

Diagnostic Procedures

When the body is in a healthy state, it functions normally, and the physical and chemical characteristics of the body substances are generally within a certain acceptable range, known as the normal range.

Pathologic means pertaining to a condition that is caused by or involves a disease process. When a pathologic condition exists, changes take place within the body and may cause an alteration in the physical and chemical characteristics of body substances, as evidenced by abnormal laboratory values or results.

Disease: The original meaning of the word disease (des-aise) which means lack of ease. Now the word disease refers to "a condition of the living animal or one of its parts that impairs normal functioning and is typically manifested by distinguishing signs and symptoms."

Signs and Symptoms in Diagnosis

Diagnosis (Dx) is the identification of a disease or condition by a scientific evaluation of symptoms, history, physical signs, tests, and procedures.

Prognosis means the predicted outcome of a disease. A disease is often described as acute or chronic. **Acute** means having a short and relatively severe course. The opposite of acute is **chronic**, meaning that the disease exists over a long time.

A person's **history** is a record of past events and factors that may have a bearing on one's present condition. The history of present illness is obtained by the

medical professional from the patient regarding the onset, duration, and character of the present illness.

The history and physical examination, an investigation to determine the state of health, become part of a patient's medical record.

Signs are objective, or definitive, evidence of an illness or disordered function that are perceived by an examiner, such as fever, a rash, or evidence established by radiologic or laboratory testing. **Symptoms** (Sx) are subjective evidence as perceived by the patient, such as pain.

Diagnostic terms are used to describe the signs and symptoms of disease and the tests used to establish a diagnosis. The tests include **clinical examination** (e.g., measuring blood pressure), **laboratory tests** (e.g., determination of blood gases), and **radiologic studies**, which relate to the use of radiation (e.g., chest xray image). Laboratory (lab) tests, ranging from simple to sophisticated studies, identify and quantify substances to evaluate organ functions or establish a diagnosis.

Various body fluids are collected and sent to the laboratory for testing, most often blood and urine. In addition, fluids are collected from various body cavities or wounds. A small sample or part taken from the body to represent the nature of the whole is called a **specimen** or **biopsy**.

The following four techniques are useful in the **physical examination**:

- **Inspection.** The examiner uses the eyes and ears to observe and listen to the patient. Inspection could reveal superficial abnormalities, such as a rash.

- **Palpation.** The examiner feels the texture, size, consistency, and location of certain body parts with the hands (Figure 4 A). Palpation sometimes reveals deep abnormalities, such as an enlarged liver.
- **Percussion.** The examiner taps the body with the fingertips or fist to evaluate the size, borders, and consistency of internal organs and to determine the amount of fluid in a body cavity (Figure 4 B).
- **Auscultation.** The examiner listens for sounds within the body to evaluate the heart, blood vessels, lungs, intestines, or other organs, or to detect the fetal heart sound. Auscultation is performed most frequently with a stethoscope (Figure 4 C).

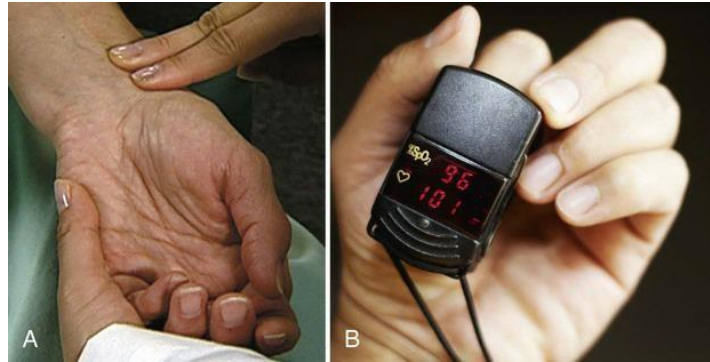


A **stethoscope** is an instrument consisting of two earpieces connected by flexible tubing; the diaphragm is placed against the patient's skin to hear sounds within the body.

The Vital Signs

Basic examinations are performed to assess the patient's condition. **Vital signs** are measured and recorded for most patients. Vital signs are the measurements of **pulse rate**, **respiratory rate**, **blood pressure** and **body temperature**.

The pulse (sometimes abbreviated P) is the rhythmic expansion of an artery that occurs as the heart beats; it may be felt with a finger or measured electronically (Figure 1).



The pulse results from the expansion and contraction of an artery as blood is forced from the heart. The pulse rate is the count of the heart beats per minute. A normal pulse rate in a resting state is 60 to 100 beats per minute.

Respiration (R) refers either to the exchange of oxygen and carbon dioxide within the body or to breathing. The respiration (or respiratory) rate is the number of breaths per minute. The rise and fall of the patient's chest is observed while counting the number of breaths and noting the ease with which breathing is accomplished.

Body temperature can be measured through several routes, including the mouth, the rectum, under the armpit, and the external opening of the ear canal. T is the abbreviation for temperature. **Thermometers** are instruments used to measure temperature. Originally, a thermometer consisted of a sealed glass tube, marked in degrees Celsius or Fahrenheit, and contained a liquid such as mercury. The liquid rises or falls as it expands or contracts according to changes in temperature (Figure 2).



Blood pressure (BP) is the pressure exerted by the circulating volume of blood on the walls of the arteries and veins and on the chambers of the heart. Indirect measurement of blood pressure is made with a stethoscope and a blood pressure cuff (**Figure 3**).

