Cardiovascular Concerns in Intermediate Care

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HEART AND & CRITICAL AND INTERMEDIATE CARE

Objectives:

► Identify how to do a thorough assessment of the cardiovascular system.

► Identify the most common cardiovascular diagnoses found in the intermediate care population and the treatments typically used.

► Identify signs and symptoms of common cardiovascular emergencies

► Be able to manage initial care for patients experiencing cardiovascular emergencies in intermediate care settings.

The Cardiovascular System
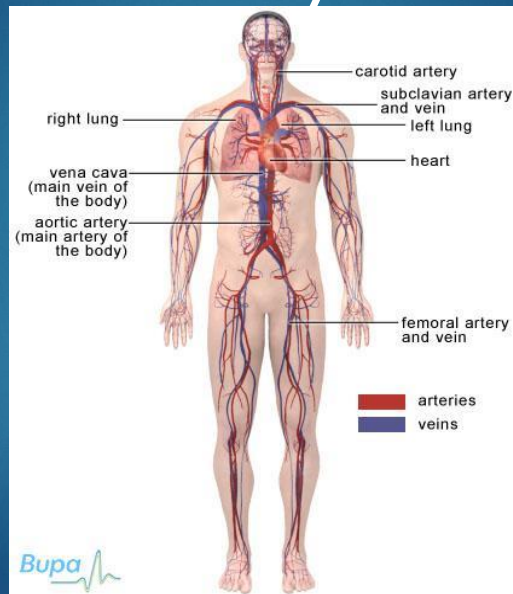
Overview

- ► The cardiovascular system is composed of the heart and a network of veins, arteries and capillaries that transport blood throughout the body.
- ► The average adult has between 5 to 6 liters of blood or blood volume
- ► The blood carries oxygen and essential nutrients to all of the living cells in the body, and also carries waste products from the tissues to the systems of the body through which they are eliminated.
- ► Most of the blood is made up of a watery, protein-laden fluid called plasma. A little less than half of this blood volume is composed of red and white blood cells, and other solid elements called platelets.

What is cardiovascular disease?

▶ Cardiovascular disease is made up of several problems related to plaque buildup in the walls of the arteries, or atherosclerosis.

▶ As the plaque builds up, the arteries narrow, making it more difficult for blood to flow and creating a risk for heart attack or stroke.

▶ https://youtu.be/yx9pwhTCi5c

Myocardial Infarction/ MI

▶ A Myocardial infarction, or MI is a heart attack. Patients with occlusions in their coronary arteries usually present to the doctor or ER with signs and symptoms such as:

  ▶ Chest pain

  ▶ Jaw or arm pain

  ▶ Sweating

  ▶ Nausea or vomiting

  ▶ Weak or lightheaded

  ▶ Palpitations

  ▶ SOB

  ▶ Keep in mind that diabetics and women often do not present with the typical signs and symptoms.

Do you know the current statistics?

The coronary arteries
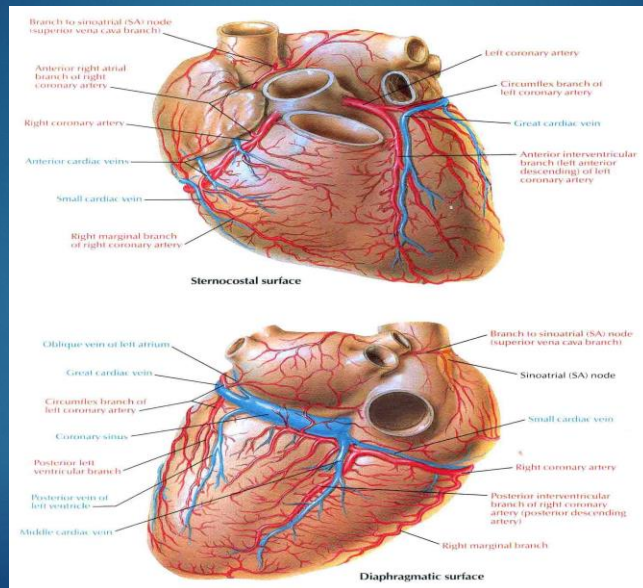
Acute Coronary Syndrome

► Acute Coronary Syndrome (ACS) or Myocardial Infarction results from lack of blood and oxygen to the heart muscle. This usually results in tissue hypoxia or ischemia and ultimately tissue death unless the blood flow is restored.

► The tissue hypoxia can cause pain, dyspnea, elevated biomarkers such as troponin or CK, and ECG changes, as well as other things. If the area of infarct is significant enough, it may result in death.

► If the tissue becomes necrotic and dies, that area of heart muscle will no longer expand and contract effectively, thus reducing efficiency of the heart and lowering cardiac output.

Treatment

- ▶ Thrombolytics
  - ▶ Recommended for ST elevation MI (STEMI) within 3 hours of symptom onset
  - ▶ Contraindicated in patients at risk for bleeding/ CVA
- ▶ Aspirin/ Heparin/ Plavix
  - ▶ Antiplatelets and blood thinners are recommended
- ▶ Percutaneous Coronary Angiography (PCI) AKA *The Cath Lab"*
  - ▶ The patient can be taken to the Cath lab within 30 minutes to open the occlusion with a balloon, bare metal stent (BMS) or drug eluting stent (DES)
  - ▶ The goal is reperfusion within 90 minutes. This is sometimes called "door to balloon time". Patients are often called in from EMS and do a "drive by" in the ED straight to the cath lab.
  - ▶ https://youtu.be/JeH4zPzQgRc
- ▶ Coronary Artery Bypass Grafting (CABG)
  - ▶ If we cannot put a stent in or open the artery in the cath lab, we will then consult the cardiac surgery team to determine if the patient is a candidate for open heart surgery.
  - ▶ https://youtu.be/UY2xGiOwe2o
  - ▶ Baystate currently does over 750 cardiac surgery cases per year.
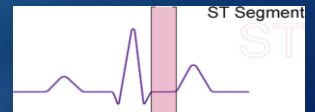
- ▶ Beta Blockers
  - ▶ Recommended to reduce rates of reinfarction and recurrent ischemia
  - ▶ Contraindicated with signs of heart failure, evidence of a low Cardiac output, risk for cardiogenic shock, heart block, and asthma or lung disease
- ▶ ACI or ARB
  - ▶ Reduces morbidity and mortality if given within 24 hours. Should be given indefinitely after MI
- ▶ Nitrates
  - ▶ vasodilate coronary arteries to increase blood flow.
  - ▶ Decrease preload.
  - ▶ Contraindicated in Right sided MI
- ▶ Morphine- pain and anxiety relief
- ▶ Oxygen
- ▶ Rest- Do not allow these patients to strain in the bathroom, ambulate about or do anything strenuous or stressful.

The chambers, vessels, and valves
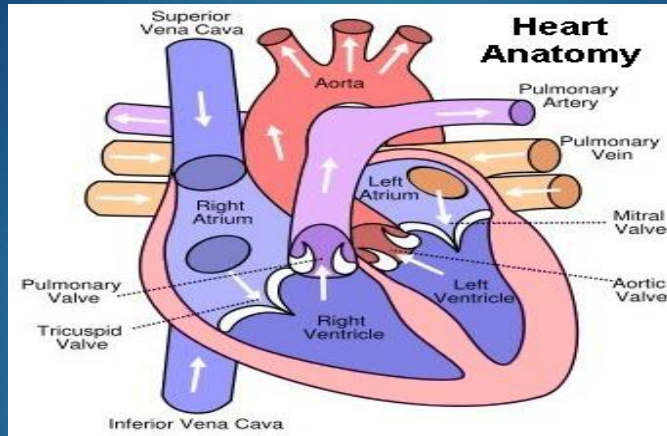

https://youtu.be/afYCN3Upy_w?list=PL1B3213F91CFDB3E3

High Blood Pressure

▶ High blood pressure is a common and dangerous condition. Having high blood pressure means the pressure of the blood in your blood vessels is higher than it should be.

▶ About **1 of 3 U.S. adults**—or **67 million people**—have high blood pressure.[1] **Only about half (47%)** of these people have their high blood pressure under control.[1] This common condition increases the risk for heart disease and stroke, 2 of the leading causes of death for Americans.

▶ High blood pressure is called the "silent killer" because it often has no warning signs or symptoms, and many people do not know they have it.

▶ High blood pressure can harden the arteries or rupture them. This can cause decreased blood flow to the heart, brain and kidneys as well as other major organs.
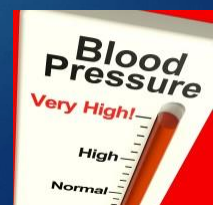
Blood Pressure Ranges

- ► Normal
  - ► systolic: less than 120 mmHg
  - ► diastolic: less than 80mmHg
- ► At Risk (prehypertension)
  - ► systolic: 120–139 mmHg
  - ► diastolic: 80–89 mmHg
- ► High
  - ► systolic: 140 mmHg or higher
  - ► diastolic: 90 mmHg or higher

"You've got the blood pressure of a teenager – who lives on junk food, TV and the computer."
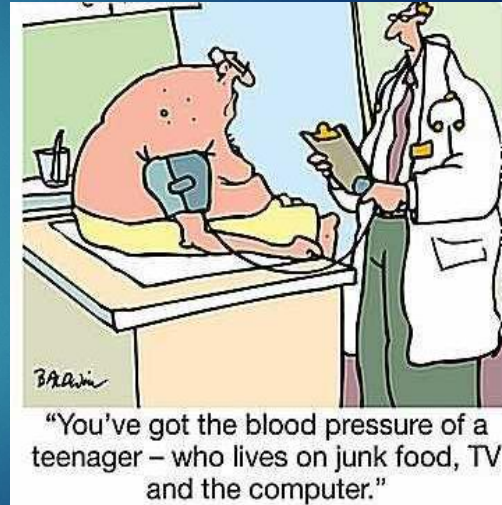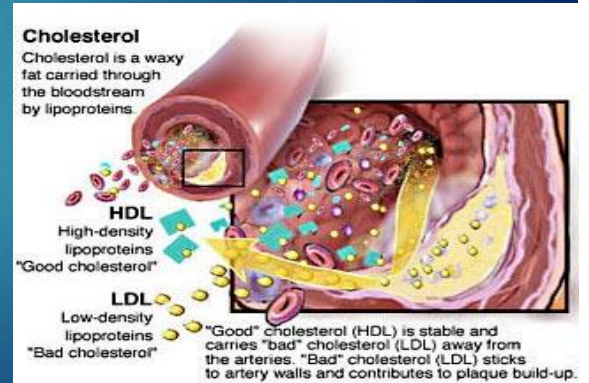
High Cholesterol

- ► Cholesterol is a waxy, fat-like substance found in your body and many foods. Your body needs it to work properly and makes all that you need. Too much cholesterol can accumulate depending on the kind of foods you eat and the rate at which your body breaks it down.

- ► Extra cholesterol can build up in your arteries. Over time, cholesterol deposits, called plaque, can narrow your arteries and allow less blood to pass through.

- ► When plaque totally blocks an artery carrying blood to the heart, a heart attack occurs. It also can happen when a deposit ruptures and causes a clot in a coronary artery. Chest pain, also called angina, is caused by plaque partially blocking a coronary artery, reducing blood flow to the heart.

▶ Low-density lipoproteins (LDL) cholesterol make up the majority of the body's cholesterol. LDL is known as "bad" cholesterol because having high levels can lead to a buildup in the arteries and result in heart disease.

▶ High-density lipoproteins (HDL) cholesterol absorb cholesterol and carry it back to the liver, which flushes it from the body. High levels of HDL, or "good" cholesterol, reduce the risk of heart disease and stroke.

▶ GOALS:
  ▶ Total Cholesterol <200
  ▶ LDL 100-129 mg/DL
  ▶ HDL 60 mg/DL and above
  ▶ Triglycerides <150 mg/ DL

Cholesterol
Cholesterol is a waxy fat carried through the bloodstream by lipoproteins.

HDL High-density lipoproteins "Good cholesterol"

LDL Low-density lipoproteins "Bad cholesterol"

"Good" cholesterol (HDL) is stable and carries "bad" cholesterol (LDL) away from the arteries. "Bad" cholesterol (LDL) sticks to artery walls and contributes to plaque build-up.

Heart Failure

▶ Heart failure is a condition in which the heart can't pump enough blood to meet the body's needs. In some cases, the heart can't fill with enough blood. In other cases, the heart can't pump blood to the rest of the body with enough force. Some people have both problems.

▶ Heart failure develops over time as the heart's pumping action grows weaker. The condition can affect the right side of the heart only, or it can affect both sides of the heart. Most cases involve both sides of the heart.

▶ Right-side heart failure occurs if the heart can't pump enough blood to the lungs to pick up oxygen. Left-side heart failure occurs if the heart can't pump enough oxygen-rich blood to the rest of the body.

▶ Right-side heart failure may cause fluid to build up in the feet, ankles, legs, liver, abdomen, and the veins in the neck. Right-side and left-side heart failure also may cause shortness of breath and fatigue.

▶ The leading causes of heart failure are diseases that damage the heart. Examples include coronary heart disease, high blood pressure, and diabetes.

▶ Currently, heart failure has no cure. However, treatments—such as medicines and lifestyle changes—can help people who have the condition live longer and more active lives. Researchers continue to study new ways to treat heart failure and its complications.

Normal Heart **Congestive Heart**
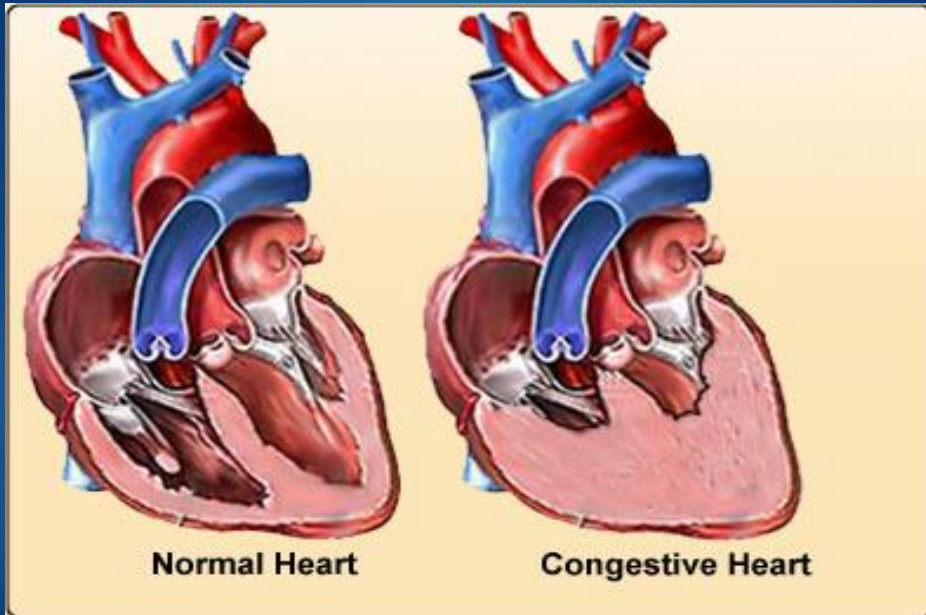
A Bit About Core Measures and Readmissions…

▶ AHA
▶ JACHO
▶ CMS
▶ DPH
▶ Simply Best Practice

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