**VITAL SIGNS**

**(BODY TEMPERATURE, PULSE RATE, RESPIRATION RATE, BLOOD PRESSURE)**

**What are vital signs?**

Vital signs are measurements of the body's **most** basic functions. The four main vital signs routinely monitored by medical professionals and health care providers include the following:

* Body temperature
* Pulse rate
* Respiration rate (rate of breathing)
* Blood pressure (Blood pressure is not considered a vital sign but is often measured along with the vital signs.)

Vital signs are useful in detecting or monitoring medical problems. Vital signs can be measured in a medical setting, at home, at the site of a medical emergency, or elsewhere.

## What is body temperature?

Temperature is a physical quantity expressing hot and cold. Temperature is measured with a thermometer, historically calibrated in various temperature scales and units of measurement.

The normal range for human body temperature is between 36.5°C and 37.2°C, 97.8 F-98.6F. However, it is usual to consider a reading above 37.2°C as deviation from normal range. Repeat checks should be done.

A patient's temperature may be altered due to hormonal changes, exposure to heat or cold, exercise, and infection.

**A person's body temperature can be taken in any of the following ways:**

* **Orally.** Temperature can be taken by mouth using either the classic glass thermometer, or the more modern digital thermometers that use an electronic probe to measure body temperature.
* **Rectally.** Temperatures taken rectally (using a glass or digital thermometer) tend to be 0.5 to 0.7 degrees F higher than when taken by mouth.
* **Axillary.** Temperatures can be taken under the arm using a glass or digital thermometer. Temperatures taken by this route tend to be 0.3 to 0.4 degrees F lower than those temperatures taken by mouth.
* **By ear.** A special thermometer can quickly measure the temperature of the ear drum, which reflects the body's core temperature (the temperature of the internal organs).
* **By skin.** A special thermometer can quickly measure the temperature of the skin on the forehead.

**Requirements**

* A thermometer
* Disinfectant or an alcohol wipe
* Tissue or dry swab
* Record chart /patient's notes
* Pen

## Preparation

1. Wash and dry your hands – this will help to prevent cross-infection.
2. Explain to the patient what you are going to do. This will help the patient to understand and will make it easier for them to cooperate.

## Method

We recommend taking the temperature in the axilla (armpit) as this is the easiest and safest place.

1. Ask the patient to loosen any tight clothing or remove long-sleeved garments so it is possible to access the axilla.
2. Place the thermometer in the axilla (armpit). Place the forearm across the chest and ensure the upper arm is resting against the patient's side.
3. Leave the thermometer in place until it beeps. This will ensure that the reading will be accurate.
4. Remove the thermometer, read, and immediately record the temperature on the record chart or in the patient's notes.
5. Tell the patient the temperature and whether any further investigations are needed.
6. Disinfect the thermometer and wash and dry your hands again.
7. Report a raised temperature to the clinical person in charge.

Body temperature may be abnormal due to fever hyperthamia (high temperature) or [hypothermia](http://www.hopkinsmedicine.org/healthlibrary/conditions/adult/non-traumatic_emergencies/hypothermia_85,P00844/) (low temperature). A fever is indicated when body temperature rises about one degree or more over the normal temperature of 98.6 degrees Fahrenheit, according to the American Academy of Family Physicians. Hypothermia is defined as a drop in body temperature below 95 degrees Fahrenheit.

**What is the pulse rate?**

The pulse rate is a measurement of the heart rate, or the number of times the heart beats per minute. As the heart pushes blood through the arteries, the arteries expand and contract with the flow of the blood. Taking a pulse not only measures the heart rate, but also can indicate the following:

* Heart rhythm
* Strength of the pulse

The normal pulse for healthy adults ranges from 60 to 100 beats per minute. The pulse rate may fluctuate and increase with exercise, illness, injury, and emotions. Females ages 12 and older, in general, tend to have faster heart rates than do males. Athletes, such as runners, who do a lot of cardiovascular conditioning, may have heart rates near 40 beats per minute and experience no problems.

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| [Illustration demonstrating  how to take a pulse](https://www.hopkinsmedicine.org/healthlibrary/GetImage.aspx?ImageId=125505) |
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**How to check your pulse**

As the heart forces blood through the arteries, you feel the beats by firmly pressing on the arteries, which are located close to the surface of the skin at certain points of the body. The pulse can be found on the side of the neck, on the inside of the elbow, or at the wrist. For most people, it is easiest to take the pulse at the wrist. If you use the lower neck, be sure not to press too hard, and never press on the pulses on both sides of the lower neck at the same time to prevent blocking blood flow to the brain. When taking your pulse:

* Using the first and second fingertips, press firmly but gently on the arteries until you feel a pulse.
* Begin counting the pulse when the clock's second hand is on the 12.
* Count your pulse for 60 seconds (or for 15 seconds and then multiply by four to calculate beats per minute).
* When counting, do not watch the clock continuously, but concentrate on the beats of the pulse.

**WHAT IS THE RESPIRATION RATE?**

The respiration rate is the number of breaths a person takes per minute. The rate is usually measured when a person is at rest and simply involves counting the number of breaths for one minute by counting how many times the chest rises. Respiration rates may increase with fever, illness, and with other medical conditions. When checking respiration, it is important to also note whether a person has any difficulty breathing.

Normal respiration rates for an adult person at rest range from 12 to 20 breaths per minute.

**WHAT IS BLOOD PRESSURE?**

Blood pressure is the force of the blood pushing against the artery walls during contraction and relaxation of the heart. Each time the heart beats, it pumps blood into the arteries, resulting in the highest blood pressure as the heart contracts. When the heart relaxes, the blood pressure falls.

Two numbers are recorded when measuring blood pressure.

* 1. The higher number, or systolic pressure, refers to the pressure inside the artery when the heart contracts and pumps blood through the body.
  2. The lower number, or diastolic pressure, refers to the pressure inside the artery when the heart is at rest and is filling with blood.

Both the systolic and diastolic pressures are recorded as "mm Hg" (millimetres of mercury). This recording represents how high the mercury column in an old-fashioned manual blood pressure device (called a mercury manometer or sphygmomanometer) is raised by the pressure of the blood. Today, doctors use a simple dial for this measurement.

[High blood pressure](https://www.hopkinsmedicine.org/healthlibrary/conditions/adult/cardiovascular_diseases/high_blood_pressure_hypertension_85,P00224), or hypertension, directly increases the risk of heart attack, heart failure, and stroke. With high blood pressure, the arteries may have an increased resistance against the flow of blood, causing the heart to pump harder to circulate the blood.

Normal B/P range is **110/60-140/90mm/hg**.

* High blood pressure is when systolic is 140 or higher **or** the diastolic is 90 or higher

These numbers should be used as a guide only. A single blood pressure measurement that is higher than normal is not necessarily an indication of a problem. The doctor will want to see multiple blood pressure measurements over several days or weeks before making a diagnosis of high blood pressure and starting treatment. contact the doctor if your blood pressure readings are not within normal range.

**Why should one monitor blood pressure at home?**

For people with hypertension, home monitoring allows doctors to monitor how much blood pressure changes during the day, and from day to day. This may also help doctors determine how effectively blood pressure medication is working.

**What special equipment is needed to measure blood pressure?**

Either an aneroid monitor, which has a dial gauge and is read by looking at a pointer, or a digital monitor, in which the blood pressure reading flashes on a small screen, can be used to measure blood pressure.

**About the aneroid monitor**

The aneroid monitor is less expensive than the digital monitor. The cuff is inflated by hand by squeezing a rubber bulb. Some units even have a special feature to make it easier to put the cuff on with one hand. However, the unit can be easily damaged and become less accurate. Because the person using it must listen for heartbeats with the stethoscope, it may not be appropriate for the hearing-impaired.

**About the digital monitor**

The digital monitor is automatic, with the measurements appearing on a small screen. Because the recordings are easy to read, this is the most popular blood pressure measuring device. It is also easier to use than the aneroid unit, and since there is no need to listen to heartbeats through the stethoscope, this is a good device for hearing-impaired patients. One disadvantage is that body movements or an irregular heart rate can change the accuracy. These units are also more expensive than the aneroid monitors.

**About finger and wrist blood pressure monitors**

Tests have shown that finger and/or wrist blood pressure devices are not as accurate in measuring blood pressure as other types of monitors. In addition, they are more expensive than the other monitors.

Before you measure blood pressure:

* Relax for 5 minutes before taking the measurement.
* Sit patient with back supported (don't sit on a couch or soft chair). Keep feet on the floor uncrossed. Place arm on a solid flat surface (like a table) with the upper part of the arm at heart level. Place the middle of the cuff directly above the bend of the elbow. Check the monitor's instruction manual for an illustration.
* Take multiple readings. When you measure, take 2 to 3 readings one minute apart and record all the results.
* Take blood pressure at the same time every day, or as your healthcare provider recommends.
* Record the date, time, and blood pressure reading.
* Take the record with you to your next medical appointment. If blood pressure monitor has a built-in memory, simply take the monitor with you to your next appointment.
* Call healthcare provider if several high readings.

**Hypertensive crisis**

Is When blood pressure reaches a systolic (top number) of 180 or higher OR diastolic (bottom of 110mmhg. Its emergency **inform** the doctor immediately.

**Other common home tests**

Oxygen saturation in the blood Is the percentage of haemoglobin that is carrying oxygen

Indication-Cardiac and pulmonary disease

Measured using a pulse oximeter. At home, a fingertip type is used. The device is clipped onto the person’s finger and has a tiny computer and screen. The device measures the light over several pulses and gives a reading of a person’s blood oxygen level.

**How to use this device**

1. Read the instruction manual before using the device for the first time
2. Switch on the device and put on the probe correctly onto the person’s finger
3. Read the reading displayed on the screen
4. Note that the first reading is the oxygen saturation level and the second reading is the pulse rate

There are some important points that you must keep in mind to ensure accurate readings

-There should be no nail varnish or pigment on the fingertip

-Avoid direct bright light on the fingertip.

-Ensure that the elder is holding their hand steady

The normal acceptable ranges of oxygen saturation is 95- 98%

**Blood glucose**

The elder under your care may have diabetes

Depending on the type of diabetes, the doctor may recommend testing of blood sugar levels at home.

**Device used to measure blood sugar-**Glucose meter

1.Ask the carereceiver to wash his hand with soap and dry them

2. you should also wash your hands

3. Remove a test strip from the container

Remember to replace cap to prevent damage to the strips

4.Insert the test strip into the meter

5. Prick the elder’s finger with the needle/lancet provided

To make prick less painful, remember to prick the side of the finger rather than the tip

* 1. Gently squeeze the finger until a drop of blood forms
  2. Touch the test strip to the blood. Make sure the strip does not touch the skin
  3. Note the blood sugar reading on the meter screen
  4. Record the results along with the date and time of the test

*The doctor may set target blood sugar levels for the elder based on several factors such as type and severity of diabetes and other medical conditions*

Diabetic patient target levels- range from **70-130mg**/dl (3.9–7.2 mmol/L) before meals, up to **180** (10.0 mmol/L)2 hrs after meals and **90-130mg/dl** (5 to 7.2 **mmol**/l).after fasting for at least 8 hours