

NUR 221 health assessment (practical) Procedure guide and performance checklist

Module Five

Physical examination of Cardiovascular System



Nursing Assessment of the Cardiovascular

- Physical assessment of the cardiovascular system follows an organized pattern. It begins with inspection of the patient's head and neck, including the eyes, ears, lips, face, skull, and neck vessels. The upper extremities, chest, abdomen, and lower extremities are also inspected. Palpation includes the precordium and carotid pulses. Percussion of the chest is conducted to determine the cardiac borders. Auscultation includes the heart in five areas with the diaphragm and the bell of the stethoscope

A. Physical Examination of the heart:

1. Obtain Health History about:

- ✓ **Presence of symptoms such as** fatigue, dyspnea, hypertension, chest pain, cyanosis, pallor, orthopnea, Edema, numbness, tingling.
- ✓ **Presence of other disease such as** diabetes, lung disease, endocrine disorder, obesity.
- ✓ **Family History:** heart disease, high cholesterol level, high blood pressure.
- ✓ **Life style habits (cardiac risk factors):** smoking, alcohol intake, eating habits, exercise, stress levels.
- ✓ **Medications:** antihypertensive, diuretics, anticoagulants (aspirin).

2. Prepare equipment:

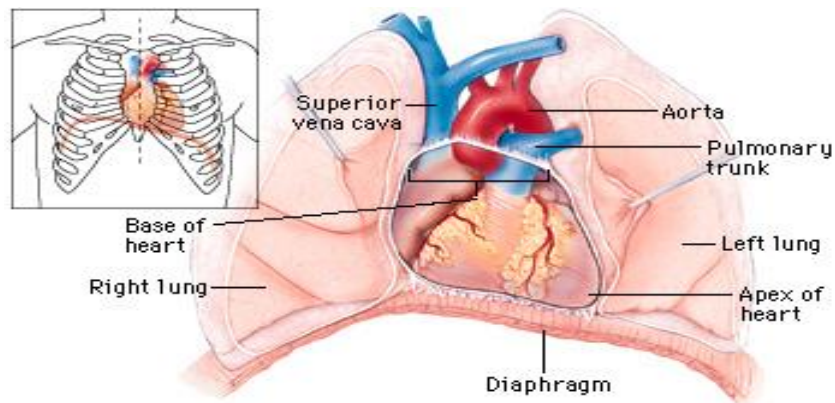
- ✓ Stethoscope.
- ✓ penlight
- ✓ Measuring tap
- ✓ Alcohol swabs.

3. Wash your hand & Prepare clients for the examination by;

- ✓ Explain the steps of the examination, and answer any questions the client may have. These actions will help to relive client anxiety.
- ✓ Explaining that they will need to expose the anterior chest and privacy will be provided.
- ✓ Explain to the client that you will be listening to the heart in a number of places and that this does not necessarily mean that anything is wrong.
- ✓ Explain to the client that it is necessary to assume several different positions for this examination.

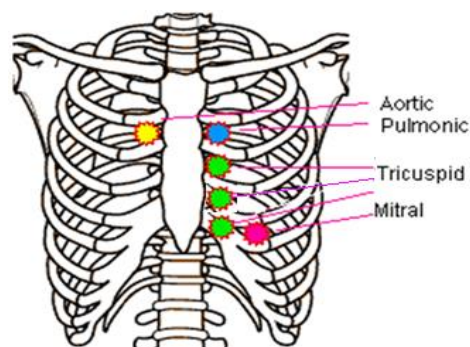
Patient positions will include:

- **Fowler position with head elevated (30-45).** during auscultation and palpation of the neck vessels and inspection, palpation, and auscultation of the precordium.
- **left lateral position** for palpation of the apical impulse
- **sitting-up and leaning-forward position** to auscultate for the presence of any abnormal heart sounds
- **Sitting or dangling on the bedside** to assess peripheral.



✓ The precordium, the area of the chest overlying the heart, is assessed in a systematic manner at the following anatomical landmarks:

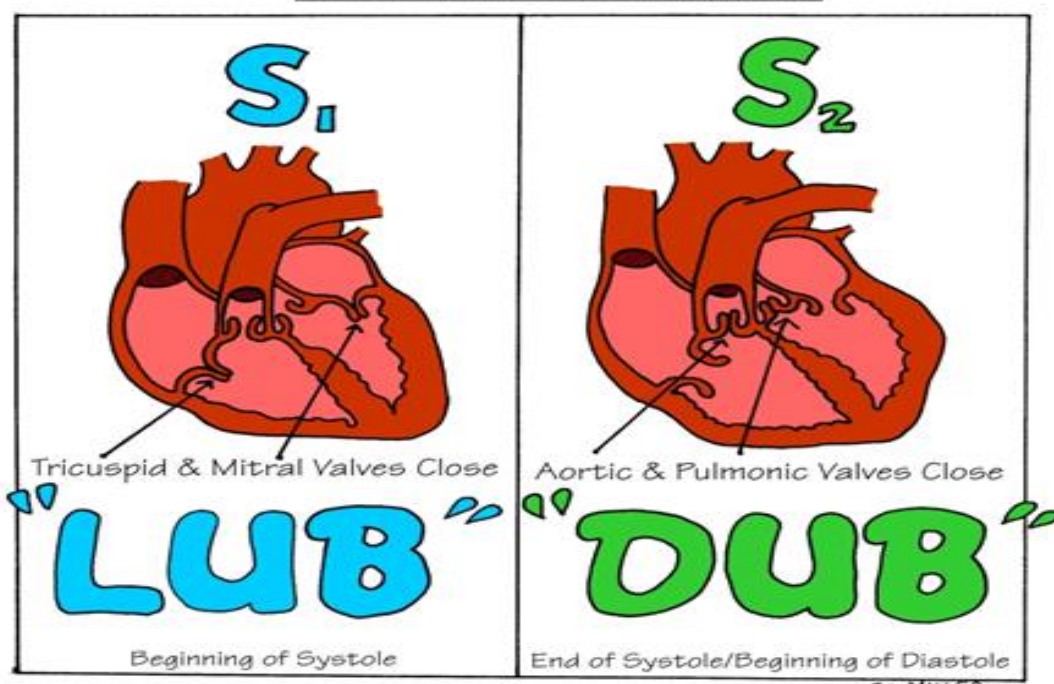
- 1- Aortic area.
- 2- Pulmonic area.
- 3- Tricuspid area.
- 4- Apical area.
- 5- Epigastric area.



Notes;

Aortic, Pulmonic, Tricuspid, Apical area are the sites on the chest wall where sounds produced by the valves are best heard. The sound radiates with the direction of blood flow. They are not over the actual anatomic location of the valves

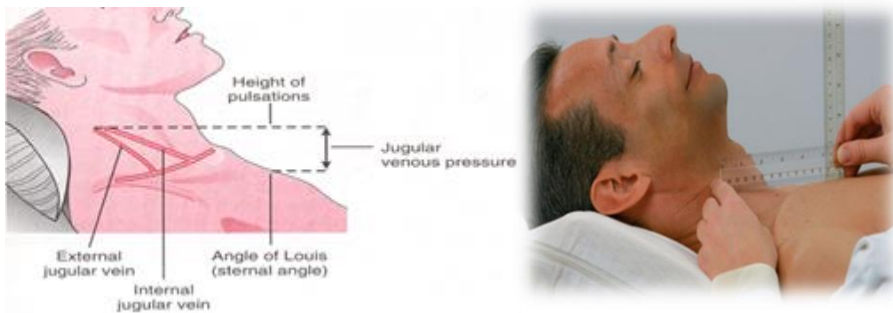
HEART SOUNDS



A- Assessment of the Cardiovascular System:

Procedure and Rationale	Normal Findings
<p>A- Inspection</p> <ul style="list-style-type: none"> • Begin the examination with the patient seated upright with the chest exposed • Inspect the patient's face, lips, ears, and scalp. (Rationale: These structures can provide valuable clues to the patient's cardiovascular health). • Inspect the jugular veins for pulsation & distention. (Rationale: Examination of the jugular veins can provide essential information about the patient's central venous pressure and the heart's pumping efficiency) <ul style="list-style-type: none"> ✓ With the patient sitting upright, adjust the lamp to the patient's neck. ✓ Be sure the patient's head is turned slightly away from the side you are examining. ✓ Look for the jugular veins for pulsation & distention <div data-bbox="718 347 1013 571" data-label="Image"> </div> <div data-bbox="662 907 1037 1344" data-label="Image"> </div> <div data-bbox="191 1153 829 1265" data-label="Text"> <p>Be careful not to confuse pulsations of the carotid arteries with pulsations of the internal jugular veins.</p> </div> <ul style="list-style-type: none"> ✓ If jugular vein pulsations are visible, palpate the patient's radial pulse and determine whether the jugular vein pulsations coincide with the palpated radial pulse. ✓ Next, have the patient lie at a 45-degree angle if the patient can tolerate this position , ✓ Place the first of the metric rulers vertically at the angle of Louis. Place the second metric ruler horizontally at a 90-degree angle to the first ruler. ✓ One end of this ruler should be at the angle of Louis and the other end in the jugular area on the lateral aspect of the neck ✓ Raise the lateral portion of the horizontal ruler until it is at the top of the height of the distention and assess the height in centimeters 	<ul style="list-style-type: none"> • The skin color should be uniform • the jugular veins are not normally visible when the patient sits upright. • The jugular veins normally distend only 3 cm (1.18 in.) above the sternal angle when the patient is lying at a 45-degree angle.

of the elevation from the vertical ruler (measure the distention only on one side).



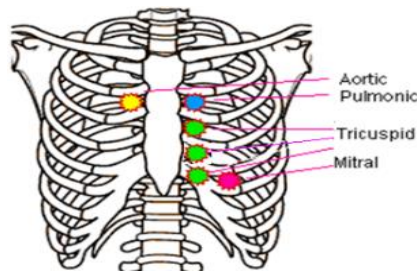
• **Inspect the carotid arteries.**

- ✓ With the patient still lying at a 45-degree angle, using tangential lighting, inspect the carotid arteries for pulsations.

- Pulsations should be visible bilaterally.

• **Inspect the chest for pulsations.**

- ✓ Inspect the entire chest for pulsations.
- ✓ Observe the patient first in an upright position and then at a 30-degree angle, which is a low- to mid Fowler's position.
- ✓ In particular, observe for pulsations, heaves or lifts over the five key landmarks.



- The apical impulse may or may not be visible. If apparent, it would be in the mitral area. Also, it is easier to see in those with thinner chest walls .
- **No** Heaves or lifts noted

*Heaves or lifts are forceful risings of the landmark area.

B- Palpation

• **Palpate the carotid pulses by**

- ✓ Place the pads of your first two or three fingers on the patient's neck between the trachea and the sternocleidomastoid muscle.
- ✓ Palpate firmly but not so hard that you occlude the artery.
- ✓ Palpate one side of the neck at a time (**Rationale:** The carotid pulses must never be palpated simultaneously since this may obstruct blood flow to the brain, resulting in severe bradycardia)
- ✓ Note the rate, rhythm



Pulse 60-100 b\m

- **Palpate the chest in the six areas for the apical impulse.**
 - ✓ Remain on the client's right side and ask the client to remain supine.
 - ✓ Use one or two finger pads to Palpate the anterior chest for pulsation.
 - ✓ beginning with the aorta and proceed downward to the apex of the heart.
 - ✓ Localize the apical impulse precisely by using pads of finger and asking the client to " exhale and then hold it (**Rational** aids the examiner in locating the pulsation)



- ✓ palpate the apical impulse in the mitral. You may ask the client to roll to the left side to better feel the impulse using the palmar surface of your hand.



- No pulsation should be present except for mitral area.
- The apical impulse is palpated in the mitral tap. Amplitude is usually small like a gentle tap.
- In obese clients or clients with large breasts, the apical impulse may not be palpable.

C- **Percussion**

Percussion is used to outline the heart borders. Evidence shows that chest x-ray or echocardiogram are more accurate in detecting heart enlargement.

D- **Auscultation**

- ✓ place the diaphragm of the stethoscope on the chest wall beginning with the aortic area and proceed to the apex of the heart in a **Z** pattern.
- ✓ **Auscultate for heart rate and rhythm.**
 - **If you detect an irregular rhythm, auscultate for a pulse rate deficit.** This is done by;
 - ↳ Compare the apical pulse to a carotid pulse. (**Rational:** The carotid artery is used because it is closest to the heart and most accessible)
 - ↳ Auscultate the apical pulse Simultaneously palpate a carotid pulse and Compare the findings.



- Rate should be 60-100 b/m with regular rhythm.
- The two pulses should be synchronous.

✓ **Auscultate to identify S1 and S2.**

- Auscultate the first heart sound S1 “Lub” and the second heart sound S2 “Dub”.
- Remember these two sounds make up the cardiac cycle of systole and diastole.
- S1 starts systole, and S2 starts diastole



✓ **Auscultate for extra heart sounds.**

- Roll the client towards the left side and listen with the bell at the apex for the presence of any extra heart sound (S3) (S4) or (murmurs).



Listening to heart sounds with the bell of the stethoscope.

- because some murmurs occur or subside according to the client’s position. auscultate in different positions which is a left lateral position by using the bell of the stethoscope and sitting-up and leaning-forward position by Asking the client to
 - ↪ sit up and lean forward, and exhale.
 - ↪ Use the bell of the stethoscope
 - ↪ and listen at the aortic and pulmonic area.



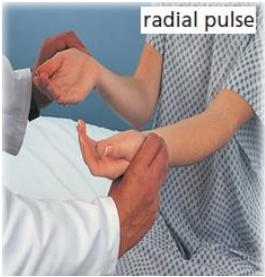
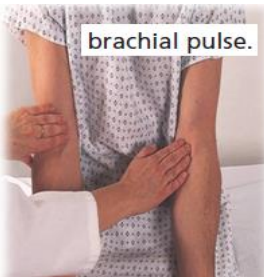
- In **the aortic** and **pulmonic** areas, **S2** is louder than S1.
- In **the tricuspid** area, **S1 and S2** are of almost equal in intensity.
- In **the mitral area**, **S1** is louder than S2.

NORMAL CARDIAC CYCLE

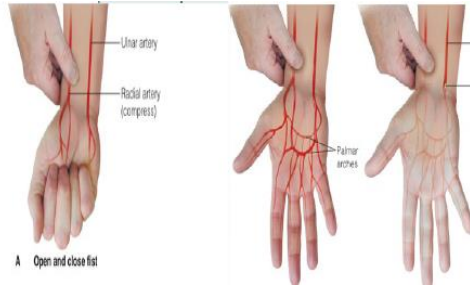


- Normally no extra heart sounds are heard

B- Assessment of the peripheral Vascular System:

Procedure and Rationale	Normal Findings
<ul style="list-style-type: none"> Place the patient in a sitting position on the examination table assessing blood pressure in both arms and legs. <p>Neck</p> <ul style="list-style-type: none"> Inspect the neck for carotid pulsations Palpate the carotid pulses by using 2 or 3 fingers pads 	<ul style="list-style-type: none"> The blood pressure normally does not vary more than 5 to 10 mmHg in each arm, A difference of 10 mmHg or more between the arms may indicate an obstruction of arterial flow to one arm. Bilateral pulsations will be seen between the trachea and Sternocleidomastoid muscle.
<p>Arms</p> <ul style="list-style-type: none"> Assess the hands by: <ul style="list-style-type: none"> Take the patient's hands in your hands. Inspect the color of skin and nail beds, the temperature and texture of the skin, and the presence of any lesions or swelling. Observe for capillary refill in both hands. <ul style="list-style-type: none"> Holding one of the patient's hands in your hand, apply pressure to one of the patient's fingernails for 5 seconds. Repeat the procedure for the other hand. 	<ul style="list-style-type: none"> The skin color should be uniform ,warm and free from lesions. In a healthy patient, the color should return in less than 1 to 2 seconds.
<ul style="list-style-type: none"> Palpate the radial pulse. <ul style="list-style-type: none"> Repeat the procedure for another arm. Note the rate, rhythm, amplitude, and symmetry of the pulses. Palpate both brachial pulses. <ul style="list-style-type: none"> Repeat the procedure for another arm. Note the rate, rhythm, amplitude, and symmetry of the pulses <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	<ul style="list-style-type: none"> Pulse should be palpable If any pulses are difficult to palpate, a Doppler flowmeter should be used.
<ul style="list-style-type: none"> Perform Allen's test. <ul style="list-style-type: none"> If you suspect an obstruction or insufficiency of an artery in the arm. Allen's test may determine the patency of the radial and ulnar arteries. 	

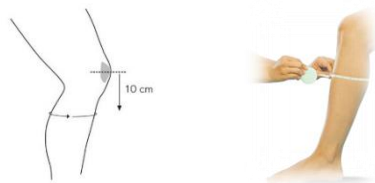
- Ask the patient to place the hands on the knees with palms up.
- compress the radial arteries of both wrists with your thumbs.
- Ask the patient to open and close his or her fist several times.
- While you are still compressing the radial arteries, ask the patient to open his or her hands.



- The palms should become pink immediately, indicating patent ulnar arteries

Legs

- **Inspect both legs.**
- Observe skin color, hair distribution, and any skin lesions.
- Skin color should match the skin tone of the rest of the body. Hair is normally present on the legs.
- **Compare the size of both legs.**
 - ✓ Both legs should be symmetric in size. **If the legs are unequal** in size, measure the circumference of each leg at the widest point.
 - ✓ It is important to measure each leg at the same point.



- **Assess the legs for the presence of superficial veins.**
 - ✓ With the patient in a sitting position and legs dangling from the examination table, inspect the legs.
 - ✓ Now ask the patient to elevate the legs.
 - ✓ The veins may appear as nodular bulges when the legs are in the dependent position, but any bulges should disappear when the legs are elevated.
 - ✓ Palpate the veins for tenderness or inflammation (phlebitis).

- The skin should be the same color and temperature on both legs.

- bulges should disappear when the legs are elevated.

- **Palpate the legs bilaterally for temperature** using the dorsal surface of your hands

- **Test for Homans' sign.**

- ✓ Assist the patient to a supine position.
- ✓ Flex the patient's knee about 5 degrees.
- ✓ Now sharply dorsiflex the patient's foot
- ✓ Testing for Homans' sign.
- ✓ Ask whether the patient feels calf pain or not .



- **Palpate peripheral pulses bilaterally**

- femoral, popliteal, posterior tibial, dorsalis pedis.



- **Assess for arterial supply to the lower legs and feet (Buerger's test) If pulses in the legs are weak.**

- ✓ If you suspect an arterial deficiency, test for arterial supply to the lower extremities.
- ✓ Ask the patient to remain supine.
- ✓ Elevate the patient's legs 12 inches above the heart.
- ✓ Ask the patient to move the feet up and down at the ankles for 60 seconds to drain the venous blood.
- ✓ The skin will be blanched in color because only arterial blood is present.
- ✓ Now ask the patient to sit up and dangle the feet.
- ✓ Compare the color of both feet.

- The skin should be the same temperature on both legs.

- This maneuver exerts pressure on the posterior tibial vein and should not cause pain

- pulses palpable and equal bilaterally.

- a pinkish color returns to tips of the toes in 10 seconds or less. The superficial veins on top of the feet fill in 15 seconds or less.



- **Check for edema of the legs.** If edema is present, you should grade it on a scale of 1+ (mild) to 4+ (severe)
- **Document your findings**

- Free from edema



NURS 221 HEALTH ASSESSMENT (Practical)
Performance Checklist
Cardiovascular assessment

Name of student _____

Student Number _____

The student nurse should be able to:

Performance Criteria	Competency Level			
	Done Correctly	Done with Assistance	Not Done	Comments
<u>Inspection</u>				
<ul style="list-style-type: none"> • Begin the examination with the patient seated upright with the chest exposed 				
<ul style="list-style-type: none"> • Inspect the patient's face, lips, ears, and scalp. 				
<ul style="list-style-type: none"> • <u>Inspect the jugular veins for pulsation & distention.</u> <ul style="list-style-type: none"> ✓ With the patient sitting upright, adjust the lamp to the patient's neck. ✓ patient's head is turned slightly away from the side you are examining. ✓ Look for the jugular veins for pulsation & distention 				
<ul style="list-style-type: none"> • <u>If jugular vein pulsations are visible (measure the distention only on one side).</u> <ul style="list-style-type: none"> ✓ palpate the patient's radial pulse and determine whether the jugular vein pulsations coincide with the palpated radial pulse. ✓ Then have the patient lie at a 45-degree angle if the patient can tolerate this position , ✓ Place the first of the metric rulers vertically at the angle of Louis. ✓ Place the second metric ruler horizontally at a 90-degree angle to the first ruler. ✓ One end of this ruler should be at the angle of Louis and the other end in the jugular area on the lateral aspect of the neck ✓ Raise the lateral portion of the horizontal ruler until it is at the top of the height of the distention and assess the height in centimeters of the elevation from the vertical ruler 				

<ul style="list-style-type: none"> • Inspect the carotid arteries. <ul style="list-style-type: none"> ✓ With the patient still lying at a 45-degree angle, ✓ using tangential lighting, ✓ inspect the carotid arteries for pulsations. 				
<ul style="list-style-type: none"> • Inspect the chest for pulsations. <ul style="list-style-type: none"> ✓ Inspect the entire chest for pulsations. ✓ Observe the patient first in an upright position and then at a low- to mid Fowler's position. ✓ In particular, observe for pulsations, heaves or lifts over the five key landmarks 				
<u>Palpation</u>				
<ul style="list-style-type: none"> • Palpate the carotid pulses Note the rate, rhythm 				
<ul style="list-style-type: none"> • Palpate the chest in the six areas for the apical impulse. <ul style="list-style-type: none"> ✓ Remain on the client's right side and ask the client to remain supine. ✓ Use one or two finger pads to Palpate the anterior chest for pulsation. ✓ beginning with the aorta and proceed downward to the apex of the heart. ✓ Localize the apical impulse precisely by using pads of finger and asking the client to " exhale and then hold it ✓ palpate the apical impulse in the mitral. You may ask the client to roll to the left side to better feel the impulse using the palmar surface of your hand. 				
<u>Auscultation</u>				
<ul style="list-style-type: none"> • Auscultate for heart rate and rhythm. • If you detect an irregular rhythm, auscultate for a pulse rate deficit.by; <ul style="list-style-type: none"> ✓ Compare the apical pulse to a carotid pulse. ✓ Auscultate the apical pulse Simultaneously palpate a carotid pulse and Compare the findings. 				
<ul style="list-style-type: none"> • Auscultate to identify S1 and S2. 				
<ul style="list-style-type: none"> • Auscultate for extra heart sounds. <ul style="list-style-type: none"> ✓ Roll the client towards the left side and listen with the bell at the apex for the presence of any extra heart sound. ✓ Aske the client to sit up and lean forward, and exhale. ✓ Use the bell of the stethoscope and listen at the aortic and pulmonic area. 				
<u>Assessment of the peripheral Vascular System</u>				
<ul style="list-style-type: none"> • Place the patient in a sitting position on the examination table • assessing blood pressure in both arms and legs. 				
<u>Neck</u>				
<ul style="list-style-type: none"> • Inspect the neck for carotid pulsations • Palpate the carotid pulses by using 2 or 3 fingers pads 				

<u>Arms</u>				
<ul style="list-style-type: none"> • <u>Assess the hands by:</u> <ul style="list-style-type: none"> ✓ Take the patient's hands in your hands. ✓ Inspect the color of skin and nail beds, the temperature and texture of the skin, and the presence of any lesions or swelling 				
<ul style="list-style-type: none"> • <u>Observe for capillary refill in both hands.</u> 				
<ul style="list-style-type: none"> • <u>Palpate the radial pulse.</u> <ul style="list-style-type: none"> ✓ Repeat the procedure for another arm. ✓ Note the rate, rhythm, amplitude, and symmetry of the pulses. 				
<ul style="list-style-type: none"> • <u>Palpate both brachial pulses.</u> <ul style="list-style-type: none"> ✓ Repeat the procedure for another arm. ✓ Note the rate, rhythm, amplitude, and symmetry of the pulses 				
<ul style="list-style-type: none"> • <u>Perform Allen's test.</u> <ul style="list-style-type: none"> ✓ If you suspect an obstruction or insufficiency of an artery in the arm. ✓ Allen's test may determine the patency of the radial and ulnar arteries. ✓ Ask the patient to place the hands on the knees with palms up. ✓ compress the radial arteries of both wrists with your thumbs. ✓ Ask the patient to open and close his or her fist several times. ✓ While you are still compressing the radial arteries, ask the patient to open his or her hands. 				
<u>Legs</u>				
<ul style="list-style-type: none"> • <u>Inspect both legs.</u> <ul style="list-style-type: none"> ✓ Observe skin color, hair distribution, and any skin lesions. ✓ Skin color should match the skin tone of the rest of the body. Hair is normally present on the legs. 				
<ul style="list-style-type: none"> • <u>Compare the size of both legs.</u> <ul style="list-style-type: none"> ✓ Both legs should be symmetric in size. If the legs are unequal in size, measure the circumference of each leg at the widest point. ✓ It is important to measure each leg at the same point 				
<ul style="list-style-type: none"> • <u>Assess the legs for the presence of superficial veins.</u> <ul style="list-style-type: none"> ✓ With the patient in a sitting position and legs dangling from the examination table, inspect the legs. ✓ Now ask the patient to elevate the legs. ✓ The veins may appear as nodular bulges when the legs are in the dependent position, but any bulges should disappear when the legs are elevated. ✓ Palpate the veins for tenderness or inflammation (phlebitis). 				
<ul style="list-style-type: none"> • <u>Palpate the legs bilaterally for temperature</u> using the dorsal surface of your hands 				
<ul style="list-style-type: none"> • <u>Test for Homans' sign.</u> 				

<ul style="list-style-type: none"> ✓ Assist the patient to a supine position. ✓ Flex the patient's knee about 5 degrees. ✓ Now sharply dorsiflex the patient's foot ✓ Testing for Homans' sign. ✓ Ask whether the patient feels calf pain or not . 				
<ul style="list-style-type: none"> • Palpate peripheral pulses bilaterally femoral, popliteal, posterior tibial, dorsalis pedis 				
<ul style="list-style-type: none"> • Assess for arterial supply to the lower legs and feet (buerger's test) If pulses in the legs are weak. <ul style="list-style-type: none"> ✓ If you suspect an arterial deficiency, test for arterial supply to the lower extremities. ✓ Ask the patient to remain supine. ✓ Elevate the patient's legs 12 inches above the heart. ✓ Ask the patient to move the feet up and down at the ankles for 60 seconds to drain the venous blood. ✓ he skin will be blanched in color because only arterial blood is present. ✓ Now ask the patient to sit up and dangle the feet. <p>Compare the color of both feet</p>				
<ul style="list-style-type: none"> • Check for edema of the legs. If edema is present, you should grade it on a scale of 1+ (mild) to 4+ (severe) 				
<ul style="list-style-type: none"> • Document your findings 				

Date Evaluated: _____

Evaluated by: _____

References

D' Amico, D. Health & Physical Assessment in Nursing, 3rd Ed. (2016). Pearson, Cloth. ISBN-10: 0133876403 • ISBN-13: 9780133876406