



SNS COLLEGE OF NURSING



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Affiliated to The Tamilnadu DR.MGR MEDICAL UNIVERSITY, Chennai

DEPARTMENT OF NURSING

COURSE – 1 ST YEAR B.SC(N)

SUBJECT - NURSING FOUNDATION

UNIT: VII -VITAL SIGNS

TOPIC 2: ASSESSMENT OF PULSE



VITAL SIGNS

Vital signs are physical signs that indicate an individual is alive, such as heart beat, breathing rate, temperature, blood pressures and recently oxygen saturation.



- They are the measurement of the body's most basic functions. These signs may be observed, measured, and monitored to assess an individual's level of physical functioning.



INTRODUCTION



- **Vital signs** (also known as **vitals**) are a group of the four to six most important medical signs that indicate the status of the body's vital (life-sustaining) functions.
- The normal ranges for a person's vital signs vary with age, weight, gender, and overall health.

Four primary vital signs :

1. Body temperature

2. Heart rate or pulse

3. Respiratory rate

4. Blood pressure



NORMAL VITAL SIGNS RANGES



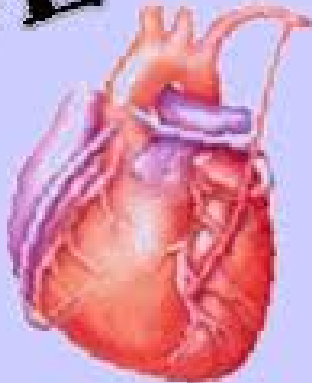
Normal vital sign ranges for the average healthy adult while resting are:

- ✓ Blood pressure: 90/60 mm/Hg to 120/80 mm/Hg
- ✓ Breathing: 12 to 18 breaths per minute
- ✓ Pulse: 60 to 100 beats per minute
- ✓ Temperature: 97.8°F to 99.1°F (36.5°C to 37.3°C)/average 98.6°F (37°C)

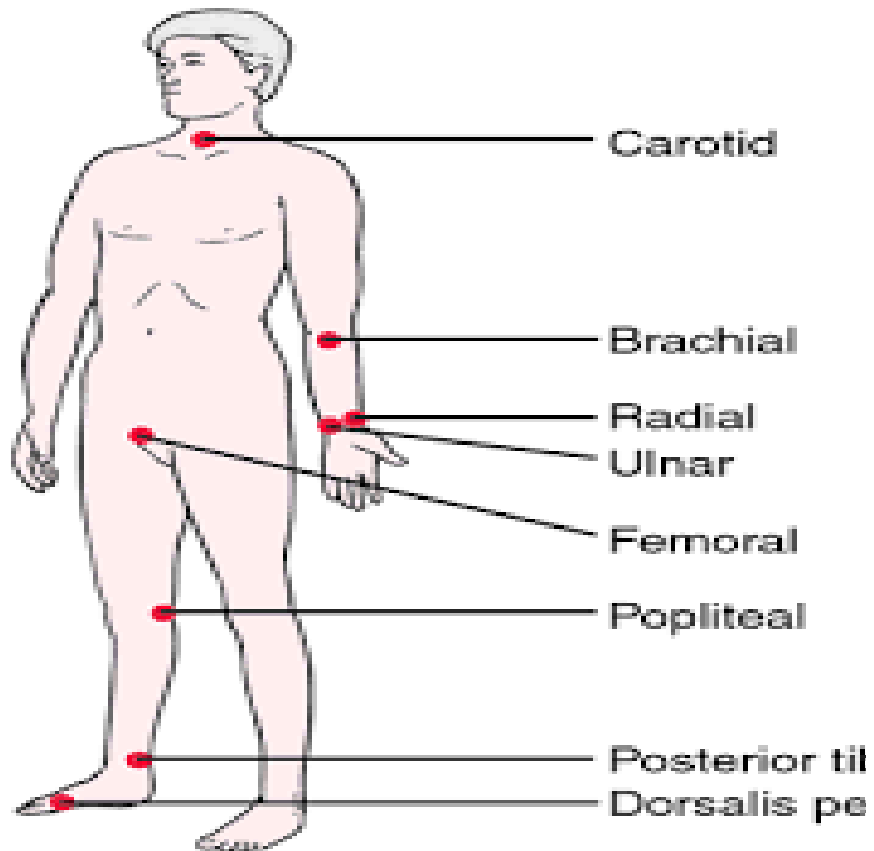
PULSE

- Pulse is an alternative expanse(rise)and recoil (fall) Of an artery as the wave of blood is forced during the contraction of the left ventricle.
- The pulse can be felt by the fingers on a point where an artery crosses a bone close to the surface of the skin.

PULSE



COMMON SITES FOR TAKING PULSE



❖ Temporal Posterior tibial

❖ Carotid

❖ Apical

❖ Brachial

❖ Radial

❖ Femoral



PULSE TAKEN AT VARIOUS ARTERIES

1. TEMPORAL PULSE:

- Temporal artery over the temporal bone.
- The temporal pulse (i.e. superficial temporal artery) is palpated on the temple directly in front of the ear with the index finger.



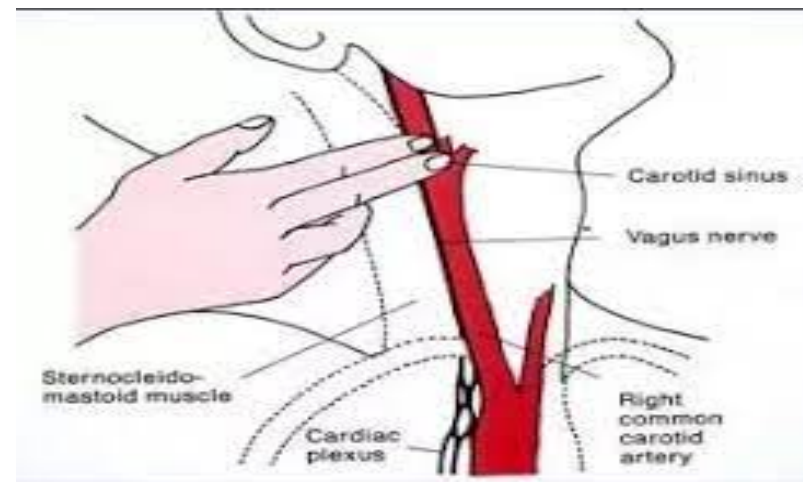


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2. CAROTID PULSE

- The carotid pulse (CP) is a pressure signal acquired over the carotid artery as it passes near the surface of the body at the neck.
- It delivers a pulse signal signifying the variations in arterial blood pressure and volume with each heartbeat.





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3.APICAL PULSE

- The apical pulse is a pulse site on the left side of the chest over the pointed end, or apex, of the heart.
- The apical pulse is palpated to count the pulse rate in infants.





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4. BRACHIAL PULSE

- The brachial pulse can be located by feeling the bicep tendon in the area of the antecubital fossa.
- Move the pads of your three fingers medial (about 2 cm) from the tendon and about 2–3 cm above the antecubital fossa to locate the pulse.





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5. RADIAL AND ULNAR ARTERY

- The radial and ulnar arteries supply blood flow to the forearm and eventually to the hand.
- The radial artery runs along the lateral aspect of the forearm between the brachioradialis. At the wrist, it splits into superficial and deep palmar branches.

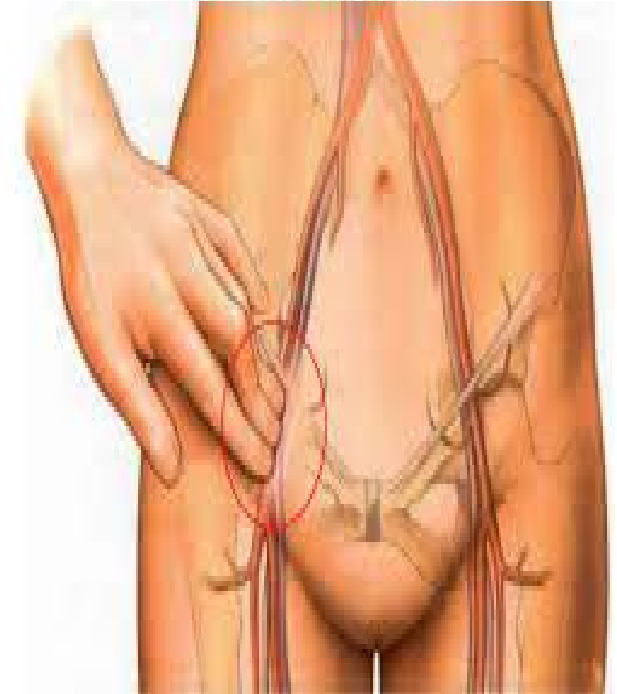


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6.FEMORAL ARTERY:

- ❑The femoral artery is a continuation of the external iliac artery and constitutes the major blood supply to the lower limb.
- ❑In the thigh, the femoral artery passes through the femoral triangle, a wedge-shaped depression formed by muscles in the upper thigh.

Femoral pulse



7. POPLITEAL ARTERY

- ❖ The popliteal artery is a deeply placed continuation of the femoral artery opening in the distal portion of the adductor Magnus muscle.
- ❖ It courses through the popliteal fossa and ends at the lower border of the popliteal muscle.





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8. POSTERIOR TIBIAL ARTERY

- The posterior tibial artery is a branch of the popliteal artery that supplies the posterior compartment of the leg and the sole of the foot.
- It coursing from the inferior margin of the popliteus muscle up to the medial malleolus.





CHARACTERISTICS OF PULSE:



1. Pulse rate :

It is the number of pulse beats per minute. Normal pulse rate in adults varies from 72 to 80 beats per minute.

2. Rhythm or regularity:

It is the time interval between pulse beats. Normally the time intervals between pulse beats are equal or regular.



CHARACTERISTICS OF PULSE

3. Tension :

It is degree of compressibility and depends upon the resistance of the wall of the artery.

4. Strength/volume :

It is the fullness of artery. It is force of blood felt at each beat.



PURPOSE OF TAKING PULSE



- To establish baseline data
- To check abnormalities in rate, rhythm and volume
- To monitor any changes in health status of the patient
- To assess response of heart to cardiac medications, activity, blood volume and gas exchange
- To check the peripheral circulation
- To determine number of heart beat per minute.



FACTORS AFFECTING PULSE

- Age
- Sex
- Exercise/activity
- Stature
- Emotions
- Fever
- Blood pressure
- Drugs
- Disease condition
- Position
- Pain
- Hypovolemia /hemorrhage



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Age: Before birth(F.H.S)	140 to 150 per minute
At birth(New born)	130 to 150 per minute
First year	115 to 130 per minute
Second year	100 to 115 per minute
Third year	90 to 100 per minute
4 to 8 years	86 to 90 per minute
8 to 15 years	80 to 86 per minute
Adult	70 to 80 per minute
Old age	60 to 70 per minute



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- **Sex** : Females have a slightly higher pulse rate than males.
- **Exercise/Activity** : Pulse rate is much faster during exercise.
- **Stature** : The short and thin persons have a more rapid pulse than tall and heavy.
- **Emotions** : Anger or excitement increases the pulse rate temporally.
- **Fever** : When body temperature is elevated, the pulse rate usually increases as well. Pulse increases 10 beats per minute each degree rise of body temperature (10:10f)



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- **Drugs** : Stimulant drugs increase and Depressant drugs decrease.
- **Disease condition** : other infections effect on pulse rate
- **Acute pain and anxiety** : Increases the pulse rate.
- **Severe and chronic pain** : Decrease the pulse rate.
- **Hemorrhage** : Loss of blood increases pulse rate.
- **Position** : Slow while lying down and rapid while standing.



PROCEDURE FOR TAKING PULSE

- Explain procedure to patient and check if the patient had been involved in any activity. If so, allow the patient to rest for 10 minutes before taking pulse because activity can increase the pulse rate.
- Select the pulse site. Usually radial pulse is selected.
- Assist the patient to a comfortable position. For radial pulse, keep the arm, resting over chest or on the side with palm facing downward.



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- Palpate and check pulse.
- Place tips of 3 fingers other than thumb lightly over pulse site. Thumb is not used for assessing pulse as it has its own pulse which can be mistaken for patient's pulse. Do not press the artery with more force.
- After getting the pulse regularly, count the pulse for one whole minute.
- Assist client in returning to comfortable position.



ABNORMAL RHYTHM IN PULSE



1.ARRHYTHMIAS:

- The heart can beat too fast, too slowly, or with an irregular rhythm.
- When a heart beats too fast, the condition is called tachycardia.
- When a heart beats too slowly, the condition is called bradycardia.

2.INTERMITTENT PULSE:

- In which the beats are missed at regular intervals.there is a difference between the apical and the radial pulse. It is known as **pulse deficit**.



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3.EXTRA SYSTOLES: The cardiac contractions occur prematurely called extra systolic pulse.

4.ATRIAL FIBRILLATION:

Rapid contractions of the atrium causing irregular contraction of the ventricles in both rhythm and force.

5.VENTRICULAE FIBRILLATION:

It is the rapid twitching of the ventricles. It is fatal.



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6. SINUS ARRHYTHMIA:

It is a condition in which the pulse rate is rapid during inspiration and slow during expiration.

7. DICROTIC PULSE;

There is one heart beat and two arterial pulsations giving the sensation of a double beat.



ABNORMAL VOLUME OF PULSE



- ❖ Water hammer pulse or
corrigan's pulse or
collapsing pulse:

It describes a bounding, forceful pulse with a rapid upstroke and descent.

- ❖ **Bounding pulse** : signifies
an increased stroke volume as seen in the water hammer pulse.
- ❖ **Pulse alternans**: The
rhythm is regular but the volume has an alternative character.



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- ❖ **Bigeminal pulse:** It is accompanied by an irregular rhythm in which every other beat comes early.
- ❖ **Weak/Wiry/ Thready pulse:** A small weak pulse that feels like a wire or thread pulse on the palpation of arteries.
- ❖ **Paradoxical pulse:** In this case the force or strength of the pulse wave varies, feelings weaker when the client takes in a breath.



QUESTIONS



1. What is the first primary vital signs?

a) Pulse b) temperature c) respiration

2. What is the normal pulse rate for new born babies?

a) 130 to 150 per minute b) 70 to 80 per minute c) 80 to 86 per minute

3. Brady cardia refers to?

a) Increased pulse rate b) decreased pulse rate c) a&b

CONCLUSION

- o Pulse assessment is a key element of healthcare and is used to indicate a patients health status.
- o It is therefore,vital that nurses feel confident in their ability to accurately locate and measure the pulse.





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