Pulse

The pulse is the vibration of each wave of blood going through the arteries as the heart beats .

The pulse rate is usually equal to heart rate , but may be lower if there is:

1 -an obstruction of the artery

2 - if the heart rhythm is weak or irregular .

You can feel it by placing your fingers over one of the large arteries that lie close to the skin .

Especially if the artery runs across a bone and has very little soft tissue around it .

There are eight common arterial pulse sites:

- Radial.
- Temporal.
- Carotid.
- Apical (listening to the heart directly).
- Brachial.
- Femoral.
- Popliteal.
- Pedal (dorsalis pedis)

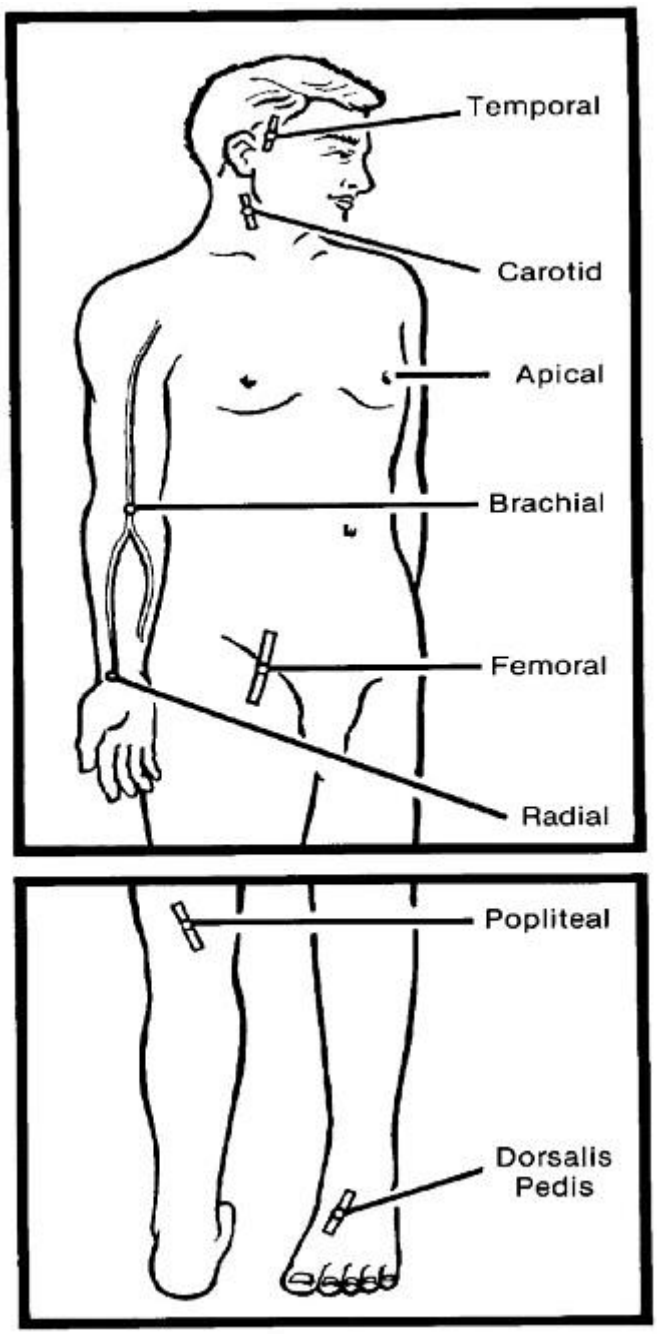

Figure 4-2. Arterial pulse sites

MEASURING THE PULSE:

1 - Measuring a Radial Pulse :

1. Supporting the patient's arm and hand with the palm down, press the first, second, and third finger of your dominant hand gently against the radius bone until you feel the contraction and expansion of the artery with each heartbeat. Do not use your thumb; it has a strong pulse of its own and you may be counting your pulse.
2. Count the pulsations for 30 seconds using:
   a- a watch with a second hand
   b- digital display to time yourself.
   Multiply the count by 2 to determine the rate for 1 minute. If the pulse is abnormal in any way, count for a full minute to get a more accurate reading.
3. The pulse rate may also be determined by the electronic vital signs monitor
4. If there is any doubt about the rhythm or rate of the heart, take an apical pulse.

2 - Measuring an Apical Pulse:

1. Warm the stethoscope in your hands. A cold stethoscope may:

   A -surprise the patient

   b- alter the pulse rate.

2. Place the stethoscope at the apex (pointed end) of the heart, in the left center of the chest, just below the nipple. The pulse can usually be heard best at the apex.
3. Count the pulse for one full minute.

Measuring the Apical-Radial Pulse:

1 - If the apical-radial (A-R) pulse is ordered by the physician, two nurses carry out the procedure together.

2 - Using the same watch, one nurse counts the patient's apical pulse for 1 minute while the other nurse counts the radial pulse for 1 minute. One nurse gives the signal to start counting, and both start at the same time. The two figures are identified and charted (A-R pulse 76/72, for example).

Normally, these two readings should be the same.

If there is a difference, it is called the ***pulse deficit***.

NOTE: An apical pulse will never be lower than the radial pulse.

DESCRIBING THE PULSE:

rate describes how often the heart beats

normal rate:

	rate	**age**
adult	is 60 to 100 beats per minute	
Adolescent	60 to 105	11- 14 years
School age	70 to 110	6- 10
Preschooler	80 to 120	3-5
Toddler	80 to 130	1-3
Infant	80 to 140	6-12
Infant	90 to 140	1-5
New born	120 to 160	

Bradycardia:

Less than 50 beats per minute

Tachycardia:

more than 100 beats per minute

Activity affects the pulse rate:

1 - Exercise or heavy physical work Excitement, anger, and fear cause the heart to beat faster the pulse rate to increase.

2 - Some drugs, such as caffeine, may also increase the pulse rate.

3 - a fever increases in the pulse rate about 10-15 beats for every 1 C .

The heartbeat and pulse rate that is consistently above normal may be a sign of:

1 - heart disease

2 - heart failure

3 -hemorrhage,

4 - an overactive thyroid gland

5 - some other serious disturbance.

Volume:

describes the force with which the heart beats.

The volume of the pulse varies with**:**

1 - the volume of blood in the arteries**.**

2 - the strength of the heart contractions**.**

3 - the elasticity of the blood vessels.

A normal pulse

1 - can be felt with moderate pressure of the finger.

2 - When every beat is easily felt, the pulse is described as strong.

3 - When greater pressure exerted by the finger cannot blot out the pulse, it is called full or bounding.

4 - A pulse with little force is described as weak or thready.

Rhythm: is the spacing of the heartbeats.

1 - When the intervals between the beats are the same, the pulse is described as normal or regular.

2 -When the pulse skips a beat occasionally, it is described as intermittent or irregular.

A pulse may be regular in rhythm but irregular in force, with every other beat being weak.

To obtain an accurate assessment of the heart rate, the pulse is counted by listening directly to the heart (apical pulse).

RESPIRATION

Respiration is the process that brings oxygen into the body and removes carbon dioxide waste. The exchange occurs in the lungs.

Normal breathing:

Effortless , automatic ,even depth, noiseless, free of discomfort,

Regular rate

- ***Apnea*** is the absence of respirations.
- ***Rate:***

	rate	**age**
adult	12- 20	
Adolescent	12 - 20	11- 14 years
School age	15- 30	6- 10
Preschooler	20 - 30	3-5
Toddler	20 -30	1-3
Infant	20 - 30	6-12
Infant	25-40	1-5
New born	30 -50	

Tachypnea : increased respiration rate.

Bradypnea : decreased respiration rate.

b. Depth:

Normal - Deep	Even movement of the chest
shallow	Minimal rise and fall of the chest and abdomen
deep	The rib cage expand fully , and the diaphragm descends to create a maximum capacity

C. Cough:

Acute	**Comes on suddenly**
chronic	Has existed for a long time
dry	Coughs without sputum
productive	Coughs which expels sputum

Normal sputum	**Abnormal sputum**
Clear **Semi liquid mucus** **Watery** **Frothy** **Or thick**	May be green or yellow or gray Blood-tinged May have a foul or sweetish smell

Blood pressure :

is the pressure exerted by the blood on the walls of the blood vessels within the systemic arterial system.

Systolic blood pressure:

is greatest. It is the pressure against the wall of the blood vessels following ventricular contraction.

Diastolic blood pressure:

is lowest. It is the pressure against the blood vessels when the heart is relaxed before it begins to contract again.

Two things determine the blood pressure:

1 - the rate and force of the heartbeat

2 - the ease with which the blood flows into the small branches of the arteries.

When the heart rate or force is increased by exertion or illness, blood pressure increases. If the volume of blood within the circulatory system is reduced (as in hemorrhage), and other factors remain the same, blood pressure decreases.

Hypertension is blood pressure above normal limits (above 140/90); it is a sign of a circulatory problem.

Hypotension is blood pressure below normal limits (below 90/60) and may indicate shock.

SYSTOLIC 100 to 140 mmHg DIASTOLIC 60 to 90 mmHg