7

Assessing General Status & Vital Signs

Structure and Function

The general survey is the first part of the physical exam that begins the moment the nurse meets the client. It requires the nurse to use all of her observational skills while interviewing and interacting with the client. These observations will lead to clues about the health status of the client. The outcome of the general survey provides the nurse with an overall impression of the client's whole being. The general survey includes observation of the client's

- Physical development and body build
- Gender and sexual development
- Apparent age as compared to reported age
- Skin condition and color
- Dress and hygiene
- Posture and gait
- Level of consciousness
- Behaviors, body movements, and affect
- Facial expression
- Speech
- Vital signs

The client's vital signs (pulse, respirations, blood pressure, temperature, and pain) are the body's indicators of health. Usually when a vital sign (or signs) is abnormal, something is wrong in at least one of the body systems. Traditionally, vital signs have included the client's pulse, respirations, blood pressure, and temperature. Today, "pain" is considered to be the "fifth vital sign" (Flaherty, 2001). Pain is inexpensive to assess and does not involve the use of fancy instruments, yet it can be an early predictor of impending disability. For example, early and correct assessment of a client's chest pain may promote early treatment and prevention of complications and the high cost of cardiovascular damage and/or failure.

OVERALL IMPRESSION OF THE CLIENT

The first time you meet a client, you tend to remember certain obvious characteristics. Forming an overall impression consists of a systematic examination and recording these general characteristics and impressions of the client. If possible, try to observe the client and environment quickly before interacting with the client. This gives you the opportunity to "see" the client before she assumes a social face or behavior and allows you to glimpse any distress, sadness, or pain before the client, knowingly or unknowingly, may mask it.

When you meet the client for the first time, observe any significant abnormalities in the client's skin color, dress, hygiene, posture and gait, physical development, body build, apparent age, and gender. If you observe abnormalities, you may need to perform an in-depth assessment of the body area that appears to be affected (e.g., an unusual gait may prompt you to perform a detailed musculoskeletal assessment). You should also generally assess the client's level of consciousness, level of comfort, behavior, body movements, affect, facial expression, speech and mental acuities. If you detect any abnormalities during your general impression examination, you will need to do an in-depth mental status examination. This examination is described in Chapter 6. Additional preparation involves creating a comfortable, non-threatening atmosphere to relieve anxiety in the client.

VITAL SIGNS

The nurse usually begins the "hands-on" physical examination by taking vital signs. This is a common, non-invasive physical assessment procedure that most clients are accustomed to. Vital signs provide data that reflect the status of several body systems including but not limited to the cardiovascular, neurological, peripheral vascular, and respiratory systems. Measure the client's temperature first, followed by pulse, respirations, and blood pressure. Measuring the temperature puts the client at ease and causes him or her to remain still for several minutes. This is important because pulse, respirations, and blood pressure are influenced by anxiety and activity. By easing the client's anxiety and keeping him or her still, you help to increase the accuracy of the data.

Temperature

For the body to function on a cellular level, a core body temperature between 36.5°C and 37.7°C (96.0°F and 99.9°F orally)

must be maintained. An approximate reading of core body temperature can be taken at various anatomic sites. None of these is completely accurate; they are simply a good reflection of the core body temperature.

Several factors may cause normal variations in the core body temperature. Strenuous exercise, stress, and ovulation can raise temperature. Body temperature is lowest early in the morning (4 to 6 AM) and highest late in the evening (8 PM to midnight). Hypothermia (lower than 36.5°C or 96.0°F) may be seen in prolonged exposure to the cold, hypoglycemia, hypothyroidism, or starvation. Hyperthermia (higher than 38.0°C or 100°F) may be seen in viral or bacterial infections, malignancies, trauma, and various blood, endocrine, and immune disorders.

In the older adult, temperature may range from 95.0°F to 97.5°F. Therefore, the older client may not have an obviously elevated temperature with an infection or be considered hypothermic below 96°F.

Pulse

A shock wave is produced when the heart contracts and forcefully pumps blood out of the ventricles into the aorta. The shock wave travels along the fibers of the arteries and is commonly called the *arterial* or *peripheral pulse*. The body has many arterial pulse sites. One of them—the radial pulse—gives a good overall picture of the client's health status (see Chapter 21 for more information about additional pulse sites). Several characteristics should be assessed when measuring the radial pulse—rate, rhythm, amplitude and contour, and elasticity.

Amplitude can be quantified as follows:

1+ Thready or weak (easy to obliterate)

2+ Normal (obliterate with moderate pressure)

3+ Bounding (unable to obliterate or requires very firm pressure)

If abnormalities are noted during assessment of the radial pulse, further assessment should be performed. For more information on assessing pulses and abnormal pulse findings, refer to Chapters 20 and 21.

Respirations

The respiratory rate and character are additional clues to the client's overall health status. Respirations can be easily observed without alerting the client by watching chest movement before removing the stethoscope after you have completed counting the apical beat. Notable characteristics of respiration are rate, rhythm, and depth (see Chapter 18 for more information about respirations).

Blood Pressure

Blood pressure reflects the pressure exerted on the walls of the arteries. This pressure varies with the cardiac cycle, reaching a high point with systole and a low point with diastole (Fig. 7-1). Therefore, blood pressure is a measurement of the pressure of the blood in the arteries when the ventricles are contracted (systolic blood pressure) and when the ventricles are relaxed (diastolic blood pressure). Blood pressure is expressed as the ratio of the systolic pressure over the diastolic pressure. A client's blood pressure is affected by several factors:

- *Cardiac output*—Blood pressure increases with increased cardiac output and decreases with decreased cardiac output.

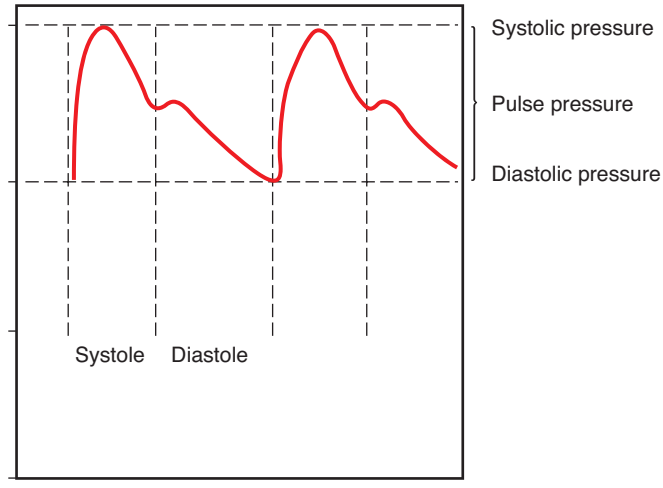


Figure 7-1 Blood pressure measurement identifies the amount of pressure in the arteries when the ventricles of the heart contract (systole) and when they relax (diastole).

- *Distensibility of the arteries*—Blood pressure increases when more effort is required to push blood through stiffened arteries.
- *Blood volume*—Blood pressure increases with increased volume and decreases with decreased volume.
- *Blood velocity*—Blood pressure increases when blood flow is slowed due to resistance and decreases when blood flow meets no resistance.
- *Blood viscosity (thickness)*—Blood pressure increases when the blood is thickened and decreases with thinning of the blood.

A client's blood pressure will normally vary throughout the day due to external influences. These include the time of day, caffeine or nicotine intake, exercise, emotions, pain, and temperature. The difference between systolic and diastolic pressure is termed the *pulse pressure*. The pulse pressure should be determined after the blood pressure is measured because it reflects the stroke volume—the volume of blood ejected with each heartbeat.

Blood pressure may also vary depending on the positions of the body and of the arm. Blood pressure in a normal person who is standing is usually slightly higher to compensate for the effects of gravity. Blood pressure in a normal reclining person is slightly lower because of decreased resistance.

Pain

Pain screening is very important in developing a comprehensive plan of care for the client. Therefore, it is essential to assess for pain at the initial assessment. When pain is present, it is important to identify the location, intensity, quality, duration, and any alleviating or aggravating factors to the client. Pain intensity measurement tools such as a 1 to 10 Likert scale (described in Chapter 8) may be used. Pain quality may be described as "dull," "sharp," "radiating," or "throbbing." The mnemonic device "COLDSPA" may help you to remember how to further assess pain if present. Chapter 8 provides in-depth information on the etiology of pain and pain assessment.

Health Assessment

COLLECTING SUBJECTIVE DATA: THE NURSING HEALTH HISTORY

COLDSPA Symptom Analysis Mnemonic

During the general survey, the **COLDSPA** mnemonic may be particularly helpful in exploring unusual signs and symptoms or problems reported, as you and the client ask and answer various questions during the health history interview.

Mnemonic	*Question*
Character	Describe the sign or symptom (feeling, appearance, sound, smell, or taste if applicable).
Onset	When did it begin?
Location	Where is it? Does it radiate? Does it occur anywhere else?
Duration	How long does it last? Does it recur?
Severity	How bad is it? How much does it bother you?
Pattern	What makes it better or worse?
Associated factors/How it **A**ffects the client	What other symptoms occur with it? How does it affect you?

Question	*Rationale*
General Survey Questions	
What are your name, address, and telephone number?	Answers to these questions provide verifiable and accurate identification data about the client. They also provide baseline information about level of consciousness, memory, speech patterns, articulation, or speech defects. For example, a client who is unable to answer these questions has cognitive/neurological deficits.
How old are you?	Establishes baseline for comparing appearance and development to chronologic age.
Do you know what your usual blood pressure is?	Knowing blood pressure indicates client is involved in own health care.
When and where did you last have your blood pressure checked?	Answer indicates if client consults professionals for health care, if client relies on possibly erroneous equipment in public places (e.g., drug stores), or if client has approved equipment at home that he is trained to use.
Have you had any high fevers that occur often or persistently?	A pattern of elevated temperatures may indicate a chronic infection or blood disorder such as leukemia.
Do you have any pain? If yes, describe the pain. How does it feel (dull, sharp, aching, throbbing)? How does area of pain look (shiny, bumpy, red, swollen, bruised)? When did it begin? Where is it? Does it radiate? How long does it last? Does it recur? How bad is it? What makes it better? What makes it worse? What other symptoms occur with it?	Exploring the pain in depth helps the nurse to understand the cause and significance of the pain.
Do you have any present health concerns?	This allows the client to voice her concerns and provides a focus for the examination.

COLLECTING OBJECTIVE DATA: PHYSICAL EXAMINATION

Preparing the Client

The general survey begins when the nurse first meets the client. During this time the nurse observes the client's posture, movements and overall appearance. To begin the interview for the mental status exam, the client should be in a comfortable sitting position in a chair, on the examination table, or on a bed in the home setting. Prepare the client for the mental status exam by explaining the purpose of the exam. Then explain that vital signs will be taken.

Equipment

- Thermometer: mercury-in-glass oral, axillary, or rectal thermometer; electronic thermometer; or tympanic thermometer
- Protective, disposable covers for type of thermometer used
- Aneroid or mercury sphygmomanometer or electronic blood pressure-measuring equipment
- Stethoscope
- Watch with a second hand

Physical Assessment

You may assess mental status effectively using the SLUMS or CAM tools found in Assessment Tools 6-1. Identify the equipment needed to measure vital signs and its proper use.

PHYSICAL ASSESSMENT

Assessment Procedure	Normal Findings	Abnormal Findings
General Impression		
Observe physical development, body build, and fat distribution.	A wide variety of body types fall within a normal range: from small amounts of fat and muscle to larger amounts of fat and muscle. See Chapter 12, "Assessing Nutrition," for more information. Body proportions are normal. Arm span (distance between finger tips with arms extended) is approximately equal. The distance from the head crown to the symphysis pubis is approximately equal to the distance from the symphysis pubis to the sole of the client's foot.	A lack of subcutaneous fat with prominent bones is a sign of malnutrition. Abundant fatty tissue is seen in obesity. Decreased height and delayed puberty, with chubbiness, are seen in hypopituitary dwarfism. Skeletal malformations with a decrease in height are seen in achondroplastic dwarfism. In gigantism, there is increased height and weight with delayed sexual development. Overgrowth of bones in the face, head, hands, and feet with normal height is seen in hyperpituitarism (acromegaly). Extreme weight loss is seen in anorexia nervosa. Arm span is greater than height, and pubis to sole measurement exceeds pubis to crown measurement in Marfan's syndrome. Excessive body fat that is evenly distributed is referred to as exogenous obesity. Central body weight gain with excessive cervical obesity (Buffalo's hump) is seen in Cushing's syndrome referred to as endogenous obesity. See Abnormal Findings 7.1.
Observe gender and sexual development.	Sexual development is appropriate for gender and age.	Abnormal findings include delayed puberty, male client with female characteristics, and female client with male characteristics.
Compare client's stated age with her apparent age and developmental stage.	Client appears to be her stated chronologic age.	Client appears older than actual chronologic age (e.g., due to hard life, manual labor, chronic illness, alcoholism, smoking).
Observe skin condition and color. ➤ ***Clinical Tip*** • *Keep in mind that underlying red tones from good circulation give a liveliness or healthy glow to all shades of skin color.*	Color is even without obvious lesions: light to dark beige-pink in light-skinned client; light tan to dark brown or olive in dark-skinned clients.	Abnormal findings include extreme pallor, flushed, or yellow in light-skinned client; loss of red tones and ashen gray cyanosis in dark-skinned client. See abnormal skin colors and their significance in Chapter 13.

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Observe posture and gait.	Posture is erect and comfortable for age. Gait is rhythmic and coordinated with arms swinging at side.	Curvatures of the spine (lordosis, scoliosis, or kyphosis) may indicate a musculoskeletal disorder. Stiff, rigid movements are common in arthritis or Parkinson's disease (see Chapter 26). Slumped shoulders may signify depression. Clients with chronic pulmonary obstructive disease tend to lean forward, brace themselves with arms.  In older adults, osteoporotic thinning and collapse of the vertebrae secondary to bone loss may result in kyphosis. In older men, gait may be wider based with arms held outward. Older women tend to have a narrow base and may waddle to compensate for a decreased sense of balance. Steps shorten with decreased speed and arm swing. Mobility may be decreased, and gait may be rigid.
Vital Signs		
Temperature		
To take oral temperature, use an electronic thermometer with a disposable protective probe cover. Then place the thermometer under the client's tongue to the right or left of the frenulum deep in the posterior sublingual pocket. Ask the client to close his or her lips around the probe. Hold the probe until you hear a beep. Remove the probe and dispose of its cover by pressing the release button. Electronic thermometers give a digital reading in about 2 minutes.	Oral temperature is 36.5ºC to 37.0ºC (96.0ºF to 99.9ºF).	Oral temperature is below 36.5ºC (96.0ºF) or over 37.0ºC (99.9ºF).
To take axillary temperature, hold the glass or electronic thermometer under the axilla firmly by having the client hold the arm down and across the chest for 10 minutes.	The axillary temperature is 0.5ºC (1ºF) lower than the oral temperature.	
For rectal temperature, use this route only if other routes are not practical (e.g., client cannot cooperate, is comatose, cannot close mouth, or tympanic thermometer is unavailable). Cover the glass thermometer with a disposable, sterile sheath, and lubricate the thermometer. Wear gloves, and insert thermometer 1 inch into rectum. Hold a glass thermometer in place for 3 minutes; hold an electronic thermometer in place until the temperature appears in the display window.	The rectal temperature is between 0.4ºC and 0.5ºC (0.7ºF and 1ºF) higher than the normal oral temperature.	

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
➤ ***Clinical Tip*** • *Never force the thermometer into the rectum or use a rectal thermometer for clients with severe coagulation disorders.*		
For tympanic temperature, an electronic tympanic thermometer measures the temperature of the tympanic membrane quickly and safely. It is also a good device for measuring core body temperature because the tympanic membrane is supplied by a tributary of the artery (internal carotid) that supplies the hypothalamus (the body's thermoregulatory center). Place the probe very gently at the opening of the ear canal for 2 to 3 seconds until the temperature appears in the digital display (Fig. 7-2).	The tympanic membrane temperature is about 0.8ºC (1.4ºF) higher than the normal oral temperature.	
Pulse		
Measure the radial pulse rate. Use the pads of your two middle fingers and lightly palpate the radial artery on the lateral aspect of the client's wrist (Fig. 7-3). Count the number of beats you feel for 30 seconds if the pulse rhythm is regular. Multiply by two to get the rate. Count for a full minute if the rhythm is irregular. Then, verify by taking an apical pulse as well.	A pulse rate ranging from 60 to 100 beats/min is normal for adults. Tachycardia may be normal in clients who have just finished strenuous exercise. Bradycardia may be normal in well-conditioned athletes.	*Tachycardia* is a rate greater than 100 beats/min. May occur with fever, certain medications, stress, and other abnormal states such as cardiac dysrhythmias. *Bradycardia* is a rate less than 60 beats/min. Sitting or standing for long periods may cause the blood to pool and decrease the pulse rate. Heart block or dropped beats can also manifest as bradycardia. Abnormal findings should be followed up with cardiac auscultation of the apical pulse (see Chapter 20 for more detail).

Figure 7-2 Taking a tympanic temperature.

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Evaluate pulse rhythm.	There are regular intervals between beats.	Irregular intervals between beats should be followed up with auscultation of the apical pulse (see Chapter 20). When describing irregular beats, indicate whether they are regular irregular or irregular irregular.
Assess amplitude and contour.	Normally pulsation is equally strong in both wrists. Upstroke is smooth and rapid with a more gradual downstroke.	A bounding or weak and thready pulse is not normal. Delayed upstroke is also abnormal. Follow up on abnormal amplitude and contour findings by palpating the carotid arteries, which provides the best assessment of amplitude and contour (see Chapter 21).
Palpate arterial elasticity.	Artery feels straight, resilient, and springy. The older client's artery may feel more rigid, hard, and bent.	Artery feels rigid.
Respirations **Monitor the respiratory rate.** Observe the client's chest rise and fall with each breath. Count respirations for 30 seconds and multiply by 2 (refer to Chapter 16 for more information). ➤ ***Clinical Tip*** • *If you place the client's arm across the chest while palpating pulse, you can also count respirations. Do this by keeping your fingers on the client's pulse even after you have finished taking it.*	Between 12 and 20 breaths/min is normal. In the older adult, the respiratory rate may range from 15 to 22. The rate may increase with a shallower inspiratory phase because vital capacity and inspiratory reserve volume decrease with aging.	Fewer than 12 breaths/min or more than 20 breaths/min are abnormal.
Observe respiratory rhythm.	Rhythm is regular (if irregular, count for one full minute).	Rhythm is irregular (see Chapter 18 for more detail).

Figure 7-3 Timing the radial pulse rate. (© B. Proud.)

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
Observe respiratory depth.	There is equal bilateral chest expansion of 1 to 2 inches.	There is unequal, shallow, or extremely deep chest expansion (see Chapter 18 for more detail) and labored or gasping breaths are abnormal.
Blood Pressure Measure blood pressure (Fig. 7-4). Spotlight Technique 7-1 and Display 7-1 provide guidelines.	Systolic pressure is <120 mmHg.	Tables 7-1 and 7-2 provide blood pressure classifications and recommended follow-up criteria. More than a 10 mmHg pressure difference between arms may indicate coarctation of the aorta or cardiac disease.
Measure on dominant arm first. Take blood pressure in both arms when recording it for the first time. Take subsequent readings in arm with highest measurement. ➤ ***Clinical Tip*** • *Advise client to avoid nicotine and caffeine for 30 minutes prior to measurement. Ask client to empty bladder before evaluating and avoid talking to the client while taking the reading. Each of these prevents elevating blood pressure prior to/during reading (Reeves, 1995; Mcalister & Strauss, 2001).*	Diastolic pressure is <80 mmHg; varies with individuals. A pressure difference of 10 mmHg between arms is normal.	More rigid, arteriosclerotic arteries account for higher systolic blood pressure in older adults. Systolic pressure over 140 but diastolic pressure under 90 is called isolated systolic hypertension.
If the client takes antihypertensives or has a history of fainting or dizziness, assess for possible orthostatic hypotension. Measure blood pressure with the client in a standing or sitting position after taking the pressure with the client in a supine position. ➤ ***Clinical Tip*** • *An ill client may not be able to stand; sitting is usually adequate to detect if the client truly has orthostatic hypotension.*	A drop of less than 20 mmHg from recorded sitting position is normal.	A drop of 20 mmHg or more from the recorded sitting blood pressure may indicate orthostatic (postural) hypotension. Orthostatic hypotension may be related to a decreased baroreceptor sensitivity, fluid volume deficit (e.g., dehydration), or certain medications (i.e., diuretics, antihypertensives). Symptoms of orthostatic hypotension include dizziness, lightheadedness, and falling. Further evaluation and referral to the client's primary care provider are necessary.

Figure 7-4 Measuring blood pressure.

continued on page 87

SPOTLIGHT TECHNIQUE 7-1 Measuring Blood Pressure

Preparation

Before measuring the blood pressure, consider the following behavioral and environmental conditions that can affect the reading:

- Room temperature too hot or cold
- Recent exercise
- Alcohol intake
- Nicotine use
- Muscle tension
- Bladder distension
- Background noise
- Talking (either patient or nurse)
- Arm position

Steps for Measuring Blood Pressure

1. Assemble your equipment so that the sphygmomanometer, stethoscope, and your pen and recording sheet are within easy reach.
2. Assist the client into a comfortable, quiet, restful position for 5 to 10 minutes. Client may lie down or sit.
3. Remove client's clothing from the arm and palpate the pulsations of the brachial artery. (If the client's sleeve can be pushed up to make room for the cuff, make sure that the clothing is not so constrictive that it would alter a correct pressure reading.)
4. Place the blood pressure cuff so that the midline of the bladder is over the arterial pulsation, and wrap the appropriate-sized cuff smoothly and snugly around the upper arm, 1 in. above the antecubital area so that there is enough room to place the bell of the stethoscope. The bladder inside the cuff should encircle 80% of the arm circumference in adults and 100% of the arm circumference in children younger than age 13. A cuff that is too small may give a false or abnormally high blood pressure reading. A mercury phygmomanometer is more reliable than an aneroid sphygmomanometer (Beevers, Lip, & O'Brien, 2001).
5. Support the client's arm slightly flexed at heart level with the palm up.
6. Put the earpieces of the stethoscope in your ears, then palpate the brachial pulse again and place the stethoscope lightly over this area. Position the mercury gauge on the manometer at eye level.
7. Adjust the screw above the bulb to tighten the valve on the air pump, and make sure that the tubing is not kinked or obstructed.
8. Inflate the cuff by pumping the bulb to about 30 mmHg above the point at which the radial pulse disappears. This will help you avoid missing an auscultatory gap.
9. Deflate the cuff slowly—about 2 mm per second—by turning the valve in the opposite direction while listening for the first of Korotkoff's sounds.
10. Read the point, closest to an even number, on the mercury gauge at which you hear the first faint but clear sound. Record this number as the systolic blood pressure. This is phase I of Korotkoff's sounds.
11. Next, note the point, closest to an even number, on the mercury gauge at which the sound becomes muffled (phase IV of the Korotkoff's sounds). Finally, note the point where the sound subsides completely (phase V of the Korotkoff's sounds). When both a change in sounds and a cessation of the sounds are heard, record the numbers at which you hear phase I, IV, and V sounds. Otherwise, record the first and last sounds.
12. Deflate the cuff at least another 10 mmHg to make sure you hear no more sounds. Then deflate completely and remove.
13. Record readings to the nearest 2 mmHg.

Cuff Selection Guidelines

The "ideal" cuff should have a bladder length that is 80% and a width that is at least 40% of the arm circumference (a length-to-width ratio of 2:1). A recent study comparing intra-arterial and auscultatory blood pressure concluded that the error is minimized with a cuff of 46% of the arm circumference. The recommended cuff sizes are

- 12 × 22 cm for arm circumference of 22 to 26 cm, which is the "small adult" size
- 16 × 30 cm for arm circumference of 27 to 34 cm, which is the "adult" size
- 16 × 36 cm for arm circumference of 35 to 44 cm, which is the "large adult" size
- 16 × 42 cm for arm circumference of 45 to 52 cm, which is the "adult thigh" size

Summary Points for Clinical Blood Pressure Measurement

- The patient should be seated comfortably with the back supported and the upper arm bared without constrictive clothing. The legs should not be crossed.
- The arm should be supported at heart level, and the bladder of the cuff should encircle at least 80% of the arm circumference.
- The mercury column should be deflated at 2 to 3 mm per second, and the first and last audible sounds should be taken as systolic and diastolic pressure. The column should be read to the nearest 2 mmHg.
- Neither the patient nor the observer should talk during the measurement.

(Based on information from American Heart Association. (2005). Recommendations for blood pressure measurement in humans and experimental animals. *Hypertension*, 45(1), 142–161. Available at http://hyper.ahajournals.org/cgi/content/full/45/1/142)

DISPLAY 7-1 Identifying Korotkoff's Sounds

Phase I
It is characterized by the first appearance of faint, clear, repetitive, tapping sounds that gradually intensify for at least two consecutive beats. This coincides approximately with the resumption of a palpable pulse. The number on the pressure gauge at which you hear the first tapping sound is the systolic pressure.

Phase II
It is characterized as muffled or swishing; these sounds are softer and longer than phase I sounds. They also have the quality of an intermittent murmur. They may temporarily subside, especially in hypertensive people. The loss of the sound during the latter part of phase I and during phase II is called the auscultatory gap. The gap may cover a range of as much as 40 mmHg; failing to recognize this gap may cause serious errors of underestimating systolic pressure or overestimating diastolic pressure.

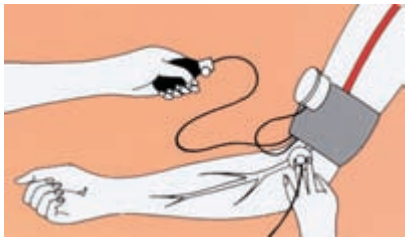
Phase III
It is characterized by a return of distinct, crisp, and louder sounds as the blood flows relatively freely through an increasingly open artery.

Phase IV
It is characterized by sounds that are muffled, less distinct, and softer (with a blowing quality).

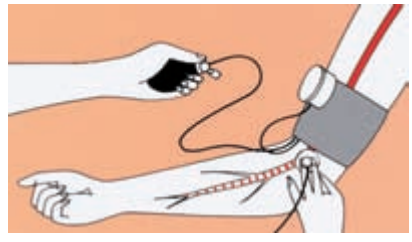
Phase V
It is characterized by all sounds disappearing completely. The last sound heard before this period of continuous silence is the onset of phase V and is the pressure commonly considered to define the diastolic measurement. (Some clinicians still consider the last sounds of phase IV the first diastolic value.)

Note: The American Heart Association recommends that values in phase IV and phase V be recorded when both a change in the sounds and a cessation in the sounds occur.

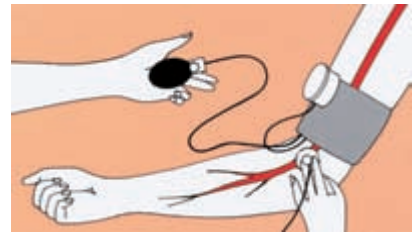
These recommendations apply particularly to children under age 13, pregnant women, and clients with high cardiac output or peripheral vasodilation. For example, such a blood pressure would be recorded as 120/80/64.



Initial silence.



Turbulence.



Final silence.

(Adapted from American Heart Association. [1994] *Human blood pressure determination by sphygmomanometry* [6th ed.]. Publication No. 70-1061 [SA]. Dallas, TX: Author.)

Table 7-1 Categories for Blood Pressure Levels in Adults (Ages 18 and Older)

	Blood Pressure Level (mmHg)	
Category	**Systolic**	**Diastolic**
Normal	<120	<80
Prehypertension	120–139	80–89
Stage 1 hypertension	140–159	90–99
Stage 2 hypertension	≥160	≥100

Source: These categories are from the National High Blood Pressure Education Program; National Heart, Lung, and Blood Institute; National Institutes of Health. Available at www.nhlbi.nih.gov/hbp/detect/categ/htm.

Assessment Procedure	Normal Findings	Abnormal Findings

Table 7-2 Recommendations for Follow-Up Based on Initial Blood Pressure Measurements for Adults Without Acute End-Organ Damage

Initial Blood Pressure, mmHg*	Follow-Up Recommended†
Normal	Recheck in 2 years
Prehypertension	Recheck in 1 year‡
Stage 1 hypertension	Confirm within 2 months‡
Stage 2 hypertension	Evaluate or refer to source of care within 1 month. For those with higher pressures (e.g., >180/110 mmHg), evaluate and treat immediately or within 1 week depending on clinical situation and complications.

*If systolic and diastolic categories are different, follow recommendations for shorter time follow-up (e.g., 160/86 mmHg should be evaluated or referred to source of care within 1 month).

†Modify the scheduling of follow-up according to reliable information about past BP measurements, other cardiovascular risk factors, or target organ disease.

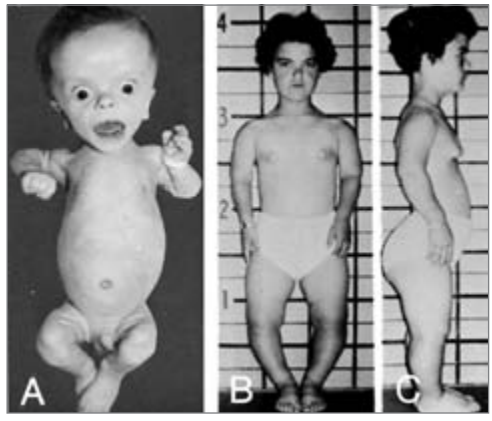
‡Provide advice about lifestyle modifications.

Assess the pulse pressure—the difference between the systolic and diastolic blood pressure levels. Record in mmHg. For example, if the blood pressure was 120/80, then the pulse pressure would be 120 minus 80 or 40 mmHg.	Pulse pressure is 30 to 50 mmHg.  Widening of the pulse pressure is seen with aging due to less elastic peripheral arteries.	A pulse pressure lower than 30 mmHg or higher than 50 mmHg may indicate cardiovascular disease.

Pain

Observe comfort level.	Client assumes a relatively relaxed posture without excessive position shifting. Facial expression is alert and pleasant.	Facial expression indicates discomfort (grimacing, frowning). Client may brace or holds body part that is painful. Breathing pattern indicates distress (shortness of breath, shallow, rapid breathing).
Ask the client if he or she has any pain.	No subjective report of pain	Any subjective report of pain should be further explored using the mnemonic COLDSPA. **Refer to Chapter 8 for further assessment of pain.**

Abnormal Findings 7-1 Deviations Related to Physical Development, Body Build, and Fat Distribution



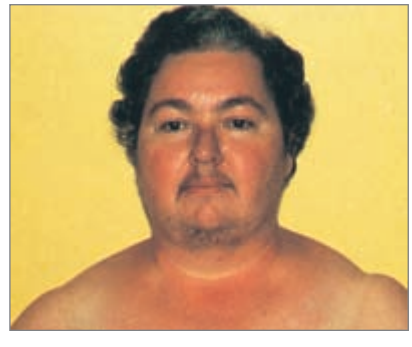
Dwarfism
These images show the associated decreased height and skeletal malformations.

Gigantism
Note the disparity in height between the affected person and a person of the same age.

Acromegaly
The affected client shows the characteristic overgrowth of bones in the face, head, and hands.

Anorexia nervosa
The client shows the emaciated appearance that follows self-starvation and accompanying extreme weight loss.

Marfan's syndrome
The elongated fingers are characteristic of this condition.



Cushing's syndrome
The affected client reflects the centralized weight gain.

VALIDATING AND DOCUMENTING FINDINGS

Validate the assessment data you have collected. This is necessary to verify that the data are reliable and accurate. Document the assessment data following the health care facility or agency policy.

Sample of Subjective Data

Mary Wright states age is 49 years, weight is 136 lbs. and height is 5 feet 4 inches. Has blood pressure checked with yearly physical exams. Usually 128/80. Does not run a fever but reports hot flashes on occasion. Does not have any pain or pain concerns. Voices happiness with family life and job as teacher. Just completed a master's degree in education and expresses interest in continuing her career teaching high school English.

Sample of Objective Data

Posture is erect and gait is smooth. Attractive female, neatly dressed in light weight clothes appropriate for summer season. Clean; nails well-groomed. Well-developed body build for age with even distribution of fat and firm muscle. Client is alert, friendly, cooperative, and answers questions with good eye contact. Smiles and laughs appropriately. Speech is fluent, clear, and moderately paced. Thoughts are free flowing. Able to recall recent events earlier in day (e.g., what she had for breakfast) without difficulty.

Oral temperature: 98.6°F; radial pulse: 84/min regular, bilateral, equally strong, and resilient; respirations: 16/min regular, equal bilateral chest expansion; blood pressure: sitting position—120/78 right arm, 124/80 left arm; standing position—124/80, RA; 126/82, LA.

Analysis of Data

After collecting subjective and objective data pertaining to general survey and vital signs, identify abnormal findings and client strengths. Then cluster the data to reveal any significant patterns or abnormalities. These data may then be used to make clinical judgments about the client.

DIAGNOSTIC REASONING: POSSIBLE CONCLUSIONS

Below are some possible conclusions related to your general survey, mental status exam, and vital signs.

Selected Nursing Diagnoses

After collecting subjective and objective data pertaining to the general survey, you will need to identify abnormals and cluster the data to reveal any significant patterns or abnormalities. These data will then be used to make clinical judgments (nursing diagnoses: wellness, risk, or actual) about the status of the client's general survey. Following is a list of selected nursing diagnoses that you may identify when analyzing data for this part of the assessment.

Wellness Diagnoses

- Health-Seeking Behaviors related to desire and request to learn more about health promotion

Risk Diagnoses

- Risk for Activity Intolerance related to deconditioned status
- Risk for Self-Directed Violence, related to depression, suicidal tendencies, developmental crisis, lack of support systems, loss of significant others, poor coping mechanisms and behaviors.

Actual Diagnoses

- Impaired Verbal Communication related to international language barrier (inability to speak English or accepted dominant language)
- Impaired Verbal Communication related to hearing loss
- Impaired Verbal Communication related to inability to clearly express self or understand others (aphasia)
- Impaired Verbal Communication related to aphasia, psychological impairment, or organic brain disorder
- Acute or Chronic Confusion related to dementia, head injury, stroke, alcohol or drug abuse.
- Impaired Memory related to dementia, stroke, head injury, alcohol or drug abuse
- Dressing/Grooming Self-Care Deficit related to impaired upper-extremity mobility and lack of resources
- Bathing/Hygiene Self-Care Deficit related to inability to wash body parts or inability to obtain water
- Disturbed Thought Processes related to alcohol or drug abuse, psychotic disorder, or organic brain dysfunction.
- Pain

Selected Collaborative Problems

After you group the data, it may become apparent that certain collaborative problems emerge. Remember that collaborative problems differ from nursing diagnoses in that they cannot be prevented by nursing interventions. However, these physiologic complications of medical conditions can be detected and monitored by the nurse. In addition, the nurse can use physician- and nurse-prescribed interventions to minimize the complications of these problems. The nurse may also have to refer the client in such situations for further treatment of the problem. Following is a list of collaborative problems that may be identified when obtaining a general impression. These problems are worded as Risk for Complications (or RC), followed by the problem.

- RC: Hypertension
- RC: Hypotension
- RC: Dysrhythmias
- RC: Hyperthermia
- RC: Hypothermia
- RC: Tachycardia

- RC: Bradycardia
- RC: Dyspnea
- RC: Hypoxemia

Medical Problems

After you group the data, it may become apparent that the client has signs and symptoms that require medical diagnosis and treatment. Refer to a primary care provider as necessary.

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