Lecture 7

Vital Signs
Part 2
Theoretical

Prepared by

Dr. Ali Ahmed

Dr: Hayder Mohammed

Respiration

Respiration

Respiration is the act of breathing.

Inhalation or **inspiration** refers to the intake of air into the lungs.

Exhalation or **expiration** refers to breathing out or the movement of gases from the lungs to the atmosphere.

Ventilation refer to the movement of air in and out of the lungs.

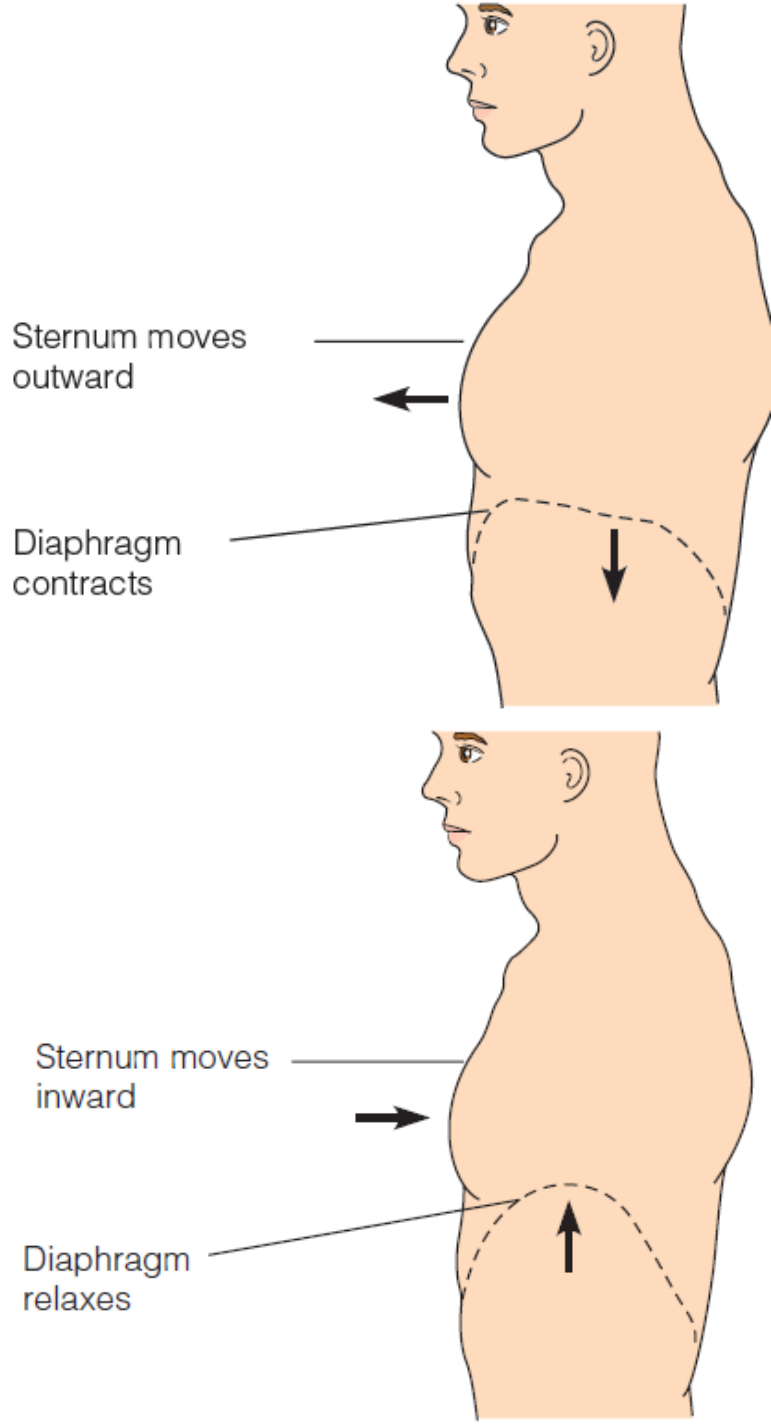
There are basically two types of breathing:

1. **Costal (thoracic) breathing**
2. **Diaphragmatic (abdominal) breathing.**

Mechanics and Regulation of Breathing

During inhalation the following processes normally occur:-

The diaphragm contracts (flattens), the ribs move upward and outward, and the sternum moves outward, thus enlarging the thorax and permitting the lungs to expand.



Before assessing a client's respirations, a nurse should be aware of the following:

1. Health problems on respirations.
2. Any medications or therapies that might affect respirations.
3. The relationship of the client's respirations to cardiovascular function.
4. Exercise affects respirations, increasing their rate and depth.
5. Anxiety.

Factors influencing of respiration :

1. **Medication:** increased or decreased
2. **Acute pain:** increased rate and depth of respiration.
3. **Anxiety:** increased rate and depth of respiration.
4. **Smoking:** increased rate and depth of respiration.
5. **Anemia:** increased rate and depth of respiration.

Assessment of Respiration

1- Rate:

- **Normal: (14-20) breaths per minute**

1- Rhythm;

- **Regular**
- **Irregular**

2- Depth;

- **Deep -- normal**
- **Shallow--- abnormal**

Breathing pattern

- **Eupnea:-** Breathing that is normal in rate and depth\ **Normal: (14-20) breath per minute**
- **Bradypnea:-** Abnormally slow respirations
- **Tachypnea:-** abnormally fast respirations
- **Apnea :-** is the absence of breathing.
- **Dyspnea :-** difficulty in breathing
- **Orthopnea :-** shortness of breathing when the patient lying flat (supine position).

Secretion and Coughing

- **Haemoptysis**: blood in sputum (cough with blood)
- **Productive cough**: expectorated secretion.
- **Non productive cough**: dry cough.

Procedure to checking respiratory rate

1. Wash your hands.
2. Prepare all required equipment's (Watch).
3. Introduce your self and explain procedure to client.
4. Provide for client privacy.
5. Observe or palpate and count the respiratory rate by place the client’s arm across the chest and observe the chest movements while supposedly taking the radial pulse.
6. Count the respiratory rate for 30 seconds if the respirations are regular. Count for 60 seconds if they are irregular. An inhalation and an exhalation count as one respiration.
7. Document the respiratory rate, depth, rhythm.

Blood pressure

Blood Pressure

- **Blood Pressure (BP):** is a measure of the pressure exerted by the blood as it flows through the arteries.
- **Blood pressure** is measured in millimeters of mercury (mmHg).
- **Systolic Pressure** is the pressure of the blood as a result of contraction of the ventricles, that is, the pressure of the height of the blood wave.
- **Diastolic Pressure** is the pressure when the ventricles are at rest.

- **Hypertension:** A blood pressure that is above normal.
- **Hypotension: A** blood pressure that is below normal.
- **Orthostatic hypotension** is a blood pressure that falls when the client sits or stands.

TABLE 29–4 Classification of Blood Pressure

Category	Systolic BP (mmHg)		Diastolic BP (mmHg)
Normal	<120	and	<80
Prehypertension	120–139	or	80–89
Hypertension, stage 1	140–159	or	90–99
Hypertension, stage 2	>160	or	>100

- The systolic blood pressure of a **newborn** ranges between 50 and 80 mmHg; the diastolic between 25 and 55 mmHg

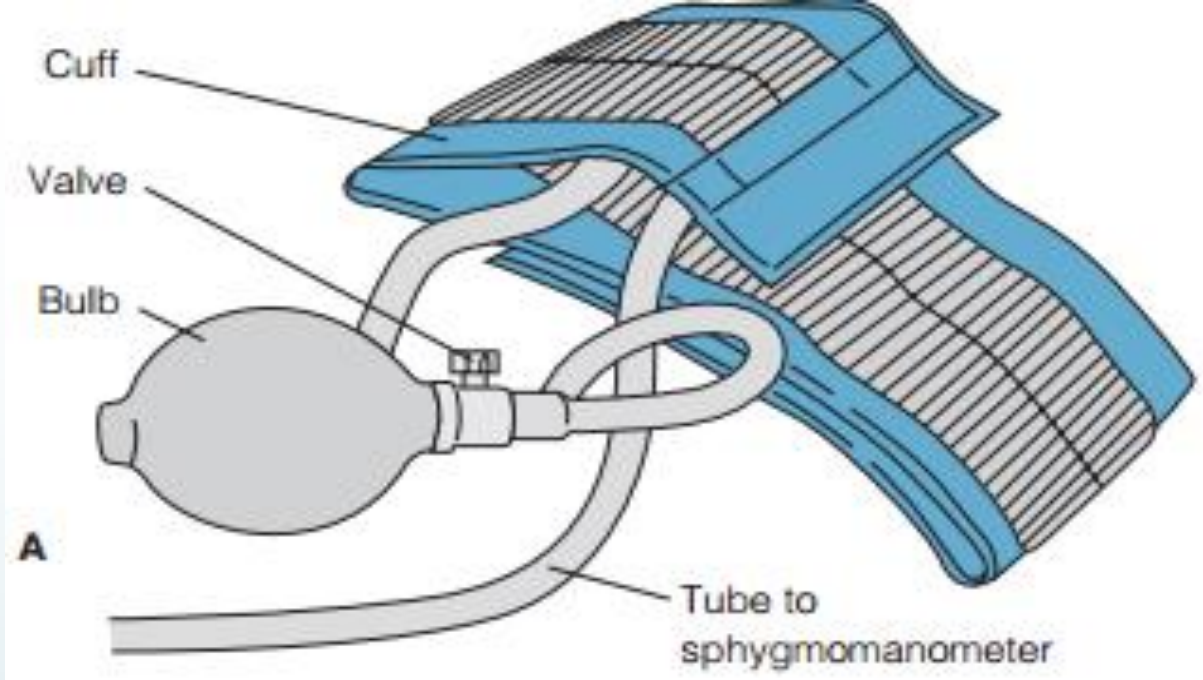


Figure 29–19 ■ Blood pressure equipment: an aneroid manometer and cuff.

❶ Measuring blood pressure in the client's thigh.

Figure 29–21 ■ Three standard cuff sizes: a small cuff for an infant, small child, or frail adult; a normal adult-size cuff; and a large cuff for measuring the blood pressure on the leg or on the arm of an obese adult.

Figure 29–24 ■ Pediatric blood pressure cuffs.

Figure 29–21 ■ Standard cuff sizes: smaller cuffs are used for infants, small children, or frail adults; midsize cuffs are used for most adults; and larger cuffs are used for measuring the blood pressure on the leg or arm of an adult who is obese.

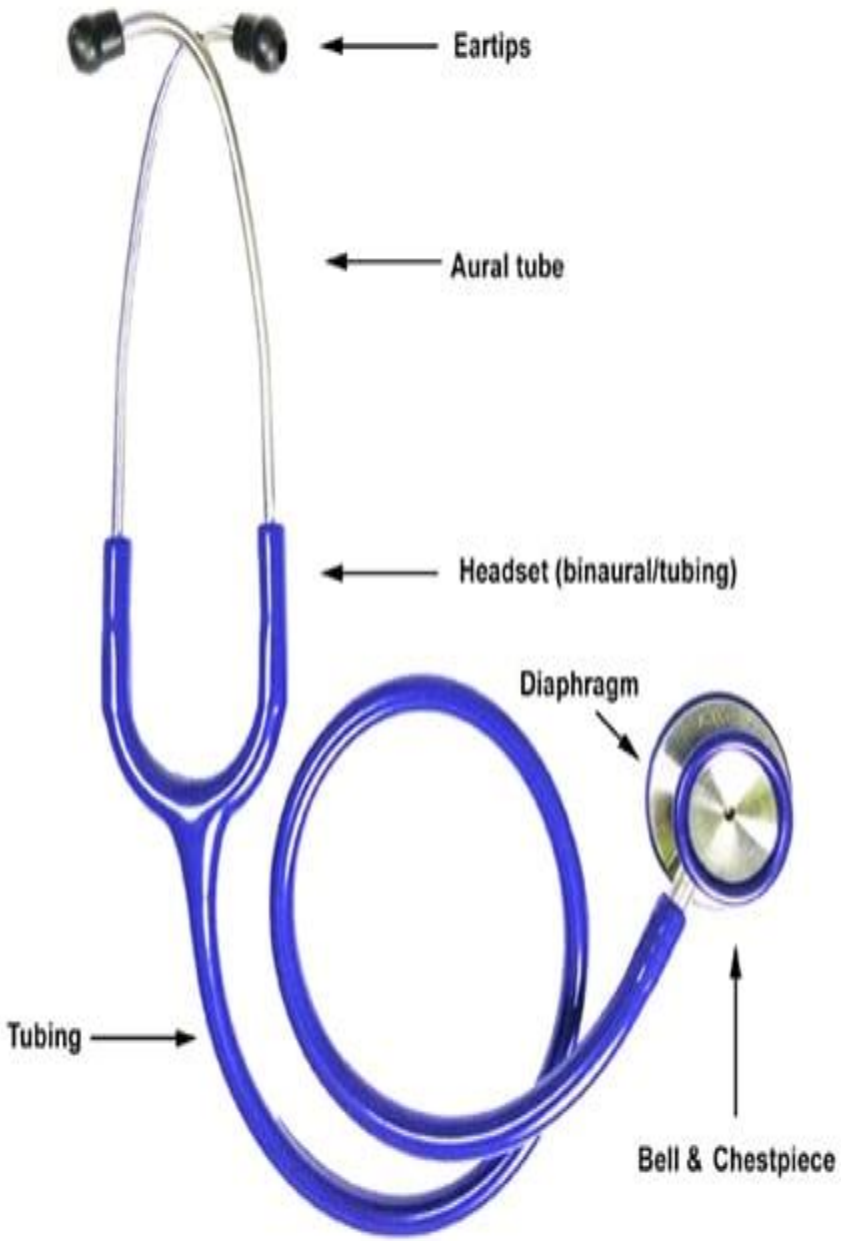
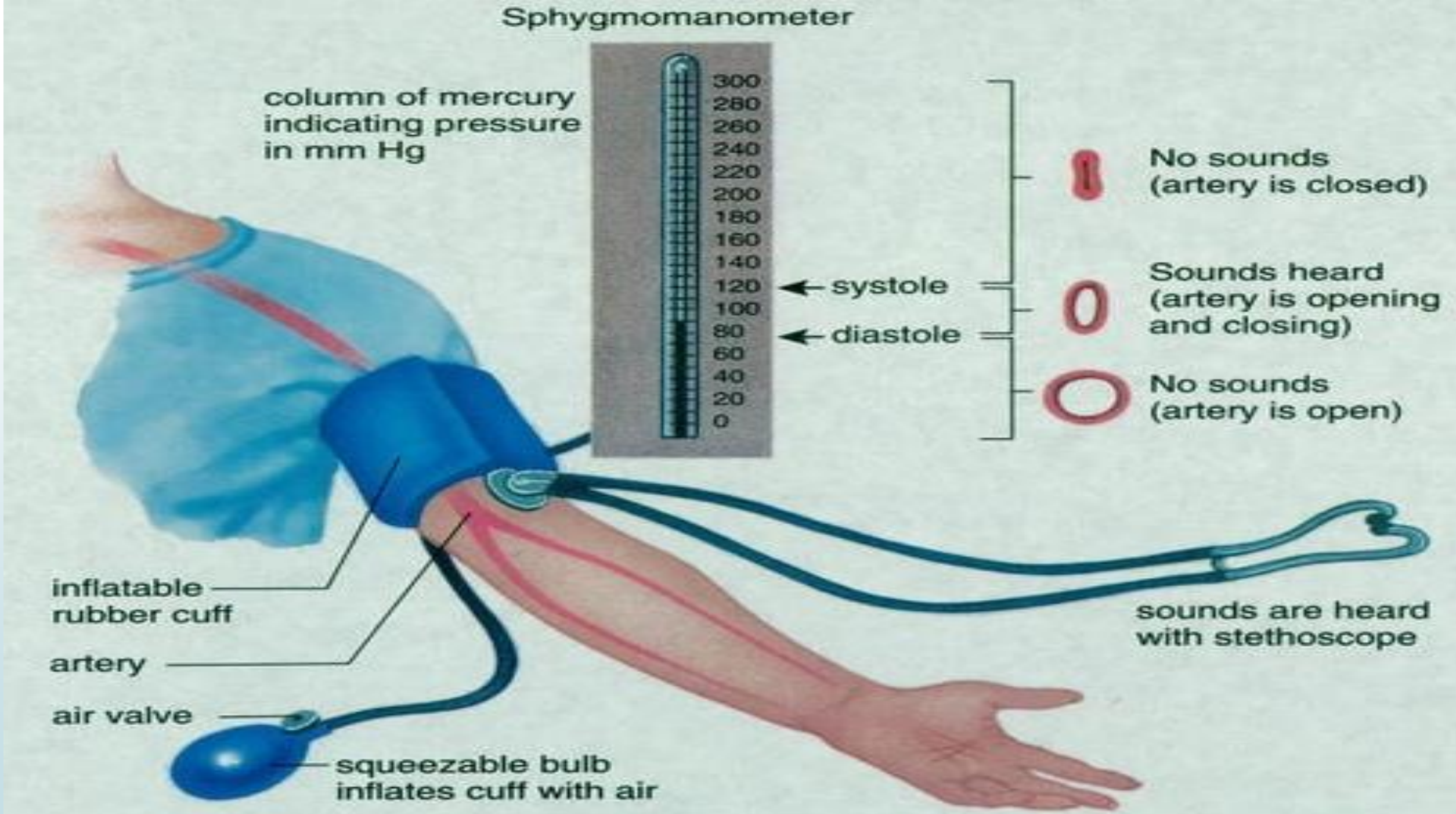


Figure 29–20 ■ Electronic blood pressure monitors register blood pressures.

Factors Affecting Blood Pressure

1. *Age.*
2. *Exercise*
3. *Stress.*
4. *Race.*
5. *Sex.*
6. *Medications.*
7. *Obesity.*
8. *Diurnal variations.*
9. *Medical conditions*
10. *Temperature.*

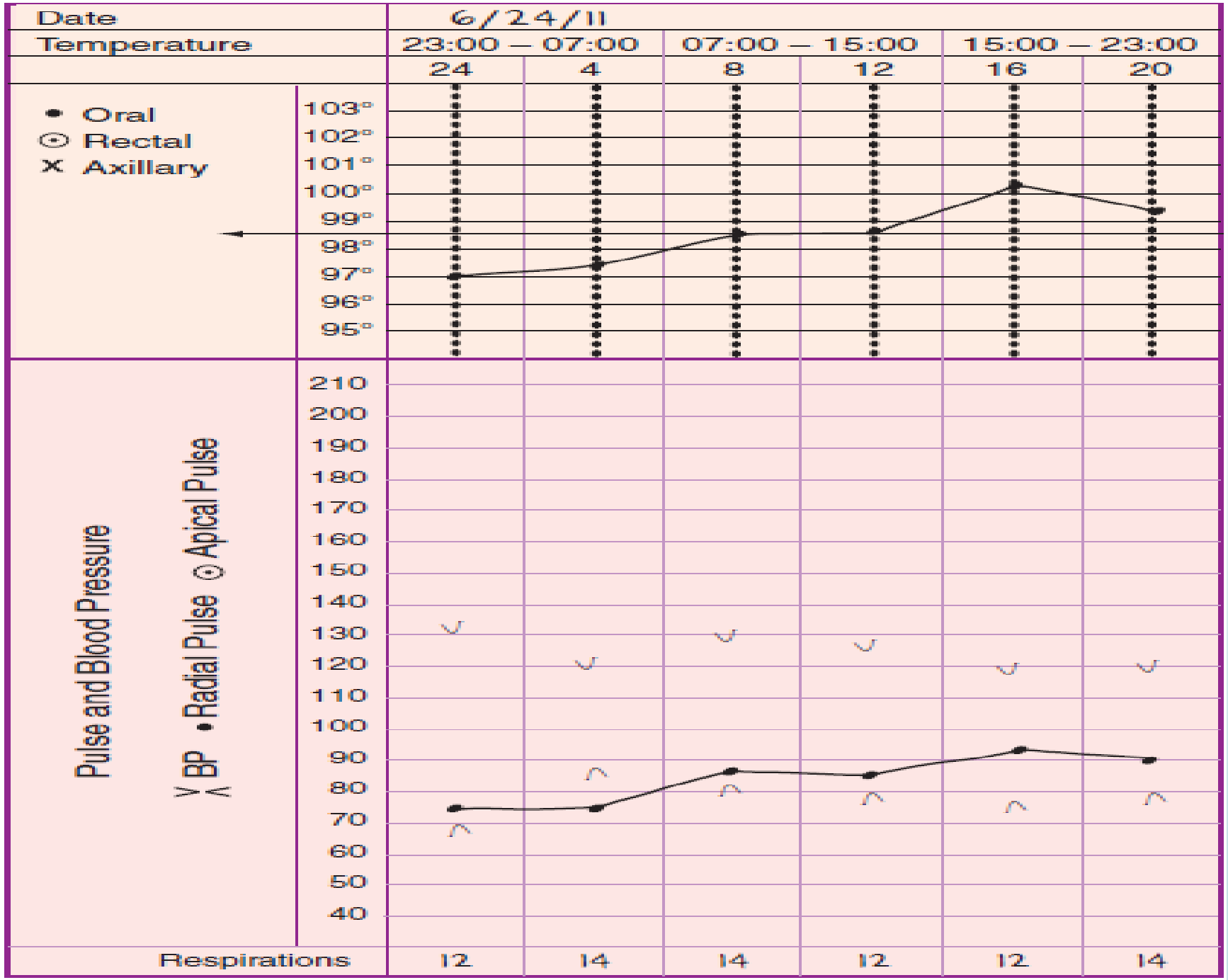

Sphygmomanometer
column of mercury indicating pressure in mm Hg
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
systole
diastole
No sounds (artery is closed)
Sounds heard (artery is opening and closing)
No sounds (artery is open)
inflatable rubber cuff
artery
air valve
squeezable bulb inflates cuff with air
sounds are heard with stethoscope

Procedure to checking Blood pressure

1. Wash your hands.
2. Prepare all required equipment's (Stethoscope, Blood pressure cuff of the appropriate size, Sphygmomanometer).
3. Introduce your self and explain procedure to client.
4. Provide for client privacy.
5. Position the client appropriately.
    A. The adult client should be sitting.
    B. Both feet should be flat on the floor.
    C. The palm of the hand facing up and the arm supported at heart level.
    D. Expose the upper arm.

Cont.....

6. Wrap the deflated cuff evenly around the upper arm. Apply the center of the bladder directly over the artery. For an adult, place the lower border of the cuff approximately 2.5 cm (1 in.) above the antecubital space.
7. Palpate the brachial artery with the fingertips.
8. Close the valve on the bulb.
9. Position the stethoscope directly on the skin, not on clothing over the site.
10. Auscultate the client's blood pressure.
11. Remove the cuff from the client's arm.



1 Vital signs graphic record.

Thanks