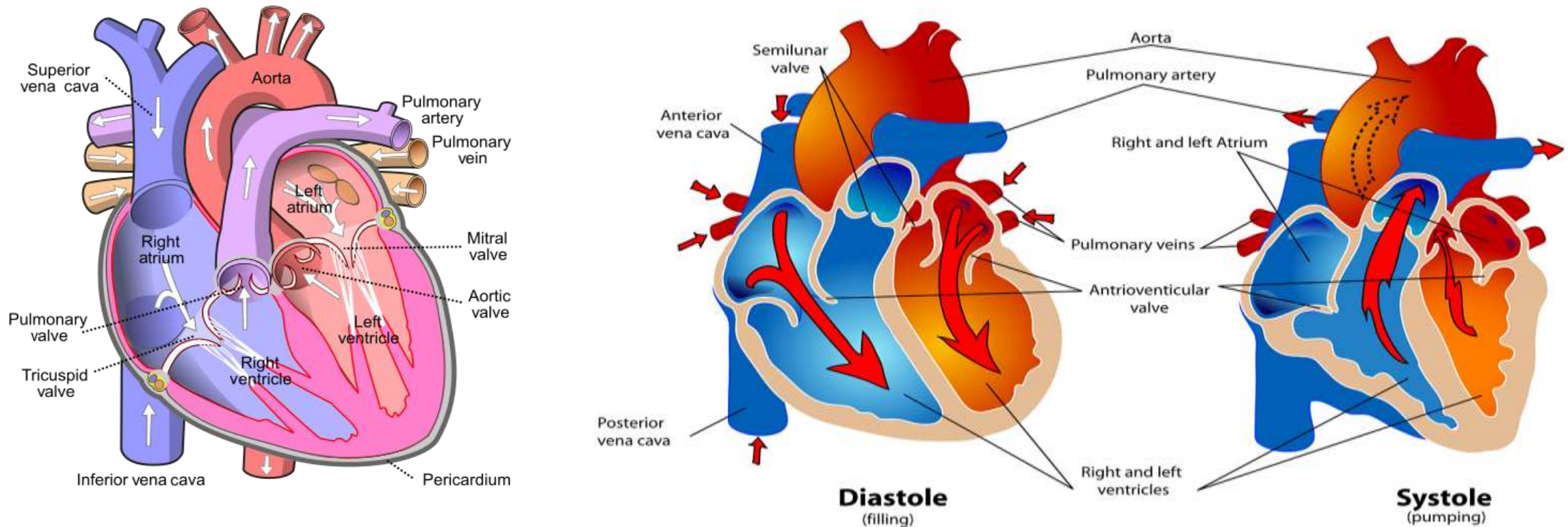
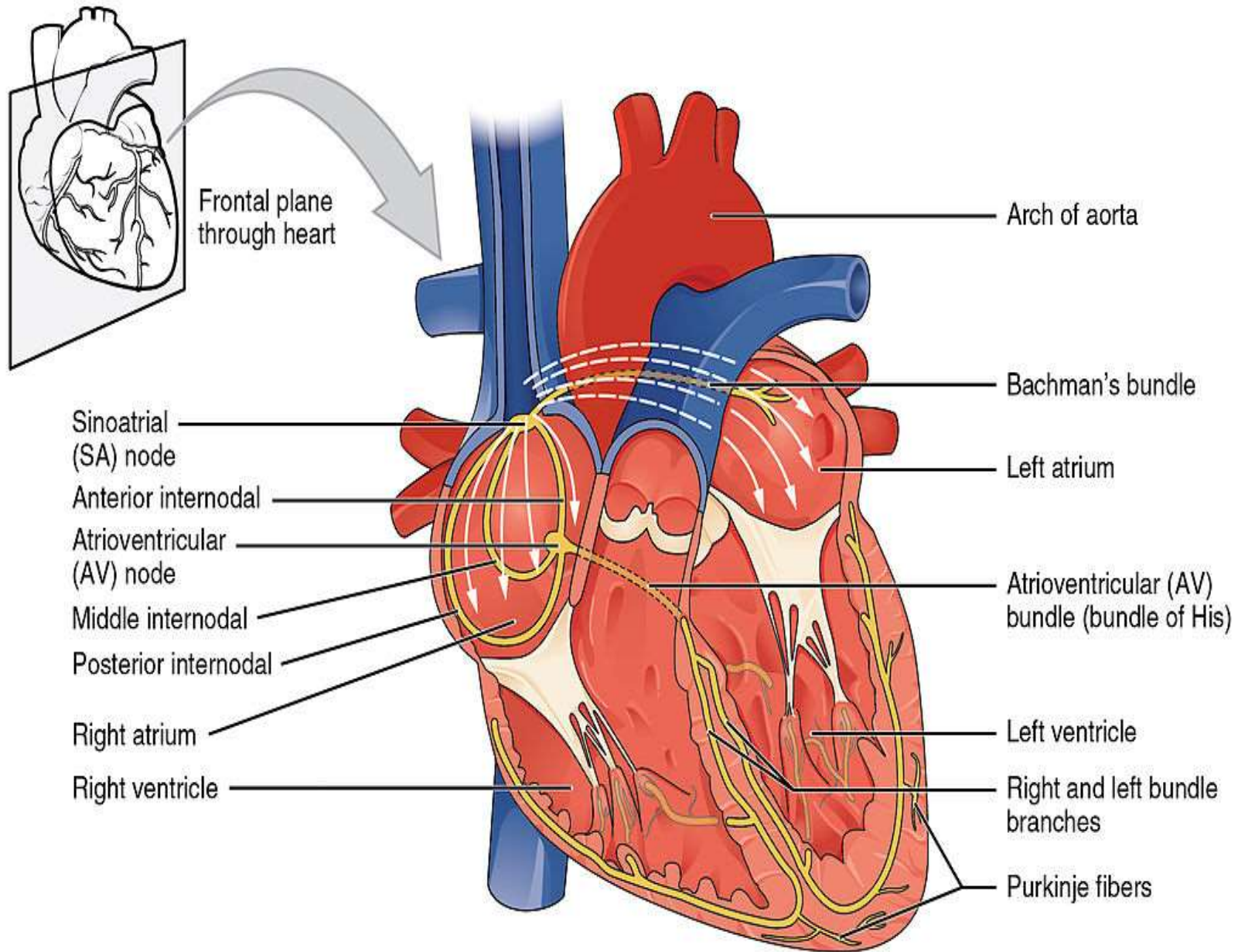


Cardiovascular system

- A thorough assessment of the heart provides valuable information about the function of a patient's cardiovascular system. Understanding how to properly assess the cardiovascular system and identifying both normal and abnormal assessment findings will allow the nurse to provide quality, safe care to the patient.
- Assessing the cardiovascular system includes performing several subjective and objective assessments. At times, assessment findings are modified according to life span considerations.





Anterior view of frontal section

Subjective Assessment

symptom	Question	Follow-Up Safety Note: If findings indicate current severe symptoms suggestive of myocardial infarction or another critical condition, suspend the remaining cardiovascular assessment and obtain immediate assistance according to agency policy or call 911.
Chest Pain	Have you had any pain or pressure in your chest, neck, or arm?	Review how to assess a patient's chief complaint using the PQRSTU method. P-provocation or palliation ,Q-Quality or quantity, R-Region or Radiation, S-Severity, T-Timing, U-Understanding
Shortness of Breath (Dyspnea)	Do you ever feel short of breath with activity? Do you ever feel short of breath at rest? Do you feel short of breath when lying flat?	What level of activity elicits shortness of breath? How long does it take you to recover? Have you ever woken up from sleeping feeling suddenly short of breath (paroxysmal nocturnal dyspnea)? How many pillows do you need to sleep, or do you sleep in a chair (orthopnea) ? Has this recently changed?
Edema	Have you noticed swelling of your feet or ankles? Have you noticed your rings, shoes, or clothing feel tight at the end of the day?	Has this feeling of swelling or restriction gotten worse? Is there anything that makes the swelling better (e.g., sitting with your feet elevated)? How much weight have you gained? Over what time period have you gained this weight?

Palpitations	<p>Have you ever noticed your heart feels as if it is racing or “fluttering” in your chest?</p> <p>Have you ever felt as if your heart “skips” a beat?</p>	<p>Are you currently experiencing palpitations?</p> <p>When did palpitations start?</p> <p>Have you previously been treated for palpitations? If so, what treatment did you receive?</p>
Dizziness (Syncope)	<p>Do you ever feel light-headed?</p> <p>Do you ever feel dizzy?</p> <p>Have you ever fainted?</p>	<p>Can you describe what happened?</p> <p>Did you have any warning signs?</p> <p>Did this occur with position change?</p>
Poor Peripheral Circulation	<p>Do your hands or feet ever feel cold or look pale or bluish?</p> <p>Do you have pain in your feet or lower legs when exercising?</p>	<p>What, if anything, brings on these symptoms?</p> <p>How much activity is needed to cause this pain?</p> <p>Is there anything, such as rest, that makes the pain better?</p>
Calf Pain	<p>Do you currently have any constant pain in your lower legs?</p>	<p>Can you point to the area of pain with one finger?</p>

Topic	Questions
Medical History	<p>Have you ever been diagnosed with any heart or circulation conditions, such as high blood pressure, coronary artery disease, peripheral vascular disease, high cholesterol, heart failure, or valve problems?</p> <p>Have you had any procedures done to improve your heart function, such as ablation or stent placement?</p> <p>Have you ever had a heart attack or stroke?</p>
Medications	<p>Do you take any heart-related medications, herbs, or supplements to treat blood pressure, chest pain, high cholesterol, cardiac rhythm, fluid retention, or the prevention of clots?</p>

Cardiac Risk Factors

Have your parents or siblings been diagnosed with any heart conditions?

- If yes, who has what conditions?

Do you smoke or vape?

- If yes, how many do you smoke/vape daily?
- For how many years have you smoked/vaped?

If you do not currently smoke, have you smoked in the past?

- If yes, what did you smoke?
- For how many years did you smoke?

Are you physically active during the week?

- How many times per week do you exercise and for how many minutes?
- What type of exercise do you usually do?

What does a typical day look like in your diet?

- How many fruits and vegetables do you normally eat in a day?

Objective Assessment

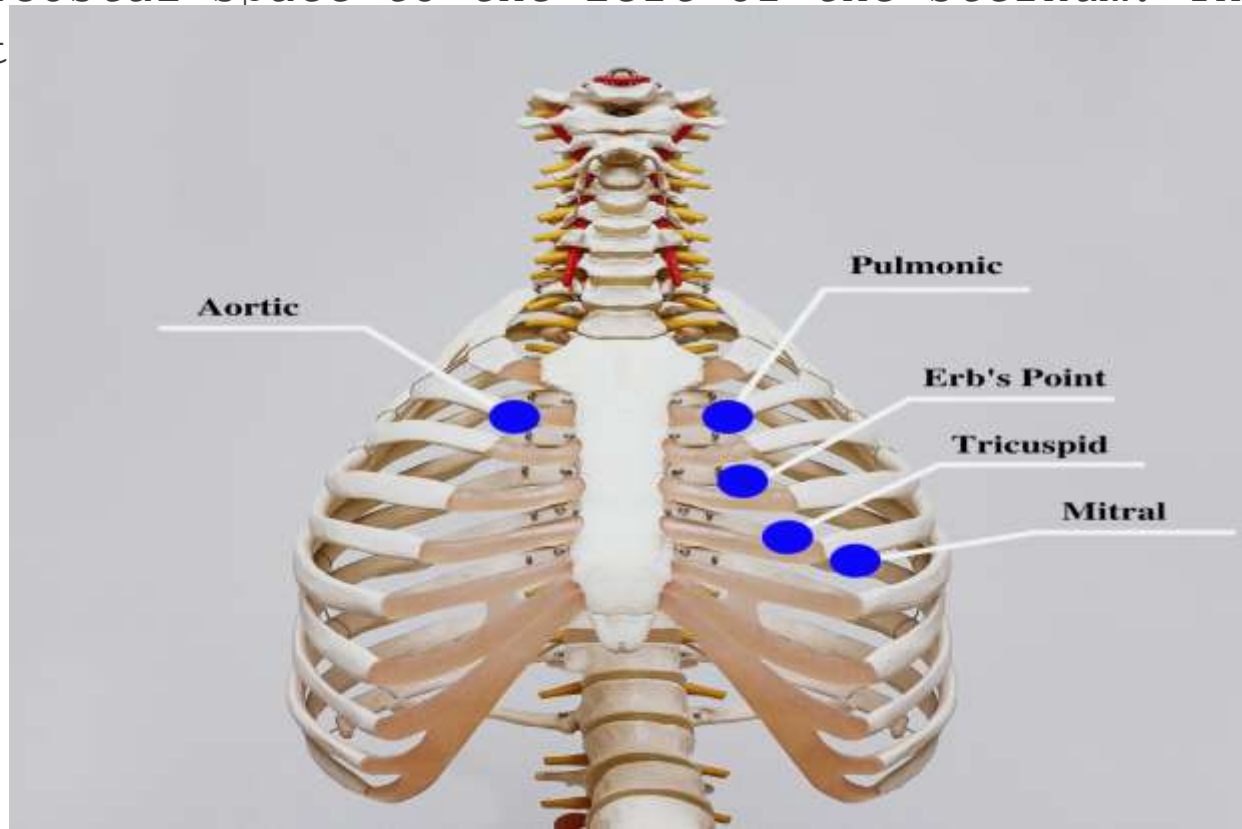
- **Inspection**

- **Skin color to assess perfusion.** Inspect the face, lips, and fingertips for **cyanosis** or pallor. Cyanosis is a bluish discoloration of the skin, lips, and nail beds and indicates decreased perfusion and oxygenation. **Pallor** is the loss of color, or paleness of the skin or mucous membranes, as a result of reduced blood flow, oxygenation, or decreased number of red blood cells., assess for pallor on the palms, conjunctiva,
- **Jugular Vein Distension (JVD).** Inspect the neck for JVD that occurs when the increased pressure of the superior vena cava causes the jugular vein to bulge, making it most visible on the right side of a person's neck. JVD should not be present in the upright position or when the head of bed is at 30-45 degrees.
- **Precordium for abnormalities.** Inspect the chest area over the heart for deformities, scars, or any abnormal pulsations the underlying cardiac chambers and great vessels may produce.
- **Extremities:**
 - **Upper Extremities:** Inspect the fingers, arms, and hands bilaterally noting Color, Warmth, Assess capillary refill by compressing the nail bed until it blanches and record the time taken for the color to return to the nail bed. Normal capillary refill is less than 2 seconds.
 - **Lower Extremities:** Inspect the toes, feet, and legs bilaterally, capillary refill, and the presence of peripheral edema, superficial distended veins, and hair distribution. Document the location and size of any skin ulcers.



• HEART SOUNDS

- Auscultation is routinely performed over five specific areas of the heart to listen for corresponding valvular sounds. These auscultation sites are often referred to by the mnemonic "APE To Man," referring to Aortic, Pulmonic, Erb's point, Tricuspid, and Mitral areas. The aortic area is the second intercostal space to the right of the sternum. The pulmonic area is the second intercostal space to the left of the sternum. Erb's point is directly below the pulmonic area and located at the third intercostal space to the left of the sternum. The tricuspid (or parasternal) area is at the fourth intercostal space to the left of the sternum. The mitral (also called apical or left vent) area is at the midclavicular line.



Auscultation usually begins at the aortic area . Use the diaphragm of the stethoscope to carefully identify the S1 and S2 sounds. They will make a "lub-dub" sound. Note that when listening over the area of the aortic and pulmonic valves, the "dub" (S2) will sound louder than the "lub" (S1). Move the stethoscope sequentially to the pulmonic area , Erb's point (**the approximate center of the heart. At this point, the doctor will listen for both the S1 and S2**) , and tricuspid area . When assessing the mitral area for female patients, it is often helpful to ask them to lift up their breast tissue so the stethoscope can be placed directly on the chest wall. Repeat this process with the bell of the stethoscope. The apical pulse should be counted over a 60-second period. For an adult, the heart rate should be between 60 and 100 with a regular rhythm to be considered within normal range. The apical pulse is an important assessment to obtain before the administration of many cardiac medications.

The first heart sound (S1) identifies the onset of systole. The second heart sound (S2) identifies the end of systole and the onset of diastole. S1 corresponds to the palpable pulse.

When auscultating, it is important to identify the S1 ("lub") and S2 ("dub") sounds, evaluate the rate and rhythm of the heart, and listen for any extra heart sounds. Listen to a normal S1/S2 sound. It may be helpful to use earbuds or a headphone:

EXTRA HEART SOUNDS

Extra heart sounds include clicks, murmurs, S3 and S4 sounds, and pleural friction rubs.. A mid systolic **click**, associated with mitral valve prolapse, may be heard with the diaphragm at the apex or left lower sternal border.

A click may be followed by a murmur. A **murmur** is a blowing or whooshing sound that signifies turbulent blood flow often caused by a valvular defect. Listen to murmur in each area which indicate lesion in the valve (stenosis, or regurgitation)

S3 and **S4** sounds, if present, are often heard best by asking the patient to lie on their left side and listening over the apex with the bell of the stethoscope.

An **S3** sound, also called a **ventricular gallop**, occurs after the S2 and sounds like "lub-dub-dah," or a sound similar to a horse galloping. An S3 can occur when a patient is experiencing fluid overload, such as during an acute exacerbation of heart failure. It can also be a normal finding in pregnancy due to increased blood flow through the ventricles.

The **S4** sound, also called **atrial gallop**, occurs immediately before the S1 and sounds like "ta-lub-dub." An S4 sound can occur with decreased ventricular compliance or coronary artery disease. [\[19\]](#)

Listen to a S3 ventricular gallop:

A pericardial friction rub is caused by inflammation of the pericardium and sounds like sandpaper being rubbed together. It is best heard at the apex or left lower sternal

CAROTID SOUNDS

The carotid artery may be auscultated for **bruits**. Bruits are sound due to turbulence in the blood vessel and may be heard due to atherosclerotic changes.

Palpation

Palpation is used to evaluate peripheral pulses, capillary refill, and for the presence of edema. When palpating these areas, also pay attention to the temperature and moisture of the skin.

PULSES

Compare the rate, rhythm, and quality of arterial pulses bilaterally, including the **carotid, radial, brachial, posterior tibialis, and dorsalis pedis pulses**. Bilateral comparison for all pulses (except the carotid) is important for determining subtle variations in pulse strength. **Carotid pulses should be palpated on one side at a time to avoid decreasing perfusion of the brain.**

The quality of the pulse is graded on a scale of 0 to 3, with 0 being absent pulses, 1 being decreased pulses, 2 is within normal range, and 3 being increased

CAPILLARY REFILL

The **capillary refill** test is performed on the nail beds to monitor **perfusion after blanching which means paleness** indicating that the blood has been forced from the tissue under the nails, Once the tissue has blanched, pressure is removed. Capillary refill time is defined as the time it takes for the color to return after pressure is removed. If there is sufficient blood flow to the area, a pink color should return within 2 seconds after the pressure is removed.