired or do not attempt resuscitation (DNAR) order exists.

Management of Adult Cardiac Arrest

- Proceeding with CPR:
  - If chest compressions were provided before your arrival, proceed with rhythm analysis.
  - If chest compressions were not provided before your arrival, begin chest compressions while a second rescuer sets up the AED or defibrillator.

Management of Adult Cardiac Arrest

- Components of high-quality CPR include:
  - Chest compressions at a rate of 100/min to 120/min
  - Compression of the chest to a depth of at least 2 inches (5 cm)
  - Full chest recoil after each compression
  - Minimal interruption of compressions.
  - Adequate ventilation (2 breaths after 30 compressions)

Management of Adult Cardiac Arrest

- Remember the four possible cardiac arrest rhythms
  - Pulseless VT
  - Pulseless VF
  - Asystole
  - PEA

Management of Adult Cardiac Arrest

- Key points to remember
  - If defibrillation is indicated, the provider giving chest compressions should continue while a second rescuer charges the defibrillator.
    - Pause CPR, clear the patient, and deliver the shock.
    - Resume chest compressions immediately, without pausing for a rhythm or pulse check.

Management of Adult Cardiac Arrest

- After 2 minutes or five cycles of CPR, pause efforts and check the rhythm on the monitor.
  - If a rhythm other than VF or VT appears, then identify the new rhythm and check for a pulse.
  - If there is no pulse, then move down the algorithm to the asystole-PEA pathway and immediately resume CPR.
  - If there is a pulse, then move to the appropriate algorithm for the new rhythm.

Management of Adult Cardiac Arrest

- CPR (cont'd)
  - If the rhythm is VF or VT, then resume CPR while charging the defibrillator.
  - Clear the patient and then defibrillate.

Management of Adult Cardiac Arrest

- Minimize rescuer fatigue by switching the CPR compressor and ventilator at the end of each 2-minute session of CPR.
- To maximize the number of compressions delivered per minute, interruptions should not exceed 10 seconds.

Management of Adult Cardiac Arrest

- Using normal saline, establish vascular access.
  - Do not interrupt chest compressions.
  - As soon as IV or intraosseous (IO) access is established, administer epinephrine.
    - 1 mg every 3 to 5 minutes until pulse returns

Management of Adult Cardiac Arrest

- Immediately follow administration of medication through an IV line during CPR with a 20-mL flush of normal saline IV.
- Elevate the extremity for 1 to 2 minutes.

Management of Adult Cardiac Arrest

- Several options are available for airway management.
  - A bag-mask device may be used.
  - For adults in cardiac arrest without an advanced airway, use a 30:2 compression/ventilation ratio.
  - Ventilate until chest rise and deliver each breath over 1 second.
  - When inserting an advanced airway, verify placement, secure the tube, and deliver one breath every 6 seconds.

Management of Adult Cardiac Arrest

- VF or pulseless VT that persists or recurs after one or more shocks is called refractory VF/VT.
- Consider amiodarone or lidocaine.

Management of Adult Cardiac Arrest

- Consider the Hs and Ts to identify possible reversible causes.
- If there is a ROSC, assess the vital signs, support the airway and breathing, and give medications as indicated.

Management of Adult Cardiac Arrest

Table 17-5 Hs and Ts: Causes and Treatment of Cardiac Arrest Rhythms

Possible Reversible Cause	Clues	Treatment*
Hypovolemia	▪ History ▪ Flat neck veins	Volume replacement
Hypoxemia	▪ Cyanosis ▪ Airway compromise	Ventilation with 100% oxygen; consider advanced airway insertion
Hypothermia	History of exposure to cold	See hypothermia algorithm in Chapter 38, *Environmental Emergencies*, for information on treating hypothermia.
▪ Hyperkalemia ▪ Hypokalemia ▪ Hydrogen ions (acidosis)	▪ History ▪ ECG changes	▪ Immediate transport ▪ Consider sodium bicarbonate if certain of acidosis
Tension pneumothorax	▪ History (trauma, asthma, COPD) ▪ No pulse with CPR ▪ Difficult to ventilate ▪ Unequal breath sounds, with hyperresonance to percussion on affected side	Needle decompression of the affected side of the chest
Cardiac tamponade	▪ History ▪ No pulse with CPR ▪ Jugular venous distention	Immediate transport for pericardiocentesis
▪ Toxins (drug overdose) ▪ Thrombosis (massive MI, pulmonary embolism)	History	▪ Consider immediate transport. ▪ Naloxone (Narcan) for opioid overdose

* Beyond managing the cardiac arrest

Abbreviations: ECG, electrocardiogram; COPD, chronic obstructive pulmonary disease; CPR, cardiopulmonary resuscitation; MI, myocardial infarction.

Management of Adult Cardiac Arrest

- If local protocol allows, begin transport when any of the following occurs:
  - The patient regains a pulse.
  - Six to nine shocks have been delivered (or as directed by protocol).
  - The device indicates three consecutive messages (separated by 2 minutes of CPR) and no shock is advised (or as directed by protocol).

Special Circumstances in Cardiac Arrest

- Cardiac arrests that require adjustments to procedures include those associated with:
  - Morbid obesity
  - Anaphylaxis
  - Opioids
  - Acute asthma
  - Electrolyte disturbances

Post–Cardiac Arrest Care

- Begin by optimizing oxygenation and ventilation.
- Perform a neurologic assessment; assess for signs of hypoperfusion.
- Start targeted temperature management after cardiac arrests for comatose adult patients with ROSC.
- Closely monitor the post–cardiac patient.

When to Stop CPR

- The AHA recommends that rescuers continue CPR until:
  - Effective spontaneous circulation is restored.
  - Care is transferred to a team providing advanced life support.
  - The rescuer is unable to continue because of exhaustion, environmental hazards, or danger to others.
  - Criteria indicating irreversible death have been met.

Acute Myocardial Infarction (AMI)

- Pathophysiology (cont'd)
  - Infarcted tissue is surrounded by a ring of ischemic tissue.
    - Deprived of oxygen but still viable
    - Electrically unstable

Acute Myocardial Infarction (AMI)

- Assessment
  - Identify whether STEMI is present; if so, notify the medical facility.
  - Determine the time of onset.
  - Monitor cardiac rhythm and vital signs.
  - Administer appropriate medications.
  - Transport to an appropriate facility.

Acute Myocardial Infarction (AMI)

- Symptoms
  - Chest pain is the most common symptom.
    - Patient often clenches his or her fist when describing it.
    - May radiate to the arms, fingers, neck, jaw, upper back, or epigastrium.
    - Sometimes mistaken for indigestion.
    - It is not influenced by body movements.

Acute Myocardial Infarction (AMI)

- Symptoms (cont'd)
  - Not every ACS patient has chest discomfort (a silent MI).
  - Symptoms of MI other than chest pain are called anginal equivalents.

Table 17-11 Anginal Equivalents

- Abdominal pain
- Acute change in mental status
- Dizziness
- Dyspnea
- Dysrhythmia
- Epigastric pain
- Fatigue
- Generalized weakness
- Indigestion
- Isolated arm or jaw pain
- Light-headedness
- Palpitations
- Restlessness
- Syncope or near syncope
- Unexplained nausea or vomiting

Acute Myocardial Infarction (AMI)

- Symptoms (cont'd)
  - Women
    - Discomfort in the back, shoulder, or neck that may come and go
    - Shortness of breath
    - Weakness
    - Nausea and vomiting

Acute Myocardial Infarction (AMI)

- Symptoms (cont'd)
  - Older adults
    - Compromised mental status, generalized weakness, syncope, shortness of breath
  - Patients with diabetes
    - Generalized weakness, syncope, light-headedness, diminished mental status

Acute Myocardial Infarction (AMI)

- Take note of:
  - Patient's general appearance
  - Patient's level of responsiveness
  - Pale, cold, and clammy skin
  - Vital signs
  - Signs of LVF (wheezes or crackles)
  - Signs of RVF (distended neck veins, pedal or presacral edema)

Thank You

Please continue to the next section