



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

NURSING



# Skills Laboratory Manual in PATIENT CARE (NRS 234)

## Document Revision Control History

Author	Revision No.	Description	Reviewed by	Approved by	Release Date
Dr. Jestoni D. Maniago	3	Update of contents	Dr. Brian A. Vasquez	Department Council	01 March 2020
	2				
	1				



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## NRS 234: Clinical Skills in Patient Care / Laboratory

### LIST OF PROCEDURES

Unit No.	Topics	Procedure / Skills to be Performed
	Orientation	
1	Asepsis and Infection Control	<ul style="list-style-type: none"><li>• Performing hand hygiene using soap and water</li><li>• Using personal protective equipment</li></ul>
2	Vital Signs	<ul style="list-style-type: none"><li>• Assessing body temperature</li><li>• Assessing peripheral pulse by palpation</li><li>• Assessing apical pulse by auscultation</li><li>• Assessing respiration</li><li>• Assessing brachial artery blood pressure</li></ul>
3	Safety	<ul style="list-style-type: none"><li>• Fall prevention</li></ul>
4	Hygiene	<ul style="list-style-type: none"><li>• Making an unoccupied bed</li><li>• Making an occupied bed</li></ul>
5	Activity	<ul style="list-style-type: none"><li>• Providing range-of-motion exercises</li></ul>
6	Comfort	<ul style="list-style-type: none"><li>• Giving a back massage</li></ul>
7	Nutrition	<ul style="list-style-type: none"><li>• Inserting a nasogastric (NG) tube</li><li>• Administering a tube feeding</li><li>• Removing a nasogastric tube</li></ul>
8	Medications	<ul style="list-style-type: none"><li>• Administering oral medications</li><li>• Administering medications via a gastric tube</li><li>• Administering an intradermal injection</li><li>• Administering a subcutaneous injection</li><li>• Administering an intramuscular injection</li><li>• Administering IV medications</li></ul>
9	Urinary Elimination	<ul style="list-style-type: none"><li>• Catheterizing the female urinary bladder</li><li>• Catheterizing the male urinary bladder</li><li>• Removing an indwelling catheter</li></ul>
10	Laboratory Specimen Collection	<ul style="list-style-type: none"><li>• Obtaining a capillary blood sample for glucose testing</li><li>• Testing stool for occult blood</li><li>• Collecting a stool specimen for culture</li><li>• Collecting a urine specimen (clean catch, midstream) for urinalysis and culture</li><li>• Obtaining a urine specimen from an indwelling urinary catheter</li></ul>
11	Fomentation	<ul style="list-style-type: none"><li>• Application of hot bottle</li><li>• Application of cold compress</li></ul>
Assessment Tool		





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## Rules When Using the Nursing Skills Laboratory

---

1. Students must wear closed-toe shoes (appropriate footwear) when in the laboratory. All students must wear the designated uniform (specified solid navy blue scrubs and white laboratory coats) with ID badges in all skills demonstration activities. Each student should be mindful of their hygiene and body grooming.
2. No eating or drinking inside the laboratory.
3. Proper hand hygiene is an important part of nursing practice. Alcohol-based hand sanitizers are available for use.
4. No products in the laboratory are safe for human ingestion, injection or infusion (via skin, oral, and intravenous routes). Products and supplies in the Nursing Skills Laboratory are intended for teaching purposes only and are not safe for human or animal use.
5. Mannequins should be treated like “REAL” patients. Please ask your course instructor for any questions regarding mannequin use.
6. Mannequins may have IV bags of simulated blood attached to them. Please be aware of these when moving the mannequins into other positions.
7. Students should not use ink pens or markers at the patient bedsides. These items will permanently stain the mannequins.
8. Providone Iodine (Betadine) and Chloraprep swabs will also permanently stain the mannequins. Do not use any of these products that might come in any of the laboratory kits. Please simulate using these items.
9. Students are expected to leave the Skills Laboratory in good condition. Please return all supplies to the area you found them. Properly dispose all sharps and trash. Sharps are to be placed in sharps boxes or containers after use. No re-capping or reusing needles or IV catheters. Please dispose these items in the sharps containers.
10. No equipment or supplies may be taken out of the Nursing Skills Laboratory without approval.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

CLOs		Aligned-PLOs
<b>1</b>	<b>Knowledge:</b>	
K3.1	Recall theoretical content and rationale for each step of clinical nursing procedure. (KPI 04)	K3
<b>2</b>	<b>Skills:</b>	
S4.1	Perform basic nursing procedures in an efficient and safe manner. (KPI 30)	S4
S4.2	Apply the nursing process at a beginning level of skill. (KPI 31)	S4
<b>3</b>	<b>Competence:</b>	
C2.1	Demonstrate professionalism, including attention to appearance, demeanor, respect for self and others, and attention to professional boundaries. (KPI 27)	C2



## Performing Hand Hygiene Using Soap and Water (Handwashing)

Handwashing remains the best method to decontaminate hands. Handwashing, as opposed to hand hygiene with an alcohol-based rub, is required (CDC, 2002a):

- When hands are visibly dirty
- When hands are visibly soiled with or in contact with blood or other body fluids
- Before eating and after using the restroom
- If exposure to certain organisms, such as those causing anthrax or *Clostridium difficile*, is known or suspected. (Other agents have poor activity against these organisms.)

### Equipment

- Antimicrobial or non-antimicrobial soap (if in bar form, soap must be placed on a soap rack)
- Paper towels
- Oil-free lotion (optional)

### Action

1. Gather the necessary supplies. Stand in front of the sink. Do not allow your clothing to touch the sink during the washing procedure (Figure 1).
2. Remove jewelry, if possible, and secure in a safe place. A plain wedding band may remain in place.
3. Turn on water and adjust force (Figure 2). Regulate the temperature until the water is warm.

### Rationale

- The sink is considered contaminated. Clothing may carry organisms from place to place.
- Removal of jewelry facilitates proper cleansing. Microorganisms may accumulate in settings of jewelry. If jewelry was worn during care, it should be left on during handwashing.
- Water splashed from the contaminated sink will contaminate clothing. Warm water is more comfortable and is less likely to open pores and remove oils from the skin. Organisms can lodge in roughened and broken areas of chapped skin.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



FIGURE 1. Standing in front of sink.



FIGURE 2. Turning on the water at the sink.

4. Wet the hands and wrist area. Keep hands lower than elbows to allow water to flow toward fingertips (Figure 3).

5. Use about 1 teaspoon liquid soap from dispenser or rinse bar of soap and lather thoroughly (Figure 4). Cover all areas of hands with the soap product. Rinse soap bar again and return to soap rack.

Water should flow from the cleaner area toward the more contaminated area. Hands are more contaminated than forearms.

Rinsing the soap before and after use removes the lather, which may contain microorganisms.



FIGURE 3. Wetting hands to the wrist.



FIGURE 4. Lathering hands with soap and rubbing with firm circular motion.

6. With firm rubbing and circular motions, wash the palms and backs of the hands, each finger, the areas between the fingers (Figure 5), and the knuckles, wrists, and forearms. **Wash at least 1 inch above area of contamination.** If hands are not visibly soiled, wash to 1 inch above the wrists (Figure 6).

Friction caused by firm rubbing and circular motions helps to loosen dirt and organisms that can lodge between the fingers, in skin crevices of knuckles, on the palms and backs of the hands, and on the wrists and forearms. Cleaning less contaminated areas (forearms and wrists) after hands are clean prevents spreading microorganisms from the hands to the forearms and wrists.

7. Continue this friction motion for at least 15

Length of handwashing is determined by degree of





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

seconds.

contamination.

8. Use fingernails of the opposite hand or a clean orangewood stick to clean under fingernails (Figure 7).

Area under nails has a high microorganism count, and organisms may remain under the nails, where they can grow and be spread to other persons.

9. Rinse thoroughly with water flowing toward fingertips (Figure 8).

Running water rinses microorganisms and dirt into the sink.



FIGURE 5. Washing areas between fingers.



FIGURE 6. Washing to 1 inch above the wrist.

10. Pat hands dry with a paper towel, beginning with the fingers and moving upward toward forearms, and discard it immediately. Use another clean towel to turn off the faucet. Discard towel immediately without touching other clean hand.

Patting the skin dry prevents chapping. Dry hands first because they are considered the cleanest and least contaminated area. Turning the faucet off with a clean paper towel protects the clean hands from contact with a soiled surface.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



**FIGURE 7.** Using fingernails to clean under nails of opposite hand.



**FIGURE 8.** Rinsing hands under running water with water flowing toward fingertips.

11. Use oil-free lotion on hands if desired.

Oil-free lotion helps to keep the skin soft and prevents chapping. It is best applied after patient care is complete and from small, personal containers. Oil-based lotions should be avoided because they can cause deterioration of gloves.



## Using personal protective equipment

Personal protective equipment refers to specialized clothing or equipment worn by an employee for protection against infectious materials. PPE is used in healthcare settings to improve personnel safety in the healthcare environment through the appropriate use of PPE (CDC, 2004a). This equipment includes clean (unsterile) and sterile gloves, impervious gowns/aprons, surgical and high-efficiency particulate air (HEPA) masks, N95 disposable masks, face shields, and protective eyewear/goggles.

Understanding the potential contamination hazards related to the patient's diagnosis and condition and the institutional policies governing PPE is very important. The type of PPE used will vary based on the type of exposure anticipated and category of precautions: Standard Precautions and Transmission-Based Precautions, including Contact, Droplet, or Airborne Precautions. It is the nurse's responsibility to enforce the proper wearing of PPE during patient care for members of the healthcare team.

### Equipment

- Gloves
- Mask (surgical or particulate respirator)
- Impervious gown
- Protective eyewear (does not include eyeglasses)

Action	Rationale
1. Check medical record and nursing plan of care for type of precautions and review precautions in infection control manual.	Mode of transmission of organism determines type of precautions required.
2. Plan nursing activities before entering patient's room.	Organization facilitates performance of task and adherence to precautions.
3. Perform hand hygiene.	Hand hygiene prevents the spread of microorganisms.
4. Provide instruction about precautions to patient, family members, and visitors.	Explanation encourages cooperation of patient and family and reduces apprehension about precaution procedures.
5. Put on gown, gloves, mask, and protective eyewear, based on the type of exposure anticipated and category of isolation precautions.	Use of PPE interrupts chain of infection and protects patient and nurse. Gown should protect entire uniform. Gloves protect hands and wrists from microorganisms. Masks protect nurse or patient from droplet nuclei and large-particle aerosols. Eyewear protects mucous membranes in the eye from splashes.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

- a. Put on the gown, with the opening in the back. Tie gown securely at neck and waist (Figure 1).  
Gown should fully cover the torso from the neck to knees, arms to the end of wrists, and wrap around the back.
- b. Put on the mask or respirator over your nose, mouth, and chin (Figure 2). Secure ties or elastic bands at the middle of the head and neck. If respirator is used, perform a fit check. Inhale; the respirator should collapse. Exhale; air should not leak out.  
Masks protect nurse or patient from droplet nuclei and large- particle aerosols. A mask must fit securely to provide protection.
- c. Put on goggles (Figure 3). Place over eyes and adjust to fit. Alternately, a face shield could be used to take the place of the mask and goggles (Figure 4).  
Eyewear protects mucous membranes in the eye from splashes. Must fit securely to provide protection.
- d. Put on clean disposable gloves. Extend gloves to cover the cuffs of the gown (Figure 5).  
Gloves protect hands and wrists from microorganisms.



FIGURE 1. Tying gown at neck and waist.



FIGURE 2. Applying mask applied over nose, mouth, and chin.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



FIGURE 3. Putting on goggles.



FIGURE 4. Putting on face shield.

6. Identify the patient. Explain the procedure to the patient. Continue with patient care as appropriate.

Patient identification validates the correct patient and correct procedure. Discussion and explanation help allay anxiety and prepare the patient for what to expect.



FIGURE 5. Putting on gloves, ensuring gloves cover gown cuffs.

## Remove PPE

7. Remove PPE: Except for respirator, remove PPE at the doorway or in an anteroom. Remove respirator after

Proper removal prevents contact with and the spread of microorganisms. Outside front of equipment is considered contaminated. The inside, outside back, ties on head and back, are considered clean, which are areas of PPE that are



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

leaving the patient room and closing door.

not likely to have been in contact with infectious organisms.

- a. If impervious gown has been tied in front of the body at the waistline, untie waist strings before removing gloves. Front of gown, including waist strings, are contaminated. If tied in front of body, the ties must be untied before removing gloves.
- b. Grasp the outside of one glove with the opposite gloved hand and peel off, turning the glove inside out as you pull it off (Figure 6). Hold the removed glove in the remaining gloved hand. Outside of gloves are contaminated.
- c. Slide fingers of ungloved hand under the remaining glove at the wrist, taking care not to touch the outer surface of the glove (Figure 7). Ungloved hand is clean and should not touch contaminated areas.
- d. Peel off the glove over the first glove, containing the one glove inside the other (Figure 8). Discard in appropriate container. Proper disposal prevents transmission of microorganisms.
- e. To remove the goggles or face shield: Handle by the headband or ear pieces (Figure 9). Lift away from the face. Place in designated receptacle for reprocessing or in an appropriate waste container. Outside of goggles or face shield is contaminated. Handling by headband or ear pieces and lifting away from face prevents transmission of microorganisms. Proper disposal prevents transmission of microorganisms.
- f. To remove gown: Unfasten ties, if at the neck and back. Allow the gown to fall away from shoulders. Touching only the inside of the gown, pull away from the torso. Keeping hands on the inner surface of the gown, pull from arms. Turn gown inside out. Fold or roll into a bundle and discard. Gown front and sleeves are contaminated. Touching only the inside of the gown and pulling it away from the torso prevents transmission of microorganisms. Proper disposal prevents transmission of microorganisms.
- g. To remove mask or respirator: Grasp the neck ties or elastic, then top ties or elastic and remove. Take care to avoid touching front of mask or respirator. Discard in waste container. If using a respirator, save for future use in the designated area. Front of mask or respirator is contaminated; **Do Not Touch**. Not touching the front and proper disposal prevent transmission of microorganisms.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



FIGURE 6. Grasping the outside of one glove and peeling off.



FIGURE 7. Sliding fingers of ungloved hand under the remaining glove at the wrist.



FIGURE 8. Pulling glove off the hand and over the other glove.



FIGURE 9. Removing goggles by grasping ear pieces.

8. Perform hand hygiene immediately after removing all PPE. Hand hygiene prevents spread of microorganisms.





## Vital Signs

**Vital signs** are a person's temperature, pulse, **respiration**, and **blood pressure**, abbreviated as T, P, R, and BP. Pain, often called the fifth vital sign Pulse oximetry, the noninvasive measurement of arterial oxyhemoglobin saturation of arterial blood, is also often included with the measurement of vital sign. The health status of an individual is reflected in these indicators of body function. A change in vital signs may indicate a change in health.

Vital signs are assessed and compared with accepted normal values and the patient's usual patterns in a wide variety of instances. Examples of appropriate times to measure vital signs include, but are not limited to, screenings at health fairs and clinics, in the home, upon admission to a healthcare setting, when medications are given that may affect one of the vital signs, before and after invasive diagnostic and surgical procedures, and in emergency situations. Nurses take vital signs as often as the condition of a patient requires such assessment.

Careful attention to the details of vital sign procedures and accuracy in the interpretation of the findings are extremely important. Although vital sign measurement may be delegated to other healthcare personnel, it is the nurse's responsibility to ensure the accuracy of the data, interpret vital sign findings, and report abnormal findings.

### AGE-RELATED VARIATIONS IN NORMAL VITAL SIGNS

Age	Temperature (°)	Pulse (beats/min)	Respirations (breaths/min)	Blood Pressure (mm Hg)
Newborn	98.2 F (36.8 C) (Axillary)	80–180	30–60	73/55
1–3 yr	99.9 F (37.7 C) (Rectal)	80–140	20–40	90/55
6–8 yr	98.6 F (37 C) (Oral)	75–120	15–25	95/75
10 yr	98.6 F (37 C) (Oral)	75–110	15–25	102/62
Teens	98.6 F (37 C) (Oral)	60–100	15–20	102/80
Adults	98.6 F (37 C) (Oral)	60–100	12–20	120/80
>70 yr	96.8 F (36 C) (Oral)	60–100	15–20	120/80





## Assessing Body Temperature

Body temperature is the difference between the amount of heat produced by the body and the amount of heat lost to the environment, measured in degrees. Heat is generated by metabolic processes in the core tissues of the body, transferred to the skin surface by the circulating blood, and then dissipated to the environment. Core body temperature is higher than surface body temperature, and is normally maintained within a range of 97.0°F (36.0°C) to 99.5°F (37.5°C). There are individual variations of these temperatures as well as normal changes during the day, with core body temperatures being lowest in the early morning and highest in the late afternoon (Porth & Matfin, 2009).

Temperatures differ in various parts of the body; core body temperatures are higher than surface body temperatures. Core temperatures are measured at tympanic or rectal sites, but they can also be measured in the esophagus, pulmonary artery, or bladder by invasive monitoring devices. Surface body temperatures are measured at oral (sublingual), axillary, and skin surface sites.

Several types of equipment and different procedures might be used to measure body temperature. Different types of thermometers are illustrated in Figure 1. Glass thermometers should never be used to take the temperature of a person who is unconscious or irrational, or of infants and young children, because the glass could break. To obtain an accurate measurement, choose an appropriate site, the correct equipment, and the appropriate tool based on the patient's condition. If a temperature reading is obtained from a site other than the oral route, document the site used along with the measurement. If no site is listed with the documentation, it is generally assumed to be the oral route.



**FIGURE 1.** Types of thermometers. (A) Electronic thermometer. (B) Tympanic membrane thermometer. (C) Disposable paper thermometer; the dots change color to indicate temperature. (D) Temporal artery thermometer.



## Equipment

- Digital, glass, or electronic thermometer, appropriate for site to be used
- Disposable probe covers
- Water-soluble lubricant for rectal temperature measurement
- Nonsterile gloves, if appropriate
- Additional **PPE**, as indicated
- Toilet tissue, if needed
- Pencil or pen, paper or flow sheet, computerized record

### Action

### Rationale

1. Check medical order or nursing care plan for frequency of measurement and route. More frequent temperature measurement may be appropriate based on nursing judgment. Bring necessary equipment to the bedside stand or overbed table.

Assessment and measurement of vital signs at appropriate intervals provide important data about the patient's health status. Bringing everything to the bedside conserves time and energy. Arranging items nearby is convenient, saves time, and avoids unnecessary stretching and twisting of muscles on the part of the nurse.

2. Perform hand hygiene and put on PPE, if indicated.

Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.

3. Identify the patient.

Identifying the patient ensures the right patient receives the intervention and helps prevent errors.

4. Close curtains around bed and close the door to the room, if possible. Discuss the procedure with patient and assess the patient's ability to assist with the procedure.

This ensures the patient's privacy. Explanation relieves anxiety and facilitates cooperation. Dialogue encourages patient participation and allows for individualized nursing care.

5. Ensure the electronic or digital thermometer is in working condition.

Improperly functioning thermometer may not give an accurate reading.

6. Put on gloves, if appropriate or indicated.

Gloves prevent contact with blood and body fluids. Gloves are usually not required for an oral, axillary, or tympanic temperature measurement, unless contact with blood or body fluids is anticipated. Gloves should be worn for rectal temperature measurement.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

7. Select the appropriate site based on previous assessment data.

This ensures safety and accuracy of measurement.

8. Follow the steps as outlined below for the appropriate type of thermometer.

9. When measurement is completed, remove gloves, if worn. Remove additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.

### Measuring a Tympanic Membrane Temperature

10. If necessary, push the “on” button and wait for the “ready” signal on the unit (Figure 2).

For proper function, the thermometer must be turned on and warmed up.

11. Slide disposable cover onto the tympanic probe.

Use of a disposable cover deters the spread of microorganisms.

12. **Insert the probe snugly into the external ear using gentle but firm pressure, angling the thermometer toward the patient’s jaw line (Figure 3). Pull pinna up and back to straighten the ear canal in an adult.**

If the probe is not inserted correctly, the patient’s temperature may be noted as lower than normal.



**FIGURE 2.** Turning unit on and awaiting the ready signal.



**FIGURE 3.** Thermometer in patient's ear canal with pinna pulled up and back.

13. Activate the unit by pushing the trigger button.  
The reading is immediate (usually within 2 seconds).  
Note the reading

14. Discard the probe cover in an appropriate receptacle by pushing the probe-release button or use rim of cover to remove from probe (Figure 4).  
Replace the thermometer in its charger, if necessary.

The digital thermometer must be activated to record the temperature.

Discarding the probe cover ensures that it will not be reused accidentally on another patient. Proper disposal prevents the spread of microorganisms. If necessary, the thermometer should stay on the charger so that it is ready to use at all times.



**FIGURE 4.** Disposing of probe cover.





## Assessing Oral Temperature

10. Remove the electronic unit from the charging unit, and remove the probe from within the recording unit. Electronic unit must be taken into the patient's room to assess the patient's temperature. On some models, by removing the probe the machine is already turned on.
11. Cover thermometer probe with disposable probe cover and slide it on until it snaps into place (Figure 5). Using a cover prevents contamination of the thermometer probe.
12. Place the probe beneath the patient's tongue in the posterior sublingual pocket (Figure 6). Ask the patient to close his or her lips around the probe. When the probe rests deep in the posterior sublingual pocket, it is in contact with blood vessels lying close to the surface.



FIGURE 5. Putting probe cover on the thermometer.



FIGURE 6. Inserting thermometer under the tongue in the posterior sublingual pocket.

13. Continue to hold the probe until you hear a beep (Figure 7). Note the temperature reading. If left unsupported, the weight of the probe tends to pull it away from the correct location. The signal indicates the measurement is completed. The electronic thermometer provides a digital display of the measured temperature.
14. Remove the probe from the patient's mouth. Dispose of the probe cover by holding the probe over an appropriate receptacle and pressing the probe release button (Figure 8). Disposing of the probe cover ensures that it will not be reused accidentally on another patient. Proper disposal prevents spread of microorganisms.
15. Return the thermometer probe to the storage place. The thermometer needs to be recharged for future



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

within the unit. Return the electronic unit to the charging unit, if appropriate.

use. If necessary, the thermometer should stay on the charger so that it is ready to use at all times.



FIGURE 7. Holding probe in the patient's mouth.



FIGURE 8. Pushing button to dispose of cover.

### Assessing Rectal Temperature

10. Adjust the bed to a comfortable working height, usually elbow height of the care giver (VISN 8 Patient Safety Center, 2009). Put on nonsterile gloves.

Having the bed at the proper height prevents back and muscle strain. Gloves prevent contact with contaminants and body fluids.

11. Assist the patient to a side-lying position. Pull back the covers sufficiently to expose only the buttocks.

The side-lying position allows the nurse to visualize the buttocks. Exposing only the buttocks keeps the patient warm and maintains his or her dignity.

12. Remove the rectal probe from within the recording unit of the electronic thermometer. Cover the probe with a disposable probe cover and slide it into place until it snaps in place (Figure 9).

Using a cover prevents contamination of the thermometer.

**13. Lubricate about 1 inch of the probe with a water-soluble lubricant (Figure 10).**

Lubrication reduces friction and facilitates insertion, minimizing the risk of irritation or injury to the rectal mucous membranes.



**FIGURE 9.** Removing appropriate probe and attaching disposable probe cover.



**FIGURE 10.** Lubricating thermometer tip.

14. Reassure the patient. Separate the buttocks until the anal sphincter is clearly visible.

**15. Insert the thermometer probe into the anus about 1.5 inches in an adult or 1 inch in a child (Figure 11).**

If not placed directly into the anal opening, the thermometer probe may injure adjacent tissue or cause discomfort.

Depth of insertion must be adjusted based on the patient's age. Rectal temperatures are not normally taken in an infant, but may be indicated. Refer to the Special Considerations section at the end of the skill.



**FIGURE 11.** Inserting thermometer into the anus.

16. Hold the probe in place until you hear a beep, then carefully remove the probe. Note the temperature reading on the display.

If left unsupported, movement of the probe in the rectum could cause injury and/or discomfort. The signal indicates the measurement is completed. The electronic thermometer provides a digital display of





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

the measured temperature.

17. Dispose of the probe cover by holding the probe over an appropriate waste receptacle and pressing the release button.

Proper probe cover disposal reduces risk of microorganism transmission.

18. Using toilet tissue, wipe the anus of any feces or excess lubricant. Dispose of the toilet tissue. Remove gloves and discard them.

Wiping promotes cleanliness. Disposing of the toilet tissue avoids transmission of microorganisms.

19. Cover the patient and help him or her to a position of comfort.

Ensures patient comfort.

20. Place the bed in the lowest position; elevate rails as needed.

These actions provide for the patient's safety.

21. Return the thermometer to the charging unit.

The thermometer needs to be recharged for future use.

### Assessing Axillary Temperature

10. Move the patient's clothing to expose only the axilla (Figure 12).

The axilla must be exposed for placement of the thermometer. Exposing only the axilla keeps the patient warm and maintains his or her dignity.

11. Remove the probe from the recording unit of the electronic thermometer. Place a disposable probe cover on by sliding it on and snapping it securely.

Using a cover prevents contamination of the thermometer probe.

**12. Place the end of the probe in the center of the axilla (Figure 13). Have the patient bring the arm down and close to the body.**

The deepest area of the axilla provides the most accurate measurement; surrounding the bulb with skin surface provides a more reliable measurement.





**FIGURE 12.** Exposing axilla to assess temperature.



**FIGURE 13.** Placing thermometer in center of axilla.

13. Hold the probe in place until you hear a beep, and then carefully remove the probe. Note the temperature reading.

Axillary thermometers must be held in place to obtain an accurate temperature.

14. Cover the patient and help him or her to a position of comfort.

Ensures patient comfort.

15. Dispose of the probe cover by holding the probe over an appropriate waste receptacle and pushing the release button.

Discarding the probe cover ensures that it will not be reused accidentally on another patient.

16. Place the bed in the lowest position and elevate rails, as needed. Leave the patient clean and comfortable.

Low bed position and elevated side rails provide for patient safety.

17. Return the electronic thermometer to the charging unit.

Thermometer needs to be recharged for future use.

### Assessing Temporal Artery Temperature

10. Brush the patient's hair aside if it is covering the temporal artery area.

Anything covering the area, such as a hat, hair, wigs, or bandages, would insulate the area, resulting in falsely high readings. Measure only the side of the head exposed to the environment.

11. Apply a probe cover.

Using a cover prevents contamination of the



thermometer probe.

12. Hold the thermometer like a remote control device, with your thumb on the red 'ON' button. Place the probe flush on the center of the forehead, with the body of the instrument sideways (not straight up and down), so it is not in the patient's face (Figure 14).

13. Depress the ON button. Keep the button depressed throughout the measurement.

14. Slowly slide the probe straight across the forehead, midline, to the hair line (Figure 15). The thermometer will click; fast clicking indicates a rise to a higher temperature, slow clicking indicates the instrument is still scanning, but not finding any higher temperature.

Allows for easy use of the device and reading of the display. Holding the instrument straight up and down could be intimidating for the patient, particularly young patients and/or those with alterations in mental status.

Midline on the forehead, the temporal artery is less than 2 mm below the skin; whereas at the side of the face, the temporal artery is much deeper. Measuring there would result in falsely low readings.



**FIGURE 14.** Placing the thermometer probe on the center of the forehead.



**FIGURE 15.** Sliding the probe across the forehead to the hairline.

15. Brush hair aside if it is covering the ear, exposing the area of the neck under the ear lobe. Lift the probe from the forehead and touch on the neck just behind the ear lobe, in the depression just below the mastoid (Figure 16).

Sweat causes evaporative cooling of the skin on the forehead, possibly leading to a falsely low reading. During diaphoresis, the area on the head behind the ear lobe exhibits high blood flow necessary for the arterial measurement; it is a double check for the thermometer (Exergen, 2007).



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



FIGURE 16. Touching the probe behind the ear.

16. Release the button and read the thermometer measurement.

17. Hold the thermometer over a waste receptacle. Gently push the probe cover with your thumb against the proximal edge to dispose of probe cover.

18. Instrument will automatically turn off in 30 seconds, or press and release the power button.

Discarding the probe cover ensures that it will not be reused accidentally on another patient.

Turns thermometer off.





## Assessing Peripheral Pulse by Palpation

The pulse is a throbbing sensation that can be palpated over a peripheral artery, such as the radial artery or the carotid artery. Auscultate (listen to) an apical pulse over the apex of the heart, as the heart beats. Peripheral pulses result from a wave of blood being pumped into the arterial circulation by the contraction of the left ventricle. Each time the left ventricle contracts to eject blood into an already full aorta, the arterial walls in the cardiovascular system expand to compensate for the increase in pressure of the blood. Characteristics of the pulse, including rate, quality, or amplitude, and rhythm provide information about the effectiveness of the heart as a pump and the adequacy of peripheral blood flow.

Pulse rates are measured in beats per minute. The normal pulse rate for adolescents and adults ranges from 60 to 100 beats per minute. Pulse quality (amplitude) describes the quality of the pulse in terms of its fullness—strong or weak. It is assessed by the feel of the blood flow through the vessel. Pulse rhythm is the pattern of the pulsations and the pauses between them. Pulse rhythm is normally regular; the pulsations and the pauses between occur at regular intervals. An irregular pulse rhythm occurs when the pulsations and pauses between beats occur at unequal intervals.

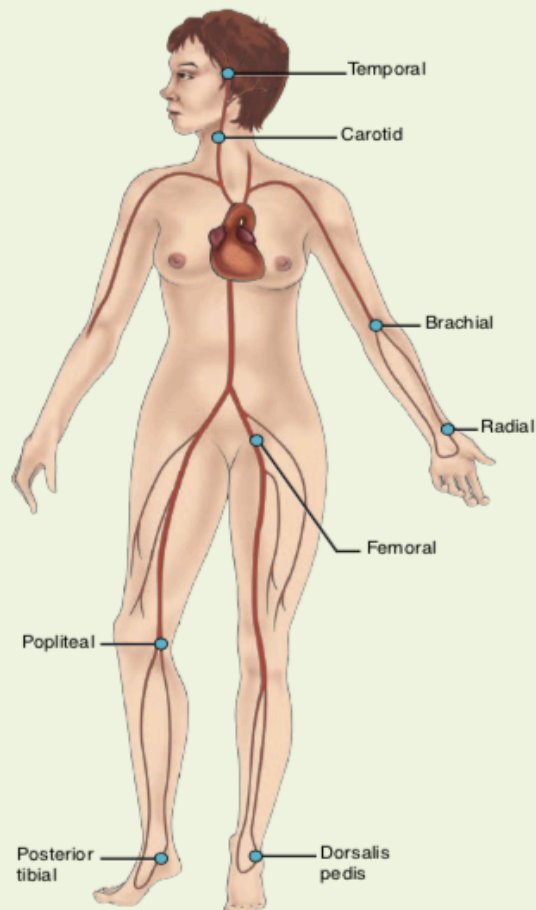
### Pulse Sites

Arteries commonly used for assessing the pulse include the temporal, carotid, brachial, radial, femoral, popliteal, posterior tibial, and dorsalis pedis.

### Pulse Amplitude

Pulse amplitude typically is graded as 0 to 4:

- 0 (absent pulse): pulse cannot be felt, even with the application of extreme pressure
- 1+ (thready pulse): pulse is very difficult to feel, and applying slight pressure causes pulse to disappear
- 2+ (weak pulse): pulse is stronger than a thready pulse, but applying light pressure causes pulse to disappear
- 3+ (normal pulse): pulse is easily felt and requires moderate pressure to make it disappear
- 4+ (bounding pulse): pulse is strong and does not disappear with moderate pressure







## Equipment

- Watch with second hand or digital readout
- Pencil or pen, paper or flow sheet, computerized record
- Nonsterile gloves, if appropriate; additional PPE, as indicated

### Action

### Rationale

1. Check medical order or nursing care plan for frequency of pulse assessment. More frequent pulse measurement may be appropriate based on nursing judgment.  
Assessment and measurement of vital signs at appropriate intervals provide important data about the patient's health status.
2. Perform hand hygiene and put on PPE, if indicated.  
Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
3. Identify the patient.  
Identifying the patient ensures the right patient receives the intervention and helps prevent errors.
4. Close curtains around bed and close the door to the room, if possible. Discuss the procedure with patient and assess the patient's ability to assist with the procedure.  
This ensures the patient's privacy. Explanation relieves anxiety and facilitates cooperation.
5. Put on gloves, as appropriate.  
Gloves are not usually worn to obtain a pulse measurement unless contact with blood or body fluids is anticipated. Gloves prevent contact with blood and body fluids.
6. Select the appropriate peripheral site based on assessment data.  
Ensures safety and accuracy of measurement.
7. Move the patient's clothing to expose only the site chosen.  
The site must be exposed for pulse assessment. Exposing only the site keeps the patient warm and maintains his or her dignity.
8. Place your first, second, and third fingers over the artery (Figure 1). **Lightly compress the artery so pulsations can be felt and counted.**  
The sensitive fingertips can feel the pulsation of the artery.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

9. Using a watch with a second hand, count the number of pulsations felt for 30 seconds (Figure 2). Multiply this number by 2 to calculate the rate for 1 minute. **If the rate, rhythm, or amplitude of the pulse is abnormal in any way, palpate and count the pulse for 1 minute.**

Ensures accuracy of measurement and assessment.



FIGURE 1. Palpating the radial pulse.



FIGURE 2. Counting the pulse.

10. Note the rhythm and amplitude of the pulse.

Provides additional assessment data regarding the patient's cardiovascular status.

11. When measurement is completed, remove gloves, if worn. Cover the patient and help him or her to a position of comfort.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Ensures patient comfort.

12. Remove additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.



## Assessing Peripheral Pulse by Auscultation

An apical pulse is auscultated (listened to) over the apex of the heart, as the heart beats. The cardiovascular system is composed of the heart and the blood vessels. The heart is a cone-shaped, muscular pump, divided into four hollow chambers. The upper chambers, the atria (singular, atrium), receive blood from the veins (the superior and inferior vena cava and the left and right pulmonary veins). The lower chambers, the ventricles, force blood out of the heart through the arteries (the left and right pulmonary arteries and the aorta). One-way valves that direct blood flow through the heart are located at the entrance (tricuspid and mitral valves) and exit (pulmonic and aortic valves) of each ventricle. Heart sounds, which are produced by closure of the valves of the heart, are characterized as “lub-dub.” The apical pulse is the result of closure of the mitral and tricuspid valves (“lub”) and the aortic and pulmonic valves (“dub”). The combination of the two sounds is counted as one beat. Pulse rates are measured in beats per minute. The normal pulse rate for adolescents and adults ranges from 60 to 100 beats per minute. Pulse rhythm is also assessed. Pulse rhythm is the pattern of the beats and the pauses between them. Pulse rhythm is normally regular; the beats and the pauses between occur at regular intervals. An irregular pulse rhythm occurs when the beats and pauses between beats occur at unequal intervals.

### Equipment

- Watch with second hand or digital readout
- Stethoscope
- Alcohol swab
- Pencil or pen, paper or flow sheet, computerized record
- Nonsterile gloves, if appropriate; additional PPE, as indicated

### Action

1. Check medical order or nursing care plan for frequency of pulse assessment. More frequent pulse measurement may be appropriate based on nursing judgment. Identify the need to obtain an apical pulse measurement.
2. Perform hand hygiene and put on PPE, if indicated.
3. Identify the patient.

### Rationale

- Provides for patient safety and appropriate care.
- Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions
- Identifying the patient ensures the right patient receives the intervention and helps



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

prevent errors.

4. Close curtains around bed and close the door to the room, if possible. Discuss procedure with patient and assess patient's ability to assist with the procedure.

This ensures the patient's privacy. Explanation relieves anxiety and facilitates cooperation.

5. Put on gloves, as appropriate.

Gloves are not usually worn to obtain a pulse measurement unless contact with blood or body fluids is anticipated. Gloves prevent contact with blood and body fluids.

6. Use alcohol swab to clean the diaphragm of the stethoscope. Use another swab to clean the earpieces, if necessary.

Cleaning with alcohol deters transmission of microorganisms.

7. Assist patient to a sitting or reclining position and expose chest area.

This position facilitates identification of the site for stethoscope placement.

8. Move the patient's clothing to expose only the apical site.

The site must be exposed for pulse assessment. Exposing only the apical site keeps the patient warm and maintains his or her dignity.

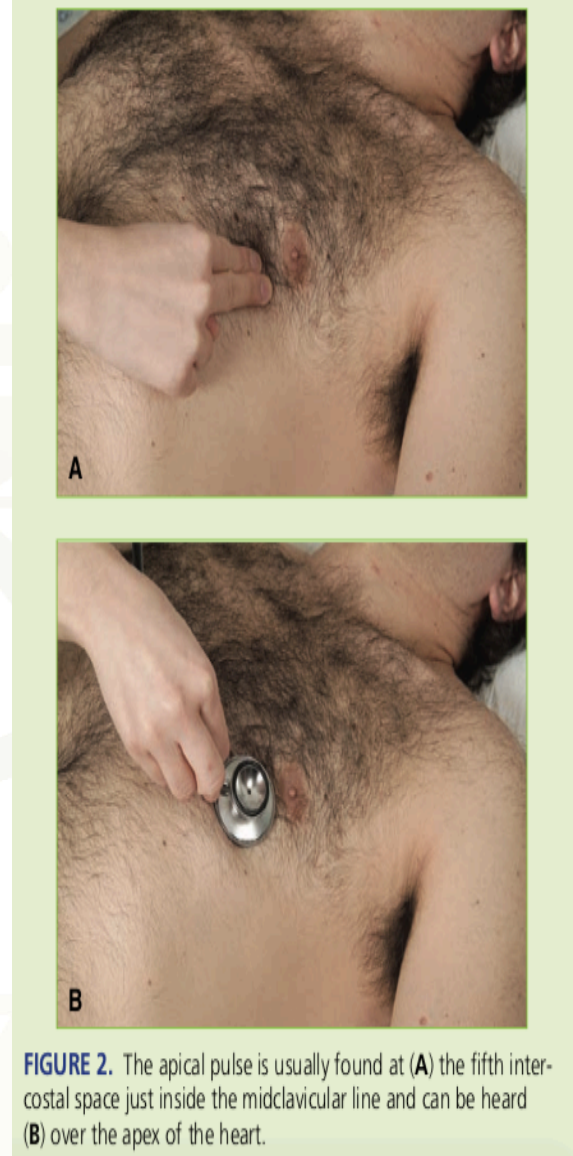
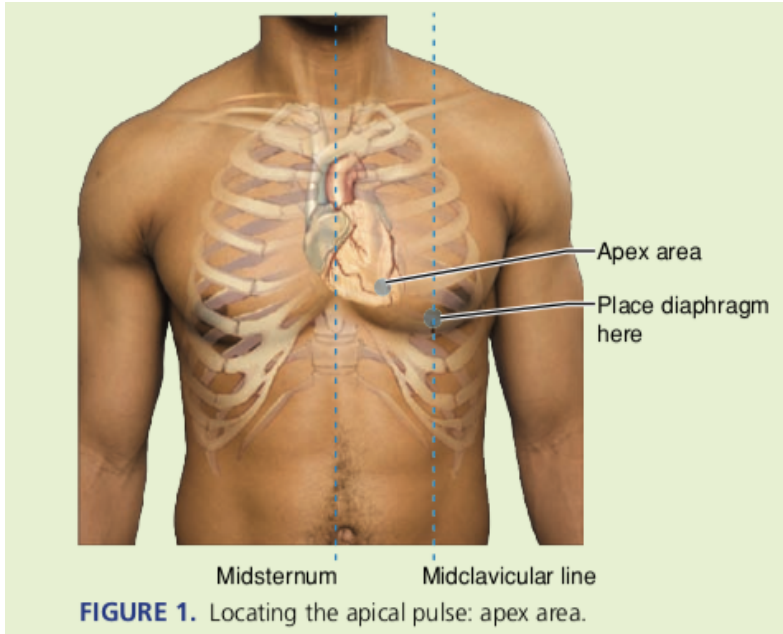
9. Hold the stethoscope diaphragm against the palm of your hand for a few seconds.

Warming the diaphragm promotes patient comfort.

**10. Palpate the space between the fifth and sixth ribs (fifth intercostal space), and move to the left midclavicular line.** Place the diaphragm over the apex of the heart (Figures 1 and 2).

Position the stethoscope over the apex of the heart, where the heartbeat is best heard.





11. Listen for heart sounds (“lub-dub”). Each “lub-dub” counts as one beat.

These sounds occur as the heart valves close.

12. Using a watch with a second hand, count the heartbeat for 1 minute.

Counting for a full minute increases the accuracy of assessment.

13. When measurement is completed, remove gloves, if worn. Cover the patient and help him or her to a position of comfort.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Ensures patient comfort.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

14. Clean the diaphragm of the stethoscope with an alcohol swab.

Cleaning with alcohol deters transmission of microorganisms.

15. Remove additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.




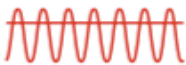







## Assessing Respiration

Under normal conditions, healthy adults breathe about 12 to 20 times per minute. Infants and children breathe more rapidly. Fundamentals Review 1-1 outlines respiratory rate ranges for different age groups. The depth of respirations varies normally from shallow to deep. The rhythm of respirations is normally regular, with each inhalation/exhalation and the pauses between occurring at regular intervals. An irregular respiratory rhythm occurs when the inhalation/exhalation cycle and the pauses between occur at unequal intervals. Table 1-1 outlines various respiratory patterns.

Assess respiratory rate, depth, and rhythm by inspection (observing and listening) or by listening with the stethoscope. Determine the rate by counting the number of breaths per minute. If respirations are very shallow and difficult to detect, observe the sternal notch, where respiration is more apparent. With an infant or young child, assess respirations before taking the temperature so that the child is not crying, which would alter the respiratory status.

TABLE • 1-1 PATTERNS OF RESPIRATION			
	Description	Pattern	Associated Features
<b>Normal</b>	12–20 breaths/min Regular		Normal pattern
<b>Tachypnea</b>	>24 breaths/min Shallow		Fever, anxiety, exercise, respiratory disorders
<b>Bradypnea</b>	<10 breaths/min Regular		Depression of the respiratory center by medications, brain damage
<b>Hyperventilation</b>	Increased rate and depth		Extreme exercise, fear, diabetic ketoacidosis (Kussmaul's respirations), overdose of aspirin
<b>Hypoventilation</b>	Decreased rate and depth Irregular		Overdose of narcotics or anesthetics
<b>Cheyne-Stokes respirations</b>	Alternating periods of deep, rapid breathing followed by periods of apnea Regular		Drug overdose, heart failure, increased intracranial pressure, renal failure
<b>Biot's respirations</b>	Varying depth and rate of breathing, followed by periods of apnea Irregular		Meningitis, severe brain damage



## Equipment

- Watch with second hand or digital readout
- Pencil or pen, paper or flow sheet, computerized record
- PPE, as indicated

### Action

**1. While your fingers are still in place for the pulse measurement, after counting the pulse rate, observe the patient's respirations (Figure 1).**



### Rationale

The patient may alter the rate of respirations if he or she is aware they are being counted.

**FIGURE 1.** Assessing respirations.

2. Note the rise and fall of the patient's chest.

A complete cycle of an **inspiration** and an **expiration** composes one respiration.

3. Using a watch with a second hand, count the number of respirations for 30 seconds. Multiply this number by 2 to calculate the respiratory rate per minute.

Sufficient time is necessary to observe the rate, depth, and other characteristics.

**4. If respirations are abnormal in any way, count the respirations for at least 1 full minute.**

Increased time allows the detection of unequal timing between respirations.

5. Note the depth and rhythm of the respirations.

Provides additional assessment data regarding the patient's respiratory status.

6. When measurement is completed, remove gloves, if worn. Cover the patient and help him or her to a position of comfort.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Ensures patient comfort.

7. Remove additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene deters the spread of microorganisms.





## Assessing Brachial Artery Blood Pressure

Blood pressure refers to the force of the blood against arterial walls. **Systolic pressure** is the highest point of pressure on arterial walls when the ventricles contract and push blood through the arteries at the beginning of systole. When the heart rests between beats during diastole, the pressure drops. The lowest pressure present on arterial walls during diastole is the **diastolic pressure** (Taylor et al., 2011). Blood pressure is measured in millimeters of mercury (mm Hg) and is recorded as a fraction. The numerator is the systolic pressure; the denominator is the diastolic pressure. The difference between the two is called the **pulse pressure**. For example, if the blood pressure is 120/80 mm Hg, 120 is the systolic pressure and 80 is the diastolic pressure. The pulse pressure, in this case, is 40. Table 1-2 outlines categories of blood pressure levels for adults.

TABLE • 1-2 CATEGORIES FOR BLOOD PRESSURE LEVELS IN ADULTS (AGES 18 AND OLDER)

Category	Blood Pressure Level (mm HG)	
	Systolic	Diastolic
Normal	<120	<80
Prehypertension	120–139	80–89
<b>High Blood Pressure</b>		
Stage 1	140–159	90–99
Stage 2	≥160	≥100

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

To get an accurate assessment of blood pressure, you should know what equipment to use, which site to choose, and how to identify the sounds you hear. Take routine measurements after the patient has rested for a minimum of 5 minutes. In addition, make sure the patient does not have any caffeine or nicotine 30 minutes before measuring blood pressure.

The series of sounds for which to listen when assessing blood pressure are called **Korotkoff sounds**. Table 1-3 describes and illustrates these sounds. Blood pressure can be assessed with different types of devices. Commonly, it is assessed by using a stethoscope and sphygmomanometer. Blood pressure can also be estimated with a Doppler ultrasound device, by palpation, and with electronic or automated devices. It is very important to use the correct technique and properly functioning equipment when assessing blood pressure to avoid errors in measurement. Use of a cuff of the correct size for the patient, correct limb placement, recommended deflation rate, and correct interpretation of the sounds heard are also necessary to ensure accurate blood pressure measurement (Smeltzer et al., 2010; Pickering, 2005; Pickering, et al., 2004). Table 1-4 outlines common errors in blood pressure measurement.



TABLE • 1-3 KOROTKOFF SOUNDS

Phase	Description	Illustration
Phase I	Characterized by the first appearance of faint but clear tapping sounds that gradually increase in intensity; the first tapping sound is the systolic pressure	
Phase II	Characterized by muffled or swishing sounds; these sounds may temporarily disappear, especially in hypertensive people; the disappearance of the sound during the latter part of phase I and during phase II is called the <i>auscultatory gap</i> and may cover a range of as much as 40 mm Hg; failing to recognize this gap may cause serious errors of underestimating systolic pressure or overestimating diastolic pressure	
Phase III	Characterized by distinct, loud sounds as the blood flows relatively freely through an increasingly open artery	
Phase IV	Characterized by a distinct, abrupt, muffling sound with a soft, blowing quality; in adults, the onset of this phase is considered to be the first diastolic pressure	
Phase V	The last sound heard before a period of continuous silence; the pressure at which the last sound is heard is the second diastolic pressure	



TABLE • 1-4 BLOOD PRESSURE ASSESSMENT ERRORS AND CONTRIBUTING CAUSES

Error	Contributing Causes	Error	Contributing Causes
Falsely low assessments	<ul style="list-style-type: none"> <li>• Hearing deficit</li> <li>• Noise in the environment</li> <li>• Viewing the meniscus from above eye level</li> <li>• Applying too wide a cuff</li> <li>• Inserting ear tips of stethoscope incorrectly</li> <li>• Using cracked or kinked tubing</li> <li>• Releasing the valve rapidly</li> <li>• Misplacing the bell beyond the direct area of the artery</li> <li>• Failing to pump the cuff 20 to 30 mm Hg above the disappearance of the pulse</li> </ul>	Falsely high assessments	<ul style="list-style-type: none"> <li>• Using a manometer not calibrated at the zero mark</li> <li>• Assessing the blood pressure immediately after exercise</li> <li>• Viewing the meniscus from below eye level</li> <li>• Applying a cuff that is too narrow</li> <li>• Releasing the valve too slowly</li> <li>• Reinflating the bladder during auscultation</li> </ul>

TABLE • 1-5 RECOMMENDED BLOOD PRESSURE CUFF SIZES

Cuff Size	Cuff Measurements	Arm Circumference*
Newborn–premature infants	4 × 8 cm	
Infants	6 × 12 cm	
Older children	9 × 18 cm	
Small adult size	12 × 22 cm	22 to 26 cm
Adult size	16 × 30 cm	27 to 34 cm
Large adult size	16 × 36 cm	35 to 44 cm
Adult thigh size	16 × 42 cm	45 to 52 cm

\*Select a blood pressure cuff that has a bladder width that is at least 40% of the arm circumference midway between the olecranon and the acromion. (From Pickering, T., Hall, J., Appel, L., et al. [2004]. American Heart Association Scientific Statement. Recommendations for blood pressure measurement in humans and experimental animals. Part 1: Blood pressure measurement in humans: A statement for professionals from the subcommittee of professional and public education of the American Heart Association Council on High Blood Pressure Research. Available at <http://hyper.ahajournals.org/cgi/content/full/45/1/142>.)



## Equipment

- Stethoscope
- Sphygmomanometer
- Blood pressure cuff of appropriate size
- Pencil or pen, paper or flow sheet
- Alcohol swab
- PPE, as indicated

Action	Rationale
1. Check physician's order or nursing care plan for frequency of blood pressure measurement. More frequent measurement may be appropriate based on nursing judgment.	Provides for patient safety.
2. Perform hand hygiene and put on PPE, if indicated.	Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
3. Identify the patient.	Identifying the patient ensures the right patient receives the intervention and helps prevent errors.
4. Close curtains around bed and close the door to the room, if possible. Discuss procedure with patient and assess patient's ability to assist with the procedure. Validate that the patient has relaxed for several minutes.	This ensures the patient's privacy. Explanation relieves anxiety and facilitates cooperation. Activity immediately before measurement can result in inaccurate results.
5. Put on gloves, if appropriate or indicated.	Gloves prevent contact with blood and body fluids. Gloves are usually not required for measurement of blood pressure, unless contact with blood or body fluids is anticipated.
6. Select the appropriate arm for application of the cuff.	Measurement of blood pressure may temporarily impede circulation to the extremity.
7. Have the patient assume a comfortable lying or sitting position with the forearm supported at the level of the heart and the palm of the hand upward (Figure 1). If the measurement is taken in the supine position, support the arm with a pillow. In the sitting position, support the arm yourself or by using the bedside table. If the patient is sitting, have	The position of the arm can have a major influence when the blood pressure is measured; if the upper arm is below the level of the right atrium, the readings will be too high. If the arm is above the level of the heart, the readings will be too low (Pickering, et al., 2004). If the back is not supported, the diastolic pressure may be elevated falsely; if the legs are crossed, the systolic





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

the patient sit back in the chair so that the chair supports his or her back. In addition, make sure the patient keeps the legs uncrossed.

8. Expose the brachial artery by removing garments, or move a sleeve, if it is not too tight, above the area where the cuff will be placed.

9. Palpate the location of the brachial artery. **Center the bladder of the cuff over the brachial artery, about midway on the arm, so that the lower edge of the cuff is about 2.5 to 5 cm (1 to 2 inches) above the inner aspect of the elbow. Line the artery marking on the cuff up with the patient's brachial artery.** The tubing should extend from the edge of the cuff nearer the patient's elbow (Figure 2).

pressure may be elevated falsely (Pickering, et al., 2004). This position places the brachial artery on the inner aspect of the elbow so that the **bell** or diaphragm of the stethoscope can rest on it easily. This sitting position ensures accuracy.

Clothing over the artery interferes with the ability to hear sounds and can cause inaccurate blood pressure readings. A tight sleeve would cause congestion of blood and possibly inaccurate readings.

Pressure in the cuff applied directly to the artery provides the most accurate readings. If the cuff gets in the way of the stethoscope, readings are likely to be inaccurate. A cuff placed upside down with the tubing toward the patient's head may give a false reading.



**FIGURE 1.** Proper positioning for blood pressure assessment using brachial artery. (Photo by B. Proud.)

10. Wrap the cuff around the arm smoothly and snugly, and fasten it. Do not allow any clothing to interfere with the proper placement of the cuff.

11. Check that the needle on the aneroid gauge is within the zero mark (Figure 3). If using a mercury manometer, check to see that the manometer is in the vertical position and that the mercury is within



**FIGURE 2.** Placing the blood pressure cuff. (Photo by B. Proud.)

A smooth cuff and snug wrapping produce equal pressure and help promote an accurate measurement. A cuff wrapped too loosely results in an inaccurate reading.

If the needle is not in the zero area, the blood pressure may not be accurate. Tilting a mercury manometer, inaccurate calibration, or improper height for reading the gauge can lead to errors in determining the pressure



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

the zero level with the gauge at eye level.

measurements.

### Estimating Systolic Pressure

12. Palpate the pulse at the brachial or radial artery by pressing gently with the fingertips (Figure 4).

Palpation allows for measurement of the approximate systolic reading.

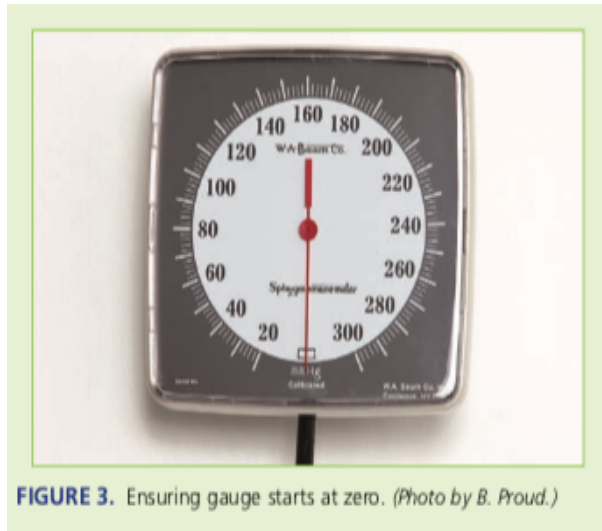


FIGURE 3. Ensuring gauge starts at zero. (Photo by B. Proud.)



FIGURE 4. Palpating the brachial pulse. (Photo by B. Proud.)

13. Tighten the screw valve on the air pump.

The bladder within the cuff will not inflate with the valve open.

**14. Inflate the cuff while continuing to palpate the artery. Note the point on the gauge where the pulse disappears.**

The point where the pulse disappears provides an estimate of the systolic pressure. To identify the first Korotkoff sound accurately, the cuff must be inflated to a pressure above the point at which the pulse can no longer be felt.

15. Deflate the cuff and wait 1 minute.

Allowing a brief pause before continuing permits the blood to refill and circulate through the arm.

### Obtaining Blood Pressure Measurement

16. Assume a position that is no more than 3 feet away from the gauge.

A distance of more than about 3 feet can interfere with accurate readings of the numbers on the gauge.

17. Place the stethoscope earpieces in your ears. Direct the earpieces forward into the canal and not against the ear itself.

Proper placement blocks extraneous noise and allows sound to travel more clearly.

18. Place the bell or diaphragm of the stethoscope firmly but with as little pressure as possible over

Having the bell or diaphragm directly over the artery allows more accurate readings. Heavy pressure on the



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

the brachial artery (Figure 5). Do not allow the stethoscope to touch clothing or the cuff.

brachial artery distorts the shape of the artery and the sound. Placing the bell or diaphragm away from clothing and the cuff prevents noise, which would distract from the sounds made by blood flowing through the artery.



**FIGURE 5.** Proper placement of diaphragm of stethoscope. (Photo by B. Proud.)

19. Pump the pressure 30 mm Hg above the point at which the systolic pressure was palpated and estimated. Open the valve on the manometer and allow air to escape slowly (allowing the gauge to drop 2 to 3 mm per second).

Increasing the pressure above the point where the pulse disappeared ensures a period before hearing the first sound that corresponds with the systolic pressure. It prevents misinterpreting phase II sounds as phase I sounds.

**20. Note the point on the gauge at which the first faint, but clear, sound appears that slowly increases in intensity. Note this number as the systolic pressure (Figure 6). Read the pressure to the closest 2 mm Hg.**

Systolic pressure is the point at which the blood in the artery is first able to force its way through the vessel at a similar pressure exerted by the air bladder in the cuff. The first sound is phase I of Korotkoff sounds.

21. Do not reinflate the cuff once the air is being released to recheck the systolic pressure reading.

Reinflating the cuff while obtaining the blood pressure is uncomfortable for the patient and can cause an inaccurate reading. Reinflating the cuff causes congestion of blood in the lower arm, which lessens the loudness of Korotkoff sounds.

**22. Note the point at which the sound completely disappears (Figure 7).**

The point at which the sound disappears corresponds to the beginning of phase V Korotkoff sounds and is generally considered the diastolic pressure reading (Pickering, et al., 2004).





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



FIGURE 6. Measuring systolic blood pressure. (Photo by B. Proud.)



FIGURE 7. Measuring diastolic blood pressure. (Photo by B. Proud.)

23. Allow the remaining air to escape quickly. Repeat any suspicious reading, but wait at least 1 minute. Deflate the cuff completely between attempts to check the blood pressure.

24. When measurement is completed, remove the cuff. Remove gloves, if worn. Cover the patient and help him or her to a position of comfort.

25. Remove additional PPE, if used. Perform hand hygiene.

26. Clean the diaphragm of the stethoscope with the alcohol wipe. Clean and store the sphygmomanometer, according to facility policy.

False readings are likely to occur if there is congestion of blood in the limb while obtaining repeated readings.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Ensures patient comfort.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene deters the spread of microorganisms.

Appropriate cleaning deters the spread of microorganisms. Equipment should be left ready for use.





## Skill Variation Assessing Blood Pressure Using an Electronic Device

Automatic, electronic equipment is often used to monitor blood pressure in acute care settings, during anesthesia, postoperatively, or any time frequent assessments are necessary (Figure A).

This unit determines blood pressure by analyzing the sounds of blood flow or measuring oscillations. The machine can be set to take and record blood pressure readings at preset intervals. Irregular heart rates, excessive patient movement, and environmental noise can interfere with the readings. Because electronic equipment is more sensitive to outside interference, these readings are susceptible to error. The cuff is applied in the same manner as the auscultatory method, with the microphone or pressure sensor positioned directly over the artery. When using an automatic blood pressure device for serial readings, check the cuffed limb frequently. Incomplete deflation of the cuff between measurements can lead to inadequate arterial perfusion and venous drainage, compromising the circulation in the limb.

1. Check physician's order or nursing care plan for frequency of blood pressure measurement. More frequent measurement may be appropriate based on nursing judgment.



**FIGURE A.** Electronic blood pressure device. (Photo by B. Proud.)



2. Perform hand hygiene and put on PPE, if indicated.



3. Identify the patient.

4. Close curtains around bed and close the door to the room, if possible.
5. Discuss procedure with patient and assess patient's ability to assist with the procedure.
6. Validate that the patient has relaxed for several minutes.
7. Select the appropriate limb for application of cuff.
8. Have the patient assume a comfortable lying or sitting position with the limb exposed.
9. **Center the bladder of the cuff over the artery, lining the artery mark on the cuff up with the limb artery.**
10. Wrap the cuff around the limb smoothly and snugly, and fasten it. Do not allow any clothing to interfere with the proper placement of the cuff.
11. Turn on the machine. **If the machine has different settings for infants, children, and adults, select the appropriate setting. Push the start button. Instruct the patient to hold the limb still.**
12. Wait until the machine beeps and the blood pressure reading appears. Remove the cuff from the patient's limb and clean and store the equipment.



13. Remove PPE, if used. Perform hand hygiene.

14. Record the findings on paper, flow sheet, or computerized record. Report abnormal findings to the appropriate person.
15. Identify arm used and site of assessment if other than brachial.



## Skill Variation Assessing Blood Pressure Using a Doppler Ultrasound Device

Blood pressure can be measured with an ultrasound or Doppler device, which amplifies sound. It is especially useful if the sounds are indistinct or inaudible with a regular stethoscope. This method only provides an estimate of systolic blood pressure.

1. Check physician's order or nursing care plan for frequency of blood pressure measurement. More frequent measurement may be appropriate based on nursing judgment.



2. Perform hand hygiene and put on PPE, if indicated.



3. Identify the patient.

4. Explain the procedure to the patient.
5. Close curtains around bed and close the door to the room, if possible.
6. Select the appropriate limb for application of cuff.
7. Have the patient assume a comfortable lying or sitting position with the appropriate limb exposed.
8. **Center the bladder of the cuff over the artery, lining the artery marker on the cuff up with the artery.**
9. Wrap the cuff around the limb smoothly and snugly, and fasten it. Do not allow any clothing to interfere with the proper placement of the cuff.
10. Check that the needle on the aneroid gauge is within the zero mark. If using a mercury manometer, check to see that the manometer is in the vertical position and that the mercury is within the zero level with the gauge at eye level.
11. Place a small amount of conducting gel over the artery.
12. Hold the Doppler device in your nondominant hand. Using your dominant hand, place the Doppler tip in the gel. Adjust the volume as needed. Move the Doppler tip around until you hear the pulse.
13. Once the pulse is found using the Doppler device, close the valve to the sphygmomanometer. Tighten the screw valve on the air pump.

14. **Inflate the cuff while continuing to use the Doppler device on the artery. Note the point on the gauge where the pulse disappears (Figure B).**



**FIGURE B.** Inflating cuff while listening to artery pulsations. (Photo by B. Proud.)

15. Open the valve on the manometer and allow air to escape quickly. Repeat any suspicious reading, but wait at least 1 minute between readings to allow normal circulation to return in the limb. Deflate the cuff completely between attempts to check the blood pressure.
16. Remove the Doppler tip and turn off the Doppler device. Wipe excess gel off of the patient's skin with tissue. Remove the cuff.
17. Wipe any gel remaining on the Doppler probe off with a tissue. Clean the Doppler device according to facility policy or manufacturer's recommendations.
18. Return the Doppler device to the charge base.
19. Remove PPE, if used. Perform hand hygiene.
20. Record the findings on paper, flow sheet, or computerized record. Report abnormal findings to the appropriate person. Identify arm used and site of assessment if other than brachial.





## Fall Prevention

Falls are associated with physical and psychological trauma, especially in older people. Fall-related injuries are often serious and can be fatal. Falls are caused by and associated with multiple factors. Primary causes of falls include:

- Change in balance or gait disturbance
- Muscle weakness
- Dizziness, syncope, and vertigo
- Cardiovascular changes, such as postural hypotension
- Change in vision or vision impairment
- Physical environment/environmental hazards
- Acute illness
- Neurologic disease, such as dementia or depression
- Language disorders that impair communication
- Polypharmacy

TABLE • 3-1 RECOMMENDED FALL-PREVENTION STRATEGIES BY FALL RISK LEVEL

Low Fall Risk	Moderate Fall Risk	High Fall Risk
<p><i>Fall Risk Score: 0–5 Points</i></p> <p>Maintain safe unit environment, including:</p> <ul style="list-style-type: none"> <li>• Remove excess equipment/supplies/furniture from rooms and hallways.</li> <li>• Coil and secure excess electrical and telephone wires.</li> <li>• Clean all spills in patient room or in hallway immediately. Place signage to indicate wet floor danger.</li> <li>• Restrict window openings.</li> </ul> <p>The following are examples of basic safety interventions:</p> <ul style="list-style-type: none"> <li>• Orient patient to surroundings, including bathroom location, use of bed, and location of call bell.</li> <li>• Keep bed in lowest position during use unless impractical (as in ICU nursing or specialty beds).</li> <li>• Keep top two side rails up (excludes box beds). In ICU, keep all side rails up.</li> <li>• Secure locks on beds, stretchers, and wheelchairs.</li> <li>• Keep floors clutter/obstacle free (with attention to path between bed and bathroom/commode).</li> <li>• Place call bell and frequently needed objects within patient reach. Answer call bell promptly.</li> <li>• Encourage patients/families to call for assistance when needed.</li> <li>• Display special instructions for vision and hearing.</li> <li>• Ensure adequate lighting, especially at night.</li> <li>• Use properly fitting nonskid footwear.</li> </ul>	<p><i>Fall Risk Score: 6–10 Points</i> <i>Color Code: Yellow</i></p> <ul style="list-style-type: none"> <li>• Institute flagging system: yellow card outside room and yellow sticker on medical record. Hill ROM flag (if available), assignment board/electronic board.</li> </ul> <p>In addition to measures listed under low fall risk:</p> <ul style="list-style-type: none"> <li>• Monitor and assist patient in following daily schedules.</li> <li>• Supervise and/or assist bedside sitting, personal hygiene, and toileting, as appropriate.</li> <li>• Reorient confused patients, as necessary.</li> <li>• Establish elimination schedule, including use of bedside commode, if appropriate.</li> <li>• PT (physical therapy) consult if patient has a history of fall and/or mobility impairment</li> </ul> <p>Evaluate need for:</p> <ul style="list-style-type: none"> <li>• OT (occupational therapy) consult</li> <li>• Slip-resistant chair mat (do not use in shower chair)</li> <li>• Use of seat belt, when in wheelchair</li> </ul>	<p><i>Fall Risk Score: &gt;10 Points</i> <i>Color Code: Red</i></p> <ul style="list-style-type: none"> <li>• Institute flagging system: red card outside room and red sticker on medical record, assignment board/electronic board; nurse call system flag, if available.</li> </ul> <p>In addition to measures listed under moderate and low fall risk:</p> <ul style="list-style-type: none"> <li>• Remain with patient while toileting.</li> <li>• Observe every 60 minutes unless patient is on activated bed/chair alarm.</li> <li>• If patient requires an air overlay, remove mattress (unless contraindicated by overlay type) or use side rail protectors.</li> <li>• When necessary, transport throughout hospital with assistance of staff or trained caregivers. Consider alternatives, for example, bedside procedure. Notify receiving area of high fall risk.</li> </ul> <p>Evaluate need for the following, starting with less restrictive to more restrictive measures in the listed order:</p> <ul style="list-style-type: none"> <li>• Moving patient to room with best visual access to nursing station</li> <li>• Bed/chair alarm</li> <li>• Specialty fall-prevention bed</li> <li>• 24-hour supervision/sitter</li> <li>• Physical restraint/enclosed bed (only if less-restrictive alternatives have been considered and found to be ineffective)</li> </ul>



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

Fall risk factor category * (NA if comatose, complete paralysis, or completely immobilized)	Points
Age <ul style="list-style-type: none"> <li>• 70–79 y (2 points)</li> <li>• ≥80 y (3 points)</li> </ul>	
Fall history <ul style="list-style-type: none"> <li>• Fall within 3 months before admission (5 points)</li> <li>• Fall during this hospitalization (11 points)</li> </ul>	
Mobility <ul style="list-style-type: none"> <li>• Ambulates or transfers with unsteady gait and <b>NO</b> assistance or assistive devices (2 points)</li> <li>• Ambulates or transfers with assistance or assistive device (2 points)</li> <li>• Visual or auditory impairment affecting mobility (4 points)</li> </ul>	
Elimination <ul style="list-style-type: none"> <li>• Urgency/nocturia (2 points)</li> <li>• Incontinence (5 points)</li> </ul>	
Mental status changes <ul style="list-style-type: none"> <li>• Affecting awareness of environment (2 points)</li> <li>• Affecting awareness of one's physical limitations (4 points)</li> </ul>	
Medications: One present (3 points); 2 or more present; or sedated procedure within the past 24 h (5 points) Psychotropics (antidepressants, hypnotics, antipsychotics, sedatives, benzodiazepines, some antiemetics) Anticonvulsants Diuretics/cathartics PCS/narcotics/opiates Antihypertensives	
Patient care equipment: One present (1 point); ≥ 2 present (2 points) (IV, chest tube, indwelling catheter, SCDs, etc)	
<b>Total points</b>	

\*Moderate risk = 6–10 Total points, High risk > 10 Total points

**FIGURE 1.** Johns Hopkins Fall Risk Assessment Tool. (Reprinted with permission. © 2003, The Johns Hopkins Hospital.)





## Equipment

- Fall-risk assessment tool, if available
- **PPE**, as indicated
- Additional intervention tools, as appropriate, (refer to sample intervention equipment following in this skill)

Action	Rationale
1. Perform hand hygiene and put on PPE, if indicated.	Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
2. Identify the patient.	Identifying the patient ensures the right patient receives the intervention and helps prevent errors.
3. Explain the rationale for fall prevention interventions to the patient and family/significant others.	Explanation helps reduce anxiety and promotes compliance and understanding.
4. Include the patient's family and/or significant others in the plan of care.	This promotes continuity of care and cooperation.
5. Provide adequate lighting. Use a night light during sleeping hours.	Good lighting reduces accidental tripping over and bumping into objects that may not be seen. Night light provides illumination in an unfamiliar environment.
6. Remove excess equipment, supplies, furniture, and other objects from rooms and walkways. Pay particular attention to high traffic areas and the route to the bathroom.	All are possible hazards.
7. Orient patient and significant others to new surroundings, including use of the telephone, call bell, patient bed, and room illumination. Indicate the location of the patient bathroom.	Knowledge of proper use of equipment relieves anxiety and promotes compliance.
8. Provide a 'low bed' to replace regular hospital bed.	Low beds are 14 inches from the floor, reducing risk of injury related to falling out of the bed.
9. Use floor mats if patient is at risk for serious injury.	Floor mats cushion fall and may prevent serious injury in patients at risk, such as those with osteoporosis (Gray-Micelli, 2008).
10. Provide nonskid footwear and/or walking shoes	Nonskid footwear prevents slipping and walking



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

(Figure 2).

shoes improve balance when ambulating or transferring.



FIGURE 2. Providing nonskid footwear.

11. Institute a toileting regimen and/or continence program, if appropriate.

Toileting on a regular basis decreases risk for falls.

12. Provide a bedside commode and/or urinal/bedpan, if appropriate. Ensure that it is near the bed at all times.

This prevents falls related to incontinence or trying to get to the bathroom.

13. Ensure that the call bell, bedside table, telephone, and other personal items are within the patient's reach at all times.

This prevents the patient from having to overreach for device or items, and/or possibly attempt ambulation or transfer unassisted.

14. This prevents the patient from having to overreach for device or items, and/or possibly attempt ambulation or transfer unassisted.

Exercise programs, such as muscle strengthening, balance training, and walking plans, decrease falls and fall-related injuries.

15. Confer with primary care provider regarding appropriate mobility aids, such as a cane or walker.

Mobility aids can help improve balance and steady the patient's gait.

16. Confer with primary care provider regarding the use of bone-strengthening medications, such as calcium, vitamin D, and drugs to prevent/treat osteoporosis.

Bone strengthening has been suggested to reduce fracture rates with falls (AGS, BGS, AAOS, 2008; Nadzam, 2008).

17. Encourage the patient to rise or change position slowly and sit for several minutes before standing.

Gradual position changes reduce the risk of falls related to orthostatic hypotension.

18. Evaluate the appropriateness of elastic stockings for lower extremities.

Elastic stockings minimize venous pooling and promote venous return.

19. Review medications for potential hazards.

Certain medications and combinations of medications have been associated with increased risk for falls.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

20. Keep the bed in the lowest position during use. If elevated to provide care (to reduce caregiver strain), ensure that it is lowered when care is completed.

Keeping bed in lowest position reduces the risk of a fall-related injury.

21. Make sure locks on the bed or wheelchair are secured at all times (Figure 3).

Locking prevents the bed or wheelchair from moving out from under the patient.

22. Use bed rails according to facility policy, when appropriate (Figure 4).

Inappropriate bed-rail use has been associated with patient injury and increased fall risk. Side rails may be considered a restraint when used to prevent an ambulatory patient from getting out of bed.



FIGURE 3. Engaging bed locks.



FIGURE 4. Raising side rails on bed at the patient's request.

23. Anticipate patient needs and provide assistance with activities instead of waiting for the patient to ask.

Patients whose needs are met sustain fewer falls.

24. Consider the use of an electronic personal alarm or pressure sensor alarm for the bed or chair.

The alarm helps alert staff to unassisted changes in position by the patient.

25. Discuss the possibility of appropriate family member(s) staying with patient.

The presence of a family member provides familiarity and companionship.

26. Consider the use of patient attendant or sitter.

Attendant or sitter can provide companionship and supervision.

27. Increase the frequency of patient observation and surveillance; 1- or 2-hour nursing rounds, including pain assessment, toileting assistance, patient comfort, personal items in reach, and patient needs.

Patient care rounds/nursing rounds can reduce patient falls (Meade, et al., 2006; Weisgram & Raymond, 2008).

28. Remove PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents transmission of microorganisms.



## Making an Unoccupied Bed

Usually bed linens are changed after the bath, but some agencies change linens only when soiled. If the patient can get out of bed, the bed should be made while it is unoccupied to decrease stress on the patient and the nurse. The following procedure explains how to make the bed using a fitted bottom sheet. Some facilities do not provide fitted bottom sheets, or sometimes a fitted bottom sheet may not be available.

### Equipment

- One large flat sheet
- One fitted sheet
- Drawsheet (optional)
- Blankets
- Bedspread
- Pillowcases
- Linen hamper or bag
- Bedside chair
- Waterproof protective pad (optional)
- Disposable gloves
- Additional PPE, as indicated

### Action

1. Assemble equipment and arrange on a bedside chair in the order in which items will be used.
2. Perform hand hygiene. Put on PPE, as indicated.
3. Adjust the bed to a comfortable working height, usually elbow height of the caregiver (VISN 8 Patient Safety Center, 2009). Drop the side rails.
4. Disconnect call bell or any tubes from bed linens.
5. Put on gloves. Loosen all linen as you move around the bed, from the head of the bed on the far side to the head of the bed on the near side.

### Rationale

- Organization facilitates performance of task.
- Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
- Having the bed at the proper height prevents back and muscle strain. Having the side rails down reduces strain on the nurse while working.
- Disconnecting devices prevents damage to the devices.
- Gloves prevent the spread of microorganisms. Loosening the linen helps prevent tugging and tearing on linen. Loosening the linen and moving around the bed systematically reduce strain caused by reaching





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

across the bed.

6. Fold reusable linens, such as sheets, blankets, or spread, in place on the bed in fourths and hang them over a clean chair.

Folding saves time and energy when reusable linen is replaced on the bed. Folding linens while they are on the bed reduces strain on the nurse's arms. Some agencies change linens only when soiled.

7. Snugly roll all the soiled linen inside the bottom sheet and place directly into the laundry hamper (Figure 1). **Do not place on floor or furniture. Do not hold soiled linens against your uniform.**

Rolling soiled linens snugly and placing them directly into the hamper helps prevent the spread of microorganisms. The floor is heavily contaminated; soiled linen will further contaminate furniture. Soiled linen contaminates the nurse's uniform, and this may spread organisms to another patient.

8. If possible, shift mattress up to head of bed. If mattress is soiled, clean and dry according to facility policy before applying new sheets.

This allows more foot room for the patient.

9. Remove your gloves, unless indicated for transmission precautions. Place the bottom sheet with its center fold in the center of the bed. Open the sheet and fan-fold to the center (Figure 2).

Gloves are not necessary to handle clean linen. Removing gloves properly reduces the risk for infection transmission and contamination of other items. Opening linens on the bed reduces strain on the nurse's arms and diminishes the spread of microorganisms. Centering the sheet ensures sufficient coverage for both sides of the mattress.



**FIGURE 1.** Bundling soiled linens in bottom sheet and holding them away from body.



**FIGURE 2.** Opening bottom sheet and fan-folding to center of bed.

10. If using, place the drawsheet with its center fold in the center of the bed and positioned so it will be located under the patient's midsection. Open the drawsheet and fan-fold to the center of the mattress (Figure 3). If a protective pad is used, place it over the drawsheet in the proper area and open to the

If the patient soils the bed, drawsheet and pad can be changed without the bottom and top linens on the bed. Having all bottom linens in place before tucking them under the mattress avoids unnecessary moving about the bed. A drawsheet can aid moving the patient in



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

centerfold. Not all agencies use drawsheets routinely. The nurse may decide to use one. In some institutions, the protective pad doubles as a drawsheet.

11. Pull the bottom sheet over the corners at the head and foot of the mattress. (See accompanying Skill Variation for using a flat bottom sheet, instead of a fitted sheet.) Tuck the drawsheet securely under the mattress.

12. Move to the other side of the bed to secure bottom linens. Pull the bottom sheet tightly and secure over the corners at the head and foot of the mattress. Pull the drawsheet tightly and tuck it securely under the mattress.

13. Place the top sheet on the bed with its center fold in the center of the bed and with the hem even with the head of the mattress. Unfold the top sheet. Follow same procedure with top blanket or spread, placing the upper edge about 6 inches below the top of the sheet.

14. Tuck the top sheet and blanket under the foot of the bed on the near side. Miter the corners (Figure 4).

bed.

Making the bed on one side and then completing the bed on the other side saves time. Having bottom linens free of wrinkles reduces patient discomfort.

This removes wrinkles from the bottom linens, which can cause patient discomfort and promote skin breakdown.

Opening linens by shaking them spreads organisms into the air. Holding linens overhead to open them causes strain on the nurse's arms.

This saves time and energy and keeps the top linen in place.



FIGURE 3. Placing drawsheet on bed.

15. Fold the upper 6 inches of the top sheet down over the spread and make a cuff.



FIGURE 4. Mitering corner of top sheet and spread.

This makes it easier for the patient to get into bed and pull the



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

covers up.

16. Move to the other side of the bed and follow the same procedure for securing top sheets under the foot of the bed and making a cuff (Figure 5).

Working on one side of the bed at a time saves energy and is more efficient.

17. Place the pillows on the bed. Open each pillowcase in the same manner as you opened other linens. Gather the pillowcase over one hand toward the closed end. Grasp the pillow with the hand inside the pillowcase. Keep a firm hold on the top of the pillow and pull the cover onto the pillow. Place the pillow at the head of the bed (Figure 6).

Opening linens by shaking them causes organisms to be carried on air currents. Covering the pillow while it rests on the bed reduces strain on the nurse's arms and back.



FIGURE 5. Cuffing top linens.

18. Fan-fold or pie-fold the top linens.



FIGURE 6. Placing pillow on bed.

Having linens opened makes it more convenient for the patient to get into bed.

19. Secure the signal device on the bed, according to agency policy (Figure 7).

The patient will be able to call for assistance as necessary. Promotes patient comfort and safety.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



FIGURE 7. Securing signal device to bed.

20. Raise side rail and lower bed.

Promotes patient comfort and safety.

21. Dispose of soiled linen according to agency policy.

Deters the spread of microorganisms.

22. Remove any other PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.





## Skill Variation Making a Bed With a Flat Bottom Sheet

1. Assemble equipment and arrange on a bedside chair in the order in which items will be used. Two large flat sheets are needed.



2. Perform hand hygiene. Put on gloves.

3. Adjust bed to high position and drop side rails.

4. Disconnect call bell or any tubes from bed linens.

5. Loosen all linen as you move around the bed, from the head of the bed on the far side to the head of the bed on the near side.

6. Fold reusable linens, such as sheets, blankets, or spread, in place on the bed in fourths and hang them over a clean chair.

7. Snugly roll all the soiled linen inside the bottom sheet and place directly into the laundry hamper. Do not place on floor or furniture. Do not hold soiled linens against your uniform.

8. If possible, shift mattress up to head of bed.

9. Remove your gloves. Place the bottom sheet with its center fold in the center of the bed and high enough to be able to tuck it under the head of the mattress. Open the sheet and fan-fold to the center.

10. If using, place the drawsheet with its center fold in the center of the bed and positioned so it will be located under the patient's midsection. Open the drawsheet and fan-fold to the center of the mattress. If a protective pad is used, place it over the drawsheet in the proper area and open to the center fold.

11. Tuck the bottom sheet securely under the head of the mattress on one side of the bed, making a corner. Corners are usually mitered. Grasp the side edge of the sheet about 18 inches down from the mattress top (Figure A). Lay the sheet on top of the mattress to form a triangular, flat fold (Figure B). Tuck the portion of the sheet that is hanging loose below the mattress under the mattress without pulling on the triangular fold (Figure C). Pick the top of the triangle fold and place it over the side of the mattress (Figure D). Tuck this loose portion of the sheet under the mattress. Continue tucking the remaining bottom sheet and drawsheet securely under the mattress (Figure E). Move to the other side of the bed to secure bottom linens. Pull the sheets across the mattress from the center fold. Secure the bottom of the sheet under the head of the bed and miter the corner. Pull the remainder of the sheet and the drawsheet tightly and tuck under the mattress, starting at the head and moving toward the foot (Figure F).



**FIGURE A.** Grasping the side edge of the sheet and lifting up to form a triangle.



**FIGURE B.** Laying sheet on top of the bed to make triangular, flat fold.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



**FIGURE C.** Tucking sheet under mattress.



**FIGURE D.** Placing top of triangular fold over mattress side.



**FIGURE E.** Tucking end of triangular linen fold under mattress to complete mitered corner.



**FIGURE F.** Tucking sheet snugly under mattress.

12. Place the top sheet on the bed with its center fold in the center of the bed and with the hem even with the head of the mattress. Unfold the top sheet. Follow same procedure with top blanket or spread, placing the upper edge about 6 inches below the top of the sheet.
13. Tuck the top sheet and blanket under the foot of the bed on the near side. Miter the corners.
14. Fold the upper 6 inches of the top sheet down over the spread and make a cuff.
15. Move to the other side of the bed and follow the same procedure for securing top sheets under the foot of the bed and making a cuff.

16. Place the pillows on the bed. Open each pillowcase in the same manner as you opened other linens. Gather the pillowcase over one hand toward the closed end. Grasp the pillow with the hand inside the pillowcase. Keep a firm hold on the top of the pillow and pull the cover onto the pillow. Place the pillow at the head of the bed.
17. Fan-fold or pie-fold the top linens.
18. Secure the signal device on the bed according to agency policy.
19. Adjust bed to low position.



20. Dispose of soiled linen according to agency policy. Perform hand hygiene.



## Making an Occupied Bed

If the patient cannot get out of bed, the linens may need to be changed with the patient still in the bed. This is termed an “occupied” bed. The following procedure explains how to make the bed using a fitted bottom sheet. Some facilities do not provide fitted bottom sheets, or sometimes a fitted bottom sheet may not be available.

### Equipment

- One large flat sheet
- One fitted sheet
- Drawsheet (optional)
- Blankets
- Bedspread
- Pillowcases
- Linen hamper or bag
- Bedside chair
- Protective pad (optional)
- Disposable gloves
- Additional PPE, as indicated

### Action

1. Check chart for limitations on patient’s physical activity.
2. Assemble equipment and arrange on bedside chair in the order the items will be used.
3. Perform hand hygiene. Put on PPE, as indicated.
4. Identify the patient. Explain what you are going to do.
5. Close curtains around bed and close the door to the room, if possible.
6. Adjust the bed to a comfortable working height, usually elbow height of the caregiver (VISN 8 Patient

### Rationale

- This facilitates patient cooperation, determines level of activity, and promotes patient safety.
- Organization facilitates performance of task.
- Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
- Patient identification validates the correct patient and correct procedure. Discussion and explanation allay anxiety and prepare the patient for what to expect.
- This ensures the patient’s privacy.
- Having the bed at the proper height prevents back and muscle strain.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

Safety Center, 2009).

7. Lower side rail nearest you, leaving the opposite side rail up. Place bed in flat position unless contraindicated. Having the mattress flat makes it easier to prepare a wrinkle-free bed.
8. Put on gloves. Check bed linens for patient's personal items. **Disconnect the call bell or any tubes/drains from bed linens.** Gloves prevent the spread of microorganisms. It is costly and inconvenient when personal items are lost. Disconnecting tubes from linens prevents discomfort and accidental dislodging of the tubes.
9. Place a bath blanket over patient. Have patient hold on to bath blanket while you reach under it and remove top linens (Figure 1). Leave top sheet in place if a bath blanket is not used. Fold linen that is to be reused over the back of a chair. Discard soiled linen in laundry bag or hamper. **Do not place on floor or furniture. Do not hold soiled linens against your uniform.** The blanket provides warmth and privacy. Placing linens directly into the hamper helps prevent the spread of microorganisms. The floor is heavily contaminated; soiled linen will further contaminate furniture. Soiled linen contaminates the nurse's uniform, and this may spread organisms to another patient.
10. If possible, and another person is available to assist, grasp mattress securely and shift it up to head of bed. This allows more foot room for the patient.
11. Assist patient to turn toward opposite side of the bed, and reposition pillow under patient's head. This allows the bed to be made on the vacant side.
12. Loosen all bottom linens from head, foot, and side of bed. This facilitates removal of linens.
13. Fan-fold soiled linens as close to patient as possible (Figure 2). This makes it easier to remove linens when the patient turns to the other side.



FIGURE 1. Removing top linens from under bath blanket.



FIGURE 2. Moving soiled linen as close to patient as possible





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

14. Use clean linen and make the near side of the bed. Place the bottom sheet with its center fold in the center of the bed (Figure 3). Open the sheet and fan-fold to the center, positioning it under the old linens (Figure 4). Pull the bottom sheet over the corners at the head and foot of the mattress.

Opening linens on the bed reduces strain on the nurse's arms and diminishes the spread of microorganisms. Centering the sheet ensures sufficient coverage for both sides of the mattress. Positioning under the old linens makes it easier to remove linens.



FIGURE 3. Placing bottom sheet with center fold in center of bed.



FIGURE 4. Fan-folding bottom sheet to the center, positioning it under the old linens.

15. If using, place the drawsheet with its center fold in the center of the bed and positioned so it will be located under the patient's midsection. Open the drawsheet and fan-fold to the center of the mattress. Tuck the drawsheet securely under the mattress (Figure 5). If a protective pad is used, place it over the drawsheet in the proper area and open to the center fold. Not all agencies use drawsheets routinely. The nurse may decide to use one.

If the patient soils the bed, drawsheet and pad can be changed without the bottom and top linens on the bed. A drawsheet can aid moving the patient in bed.

16. Raise side rail. Assist patient to roll over the folded linen in the middle of the bed toward you. Reposition pillow and bath blanket or top sheet. Move to other side of the bed and lower side rail.

This ensures patient safety. The movement allows the bed to be made on the other side. The bath blanket provides warmth and privacy.

17. Loosen and remove all bottom linen (Figure 6). Discard soiled linen in laundry bag or hamper. **Do not place on floor or furniture. Do not hold soiled linens against your uniform.**

Placing linens directly into the hamper helps prevent the spread of microorganisms. The floor is heavily contaminated; soiled linen will further contaminate furniture. Soiled linen contaminates the nurse's uniform, and this may spread organisms to another patient.



**FIGURE 5.** Tucking drawsheet tightly.

18. Ease clean linen from under the patient. Pull the bottom sheet taut and secure at the corners at the head and foot of the mattress. Pull the drawsheet tight and smooth. Tuck the drawsheet securely under the mattress.

19. Assist patient to turn back to the center of bed. Remove pillow and change pillowcase. Open each pillowcase in the same manner as you opened other linens. Gather the pillowcase over one hand toward the closed end. Grasp the pillow with the hand inside the pillowcase. Keep a firm hold on the top of the pillow and pull the cover onto the pillow. Place the pillow under the patient's head.

20. Apply top linen, sheet and blanket, if desired, so that it is centered. Fold the top linens over at the patient's shoulders to make a cuff. Have patient hold on to top linen and remove the bath blanket from underneath (Figure 7).

21. Secure top linens under foot of mattress and miter corners. Loosen top linens over patient's feet by grasping them in the area of the feet and pulling gently toward foot of bed.



**FIGURE 6.** Removing soiled bottom linens from other side of bed.

This removes wrinkles and creases in the linens, which are uncomfortable to lie on.

Opening linens by shaking them causes organisms to be carried on air currents.

This allows bottom hems to be tucked securely under the mattress and provides for privacy.

This provides for a neat appearance. Loosening linens over the patient's feet gives more room for movement.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



FIGURE 7. Removing bath blanket from under top linens.

22. Return patient to a position of comfort. Remove your gloves. Raise side rail and lower bed. Reattach call bell.

Promotes patient comfort and safety. Removing gloves properly reduces the risk for infection transmission and contamination of other items.

23. Dispose of soiled linens according to agency policy.

Deters the spread of microorganisms.

24. Remove any other PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## Providing Range-of-Motion Exercises

Range of motion (ROM) is the complete extent of movement of which a joint is normally capable. Taking part in routine activities of daily living helps to use muscle groups that keep many joints in an effective range of motion. When all or some of the normal activities are impossible, attention is given to the joints not being used or to those that have limited use. When the patient does the exercise for him- or herself, it is referred to as *active range of motion*. Exercises performed by the nurse without participation by the patient are referred to as *passive range of motion*. Exercises should be as active as the patient's physical condition permits. Allow the patient to do as much individual activity as his or her condition permits. Range-of-motion exercises should be initiated as soon as possible because body changes can occur after only 3 days of impaired mobility.

### Equipment

No special equipment or supplies are necessary to perform ROM exercises. If appropriate, nonsterile gloves and/or other PPE should be worn.

#### Action

#### Rationale

- |  |   |
|--|---|
| 1. Review the physician's orders and nursing plan of care for patient activity. Identify any movement limitations.   | Reviewing the order and plan of care validates the correct patient and correct procedure. Identification of limitations prevents injury.                              |
| 2. Perform hand hygiene and put on PPE, if indicated.  | Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.   |
| 3. Identify the patient. Explain the procedure to the patient.   | Patient identification validates the correct patient and correct procedure. Discussion and explanation help allay anxiety and prepare the patient for what to expect. |
| 4. Close curtains around bed and close the door to the room, if possible. Place the bed at an appropriate and comfortable working height, usually elbow height of the caregiver (VISN 8 Patient Safety Center, 2009). Adjust the head of the bed to a flat position or as low as the patient can tolerate. | Closing the door or curtains provides privacy. Proper bed height helps reduce back strain while performing the procedure.   |
| 5. Stand on the side of the bed where the joints are to be exercised. Lower side rail on that side, if in place. Uncover only the limb to be used during the exercise.   | Standing on the side to be exercised and lowering the side rail prevent strain on the nurse's back. Proper draping provides for privacy and warmth.                   |





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

6. Perform the exercises slowly and gently, providing support by holding the areas proximal and distal to the joint. Repeat each exercise two to five times, moving each joint in a smooth and rhythmic manner. **Stop movement if the patient complains of pain or if you meet resistance.**

Slow, gentle movements with support prevent discomfort and muscle spasms resulting from jerky movements. Repeated movement of muscles and joints improves flexibility and increases circulation to the body part. Pain may indicate the exercises are causing damage.

7. While performing the exercises, begin at the head and move down one side of the body at a time. **Encourage the patient to do as many of these exercises by him- or herself as possible.**

Proceeding from head to toe one side at a time promotes efficient time management and an organized approach to the task. Both active and passive exercises improve joint mobility and increase circulation to the affected part, but only active exercise increases muscle mass, tone, and strength and improves cardiac and respiratory functioning.

8. Move the chin down to rest on the chest (Figure 1). Return the head to a normal upright position (Figure 2). Tilt the head as far as possible toward each shoulder (Figure 3).

These movements provide for **flexion, extension,** and lateral flexion of the head and neck.

9. Move the head from side to side, bringing the chin toward each shoulder (Figure 4).

These movements provide for **rotation** of neck.



FIGURE 1. Moving patient's chin down to rest on chest.



FIGURE 2. Holding patient's head upright and centered.



**FIGURE 3.** Moving patient's head to one shoulder.

10. Start with the arm at the patient's side (Figure 5) and lift the arm forward to above the head (Figure 6). Return the arm to the starting position at the side of the body.



**FIGURE 4.** Moving patient's chin toward one shoulder.

These movements provide for flexion and extension of the shoulder.



**FIGURE 5.** Holding patient's arm at side.

11. With the arm back at the patient's side, move the arm laterally to an upright position above the head (Figure 7), and then return it to the original position. Move the arm across the body as far as possible (Figure 8).

12. Bend the elbow and move the lower arm and hand upward toward the shoulder (Figure 10). Return the lower arm and hand to the original position while straightening the elbow.



**FIGURE 6.** Lifting patient's arm above the patient's head.

These movements provide for internal and external rotation of the shoulder.

These movements provide for flexion and extension of the elbow.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



**FIGURE 9.** Raising the patient's arm until the upper arm is in line with the patient's shoulder, with elbow bent.

13. Rotate the lower arm and hand so the palm is up (Figure 11). Rotate the lower arm and hand so the palm of the hand is down.

14. Move the hand downward toward the inner aspect of the forearm (Figure 12). Return the hand to a neutral position even with the forearm (Figure 13). Then move the dorsal portion of the hand backward as far as possible.



**FIGURE 10.** Bending the patient's elbow, lower arm, and hand upward toward the shoulder.

These movements provide for **supination** and **pronation** of the forearm.

These movements provide for flexion, extension, and hyperextension of the wrist.



**FIGURE 11.** Rotating the patient's lower arm and hand so palm is up.



**FIGURE 12.** Moving the patient's hand downward toward the inner aspect of forearm.



FIGURE 13. Returning hand to the neutral position.

15. Bend the fingers to make a fist (Figure 14), and then straighten them out (Figure 15). Spread the fingers apart (Figure 16) and return them back together. Touch the thumb to each finger on the hand (Figure 17).

These movements provide for flexion, extension, abduction, and adduction of the fingers.



FIGURE 14. Bending patient's fingers to make a fist.



FIGURE 15. Straightening out the patient's fingers.





**FIGURE 16.** Spreading the patient's fingers apart.

16. Extend the leg and lift it upward (Figure 18). Return the leg to the original position beside the other leg.



**FIGURE 17.** Assisting patient to touch thumb to each finger.

These movements provide for flexion and extension of the hip.



**FIGURE 18.** Extending and lifting the patient's leg.

17. Lift the leg laterally away from the patient's body (Figure 19). Return the leg back toward the other leg and try to extend it beyond the midline (Figure 20).

These movements provide for abduction and adduction of the hip.



**FIGURE 19.** Lifting the patient's leg laterally away from the body (abduction).

18. Turn the foot and leg toward the other leg to rotate it internally (Figure 21). Turn the foot and leg outward away from the other leg to rotate it externally (Figure 22).



**FIGURE 20.** Returning the leg back toward the other leg and trying to extend it beyond the midline, if possible.

These movements provide for internal and external rotation of the hip.



**FIGURE 21.** Turning the patient's foot and leg toward the opposite leg to rotate it internally.

19. Bend the leg and bring the heel toward the back of the leg (Figure 23). Return the leg to a straight position (Figure 24).

20. At the ankle, move the foot up and back until the toes are upright (Figure 25). Move the foot with



**FIGURE 22.** Turning the patient's foot and leg outward away from the opposite leg to rotate it externally.

These movements provide for flexion and extension of the knee.

These movements provide for dorsiflexion and plantar flexion of the ankle.





the toes pointing downward (Figure 26).

21. Turn the sole of the foot toward the midline (Figure 27). Turn the sole of the foot outward (Figure 28).

These movements provide for inversion and eversion of the ankle.



**FIGURE 23.** Bending the patient's leg and bringing the heel toward the back of the leg.



**FIGURE 24.** Returning the leg to a straight position.



**FIGURE 25.** At the ankle, moving the patient's foot up and back until the toes are upright.



**FIGURE 26.** Moving the patient's foot with the toes pointing down.



**FIGURE 27.** Turning the sole toward the midline.



**FIGURE 28.** Turning the sole outward.

22. Curl the toes downward (Figure 29), and then straighten them out (Figure 30). Spread the toes apart (Figure 31) and bring them together (Figure 32).

These movements provide for flexion, extension, abduction, and adduction of the toes.



**FIGURE 29.** Curling the patient's toes downward.



**FIGURE 30.** Straightening the patient's toes.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



**FIGURE 31.** Spreading the patient's toes apart.

23. Repeat these exercises on the other side of the body. Encourage the patient to do as many of these exercises by him- or herself as possible.

**24. When finished, make sure the patient is comfortable, with the side rails up and the bed in the lowest position.**

25. Remove gloves and any other PPE, if used. Perform hand hygiene.



**FIGURE 32.** Bringing the patient's toes together.

Repeating motions on the other side provides exercise for the entire body.

Proper positioning with raised side rails and proper bed height provides for patient comfort and safety.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.



## Giving a Back Massage

Massage has many benefits, including general relaxation and increased circulation. Massage can help alleviate pain (The Joint Commission, 2008). A back massage can be incorporated into the patient's bath, as part of care before bedtime, or at any time to promote increased patient comfort. Some nurses do not always give back massages to patients because they do not think they have sufficient time. However, giving a back massage provides an opportunity for the nurse to observe the skin for signs of breakdown. It improves circulation; decreases pain, symptom distress, and anxiety; improves sleep quality; and also provides a means of communicating with the patient through the use of touch. A back massage also provides cutaneous stimulation as a method of pain relief.

Because some patients consider the back massage a luxury and may be reluctant to accept it, communicate its importance and value to the patient. An effective back massage should take 4 to 6 minutes to complete. A lotion is usually used; warm it before applying to the back. Be aware of the patient's medical diagnosis when considering giving a back massage. A back massage is contraindicated, for example, when the patient has had back surgery or has fractured ribs. Position the patient on the abdomen or, if this is contraindicated, on the side for a back massage.

### Equipment

- Massage lubricant or lotion, warmed
- Pain assessment tool and/or scale
- Powder, if not contraindicated
- Bath blanket
- Towel
- Nonsterile gloves, if indicated
- Additional PPE, as indicated

### Action

### Rationale

- |   |   |
|---|---|
| 1. Perform hand hygiene and put on PPE, if indicated.             | Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions. |
| 2. Identify the patient.  | Identifying the patient ensures the right patient receives the intervention and helps prevent errors.         |
| 3. Offer a back massage to the patient and explain the procedure. | Explanation encourages patient understanding and cooperation and reduces apprehension.                        |
| 4. Put on gloves, if indicated.                                   | Gloves are not usually necessary. Gloves prevent contact with blood and body fluid.                           |



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

5. Close room door and/or curtain.

Closing the door or curtain provides privacy, promotes relaxation, and reduces noise and stimuli that may aggravate pain and reduce comfort.

6. Assess the patient's pain, using an appropriate assessment tool and measurement scale.

Accurate assessment is necessary to guide treatment and relief interventions and to evaluate the effectiveness of pain control measures.

7. Raise the bed to a comfortable working position, usually elbow height of the caregiver (VISN 8 Patient Safety Center, 2009), and lower the side rail.

Having the bed at the proper height prevents back and muscle strain.

8. Assist the patient to a comfortable position, preferably the prone or side-lying position. Remove the covers and move the patient's gown just enough to expose the patient's back from the shoulders to sacral area. Drape the patient, as needed, with the bath blanket.

This position exposes an adequate area for massage. Draping the patient provides privacy and warmth.

9. Warm the lubricant or lotion in the palm of your hand, or place the container in small basin of warm water. **During massage, observe the patient's skin for reddened or open areas. Pay particular attention to the skin over bony prominences.** (See Chapter 8, Skin Integrity and Wound Care, for detailed information regarding skin assessment.)

Cold lotion causes chilling and discomfort. Pressure may interfere with circulation and lead to pressure ulcers.

10. Using light, gliding strokes (*effleurage*), apply lotion to patient's shoulders, back, and sacral area (Figure 1).

Effleurage relaxes the patient and lessens tension.

11. Place your hands beside each other at the base of the patient's spine and stroke upward to the shoulders and back downward to the buttocks in slow, continuous strokes (Figure 2). Continue for several minutes.

Continuous contact is soothing and stimulates circulation and muscle relaxation.



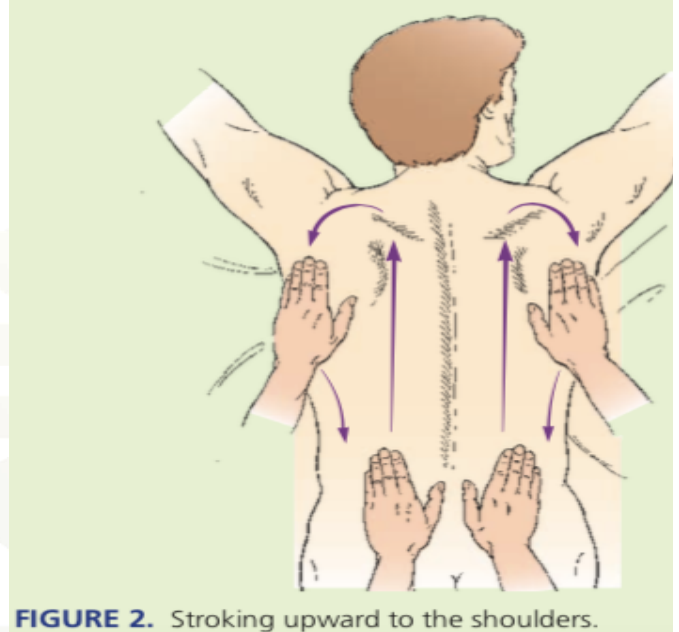


**FIGURE 1.** Using effleurage on a patient's back.

12. Massage the patient's shoulder, entire back, areas over iliac crests, and sacrum with circular stroking motions. **Keep your hands in contact with the patient's skin.** Continue for several minutes, applying additional lotion, as necessary.

13. Knead the patient's skin by gently alternating grasping and compression motions (*pétrissage*) (Figure 3).

14. Complete the massage with additional long, stroking movements that eventually become lighter in pressure (Figure 4).



**FIGURE 2.** Stroking upward to the shoulders.

A firm stroke with continuous contact promotes relaxation.

Kneading increases blood circulation.

Long, stroking motions are soothing and promote relaxation; continued stroking with gradual lightening of pressure helps extend the feeling of relaxation.

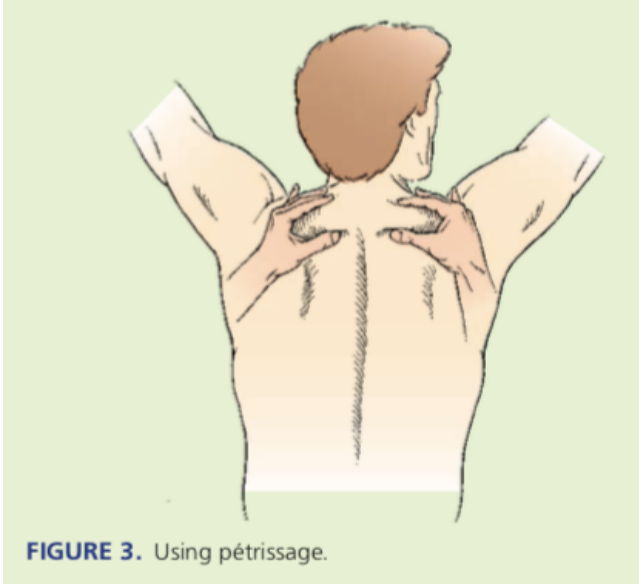


FIGURE 3. Using pétrissage.

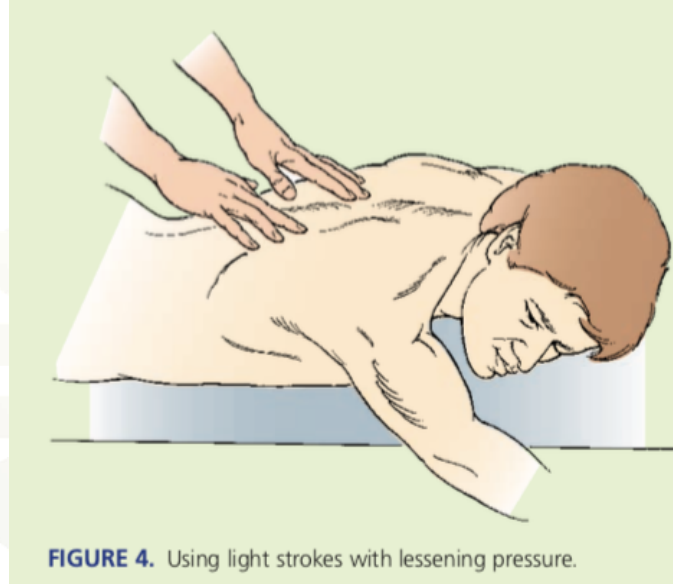


FIGURE 4. Using light strokes with lessening pressure.

15. Use the towel to pat the patient dry and to remove excess lotion.

Drying provides comfort and reduces the feeling of moisture on the back.

16. Remove gloves, if worn. Reposition patient's gown and covers. Raise side rail and lower bed. Assist patient to a position of comfort.

Repositioning bedclothes, linens, and the patient helps to promote patient comfort and safety.

17. Remove additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents transmission of microorganisms.

18. Evaluate the patient's response to interventions. Reassess level of discomfort or pain using original assessment tools. Reassess and alter plan of care, as appropriate.

Reassessment allows for individualization of the patient's plan of care and promotes optimal patient comfort.



## Inserting a Nasogastric (NG) Tube

The **nasogastric (NG) tube** is passed through the nose and into the stomach. This type of tube permits the patient to receive nutrition through a tube feeding using the stomach as a natural reservoir for food. Another purpose of an NG tube may be to decompress or to drain unwanted fluid and air from the stomach. This application would be used, for example, to allow the intestinal tract to rest and promote healing after bowel surgery. The NG tube can also be used to monitor bleeding in the gastrointestinal (GI) tract, to remove undesirable substances (lavage) such as poisons, or to help treat an intestinal obstruction.

### Equipment

- Nasogastric tube of appropriate size (8–18 French)
- Stethoscope
- Water-soluble lubricant
- Normal saline solution or sterile water, for irrigation, depending on facility policy
- Tongue blade
- Irrigations set, including a Toomey (20–50 mL)
- Flashlight
- Non-allergenic tape (1” wide)
- Tissues
- Glass of water with straw
- Topical anesthetic (lidocaine spray or gel) (optional)
- Clamp
- Suction apparatus (if ordered)
- Bath towel or disposable pad
- Emesis basin
- Safety pin and rubber band
- Nonsterile disposable gloves
- Additional PPE, as indicated
- Tape measure, or other measuring device
- Skin barrier
- pH paper

### Action

1. Verify the medical order for insertion of an NG tube.

2. Perform hand hygiene and put on PPE, if indicated.

### Rationale

Ensures the patient receives the correct treatment.

Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

precautions.

3. Identify the patient.

Identifying the patient ensures the right patient receives the intervention and helps prevent errors.

4. Explain the procedure to the patient and provide the rationale as to why the tube is needed. Discuss the associated discomforts that may be experienced and possible interventions that may allay this discomfort. Answer any questions as needed.

Explanation facilitates patient cooperation. Some patient surveys report that of all routine procedures, the insertion of an NG tube is considered the most painful. Lidocaine gel or sprays are possible options to decrease discomfort during NG tube insertion.

5. Gather equipment, including selection of the appropriate NG tube.

This provides for an organized approach to task. NG tubes should be radiopaque, contain clearly visible markings for measurement, and may have multiple ports for aspiration.

6. Close the patient's bedside curtain or door. Raise bed to a comfortable working position; usually elbow height of the caregiver (VISN 8, 2009). Assist the patient to high Fowler's position or elevate the head of the bed 45 degrees if the patient is unable to maintain upright position (Figure 1). Drape chest with bath towel or disposable pad. Have emesis basin and tissues handy.

Closing curtains or door provides for patient privacy. Having the bed at the proper height prevents back and muscle strain. Upright position is more natural for swallowing and protects against bronchial intubation aspiration, if the patient should vomit. Passage of tube may stimulate gagging and tearing of eyes.



**FIGURE 1.** Placing patient in semi- to high Fowler's position in preparation for tube insertion.

**7. Measure the distance to insert tube by placing tip of tube at patient's nostril and extending to tip of earlobe and then to tip of xiphoid process (Figures 2 and 3). Mark tube with an indelible marker.**

Measurement ensures that tube will be long enough to enter patient's stomach.



FIGURE 2. Measuring NG tube from nostril to tip of earlobe

8. Put on gloves. Lubricate tip of tube (at 2" – 4") water-soluble lubricant. Apply topical anesthetic to nostril and oropharynx, as appropriate.

9. After selecting the appropriate nostril, ask patient to slightly flex head back against the pillow. Gently insert the tube into the nostril while directing the tube upward and backward along the floor of the nose (Figure 4). Patient may gag when tube reaches pharynx. Provide tissues for tearing or watering of eyes. Offer comfort and reassurance to the patient.

10. When pharynx is reached, instruct patient to touch chin to chest. Encourage patient to sip water through a straw or swallow even if no fluids are permitted. Advance tube in downward and backward direction when patient swallows (Figure 5). Stop when patient breathes. **If gagging and coughing persist, stop advancing the tube and check placement of tube with tongue blade and flashlight.** If tube is curled, straighten the tube and attempt to advance again. Keep advancing tube until pen marking is reached. **Do not use force.**



FIGURE 3. Measuring NG tube from tip of earlobe to xiphoid process.

Lubrication reduces friction and facilitates passage of the tube into stomach. Water-soluble lubricant will not cause pneumonia if tube accidentally enters the lungs. Topical anesthetics act as local anesthetics, reducing discomfort. Consult the physician for an order for a topical anesthetic such as lidocaine gel or spray if needed.

Following the normal contour of the nasal passage while inserting the tube reduces irritation and the likelihood of mucosal injury. The tube stimulates the gag reflex readily. Tears are a natural response as the tube passes into the nasopharynx. Many patients report that gagging and throat discomfort can be more painful than passing through the nostrils.

Bringing the head forward helps close the trachea and open the esophagus. Swallowing helps advance the tube, causes the epiglottis to cover the opening of the trachea, and helps to eliminate gagging and coughing. Excessive coughing and gagging may occur if the tube has curled in the back of throat. Forcing the tube may injure mucous membranes.



Rotate tube if it meets resistance.



**FIGURE 4.** Beginning insertion with patient positioned with head up.

**11. Discontinue procedure and remove tube if there are signs of distress, such as gasping, coughing, cyanosis, and inability to speak or hum.**

12. Secure the tube loosely to the nose or cheek until it is determined that the tube is in the patient's stomach:

a. Attach syringe to end of tube and aspirate a small amount of stomach contents.

b. Measure the pH of aspirated fluid using pH paper or a meter. Place a drop of gastric secretions onto pH paper or place small amount in plastic cup and dip the pH paper into it. Within 30 seconds,



**FIGURE 5.** Advancing tube while patient drops chin to chest and swallows.

The tube is in the airway if the patient shows signs of distress and cannot speak or hum. If after three attempts, nasogastric insertion is unsuccessful, another nurse may try or the patient should be referred to another healthcare professional.

Securing with tape stabilizes the tube while position is being determined.

The tube is in the stomach if its contents can be aspirated: pH of aspirate can then be tested to determine gastric placement. If unable to obtain specimen, reposition the patient and flush the tube with 30 mL of air. This action may be necessary several times. Current literature recommends that the nurse ensures proper placement of the NG tube by relying on multiple methods and not on one method alone.

Current research demonstrates that the use of pH is predictive of correct placement. The pH of gastric contents is acidic (less than 5.5). If patient is taking an acid-inhibiting agent, the range may be 4.0 to 6.0. The





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

compare the color on the paper with the chart supplied by the manufacturer (Figure 6).

pH of intestinal fluid is 7.0 or higher. The pH of respiratory fluid is 6.0 or higher. This method will not effectively differentiate between intestinal fluid and pleural fluid.

c. Visualize aspirated contents, checking for color and consistency.

Gastric fluid can be green with particles, off-white, or brown if old blood is present. Intestinal aspirate tends to look clear or straw-colored to a deep golden-yellow color. Also, intestinal aspirate may be greenish-brown if stained with bile. Respiratory or tracheobronchial fluid is usually off-white to tan and may be tinged with mucus. A small amount of blood-tinged fluid may be seen immediately after NG insertion.

d. Obtain radiograph (x-ray) of placement of tube, based on facility policy (and ordered by physician).

The x-ray is considered the most reliable method for identifying the position of the NG tube.

13. Apply skin barrier to tip and end of nose and allow to dry. Remove gloves and secure tube with a commercially prepared device (follow manufacturer's directions) or tape to patient's nose. To secure with tape:

Skin barrier improves adhesion and protects skin. Constant pressure of the tube against the skin and mucous membranes may cause tissue injury. Securing tube prevents migration of the tube inward and outward.

a. Cut a 4" piece of tape and split bottom 2" or use packaged nose tape for NG tubes (Figure 7).

b. Place unsplit end over bridge of patient's nose (Figure 8).

c. Wrap split ends under tubing and up and over on to nose (Figure 9). **Be careful not to pull tube too tightly against nose.**



FIGURE 6. Checking pH of gastric fluid.



FIGURE 7. Making a 2" cut into a 4" strip of tape.



FIGURE 8. Applying tape to patient's nose.



FIGURE 9. Wrapping split ends around NG tube.

14. Put on gloves. Clamp tube and remove the syringe. Cap the tube or attach tube to suction (Figure 10) according to the medical orders

15. Measure length of exposed tube. Reinforce marking on tube at nostril with indelible ink. Ask the patient to turn their head to the side opposite the nostril the tube is inserted. Secure tube to patient's gown by using rubber band or tape and safety pin. For additional support, tube can be taped onto patient's cheek using a piece of tape. **If a double-lumen tube (e.g., Salem sump) is used, secure vent above stomach level.** Attach at shoulder level

Suction provides for decompression of stomach and drainage of gastric contents.

Tube length should be checked and compared with this initial measurement, in conjunction with pH measurement and visual assessment of aspirate. An increase in the length of the exposed tube may indicate dislodgement (Bourgault, et al., 2007; Smeltzer et al., 2010). The tube should be marked with an indelible marker at the nostril. This marking should be assessed each time the tube is used to ensure the tube has not become displaced. Securing prevents tension and



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

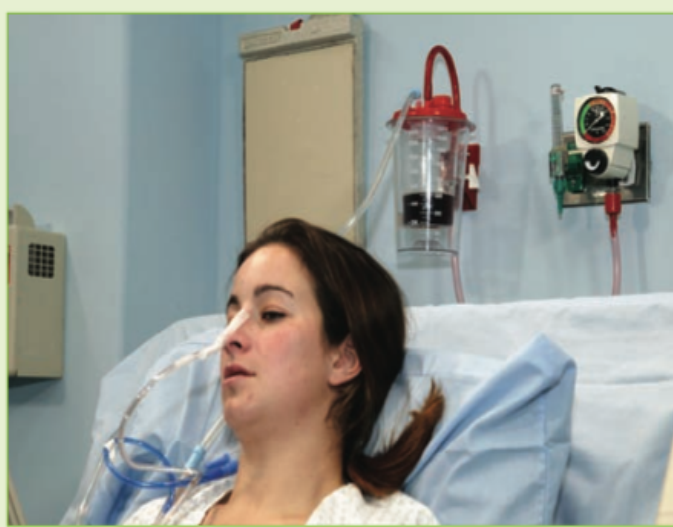
المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

(Figure 11).

tugging on the tube. Turning the head ensures adequate slack in the tubing to prevent tension when the patient turns their head. Securing the double-lumen tube above stomach level prevents seepage of gastric contents and keeps the lumen clear for venting air.



**FIGURE 10.** Attaching NG tube to wall suction.



**FIGURE 11.** Patient with Salem sump tube (NG) secured. I blue vent at patient's shoulder.

16. Assist with or provide oral hygiene at 2- to 4-hour intervals. Lubricate the lips generously and clean nares and lubricate as needed. Offer analgesic throat lozenges or anesthetic spray for throat irritation if needed.

Oral hygiene keeps mouth clean and moist, promotes comfort, and reduces thirst.

17. Remove equipment and return patient to a position of comfort. Remove gloves. Raise side rail and lower bed.

Promotes patient comfort and safety. Removing gloves properly reduces the risk for infection transmission and contamination of other items.

18. Remove additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents transmission of microorganisms.





## Administering a Tube Feeding

Depending on the patient's physical and psychosocial condition and nutritional requirements, a feeding through the NG tube or other GI tube might be ordered. The steps for administering feedings are similar regardless of the tube used. Feeding can be provided on an intermittent or continuous basis. Intermittent feedings are delivered at regular intervals, using gravity for instillation or a feeding pump to administer the formula over a set period of time. Intermittent feedings might also be given as a bolus, using a syringe to instill the formula quickly in one large amount. Intermittent feedings are the preferred method, introducing the formula over a set period of time via gravity or pump. If the order calls for continuous feeding, an external feeding pump is needed to regulate the flow of formula. Continuous feedings permit gradual introduction of the formula into the GI tract, promoting maximal absorption. However, there is a risk of both reflux and aspiration with this method. Feeding intolerance is less likely to occur with smaller volumes. Hanging smaller amounts of feeding also reduces the risk for bacteria growth and contamination of feeding at room temperature (when using open systems).

### Equipment

- Prescribed tube feeding formula at room temperature
- Feeding bag or prefilled tube feeding set
- Stethoscope
- Nonsterile gloves
- Additional PPE, as indicated
- Alcohol preps
- Disposable pad or towel
- Asepto or Toomey syringe
- Enteral feeding pump (if ordered)
- Rubber band
- Clamp (Hoffman or butterfly)
- IV pole
- Water for irrigation and hydration as needed
- pH paper
- Tape measure, or other measuring device

### Action

1. Assemble equipment. Check amount, concentration, type, and frequency of tube feeding on patient's chart. Check expiration date of formula.

2. Perform hand hygiene and put on PPE, if indicated.

### Rationale

This provides for organized approach to task. Checking ensures that correct feeding will be administered. Outdated formula may be contaminated.

Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

- transmission precautions.
3. Identify the patient. Identifying the patient ensures the right patient receives the intervention and helps prevent errors.
  4. Explain the procedure to the patient and why this intervention is needed. Answer any questions as needed. Explanation facilitates patient cooperation.
  5. Assemble equipment on overbed table within reach. Organization facilitates performance of task.
  6. Close the patient's bedside curtain or door. Raise bed to a comfortable working position, usually elbow height of the caregiver (VISN 8, 2009). Perform key abdominal assessments as described above. Closing curtains or door provides for patient privacy. Having the bed at the proper height prevents back and muscle strain. Due to changes in patient's condition, assessment is vital before initiating the intervention.
- 7. Position patient with head of bed elevated at least 30 to 45 degrees or as near normal position for eating as possible.** This position minimizes possibility of aspiration into trachea. Patients who are considered at high risk for aspiration should be assisted to at least a 45-degree position.
8. Put on gloves. Unpin tube from patient's gown. Verify the position of the marking on the tube at the nostril. Measure length of exposed tube and compare with the documented length. Gloves prevent contact with blood and body fluids. The tube should be marked with an indelible marker at the nostril. This marking should be assessed each time the tube is used to ensure the tube has not become displaced. Tube length should be checked and compared with this initial measurement, in conjunction with pH measurement and visual assessment of aspirate. An increase in the length of the exposed tube may indicate dislodgement (Bourgault, et al., 2007; Smeltzer et al., 2010).
  9. Attach syringe to end of tube and aspirate a small amount of stomach contents, as described in Skill 11-2 (Figure 1). The tube is in the stomach if its contents can be aspirated: pH of aspirate can then be tested to determine gastric placement. If unable to obtain specimen, reposition the patient and flush the tube with 30 mL of air. This action may be necessary several times. Current literature recommends that the nurse ensures proper placement of the NG tube by relying on multiple methods and not on one method alone.



FIGURE 1. Aspirating gastric contents.

10. Check the pH .

Current research demonstrates that the use of pH is predictive of correct placement. The pH of gastric contents is acidic (less than 5.5). If patient is taking an acid-inhibiting agent, the range may be 4.0 to 6.0. The pH of intestinal fluid is 7.0 or higher. The pH of respiratory fluid is 6.0 or higher. This method will not effectively differentiate between intestinal fluid and pleural fluid.

The testing for pH before the next feeding in intermittent feedings is conducted since the stomach has been emptied of the feeding formula. However, if the patient is receiving continuous feedings, the pH measurement is not as useful, since the formula raises the pH.

11. Visualize aspirated contents, checking for color and consistency.

Gastric fluid can be green with particles, off-white, or brown if old blood is present. Intestinal aspirate tends to look clear or straw-colored to a deep golden-yellow color. Also, intestinal aspirate may be greenish-brown if stained with bile. Respiratory or tracheobronchial fluid is usually off-white to tan and may be tinged with mucus. A small amount of blood-tinged fluid may be seen immediately after NG insertion.

12. If it is not possible to aspirate contents; assessments to check placement are inconclusive; the exposed tube length has changed; or there are any other indications

The x-ray is considered the most reliable method for identifying the position of the NG tube.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

that the tube is not in place, check placement by x-ray.

13. After multiple steps have been taken to ensure that the feeding tube is located in the stomach or small intestine, **aspirate all gastric contents with the syringe and measure to check for the residual amount of feeding in the stomach.** Return the **residual** based on facility policy. Proceed with feeding if amount of residual does not exceed agency policy or the limit indicated in the medical record.

Checking for residual before each feeding or every 4 to 6 hours during a continuous feeding according to institutional policy is implemented to identify delayed gastric emptying. Research suggests continuing the feedings with residuals up to 400 mL. If greater than 400 mL, confer with physician or hold feedings according to agency policy. For patients who are experiencing gastric dysfunction or decreased level of consciousness, feedings may be held for smaller residual amounts (<400 mL) (Bourgault et al., 2007; Keithley & Swanson, 2004; Metheny, 2008). Research findings are inconclusive on the benefit of returning gastric volumes to the stomach or intestine to avoid fluid or electrolyte imbalance, which has been accepted practice. Consult agency policy concerning this practice.

14. Flush tube with 30 mL of water for irrigation. Disconnect syringe from tubing and cap end of tubing while preparing the formula feeding equipment. Remove gloves.

Flushing tube prevents occlusion. Capping the tube deters the entry of microorganisms and prevents leakage onto the bed linens.

15. Put on gloves before preparing, assembling and handling any part of the feeding system.

Gloves prevent contact with blood and body fluids and deter transmission of contaminants to feeding equipment and/or formula.

16. Administer feeding.

### When Using a Feeding Bag (Open System)

a. Label bag and/or tubing with date and time. Hang bag on IV pole and adjust to about 12" above the stomach. Clamp tubing.

Labeling date and time of first use allows for disposal within 24 hours, to deter growth of microorganisms. Proper feeding bag height reduces risk of formula being introduced too quickly.

b. Check the expiration date of the formula. Cleanse top of feeding container with a disinfectant before opening it (Figure 2). Pour formula into feeding bag and allow solution to run through tubing. Close clamp.

Cleansing container top with alcohol minimizes risk for contaminants entering feeding bag (Padula, et al., 2004). Formula displaces air in tubing.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

c. Attach feeding setup to feeding tube, open clamp and regulate drip according to the medical order, or allow feeding to run in over 30 minutes (Figure 3).

Introducing formula at a slow, regular rate allows the stomach to accommodate to the feeding and decreases GI distress.

**d. Add 30 to 60 mL (1–2 oz) of water for irrigation to feeding bag when feeding is almost completed and allow it to run through the tube (Figure 4).**

Water rinses the feeding from the tube and helps to keep it patent.

e. Clamp tubing immediately after water has been instilled. Disconnect **feeding setup** from feeding tube. Clamp tube and cover end with cap (Figure 5).

Clamping the tube prevents air from entering the stomach. Capping the tube deters entry of microorganisms and covering end of tube protects patient and linens from fluid leakage from tube.



**FIGURE 2.** Cleaning top of feeding container with alcohol before opening it.



**FIGURE 3.** Attaching feeding bag tubing to NG tube



FIGURE 4. Pouring water into feeding bag.



FIGURE 5. Capping NG tube after it is clamped.

### When Using a Large Syringe (Open System)

- Remove plunger from 30- or 60-mL syringe (Figure 6).
- Attach syringe to feeding tube, pour premeasured amount of tube feeding formula into syringe (Figure 7), open clamp, and allow food to enter tube. **Regulate rate, fast or slow, by height of the syringe. Do not push formula with syringe plunger.**
- Add 30 to 60mL (1–2oz) of water for irrigation to syringe (Figure 8) when feeding is almost completed, and allow it to run through the tube.**
- When syringe has emptied, hold syringe high and disconnect from tube. Clamp tube and cover end with cap.

Introducing the formula at a slow, regular rate allows the stomach to accommodate to the feeding and decreases GI distress. The higher the syringe is held, the faster the formula flows.

Water rinses the feeding from the tube and helps to keep it patent.

By holding syringe high, the formula will not backflow out of tube and onto patient. Clamping the tube prevents air from entering the stomach. Capping end of tube deters entry of microorganisms. Covering the end protects patient and linens from fluid leakage from tube.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



FIGURE 6. Removing plunger from a 60-mL syringe.



FIGURE 7. Pouring formula into syringe.



FIGURE 8. Pouring water into almost-empty syringe.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

### When Using an Enteral Feeding Pump

a. Close flow-regulator clamp on tubing and fill feeding bag with prescribed formula. Amount used depends on agency policy. Place label on container with patient's name, date, and time the feeding was hung.

Closing clamp prevents formula from moving through tubing until nurse is ready. Labeling date and time of first use allows for disposal within 24 hours, to deter growth of microorganisms.

b. Hang feeding container on IV pole. **Allow solution to flow through tubing.**

This prevents air from being forced into the stomach or intestines.

c. Connect to feeding pump following manufacturer's directions. Set rate (Figure 9). Maintain the patient in the upright position throughout the feeding. If the patient needs to temporarily lie flat, the feeding should be paused. The feeding may be resumed after the patient's position has been changed back to at least 30 to 45 degrees.

Feeding pumps vary. Some of the newer pumps have built-in safeguards that protect the patient from complications. Safety features include cassettes that prevent free-flow of formula, automatic tube flush, safety tips that prevent accidental attachment to an IV setup, and various audible and visible alarms. Feedings are started at full strength rather than diluting the feeding, which was recommended previously. A smaller volume, 10 to 40 mL, of feeding infused per hour and gradually increased has been shown to be more easily tolerated by patients.

d. **Check placement of tube and gastric residual every 4 to 6 hours.**

Checking placement verifies the tube has not moved out of the stomach. Checking gastric residual (outlined in Step 7) monitors absorption of the feeding and prevents distention, which could lead to aspiration. However, presence of large amounts of residual, such as more than 250 to 400 mL, should not be the sole criteria for stopping the enteral feeding (Bourgault, et al., 2007; Metheny, 2008).



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



**FIGURE 9.** Setting up feeding pump with feeding bag and primed tubing.

17. Observe the patient's response during and after tube feeding and assess the abdomen at least once a shift.

Pain or nausea may indicate stomach distention, which may lead to vomiting. Physical signs such as abdominal distention and firmness or regurgitation of tube feeding may indicate intolerance.

**18. Have patient remain in upright position for at least 1 hour after feeding.**

This position minimizes risk for backflow and discourages aspiration, if any reflux or vomiting should occur.

19. Remove equipment and return patient to a position of comfort. Remove gloves. Raise side rail and lower bed.

Promotes patient comfort and safety. Removing gloves properly reduces the risk for infection transmission and contamination of other items.

20. Put on gloves. Wash and clean equipment or replace according to agency policy. Remove gloves.

This prevents contamination and deters spread of microorganisms. Reusable systems are cleansed with soap and water with each use and replaced every 24 hours. Refer to agency's policy and manufacturers' guidelines for specifics on equipment care.

21. Remove additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents transmission of microorganisms.





## Skill Variation Using a Prefilled Tube-Feeding Set (Closed System)

Prefilled tube-feeding solutions, which are considered closed systems, are frequently used to provide patient nourishment (Figure A). Closed systems contain sterile feeding solutions in ready-to-hang containers. This method reduces the opportunity for bacterial contamination of the feeding formula. In general, these prefilled feedings are administered via an enteral pump.

1. Verify the medical order.
2. Gather all equipment, checking the feeding solution and container for correct solution and expiration date. Label with patient's name, type of solution, and prescribed rate.
3. Perform hand hygiene.



4. Identify the patient and explain the procedure.



Prefilled tube feedings in plastic containers and ready-to-use feeding in a can. (Reprinted with permission from Abbott Laboratories, Ross Products Division.)

5. Put on gloves and additional PPE, as indicated.
6. Ensure the correct placement of the feeding tube through checking marking on tube at nose (if NG tube), checking length of exposed tube, aspiration of stomach contents, and checking for gastric or intestinal pH.
7. Check for residual amount of feeding in the stomach and return residual as ordered.
8. Flush tube with 30 mL of water.
9. Put on nonsterile gloves and remove screw on cap, and attach administration setup with drip chamber and tubing.
10. Hang feeding container on IV pole and connect to feeding pump, allowing solution to flow through tubing, following manufacturer's directions.
11. Attach the feeding setup to the patient's feeding tube.
12. Open the clamp of the patient's feeding tube.
13. Turn on the pump.
14. Set the pump at the prescribed rate of flow and remove the nonsterile gloves.
15. Observe the patient's response during the tube feeding.
16. Continue to assess the patient for signs and symptoms of gastrointestinal distress, such as nausea, abdominal distention, or absence of bowel sounds.
17. Have patient remain in the upright position throughout the feeding and for at least 1 hour after feeding. If patient's position needs to be changed to a supine position or turned in bed, pause the feeding pump during this time.
18. After the prescribed amount of feeding has been administered or according to agency policy, turn off the pump, put on nonsterile gloves, clamp the feeding tube, and disconnect the feeding tube from the feeding set tube, capping the end of the feeding set.
19. Draw up 30 to 60 mL of water using a syringe.
20. Attach the syringe to the feeding tube, unclamp the feeding tube, and instill the 30 to 60 mL of water into the feeding tube.
21. Clamp the feeding tube.
22. Remove equipment according to agency policy.
23. Provide for any patient needs.
24. Remove gloves and additional PPE, if used. Perform hand hygiene.



## Removing a Nasogastric (NG) Tube

When the NG tube is no longer necessary for treatment, the physician will order the tube to be removed. The NG tube is removed as carefully as it was inserted, to provide as much comfort as possible for the patient and to prevent complications. When the tube is removed, the patient must hold his or her breath to prevent aspiration of any secretions or fluid left in the tube as it is removed.

### Equipment

- Tissues
- 50-mL syringe (optional)
- Nonsterile gloves
- Additional PPE, as indicated
- Stethoscope
- Disposable plastic bag
- Bath towel or disposable pad
- Normal saline solution for irrigation (optional)
- Emesis basin

### Action

### Rationale

1. Check medical order for removal of NG tube.  
This ensures correct implementation of physician's order.
2. Perform hand hygiene and put on PPE, if indicated.  
Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
3. Identify the patient.  
Identifying the patient ensures the right patient receives the intervention and helps prevent errors.
4. Explain the procedure to the patient and why this intervention is warranted. Describe that it will entail a quick few moments of discomfort. Perform key abdominal assessments as described above.  
Patient cooperation is facilitated when explanations are provided. Due to changes in patient's condition, assessment is vital before initiating intervention.
5. Pull the patient's bedside curtain. Raise bed to a comfortable working position, usually elbow height of the caregiver (VISN 8, 2009). Assist the patient into a 30- to 45-degree position. Place towel or disposable pad across patient's chest (Figure 1). Give tissues and emesis basin to patient.  
Provides for privacy. Appropriate working height facilitates comfort and proper body mechanics for the nurse. Towel or pad protects patient from contact with gastric secretions. Emesis basin is helpful if patient vomits or gags. Tissues are necessary if patient wants to



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

6. Put on gloves. Discontinue suction and separate tube from suction. Unpin tube from patient's gown and carefully remove adhesive tape from patient's nose.

7. Check placement and **attach syringe and flush with 10 mL of water or normal saline solution (optional) or clear with 30 to 50 mL of air (Figure 2).**



**FIGURE 1.** Placing towel or disposable pad across patient's chest.

**8. Clamp tube with fingers by doubling tube on itself (Figure 3). Instruct patient to take a deep breath and hold it. Quickly and carefully remove tube while patient holds breath.** Coil the tube in the disposable pad as you remove from the patient.

9. Dispose of tube per agency policy. Remove gloves and place in bag. Perform hand hygiene.

10. Offer mouth care to patient and facial tissue to blow nose. Lower the bed and assist the patient to a position of comfort as needed.

11. Remove equipment and raise side rail and lower bed.

12. Put on gloves and measure the amount of nasogastric

blow his or her nose when tube is removed.

Gloves prevent contact with blood and body fluids. Disconnecting tube from suction and the patient allows for its unrestricted removal.

Air or saline solution clears the tube of secretions, feeding, or debris.



**FIGURE 2.** Flushing NG tube with 10 mL saline.

Clamping prevents drainage of gastric contents into the pharynx and esophagus. The patient holds their breath to prevent accidental aspiration of gastric secretions in tube.

Careful removal minimizes trauma and discomfort for patient. Containing the tube in a towel while removing prevents leakage onto the patient.

This prevents contamination with microorganisms. Follow the biohazard policy of the institution.

These interventions promote patient comfort.

Promotes patient comfort and safety.

Irrigation fluids are considered intake. To





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

drainage in the collection device and record on output flow record, subtracting irrigant fluids if necessary (Figure 4). Add solidifying agent to nasogastric drainage according to hospital policy.

obtain the true nasogastric drainage, irrigant fluid amounts are subtracted from the total nasogastric drainage. Nasogastric drainage is recorded as part of the output of fluids from the patient. Solidifying agents added to liquid nasogastric drainage facilitate safe biohazard disposal.



**FIGURE 3.** Doubling tube on itself.



**FIGURE 4.** Measuring nasogastric drainage collection device.

13. Remove additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents transmission of microorganisms.



## Administering Oral Medications

Drugs given orally are intended for absorption in the stomach and small intestine. The oral route is the most commonly used route of administration. It is usually the most convenient and comfortable route for the patient. After oral administration, drug action has a slower onset and a more prolonged, but less potent, effect than other routes.

### Equipment

- Medication in disposable cup or oral syringe
- Liquid (e.g., water, juice) with straw, if not contraindicated
- Medication cart or tray
- Computer-generated Medication Administration Record (CMAR) or Medication Administration Record (MAR)
- PPE, as indicated

### Action

1. Gather equipment. Check each medication order against the original in the medical record, according to facility policy. Clarify any inconsistencies. Check the patient's chart for allergies.
2. Know the actions, special nursing considerations, safe dose ranges, purpose of administration, and adverse effects of the medications to be administered. Consider the appropriateness of the medication for this patient.
3. Perform hand hygiene.
4. Move the medication cart to the outside of the patient's room or prepare for administration in the medication area.
5. Unlock the medication cart or drawer. Enter pass code into the computer and scan employee identification, if required.

### Rationale

- This comparison helps to identify errors that may have occurred when orders were transcribed. The primary care provider's order is the legal record of medication orders for each facility.
- This knowledge aids the nurse in evaluating the therapeutic effect of the medication in relation to the patient's disorder and can also be used to educate the patient about the medication.
- Hand hygiene prevents the spread of microorganisms.
- Organization facilitates error-free administration and saves time.
- Locking the cart or drawer safeguards each patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use. Entering pass code and scanning ID allows only authorized users into the computer system and identifies the user for documentation by the computer.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

**6. Prepare medications for one patient at a time.**

This prevents errors in medication administration.

7. Read the CMAR/MAR and select the proper medication from the patient's medication drawer or unit stock.

This is the first check of the label.

8. Compare the label with the CMAR/MAR (Figure 1). Check expiration dates and perform calculations, if necessary. Scan the bar code on the package, if required.

This is the second check of the label. Verify calculations with another nurse to ensure safety, if necessary.

9. Prepare the required medications:

a. Unit dose packages: Place unit dose-packaged medications in a disposable cup. **Do not open the wrapper until at the bedside.** Keep narcotics and medications that require special nursing assessments in a separate container.

Wrapper is kept intact because the label is needed for an additional safety check. Special assessments may be required before giving certain medications. These may include assessing vital signs and checking laboratory test results.

b. Multidose containers: When removing tablets or capsules from a multidose bottle, pour the necessary number into the bottle cap and then place the tablets or capsules in a medication cup. Break only scored tablets, if necessary, to obtain the proper dosage. Do not touch tablets or capsules with hands.

Pouring medication into the cap allows for easy return of excess medication to the bottle. Pouring tablets or capsules your hand is unsanitary.

c. Liquid medication in multidose bottle: When pouring liquid medications out of a multidose bottle, hold the bottle so the label is against the palm. Use the appropriate measuring device when pouring liquids, and read the amount of medication at the bottom of the meniscus at eye level (Figure 2). Wipe the lip of the bottle with a paper towel.

Liquid that may drip onto the label makes the label difficult to read. Accuracy is possible when the appropriate measuring device is used and then read accurately.



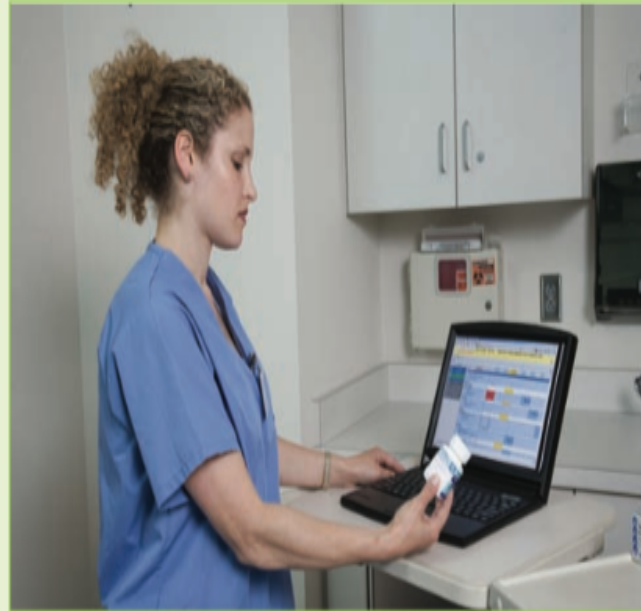


كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



**FIGURE 1.** Comparing medication label with the CMAR.

**10. When all medications for one patient have been prepared, recheck the labels with the CMAR/MAR before taking the medications to the patient. Replace any multidose containers in the patient's drawer or unit stock. Lock the medication cart before leaving it.**

11. Transport medications to the patient's bedside carefully, and keep the medications in sight at all times.

**12. Ensure that the patient receives the medications at the correct time.**

13. Perform hand hygiene and put on PPE, if indicated.

14. Identify the patient. Usually, the patient should be identified using two methods. Compare the information with the CMAR/MAR.



**FIGURE 2.** Measuring at eye level. (Photo by B. Proud.)

This is a third check to ensure accuracy and to prevent errors. Locking the cart or drawer safeguards the patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use. Some facilities require the third check to occur at the bedside, after identifying the patient and before administration.

Careful handling and close observation prevent accidental or deliberate disarrangement of medications.

Check agency policy, which may allow for administration within a period of 30 minutes before or 30 minutes after the designated time.

Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.

Identifying the patient ensures that the right patient receives the medications and helps prevent errors.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

a. Check the name and identification number on the patient's identification band (Figure 3).

This is the most reliable method. Replace the identification band if it is missing or inaccurate in any way.

b. Ask the patient to state his or her name and birth date, based on facility policy.

This requires a response from the patient, but illness and strange surroundings often cause patients to be confused.

c. If the patient cannot identify him- or herself, verify the patient's identification with a staff member who knows the patient, for the second source.

This is another way to double check identity. Do not use the name on the door or over the bed, because these signs may be inaccurate.

**15. Scan the patient's bar code on the identification band, if required (Figure 4).**

The bar code provides an additional check to ensure that the medication is given to the right patient.



**FIGURE 3.** Comparing patient's name and identification number with the CMAR.



**FIGURE 4.** Scanning the bar code on the patient's identification band. (Photo by B. Proud.)

**16. Complete necessary assessments before administering medications. Check the patient's allergy bracelet or ask the patient about allergies. Explain the purpose and action of each medication to the patient.**

Assessment is a prerequisite to administration of medications.

17. Assist the patient to an upright or lateral position.

Swallowing is facilitated by proper positioning. An upright or side-lying position protects the patient from aspiration.

18. Administer medications:

a. Offer water or other permitted fluids with pills, capsules,

Liquids facilitate swallowing of solid drugs.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

tablets, and some liquid medications.

b. Ask whether the patient prefers to take the medications by hand or in a cup.

**19. Remain with the patient until each medication is swallowed. Never leave medication at the patient's bedside (Figure 5).**



**FIGURE 5.** Remaining with the patient until each medication is swallowed.

20. Assist the patient to a comfortable position. Remove PPE, if used. Perform hand hygiene.

21. Document the administration of the medication immediately after administration.

22. Evaluate the patient's response to medication within appropriate time frame.

Some liquid drugs are intended to adhere to the pharyngeal area, in which case liquid is not offered with the medication.

This encourages the patient's participation in taking the medications.

Unless you have seen the patient swallow the drug, the drug cannot be recorded as administered. The patient's chart is a legal record. Only with a physician's order can medications be left at the bedside.

Promotes patient comfort. Proper removal of PPE prevents transmission of microorganisms. Hand hygiene deters the spread of microorganisms.

Timely documentation helps to ensure patient safety.

The patient needs to be evaluated for therapeutic and adverse effects from the medication.





## Administering Medications via a Gastric Tube

Patients with a gastrointestinal tube (nasogastric, nasointestinal, percutaneous endoscopic gastrostomy [PEG], or jejunostomy [J] tube) often receive medication through the tube. Care of the patient with an enteral feeding tube is described in Chapter 11, Nutrition. Use liquid medications, when possible, because they are readily absorbed and less likely to cause tube occlusions. Certain solid dosage medications can be crushed and combined with liquid. Medications should be crushed to a fine powder and mixed with 15 to 30 mL of water before delivery through the tube. Certain capsules may be opened, emptied into liquid, and administered through the tube (Toedter Williams, 2008). Check manufacturer's recommendations and/or with a pharmacist to verify.

### Equipment

- Irrigation set (60-mL syringe and irrigation container)
- Medications
- Water (gastrostomy tubes) or sterile water (nasogastric tubes), according to facility policy
- Gloves
- Additional PPE, as indicated

### Action

1. Gather equipment. Check each medication order against the original in the medical record, according to facility policy. Clarify any inconsistencies. Check the patient's chart for allergies.

2. Know the actions, special nursing considerations, safe dose ranges, purpose of administration, and adverse effects of the medications to be administered. Consider the appropriateness of the medication for this patient.

3. Perform hand hygiene.

4. Move the medication cart to the outside of the patient's room or prepare for administration in the medication area.

5. Unlock the medication cart or drawer. Enter pass code and scan employee identification, if required.

### Rationale

This comparison helps to identify errors that may have occurred when orders were transcribed. The primary care provider's order is the legal record of medication orders for each facility.

This knowledge aids the nurse in evaluating the therapeutic effect of the medication in relation to the patient's disorder and can also be used to educate the patient about the medication.

Hand hygiene prevents the spread of microorganisms.

Organization facilitates error-free administration and saves time.

Locking the cart or drawer safeguards each patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use. Entering pass code and scanning ID allows only authorized users into the system and identifies user



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

for documentation by the computer.

**6. Prepare medications for one patient at a time.**

This prevents errors in medication administration.

7. Read the CMAR/MAR and select the proper medication from the patient's medication drawer or unit stock.

This is the *first* check of the label.

8. Compare the label with the CMAR/MAR. Check expiration dates and perform calculations, if necessary. Scan the bar code on the package, if required.

This is the *second* check of the label. Verify calculations with another nurse to ensure safety, if necessary.

9. Check to see if medications to be administered come in a liquid form. **If pills or capsules are to be given, check with pharmacy or drug reference to verify the ability to crush or open capsules.**

To prevent the tube from becoming clogged, all medications should be given in liquid form whenever possible. Medications in extended-release formulations should not be crushed before administration.

10. Prepare medication.

*Pills:* Using a pill crusher, crush each pill one at a time. Dissolve the powder with water or other recommended liquid in a liquid medication cup, keeping each medication separate from the others. Keep the package label with the medication cup, for future comparison of information.

Some medications require dissolution in liquid other than water. The label is needed for an additional safety check. Some medications require pre-administration assessments.

*Liquid:* When pouring liquid medications from a multidose bottle, hold the bottle with the label against the palm. Use the appropriate measuring device when pouring liquids, and read the amount of medication at the bottom of the meniscus at eye level. Wipe the lip of the bottle with a paper towel.

Liquid that may drip onto the label makes the label difficult to read. Accuracy is possible when the appropriate measuring device is used and then read accurately.

**11. When all medications for one patient have been prepared, recheck the label with the MAR before taking the medications to the patient.**

This is a *third* check to ensure accuracy and to prevent errors. Some facilities require the third check to occur at the bedside, after identifying the patient and before administration.

12. Lock the medication cart before leaving it.

Locking the cart or drawer safeguards the patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

- use.
13. Transport medications to the patient's bedside carefully, and keep the medications in sight at all times.
- Careful handling and close observation prevent accidental or deliberate disarrangement of medications.
- 14. Ensure that the patient receives the medications at the correct time.**
- Check agency policy, which may allow for administration within a period of 30 minutes before or 30 minutes after designated time.
15. Perform hand hygiene and put on PPE, if indicated.
- Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
16. Identify the patient. Usually, the patient should be identified using two methods. Compare information with the CMAR/MAR.
- Identifying the patient ensures the right patient receives the medications and helps prevent errors.
- a. Check the name and identification number on the patient's identification band.
- This is the most reliable method. Replace the identification band if it is missing or inaccurate in any way.
- b. Ask the patient to state his or her name and birth date, based on facility policy.
- This requires a response from the patient, but illness and strange surroundings often cause patients to be confused.
- c. If the patient cannot identify him- or herself, verify the patient's identification with a staff member who knows the patient for the second source.
- This is another way to double-check identity. Do not use the name on the door or over the bed, because these signs may be inaccurate.
17. Complete necessary assessments before administering medications. Check the patient's allergy bracelet or ask the patient about allergies. Explain what you are going to do, and the reason for doing it, to the patient.
- Assessment is a prerequisite to administration of medications. Explanation relieves anxiety and facilitates cooperation.
18. Scan the patient's bar code on the identification band, if required.
- This provides an additional check to ensure that the medication is given to the right patient.
19. Assist the patient to the high Fowler's position, unless contraindicated.
- This reduces the risk of aspiration.
20. Put on gloves.
- Gloves prevent contact with mucous membranes and body fluids.





21. If patient is receiving continuous tube feedings, pause the tube-feeding pump (Figure 1).

If the pump is not stopped, tube feeding will flow out of the tube and onto the patient.

22. Pour the water into the irrigation container. Measure 30 mL of water. Apply clamp on feeding tube, if present. Alternately, pinch gastric tube below port with fingers, or position stopcock to correct direction. Open port on gastric tube delegated to medication administration (Figure 2) or disconnect tubing for feeding from gastric tube and place cap on end of feeding tubing.

Fluid is ready for flushing of the tube. Applying clamp, folding the tube over and clamping, or the correct positioning of the stopcock prevents any backflow of gastric drainage. Covering end of feeding tubing prevents contamination.



FIGURE 1. Pausing feeding pump. (Photo by B. Proud.)



FIGURE 2. Pinching gastric tubing to prevent backflow of gastric drainage and opening medication administration port. (Photo by B. Proud.)

23. Check placement of tube, depending on type of tube and facility policy.

Tube placement must be confirmed before administering anything through the tube to avoid inadvertent instillation in the respiratory tract.

24. Note the amount of any residual. Replace residual back into stomach, based on facility policy.

Research findings are inconclusive on the benefit of returning gastric volumes to the stomach or intestine to avoid fluid or electrolyte imbalance, which has been accepted practice. Consult agency policy concerning this practice (Bourgault, et al., 2007; Keithley & Swanson, 2004; Metheny, 2008).

25. Apply clamp on feeding tube, if present. Alternately, pinch gastric tube below port with fingers, or position stopcock to correct direction.

Folding the tube over and clamping it prevents any backflow of gastric drainage. Flushing the tube



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

Remove 60-mL syringe gastric tube. Remove the plunger of the syringe. Reinsert the syringe in the gastric tube without the plunger. Pour 30 mL of water into the syringe (Figure 3). **Unclamp the tube and allow the water to enter the stomach via gravity infusion.**

ensures all the residual is cleared from tube.

26. Administer the first dose of medication by pouring into the syringe (Figure 4). Follow with a 5- to 10-mL water flush between medication doses. Follow the last dose of medication with 30 to 60 mL of water flush.

Flushing between medications prevents any possible interactions between the medications. Flushing at the end maintains patency of the tube, prevents blockage by medication particles, and ensures all doses enter the stomach.



**FIGURE 3.** Pouring water into syringe inserted in gastric tube. (Photo by B. Proud.)



**FIGURE 4.** Pouring medication into syringe inserted in gastric tube. (Photo by B. Proud.)

27. Clamp the tube, remove the syringe, and replace the feeding tubing. If stopcock is used, position stopcock to correct direction. If tube medication port was used, cap port. Unclamp gastric tube and restart tube feeding, if appropriate for medications administered.

Some medications require the holding of the tube feeding for a certain period of time after administration. Consult a drug reference or a pharmacist.

28. Remove gloves. Assist the patient to a comfortable position. If receiving a tube feeding, the head of the bed must remain elevated at least 30 degrees.

Ensures patient comfort. Keeping the head of the bed elevated helps prevent aspiration.

29. Remove additional PPE, if used. Perform hand

Removing PPE properly reduces the risk for infection



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

hygiene.

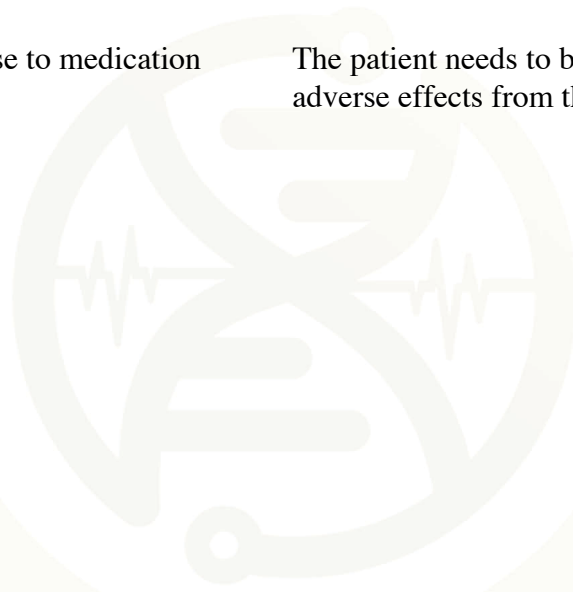
transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.

30. Document the administration of the medication immediately after administration. See Documentation section below.

Timely documentation helps to ensure patient safety.

31. Evaluate the patient's response to medication within appropriate time frame.

The patient needs to be evaluated for therapeutic and adverse effects from the medication.







## Administering Intradermal Injection

**Intradermal injections** are administered into the dermis, just below the epidermis. The intradermal route has the longest absorption time of all parenteral routes. For this reason, intradermal injections are used for sensitivity tests, such as tuberculin and allergy tests, and local anesthesia. The advantage of the intradermal route for these tests is that the body's reaction to substances is easily visible, and degrees of reaction are discernible by comparative study.

Sites commonly used are the inner surface of the forearm and the upper back, under the scapula. Equipment used for an intradermal injection includes a tuberculin syringe calibrated in tenths and hundredths of a milliliter and a 1/4- to 1/2-inch, 26- or 27-gauge needle. The dosage given intrader-

mally is small, usually less than 0.5 mL. The angle of administration for an intradermal injection is 5 to 15 degrees.

### Equipment

- Prescribed medication
- Sterile syringe, usually a tuberculin syringe calibrated in tenths and hundredths, and needle, 1/4- to 1/2-inch, 26- or 27-gauge
- Antimicrobial swab
- Disposable gloves
- Small gauze square
- Computer-generated Medication Administration Record (CMAR) or Medication Administration Record (MAR)
- PPE, as indicated

### Action

1. Gather equipment. Check each medication order against the original order in the medical record according to facility policy. Clarify any inconsistencies. Check the patient's chart for allergies.
2. Know the actions, special nursing considerations, safe dose ranges, purpose of administration, and adverse effects of the medications to be administered. Consider the appropriateness of the medication for this patient.

### Rationale

- This comparison helps to identify errors that may have occurred when orders were transcribed. The primary care provider's order is the legal record of medication orders for each facility.
- This knowledge aids the nurse in evaluating the therapeutic effect of the medication in relation to the patient's disorder and can also be used to educate the patient about the medication.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

3. Perform hand hygiene. Hand hygiene prevents the spread of microorganisms.
4. Move the medication cart to the outside of the patient's room or prepare for administration in the medication area. Organization facilitates error-free administration and saves time.
5. Unlock the medication cart or drawer. Enter pass code and scan employee identification, if required. Locking the cart or drawer safeguards each patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use. Entering pass code and scanning ID allows only authorized users into the system and identifies user for documentation by the computer.
- 6. Prepare medications for one patient at a time.** This prevents errors in medication administration.
7. Read the CMAR/MAR and select the proper medication from the patient's medication drawer or unit stock. This is the *first* check of the label.
8. Compare the label with the CMAR/MAR. Check expiration dates and perform calculations, if necessary. Scan the bar code on the package, if required. This is the *second* check of the label. Verify calculations with another nurse to ensure safety.
9. If necessary, withdraw medication from an ampule or vial.
- 10. When all medications for one patient have been prepared, recheck the label with the CMAR/MAR before taking the medications to the patient.** This is a *third* check to ensure accuracy and to prevent errors. Some facilities require the third check to occur at the bedside, after identifying the patient and before administration.
11. Lock the medication cart before leaving it. Locking the cart or drawer safeguards the patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use.
12. Transport medications to the patient's bedside carefully, and keep the medications in sight at all times. Careful handling and close observation prevent accidental or deliberate disarrangement of medications.
- 13. Ensure that the patient receives the medications at the correct time.** Check agency policy, which may allow for administration within a period of 30 minutes before



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

- or 30 minutes after the designated time.
14. Perform hand hygiene and put on PPE, if indicated.
- Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
15. Identify the patient. Usually, the patient should be identified using two methods. Compare information with the CMAR/MAR.
- Identifying the patient ensures the right patient receives the medications and helps prevent errors.
- a. Check the name and identification number on the patient's identification band.
- This is the most reliable method. Replace the identification band if it is missing or inaccurate in any way.
- b. Ask the patient to state his or her name and birth date, based on facility policy.
- This requires a response from the patient, but illness and strange surroundings often cause patients to be confused.
- c. If the patient cannot identify him- or herself, verify the patient's identification with a staff member who knows the patient for the second source.
- This is another way to double-check identity. Do not use the name on the door or over the bed, because these signs may be inaccurate.
16. Close the door to the room or pull the bedside curtain.
- This provides patient privacy.
17. Complete necessary assessments before administering medications. Check allergy bracelet or ask the patient about allergies. Explain the purpose and action of the medication to the patient.
- Assessment is a prerequisite to administration of medications. Explanation provides rationale, increases knowledge, and reduces anxiety.
18. Scan the patient's bar code on the identification band, if required.
- Provides an additional check to ensure that the medication is given to the right patient.
19. Put on clean gloves.
- Gloves help prevent exposure to contaminants.
20. Select an appropriate administration site. Assist the patient to the appropriate position for the site chosen. Drape as needed to expose only area of site to be used.
- Appropriate site prevents injury and allows for accurate reading of the test site at the appropriate time. Draping provides privacy and warmth.
21. Cleanse the site with an antimicrobial swab while wiping with a firm, circular motion and moving outward from the injection site. Allow the skin to
- Pathogens on the skin can be forced into the tissues by the needle. Moving from the center outward prevents contamination of the site. Allowing skin to dry prevents introducing alcohol into the tissue,





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

dry.

22. Remove the needle cap with the nondominant hand by pulling it straight off.

23. Use the nondominant hand to spread the skin taut over the injection site (Figure 1).

24. Hold the syringe in the dominant hand, between the thumb and forefinger with the bevel of the needle up.

25. Hold the syringe at a 5- to 15-degree angle from the site. **Place the needle almost flat against the patient's skin (Figure 2), bevel side up, and insert the needle into the skin. Insert the needle only about 1/8 inch with entire bevel under the skin.**

which can be irritating and uncomfortable.

This technique lessens the risk of an accidental needlestick.

Taut skin provides an easy entrance into intradermal tissue.

Using the dominant hand allows for easy, appropriate handling of the syringe. Having the bevel up allows for smooth piercing of the skin and introduction of medication into the dermis.

The dermis is entered when the needle is held as nearly parallel to the skin as possible and is inserted about 1/8 inch.



FIGURE 1. Spreading the skin taut over the injection site.

26. Once the needle is in place, steady the lower end of the syringe. Slide your dominant hand to the end of the plunger.

27. Slowly inject the agent while watching for a small wheal or blister to appear (Figure 3).



FIGURE 2. Inserting the needle almost level with the skin.

Prevents injury and inadvertent advancement or withdrawal of needle.

The appearance of a wheal indicates the medication is in the dermis.

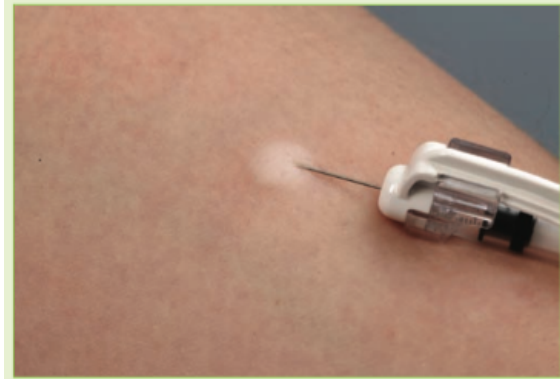


FIGURE 3. Observing for wheal while injecting medication.

28. Withdraw the needle quickly at the same angle that it was inserted. Do not recap the used needle. Engage the safety shield or needle guard.

**29. Do not massage the area after removing needle. Tell patient not to rub or scratch the site. If necessary, gently blot the site with a dry gauze square. Do not apply pressure or rub the site.**

30. Assist the patient to a position of comfort.

31. Discard the needle and syringe in the appropriate receptacle.

32. Remove gloves and additional PPE, if used. Perform hand hygiene.

33. Document the administration of the medication immediately after administration. See Documentation section below.

34. Evaluate the patient's response to medication within appropriate time frame.

35. Observe the area for signs of a reaction at determined intervals after administration. Inform the patient of the need for inspection.

Withdrawing the needle quickly and at the angle at which it entered the skin minimizes tissue damage and discomfort for the patient. Safety shield or needle guard prevents accidental needlestick injury.

Massaging the area where an intradermal injection is given may spread the medication to underlying subcutaneous tissue.

This provides for the well-being of the patient.

Proper disposal of the needle prevents injury.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.

Timely documentation helps to ensure patient safety.

The patient needs to be evaluated for therapeutic and adverse effects from the medication.

With many intradermal injections, you need to look for a localized reaction in the area of the injection at the appropriate interval(s) determined by the type of medication and purpose. Explaining this to the patient increases compliance.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## Administering Subcutaneous Injection

**Subcutaneous injections** are administered into the adipose tissue layer just below the epidermis and dermis. This tissue has few blood vessels, so drugs administered here have a slow, sustained rate of absorption into the capillaries.

It is important to choose the right equipment to ensure depositing the medication into the intended tissue layer and not the underlying muscle. Equipment used for a subcutaneous injection includes a syringe of appropriate volume for the amount of drug being administered. An insulin pen may be used for subcutaneous injection of insulin (see the accompanying Skill Variation for technique). A 25- to 30-gauge,  $\frac{3}{8}$ - to 1-inch needle can be used;  $\frac{3}{8}$ - and  $\frac{5}{8}$ -inch sized needles are most commonly used. Some medications are packaged in prefilled cartridges with a needle attached. Confirm that the provided needle is appropriate for the patient before use. If not, the medication will have to be transferred to another syringe and the appropriate needle attached.

Review the specifics of the particular medication before administering it to the patient. Various sites may be used for subcutaneous injections, including the outer aspect of the upper arm, the abdomen (from below the costal margin to the iliac crests), the anterior aspects of the thigh, the upper back, and the upper ventral gluteal area. Figure 1 displays the sites on the body where subcutaneous injections can be given. Absorption rates are different from the different sites. Injections in the abdomen are absorbed most rapidly, absorbed somewhat slower from the arms, even slower from the thighs, and slowest from the upper ventral gluteal areas (American Diabetes Association, 2004; Caffrey, 2003).

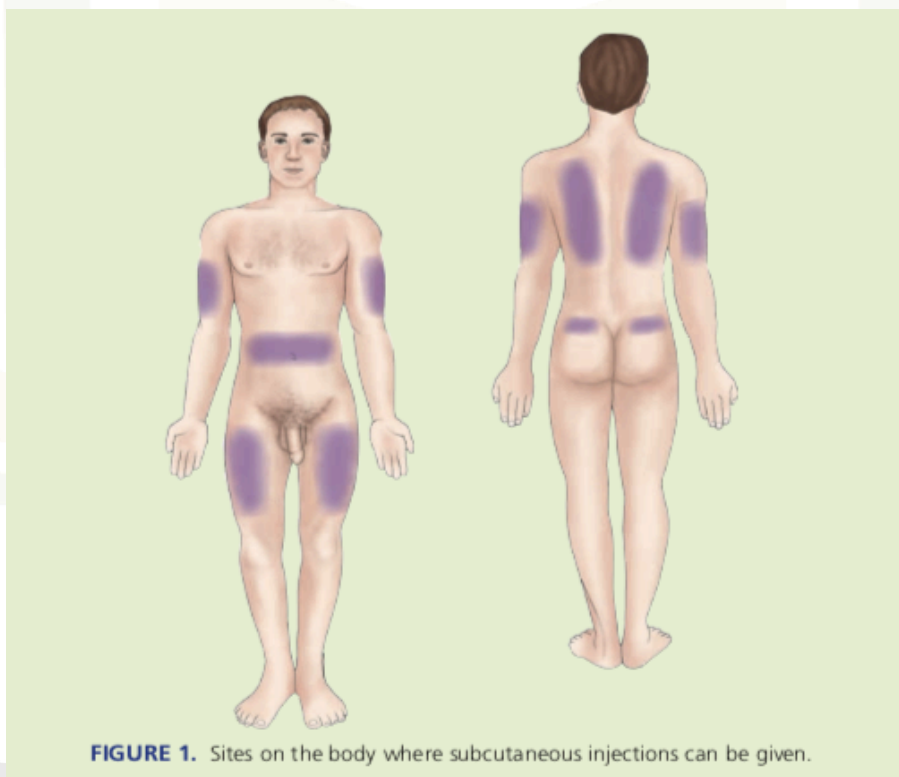


FIGURE 1. Sites on the body where subcutaneous injections can be given.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

Subcutaneous injections are administered at a 45- to 90-degree angle. Choose the angle of needle insertion based on the amount of subcutaneous tissue present and the length of the needle. Choose the needle length based on the amount of subcutaneous tissue present, based on the patient's body weight and build (Annersten & Willman, 2005). Generally, insert the shorter,  $\frac{3}{8}$ -inch needle at a 90-degree angle and the longer,  $\frac{5}{8}$ -inch needle at a 45-degree angle. Figure 5-1 in the chapter opener shows the angles of insertion for subcutaneous injections.

Recommendations differ regarding pinching or bunching of a skin fold for administration. Pinching is advised for thinner patients and when a longer needle is used, to lift the adipose tissue away from underlying muscle and tissue. If pinching is used, once the needle is inserted, release the skin to avoid injecting into compressed tissue (Rushing, 2004).

Aspiration, or pulling back on the plunger to check that a blood vessel has been entered, is not necessary and has not proved to be a reliable indicator of needle placement. The likelihood of injecting into a blood vessel is small (Rushing, 2004; Stephens, 2003). The American Diabetes Association (2004) has stated that routine aspiration is not necessary when injecting insulin. Aspiration is definitely contraindicated with administration of heparin because this action can result in hematoma formation.

Usually, no more than 1 mL of solution is given subcutaneously. Giving larger amounts adds to the patient's discomfort and may predispose to poor absorption.

## Equipment

- Prescribed medication
- Sterile syringe and needle. Needle size depends on the medication administered and patient body type (see previous discussion).
- Antimicrobial swab
- Disposable gloves
- Small gauze square
- Computer-generated Medication Administration Record (CMAR) or Medication Administration Record (MAR)
- PPE, as indicated

### Action

1. Gather equipment. Check each medication order against the original order in the medical record, according to facility policy. Clarify any inconsistencies. Check the patient's chart for allergies.

2. Know the actions, special nursing considerations, safe dose ranges, purpose of administration, and adverse effects of the medications to be administered. Consider the appropriateness of the medication for this patient.

### Rationale

This comparison helps to identify errors that may have occurred when orders were transcribed. The primary care provider's order is the legal record of medication orders for each facility.

This knowledge aids the nurse in evaluating the therapeutic effect of the medication in relation to the patient's disorder and can also be used to educate the patient about the medication.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

3. Perform hand hygiene.

Hand hygiene prevents the spread of microorganisms.

4. Move the medication cart to the outside of the patient's room or prepare for administration in the medication area.

Organization facilitates error-free administration and saves time.

5. Unlock the medication cart or drawer. Enter pass code and scan employee identification, if required.

Locking the cart or drawer safeguards each patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use. Entering pass code and scanning ID allows only authorized users into the system and identifies user for documentation by the computer.

**6. Prepare medications for one patient at a time.**

This prevents errors in medication administration.

7. Read the CMAR/MAR and select the proper medication from the patient's medication drawer or unit stock.

This is the *first* check of the label.

8. Compare the label with the CMAR/MAR. Check expiration dates and perform calculations, if necessary. Scan the bar code on the package, if required.

This is the *second* check of the label. Verify calculations with another nurse to ensure safety, if necessary.

9. If necessary, withdraw medication from an ampule or vial.

**10. When all medications for one patient have been prepared, recheck the label with the MAR before taking medications to the patient.**

This is a *third* check to ensure accuracy and to prevent errors. Some facilities require the third check to occur at the bedside, after identifying the patient and before administration.

11. Lock the medication cart before leaving it.

Locking the cart or drawer safeguards the patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use.

12. Transport medications to the patient's bedside carefully, and keep the medications in sight at all times.

Careful handling and close observation prevent accidental or deliberate disarrangement of medications.

**13. Ensure that the patient receives the medications at the correct time.**

Check agency policy, which may allow for administration within a period of 30 minutes before



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

or 30 minutes after the designated time.

14. Perform hand hygiene and put on PPE, if indicated. Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
15. Identify the patient. Usually, the patient should be identified using two methods. Compare information with the CMAR/MAR. Identifying the patient ensures the right patient receives the medications and helps prevent errors.
- a. Check the name and identification number on the patient's identification band. This is the most reliable method. Replace the identification band if it is missing or inaccurate in any way.
- b. Ask the patient to state his or her name and birth date, based on facility policy. This requires a response from the patient, but illness and strange surroundings often cause patients to be confused.
- c. If the patient cannot identify him- or herself, verify the patient's identification with a staff member who knows the patient for the second source. This is another way to double-check identity. Do not use the name on the door or over the bed, because these signs may be inaccurate.
16. Close the door to the room or pull the bedside curtain. This provides patient privacy.
17. Complete necessary assessments before administering medications. Check the patient's allergy bracelet or ask the patient about allergies. Explain the purpose and action of the medication to the patient. Assessment is a prerequisite to administration of medications. Explanation provides rationale, increases knowledge, and reduces anxiety.
18. Scan the patient's bar code on the identification band, if required. Scanning provides an additional check to ensure that the medication is given to the right patient.
19. Put on clean gloves. Gloves help prevent exposure to contaminants.
20. Select an appropriate administration site. Appropriate site prevents injury and allows for accurate reading of the test site at the appropriate time.
21. Assist the patient to the appropriate position for the site chosen. Drape, as needed, to expose only area of site to be used. Appropriate site prevents injury. Draping helps maintain the patient's privacy.
22. Identify the appropriate landmarks for the site. Good visualization is necessary to establish the





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

chosen.

23. Cleanse the area around the injection site with an antimicrobial swab. Use a firm, circular motion while moving outward from the injection site (Figure 2).

Allow area to dry.

24. Remove the needle cap with the nondominant hand, pulling it straight off.

25. Grasp and bunch the area surrounding the injection site or spread the skin taut at the site (Figure 3).

correct location of the site and to avoid damage to tissues.

Pathogens on the skin can be forced into the tissues by the needle. Moving from the center outward prevents contamination of the site. Allowing skin to dry prevents introducing alcohol into the tissue, which can be irritating and uncomfortable.

The cap protects the needle from contact with microorganisms. This technique lessens the risk of an accidental needlestick.

Decision to create a skin fold is based on the nurse's assessment of the patient and needle length used. Pinching is advised for thinner patients and when a longer needle is used, to lift the adipose tissue away from underlying muscle and tissue. If pinching is used, once the needle is inserted, release the skin to avoid injecting into compressed tissue. If skin is pulled taut, it provides easy, less painful entry into the subcutaneous tissue.



FIGURE 2. Cleaning injection site.

26. Hold the syringe in the dominant hand between the thumb and forefinger. Inject the needle quickly at a 45- to 90- degree angle (Figure 4).



FIGURE 3. Bunching tissue around injection site.

Inserting the needle quickly causes less pain to the patient. Subcutaneous tissue is abundant in well-nourished, well-hydrated people and sparse in emaciated, dehydrated, or very thin persons. For a person with little subcutaneous tissue, it is best to



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

insert the needle at a 45-degree angle.

27. After the needle is in place, release the tissue. If you have a large skin fold pinched up, ensure that the needle stays in place as the skin is released. Immediately move your nondominant hand to steady the lower end of the syringe. Slide your dominant hand to the end of the plunger. Avoid moving the syringe.

28. Inject the medication slowly (at a rate of 10 sec/mL).

29. Withdraw the needle quickly at the same angle at which it was inserted, while supporting the surrounding tissue with your nondominant hand.

30. Using a gauze square, apply gentle pressure to the site after the needle is withdrawn (Figure 5). Do not massage the site.

Injecting the solution into compressed tissues results in pressure against nerve fibers and creates discomfort. If there is a large skin fold, the skin may retract away from the needle. The nondominant hand secures the syringe. Moving the syringe could cause damage to the tissues and inadvertent administration into incorrect area.

Rapid injection of the solution creates pressure in the tissues, resulting in discomfort.

Slow withdrawal of the needle pulls the tissues and causes discomfort. Applying counter traction around the injection site helps to prevent pulling on the tissue as the needle is withdrawn. Removing the needle at the same angle at which it was inserted minimizes tissue damage and discomfort for the patient.

Massaging the site is not necessary and can damage underlying tissue and increase the absorption of the medication. Massaging after heparin administration can contribute to hematoma formation. Massaging after an insulin injection may contribute to unpredictable absorption of the medication.



FIGURE 4. Inserting needle.



FIGURE 5. Applying pressure to the injection site.

31. Do not recap the used needle. Engage the safety

Safety shield or needle guard prevents accidental



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

shield or needle guard. Discard the needle and syringe in the appropriate receptacle.

needlestick. Proper disposal of the needle prevents injury.

32. Assist the patient to a position of comfort.

This provides for the well-being of the patient.

33. Remove gloves and additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.

34. Document the administration of the medication immediately after administration. See Documentation section below.

Timely documentation helps to ensure patient safety.

35. Evaluate the patient's response to the medication within an appropriate time frame for the particular medication.

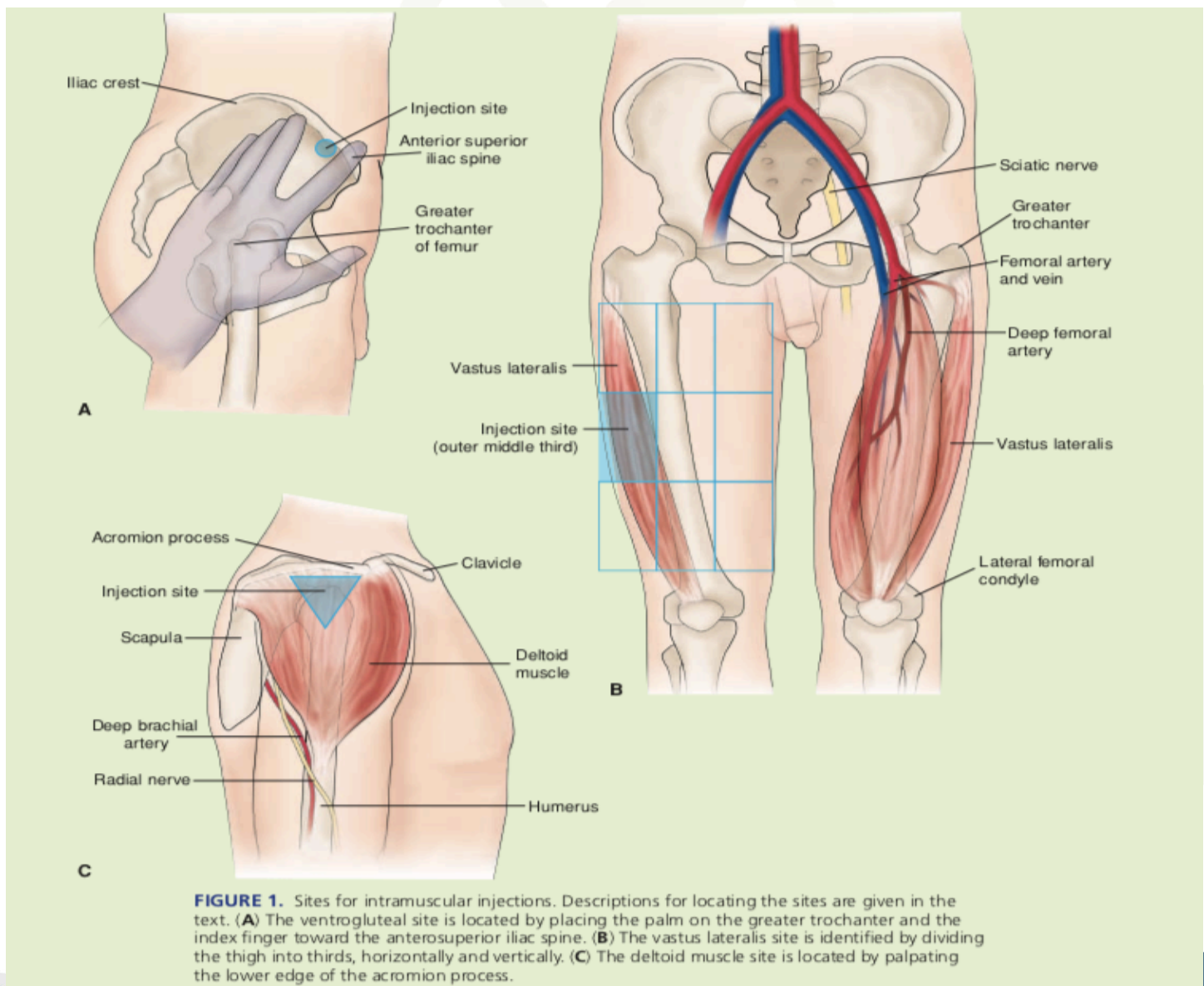
The patient needs to be evaluated for therapeutic and adverse effects from the medication.





## Administering Intramuscular Injection

**Intramuscular injections** deliver medication through the skin and subcutaneous tissues into certain muscles. Muscles have a larger and a greater number of blood vessels than subcutaneous tissue, allowing faster onset of action than with subcutaneous injections. An intramuscular injection is chosen when a reasonably rapid systemic uptake of the drug is needed by the body and when a relatively prolonged action is required (Hunter & Clark, 2008). Some medications administered intramuscularly are formulated to have a longer duration of effect. The deposit of medication creates a depot at the site of injection, designed to deliver slow, sustained release over hours, days, or weeks.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

To administer an intramuscular injection correctly and effectively, choose the right equipment, select the appropriate location, use the correct technique, and deliver the correct dose. Inject the medication into the denser part of the muscle fascia below the subcutaneous tissues. This is ideal because skeletal muscles have fewer pain-sensing nerves than subcutaneous tissue and can absorb larger volumes of solution because of the rapid uptake of the drug into the bloodstream via the muscle fibers (Hunter, 2008).

It is important to choose the right needle length for a particular intramuscular injection. Needle length should be based on the site for injection and the patient's age. See Table 5-1 for intramuscular needle length recommendations. Patients who are obese may require a longer needle, and emaciated patients may require a shorter needle. Appropriate gauge is determined by the medication being administered. Generally, biologic agents and medications in aqueous solutions should be administered with a 20- to 25-gauge needle. Medications in oil-based solutions should be administered with an 18- to 25-gauge needle. Many medications come in prefilled syringe units. If a needle is provided on the prefilled unit, ensure that the needle on the unit is the appropriate length for the patient and situation.

To avoid complications, be able to identify anatomic landmarks and site boundaries. See Figure 1 for a depiction of anatomic landmarks and site boundaries for potential intramuscular injection sites.

Consider the age of the patient, medication type, and medication volume when selecting a site for intramuscular injection. See Table 5-2 for information related to intramuscular site selection. Rotate the sites used to administer intramuscular medications when therapy requires repeated injections. Whatever pattern of rotating sites is used, a description of it should appear in the patient's plan of nursing care. Depending on the site selected, it may be necessary to reposition the patient (see Table 5-3).

Use accurate, careful technique when administering intramuscular injections. If care is not taken, possible complications include abscesses; cellulites; injury to blood vessels, bones, and nerves; lingering pain; tissue necrosis; and periostitis (inflammation of the membrane covering a bone). Administer the intramuscular injection so that the needle is perpendicular to the patient's body. This ensures it is given using an angle of injection between 72 and 90 degrees (Nicoll & Hesby, 2002). Figure 5-1 in the chapter opener shows the angles of insertion for intramuscular injections.

The volume of medication that can be administered intramuscularly varies based on the intended site. Generally, 1 to 4 mL is the accepted volume range, with no more than 1 to 2 mL given at the deltoid site. The less-developed muscles of children and elderly people limit the intramuscular injection to 1 to 2 mL.

A previously included practice associated with intramuscular injections is the inclusion of aspiration; the process of pulling back on the plunger of the syringe before injection to ensure the medication is not injected into a blood vessel. According to the CDC (2009), aspiration is not required.



**TABLE • 5-1 INTRAMUSCULAR INJECTION NEEDLE LENGTH**

Site/Age	Needle Length
Vastus lateralis	5/8" to 1"
Deltoid (children)	5/8" to 1 1/4"
Deltoid (adults)	1" to 1 1/2"
Ventrogluteal (adults)	1 1/2"

(Adapted from Centers for Disease Control and Prevention (CDC). (2009). *The pink book: Appendices. Epidemiology and prevention of vaccine preventable diseases*. (11th ed.). Appendix D. Vaccine administration. Vaccine administration guidelines. Available [www.cdc.gov/vaccines/pubs/pinkbook/pink-appendx.htm#appd](http://www.cdc.gov/vaccines/pubs/pinkbook/pink-appendx.htm#appd). Accessed July 2, 2009; Centers for Disease Control and Prevention (CDC). (2008). Needle length and injection site of intramuscular injections. Available at [www.cdc.gov/vaccines/ed/encounter08/Downloads.Table%207.pdf](http://www.cdc.gov/vaccines/ed/encounter08/Downloads.Table%207.pdf). Accessed June 20, 2009; Centers for Disease Control and Prevention (CDC). (2007). National immunization program. Vaccine administration. (Slide presentation). Available at [www.cdc.gov/vaccines/ed/vpd2007/download/slides/admin-images.ppt](http://www.cdc.gov/vaccines/ed/vpd2007/download/slides/admin-images.ppt). Accessed June 23, 2009; and Nicoll, L., & Hesby, A. (2002). Intramuscular injection: An integrative research review and guideline for evidence-based practice. *Applied Nursing Research*, 16(2), 149–162.)

**TABLE • 5-2 INTRAMUSCULAR SITE SELECTION**

	Recommended Site
<b>Age of Patient</b>	
Infants	Vastus lateralis
Toddlers and children	Vastus lateralis or deltoid
Adults	Ventrogluteal or deltoid
<b>Medication Type</b>	
Biologicals (infants and young children)	Vastus lateralis
Biologicals (older children and adults)	Deltoid
Hepatitis B/Rabies	Deltoid
Medications that are known to be irritating, viscous, or oily solutions	Ventrogluteal

(Adapted from Centers for Disease Control and Prevention (CDC). (2009). *The pink book: Appendices. Epidemiology and prevention of vaccine preventable diseases*. (11th ed.). Appendix D. Vaccine administration. Vaccine administration guidelines. Available [www.cdc.gov/vaccines/pubs/pinkbook/pink-appendx.htm#appd](http://www.cdc.gov/vaccines/pubs/pinkbook/pink-appendx.htm#appd). Accessed July 2, 2009; Centers for Disease Control and Prevention (CDC). (2008). Needle length and injection site of intramuscular injections. Available at [www.cdc.gov/vaccines/ed/encounter08/Downloads.Table%207.pdf](http://www.cdc.gov/vaccines/ed/encounter08/Downloads.Table%207.pdf). Accessed June 20, 2009; Centers for Disease Control and Prevention (CDC). (2007). National immunization program. Vaccine administration. (Slide presentation). Available at [www.cdc.gov/vaccines/ed/vpd2007/download/slides/admin-images.ppt](http://www.cdc.gov/vaccines/ed/vpd2007/download/slides/admin-images.ppt). Accessed June 23, 2009; and Nicoll, L., & Hesby, A. (2002). Intramuscular injection: An integrative research review and guideline for evidence-based practice. *Applied Nursing Research*, 16(2), 149–162.)





**TABLE • 5-3 PATIENT POSITIONING**

Injection Site	Patient Position
Deltoid	Patient may sit or stand. A child may be held in an adult's lap.
Ventrogluteal	Patient may stand, sit, lie laterally, and lay supine.
Vastus lateralis	Patient may sit or lay supine. Infants and young children may lay supine or be held in an adult's lap.

(Centers for Disease Control and Prevention (CDC). (2009). The pink book: Appendices. *Epidemiology and prevention of vaccine preventable diseases*. (11th ed.). Appendix D. Vaccine administration. Vaccine administration guidelines. Available [www.cdc.gov/vaccines/pubs/pinkbook/pink-appendx.htm#appd](http://www.cdc.gov/vaccines/pubs/pinkbook/pink-appendx.htm#appd). Accessed July 2, 2009.)

## Equipment

- Disposable gloves
- Additional PPE, as indicated
- Medication
- Sterile syringe and needle of appropriate size and gauge
- Antimicrobial swab
- Small gauze square
- Computer-generated Medication Administration Record (CMAR) or Medication Administration Record (MAR)

### Action

1. Gather equipment. Check each medication order against the original order in the medical record according to facility policy. Clarify any inconsistencies. Check the patient's chart for allergies.
2. Know the actions, special nursing considerations, safe dose ranges, purpose of administration, and adverse effects of the medications to be administered. Consider the appropriateness of the medication for this patient.
3. Perform hand hygiene.

### Rationale

- This comparison helps to identify errors that may have occurred when orders were transcribed. The primary care provider's order is the legal record of medication orders for each facility.
- This knowledge aids the nurse in evaluating the therapeutic effect of the medication in relation to the patient's disorder and can also be used to educate the patient about the medication.
- Hand hygiene prevents the spread of



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

- microorganisms.
4. Move the medication cart to the outside of the patient's room or prepare for administration in the medication area. Organization facilitates error-free administration and saves time.
5. Unlock the medication cart or drawer. Enter pass code and scan employee identification, if required. Locking the cart or drawer safeguards each patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use. Entering pass code and scanning ID allows only authorized users into the system and identifies user for documentation by the computer.
- 6. Prepare medications for one patient at a time.** This prevents errors in medication administration.
7. Read the CMAR/MAR and select the proper medication from the patient's medication drawer or unit stock. This is the *first* check of the label.
8. Compare the label with the CMAR/MAR. Check expiration dates and perform calculations, if necessary. Scan the bar code on the package, if required. This is the *second* check of the label. Verify calculations with another nurse to ensure safety, if necessary.
9. If necessary, withdraw medication from an ampule or vial.
- 10. When all medications for one patient have been prepared, recheck the label with the MAR before taking the medications to the patient.** This is a *third* check to ensure accuracy and to prevent errors. Some facilities require the third check to occur at the bedside, after identifying the patient and before administration.
11. Lock the medication cart before leaving it. Locking the cart or drawer safeguards the patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use.
12. Transport medications to the patient's bedside carefully, and keep the medications in sight at all times. Careful handling and close observation prevent accidental or deliberate disarrangement of medications.
- 13. Ensure that the patient receives the medications at the correct time.** Check agency policy, which may allow for administration within a period of 30 minutes before



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

- or 30 minutes after designated time.
14. Perform hand hygiene and put on PPE, if indicated. Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
15. Identify the patient. Usually, the patient should be identified using two methods. Compare information with the CMAR/MAR. Identifying the patient ensures the right patient receives the medications and helps prevent errors.
- a. Check the name and identification number on the patient's identification band. This is the most reliable method. Replace the identification band if it is missing or inaccurate in any way.
- b. Ask the patient to state his or her name and birth date, based on facility policy. This requires a response from the patient, but illness and strange surroundings often cause patients to be confused.
- c. If the patient cannot identify him- or herself, verify the patient's identification with a staff member who knows the patient for the second source. This is another way to double-check identity. Do not use the name on the door or over the bed, because these signs may be inaccurate.
16. Close the door to the room or pull the bedside curtain. This provides patient privacy.
17. Complete necessary assessments before administering medications. Check the patient's allergy bracelet or ask the patient about allergies. Explain the purpose and action of the medication to the patient. Assessment is a prerequisite to administration of medications. Explanation provides rationale, increases knowledge, and reduces anxiety.
18. Scan the patient's bar code on the identification band, if required. Provides an additional check to ensure that the medication is given to the right patient.
19. Put on clean gloves. Gloves help prevent exposure to contaminants.
20. Select an appropriate administration site. Selecting the appropriate site prevents injury.
21. Assist the patient to the appropriate position for the site chosen. See Table 5-3. Drape, as needed, to expose only the area of site being used. Appropriate positioning for the site chosen prevents injury. Draping helps maintain the patient's privacy.
- 22. Identify the appropriate landmarks for the site** Good visualization is necessary to establish the correct location of the site and to avoid damage to





chosen.

23. Cleanse the area around the injection site with an antimicrobial swab. Use a firm, circular motion while moving outward from the injection site. Allow area to dry.

24. Remove the needle cap by pulling it straight off. Hold the syringe in your dominant hand between the thumb and forefinger.

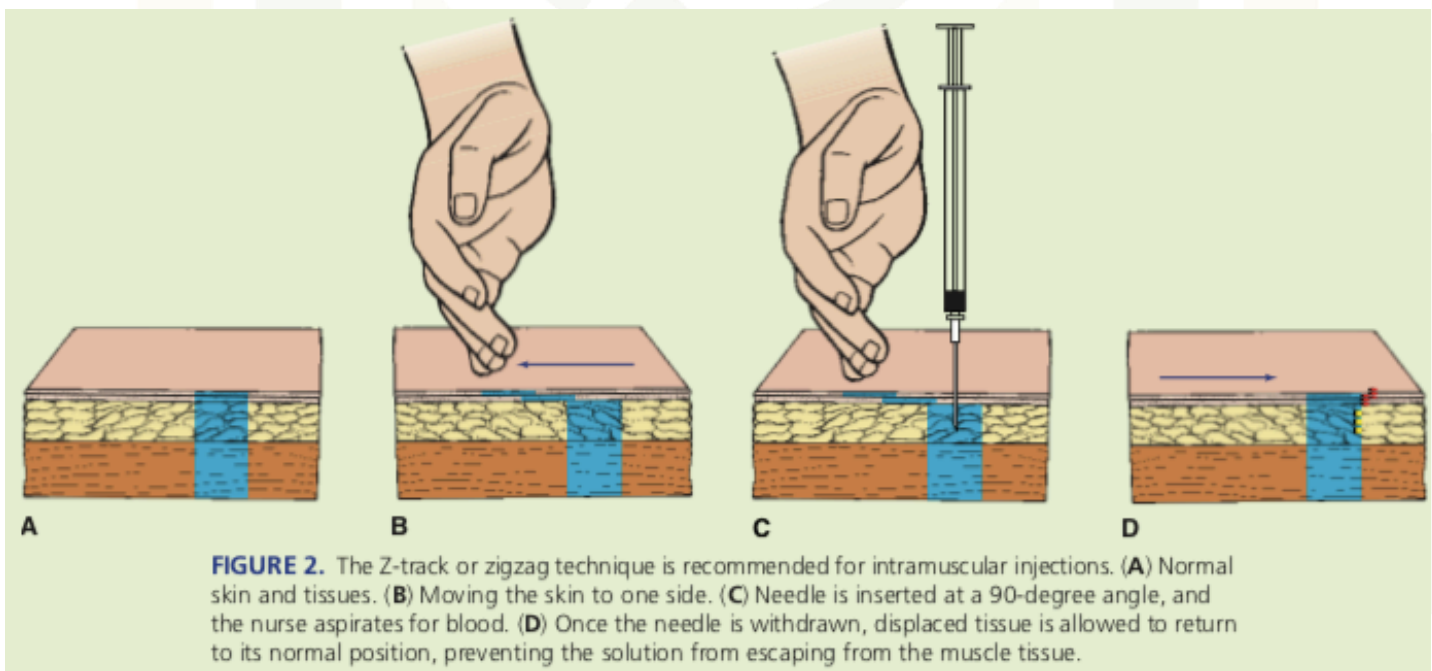
25. Displace the skin in a Z-track manner by pulling the skin down or to one side about 1 inch (2.5 cm) with your nondominant hand and hold the skin and tissue in this position (Figure 2). (See the accompanying Skill Variation for information on administering an intramuscular injection without using the Z-track technique.)

tissues.

Pathogens on the skin can be forced into the tissues by the needle. Moving from the center outward prevents contamination of the site. Allowing skin to dry prevents introducing alcohol into the tissue, which can be irritating and uncomfortable.

This technique lessens the risk of an accidental needlestick and also prevents inadvertently unscrewing the needle from the barrel of the syringe.

This ensures medication does not leak back along the needle track and into the subcutaneous tissue.



26. Quickly dart the needle into the tissue so that the needle is perpendicular to the patient's body (Figure 3). This should ensure that it is given using an angle of injection between 72 and 90 degrees.

A quick injection is less painful. Inserting the needle at a 72- to 90-degree angle facilitates entry into muscle tissue.

27. As soon as the needle is in place, use the thumb

Moving the syringe could cause damage to the



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

and forefinger of your nondominant hand to hold the lower end of the syringe. Slide your dominant hand to the end of the plunger. Inject the solution slowly (10 sec/mL of medication).

28. Once the medication has been instilled, wait 10 seconds before withdrawing the needle.

29. Withdraw the needle smoothly and steadily at the same angle at which it was inserted, supporting tissue around the injection site with your nondominant hand.

**30. Apply gentle pressure at the site with a dry gauze (Figure 4).** Do not massage the site.

tissues and inadvertent administration into incorrect area. Rapid injection of the solution creates pressure in the tissues, resulting in discomfort. An outdated practice is the inclusion of aspiration (process of pulling back on the plunger of the syringe before injection to ensure the medication is not injected into a blood vessel) has been part of this procedure in the past. According to the CDC (2009), this procedure is not required.

Allows medication to begin to diffuse into the surrounding muscle tissue (Nicoll & Hesby, 2002).

Slow withdrawal of the needle pulls the tissues and causes discomfort. Applying counter traction around the injection site helps to prevent pulling on the tissue as the needle is withdrawn. Removing the needle at the same angle at which it was inserted minimizes tissue damage and discomfort for the patient.

Light pressure causes less trauma and irritation to the tissues. Massaging can force medication into subcutaneous tissues.



**FIGURE 3.** Darting the needle into the tissue.



**FIGURE 4.** Applying pressure at the injection site.

31. Do not recap the used needle. Engage the safety shield or needle guard, if present. Discard the needle

Proper disposal of the needle prevents injury.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

and syringe in the appropriate receptacle.

32.. Assist the patient to a position of comfort.

This provides for the well-being of the patient.

33. Remove gloves and additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.

34. Document the administration of the medication immediately after administration. See Documentation section below.

Timely documentation helps to ensure patient safety.

35. Evaluate the patient's response to medication within an appropriate time frame. Assess site, if possible, within 2 to 4 hours after administration.

The patient needs to be evaluated for therapeutic and adverse effects from the medication. Visualization of the site allows for assessment of any untoward effects.





## Skill Variation

## Administering an Intramuscular Injection Without Using the Z-Track Technique

If the Z-Track technique is not used, stretch the skin flat between two fingers and hold it taut for needle insertion. To administer the injection:



1. Perform hand hygiene and put on PPE, as indicated.



2. Identify the patient.

3. Explain procedure to patient.
4. Select an appropriate administration site.
5. Assist the patient to the appropriate position for the site chosen. Drape, as needed, to expose only area of site to be used.
6. Put on gloves.
7. Identify the appropriate landmarks for the site chosen with your nondominant hand.
8. Clean the area around the injection site with an antimicrobial swab. Use a firm, circular motion while moving outward from the injection site. Allow area to dry.
9. Remove the needle cap by pulling it straight off. Hold the syringe in your dominant hand between the thumb and forefinger.
10. Stretch the skin flat between two fingers and hold taut for needle insertion.

11. Quickly dart the needle into the tissue so that the needle is perpendicular to the patient's body. This should ensure that it is given using an angle of injection between 72 and 90 degrees.
12. As soon as the needle is in place, use your thumb and forefinger of your nondominant hand to hold the lower end of the syringe. Slide your dominant hand to the end of the plunger.
13. Inject the solution slowly (10 sec/mL of medication).
14. Withdraw the needle smoothly and steadily at the same angle at which it was inserted, supporting tissue around the injection site with your nondominant hand.
15. Apply gentle pressure at the site with a dry gauze.
16. Do not recap the used needle. Engage the safety shield or needle guard. Discard the needle and syringe in the appropriate receptacle.
17. Assist the patient to a position of comfort.



18. Remove gloves and additional PPE, if used. Perform hand hygiene.
19. Document administration of the medication on the CMAR/MAR immediately after performing the procedure.
20. Evaluate the patient's response to medication within an appropriate time frame. Assess site, if possible, within 2 to 4 hours after administration.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## Administering Medications by Intravenous Bolus or Push Through an Intravenous Infusion

A medication can be administered as an IV bolus or push. This involves a single injection of a concentrated solution directly into an IV line. Drugs given by IV push are used for intermittent dosing or to treat emergencies. The drug is administered very slowly over at least 1 minute. This can be done manually or a syringe pump may be used. Confirm exact administration times by consulting a pharmacist or drug reference.

### Equipment

- Antimicrobial swab
- Watch with second hand, or stopwatch
- Clean gloves
- Additional PPE, as indicated
- Prescribed medication
- Syringe with a needleless device or 23- to 25-gauge, 1-inch needle (follow facility policy)
- Syringe pump, if necessary
- Computer-generated Medication Administration Record (CMAR) or Medication Administration Record (MAR)

### Action

1. Gather equipment. Check medication order against the original order in the medical record, according to facility policy. Clarify any inconsistencies. Check the patient's chart for allergies. Verify the compatibility of the medication and IV fluid. Check a drug resource to clarify whether the medication needs to be diluted before administration. Check the infusion rate.
2. Know the actions, special nursing considerations, safe dose ranges, purpose of administration, and adverse effects of the medications to be administered. Consider the appropriateness of the medication for this patient.
3. Perform hand hygiene.
4. Move the medication cart to the outside of the patient's room or prepare for administration in the medication area.

### Rationale

- This comparison helps to identify errors that may have occurred when orders were transcribed. The primary care provider's order is the legal record of medication orders for each facility. Compatibility of medication and solution prevents complications. Delivers the correct dose of medication as prescribed.
- This knowledge aids the nurse in evaluating the therapeutic effect of the medication in relation to the patient's disorder and can also be used to educate the patient about the medication.
- Hand hygiene prevents the spread of microorganisms.
- Organization facilitates error-free administration and saves time.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

5. Unlock the medication cart or drawer. Enter pass code and scan employee identification, if required.

Locking the cart or drawer safeguards each patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use. Entering pass code and scanning ID allows only authorized users into the system and identifies user for documentation by the computer.

**6. Prepare medication for one patient at a time.**

This prevents errors in medication administration.

7. Read the CMAR/MAR and select the proper medication from the patient's medication drawer or unit stock.

This is the *first* check of the label.

8. Compare the label with the CMAR/MAR. Check expiration dates and perform calculations, if necessary. Scan the bar code on the package, if required.

This is the *second* check of the label. Verify calculations with another nurse to ensure safety, if necessary.

9. If necessary, withdraw medication from an ampule or vial.

**10. Recheck the label with the MAR before taking it to the patient.**

This is a *third* check to ensure accuracy and to prevent errors. Some facilities require the third check to occur at the bedside, after identifying the patient and before administration.

11. Lock the medication cart before leaving it.

Locking the cart or drawer safeguards the patient's medication supply. Hospital accrediting organizations require medication carts to be locked when not in use.

12. Transport medications and equipment to the patient's bedside carefully, and keep the medications in sight at all times.

Careful handling and close observation prevent accidental or deliberate disarrangement of medications. Having equipment available saves time and facilitates performance of the task.

**13. Ensure that the patient receives the medications at the correct time.**

Check agency policy, which may allow for administration within a period of 30 minutes before or 30 minutes after designated time.





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

14. Perform hand hygiene and put on PPE, if indicated. Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
15. Identify the patient. Usually, the patient should be identified using two methods. Compare information with the CMAR/MAR. Identifying the patient ensures the right patient receives the medications and helps prevent errors.
- a. Check the name and identification number on the patient's identification band. This is the most reliable method. Replace the identification band if it is missing or inaccurate in any way.
- b. Ask the patient to state his or her name and birth date, based on facility policy. This requires a response from the patient, but illness and strange surroundings often cause patients to be confused.
- c. If the patient cannot identify him- or herself, verify the patient's identification with a staff member who knows the patient for the second source. This is another way to double-check identity. Do not use the name on the door or over the bed, because these signs may be inaccurate.
16. Close the door to the room or pull the bedside curtain. This provides patient privacy.
17. Complete necessary assessments before administering medications. Check the patient's allergy bracelet or ask the patient about allergies. Explain the purpose and action of the medication to the patient. Assessment is a prerequisite to administration of medications. Explanation provides rationale, increases knowledge, and reduces anxiety.
18. Scan the patient's bar code on the identification band, if required. Provides an additional check to ensure that the medication is given to the right patient.
- 19. Assess IV site for presence of inflammation or infiltration.** IV medication must be given directly into a vein for safe administration.
20. If IV infusion is being administered via an infusion pump, pause the pump. Pausing prevents infusion of fluid during bolus administration and activation of pump occlusion alarms.
21. Put on clean gloves. Gloves prevent contact with blood and body fluids.
22. Select injection port on tubing that is closest to venipuncture site. Clean port with antimicrobial swab. Using port closest to needle insertion site minimizes dilution of medication. Cleaning deters entry of microorganisms when port is



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

23. Uncap syringe. Steady port with your nondominant hand while inserting syringe into center of port.

punctured.

This supports the injection port and lessens the risk for accidentally dislodging the IV or entering the port incorrectly.

24. Move your nondominant hand to the section of IV tubing just above the injection port. Fold the tubing between your fingers.

This temporarily stops flow of gravity IV infusion and prevents medication from backing up tubing.

25. Pull back slightly on plunger just until blood appears in tubing.

This ensures injection of medication into the bloodstream.

**26. Inject the medication at the recommended rate**

This delivers correct amount of medication at proper interval according to manufacturer's directions.



**FIGURE 1.** Injecting medication while interrupting IV flow. (Photo by B. Proud.)

27. Release the tubing. Remove the syringe. Do not recap the used needle, if used. Engage the safety shield or needle guard, if present. Release the tubing and allow the IV fluid to flow. Discard the needle and syringe in the appropriate receptacle.

Proper disposal of the needle prevents injury.

28. Check IV fluid infusion rate. Restart infusion pump, if appropriate.

Injection of bolus may alter rate of fluid infusion, if infusing by gravity.

29. Remove gloves and additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

30. Document the administration of the medication immediately after administration. See Documentation section below.

Timely documentation helps to ensure patient safety.

31. Evaluate the patient's response to medication within appropriate time frame.

The patient needs to be evaluated for therapeutic and adverse effects from the medication.



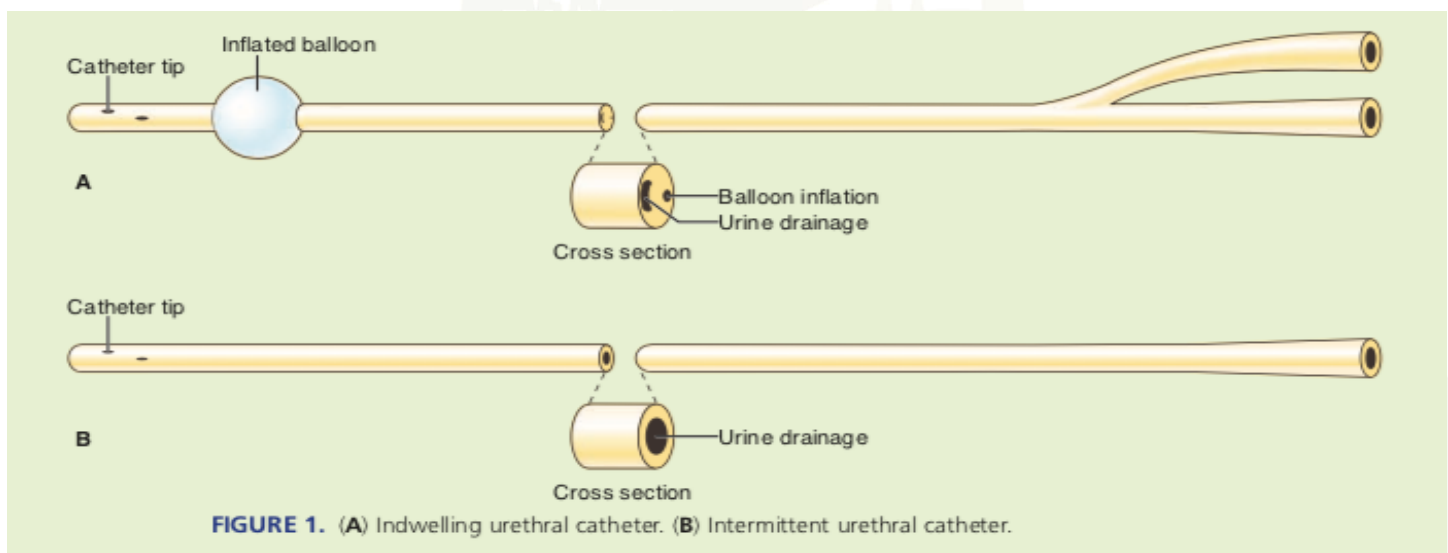




## Catheterizing the Female Urinary Bladder

Urinary catheterization is the introduction of a catheter (tube) through the urethra into the bladder for the purpose of withdrawing urine. Urinary catheterization is considered the most common cause of nosocomial infections (infections acquired in a hospital). Therefore, catheterization should be avoided whenever possible. When it is deemed necessary, it should be performed using aseptic technique.

**Intermittent urethral catheters**, or straight catheters, are used to drain the bladder for shorter periods (5 to 10 minutes) (Figure 1B). If a catheter is to remain in place for continuous drainage, an **indwelling urethral catheter** is used. Indwelling catheters are also called *retention* or *Foley catheters*. The indwelling urethral catheter is designed so that it does not slip out of the bladder. A balloon is inflated to ensure that the catheter remains in the bladder once it is inserted (Figure 1A). The following procedure reviews insertion of an indwelling catheter.



### Box 12-1 GUIDELINES FOR CARE OF THE PATIENT WITH AN INDWELLING CATHETER

- Use an indwelling catheter only when necessary.
- Use strict hand hygiene principles.
- Use sterile technique when inserting a catheter.
- Secure the catheter properly to the patient's thigh or abdomen after insertion.
- Keep the drainage bag below the level of the patient's bladder to maintain drainage of urine and prevent the backflow of urine into the patient's bladder.
- Keep the drainage bag and tubing off the ground.
- Maintain a closed system whenever possible.
- If necessary, obtain urine samples using aseptic technique via a closed system.
- Keep the catheter free from obstruction to maintain free flow to the urine.
- Avoid irrigation unless needed to relieve or prevent obstruction.
- Ensure that patient maintains adequate fluid intake.
- Empty the drainage bag when one-half to two-thirds full or every 3 to 6 hours. (When emptying the drainage bag, do not touch drainage bag spout to the collection device.)
- Clean drainage bags daily using a commercial cleaning product or vinegar solution (1 part vinegar to 3 parts water).
- Provide daily routine personal hygiene as outlined in Chapter 7, Hygiene; no need to apply antibiotic ointment or povidone-iodine (Betadine) to the urethral meatus.



## Equipment

- Sterile catheter kit that contains:
  - Sterile gloves
  - Sterile drapes (one of which is **fenestrated** [having a window-like opening])
  - Sterile catheter (Use the smallest appropriate-size catheter, usually a 14F to 16F catheter with a 5- to 10-mL balloon [Mercer Smith, 2003; Newman, 2008]).
  - Antiseptic cleansing solution and cotton balls or gauze squares; antiseptic swabs
  - Lubricant
  - Forceps
  - Prefilled syringe with sterile water (sufficient to inflate indwelling catheter balloon)
  - Sterile basin (usually base of kit serves as this)
  - Sterile specimen container (if specimen is required)
- Flashlight or lamp
- Waterproof, disposable pad
- Sterile, disposable urine collection bag and drainage tubing (may be connected to catheter in catheter kit)
- Velcro leg strap or tape
- Disposable gloves
- Additional PPE, as indicated
- Washcloth and warm water to perform perineal hygiene before and after catheterization

### Action

### Rationale

1. Review the patient's chart for any limitations in physical activity. Confirm the medical order for indwelling catheter insertion.

Physical limitations may require adaptations in performing the skill. Verifying the medical order ensures that the correct intervention is administered to the right patient.

2. Bring the catheter kit and other necessary equipment to the bedside. Obtain assistance from another staff member, if necessary.

Bringing everything to the bedside conserves time and energy. Arranging items nearby is convenient, saves time, and avoids unnecessary stretching and twisting of muscles on the part of the nurse. Assistance from another person may be required to perform the intervention safely.

3. Perform hand hygiene and put on PPE, if indicated

Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.

4. Identify the patient.

Identifying the patient ensures the right patient



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

receives the intervention and helps prevent errors.

5. Close curtains around bed and close the door to the room, if possible. Discuss the procedure with the patient and assess the patient's ability to assist with the procedure. Ask the patient if she has any allergies, especially to latex or iodine.

This ensures the patient's privacy. This discussion promotes reassurance and provides knowledge about the procedure. Dialogue encourages patient participation and allows for individualized nursing care. Some catheters and gloves in kits are made of latex. Some antiseptic solutions contain iodine.

6. Provide good lighting. Artificial light is recommended (use of a flashlight requires an assistant to hold and position it). Place a trash receptacle within easy reach.

Good lighting is necessary to see the meatus clearly. A readily available trash receptacle allows for prompt disposal of used supplies and reduces the risk of contaminating the sterile field.

7. Adjust the bed to a comfortable working height, usually elbow height of the caregiver (VISN 8 Patient Safety Center, 2009). Stand on the patient's right side if you are right-handed, patient's left side if you are left-handed.

Having the bed at the proper height prevents back and muscle strain. Positioning allows for ease of use of dominant hand for catheter insertion.

8. Assist the patient to a dorsal recumbent position with knees flexed, feet about 2 feet apart, with her legs abducted. Drape patient (Figure 2). Alternately, the Sims', or lateral, position can be used. Place the patient's buttocks near the edge of the bed with her shoulders at the opposite edge and her knees drawn toward her chest (Figure 3). Allow the patient to lie on either side, depending on which position is easiest for the nurse and best for the patient's comfort. Slide waterproof pad under patient.

Proper positioning allows adequate visualization of the urinary meatus. Embarrassment, chilliness, and tension can interfere with catheter insertion; draping the patient will promote comfort and relaxation. The Sims' position may allow better visualization and be more comfortable for the patient, especially if hip and knee movements are difficult. The smaller area of exposure is also less stressful for the patient. The waterproof pad will protect bed linens from moisture.





**FIGURE 2.** Patient in dorsal recumbent position and draped properly.

9. Put on clean gloves. Clean the perineal area with washcloth, skin cleanser, and warm water, using a different corner of the washcloth with each stroke. Wipe from above orifice downward toward sacrum (front to back). Rinse and dry. Remove gloves. Perform hand hygiene again.

10. Prepare urine drainage setup if a separate urine collection system is to be used. Secure to bed frame according to manufacturer's directions

11. Open sterile catheterization tray on a clean overbed table using sterile technique.

12. Put on sterile gloves. Grasp upper corners of drape and unfold drape without touching unsterile areas. Fold back a corner on each side to make a cuff over gloved hands. Ask patient to lift her buttocks and slide sterile drape under her with gloves protected by cuff.

13. Based on facility policy, position the fenestrated sterile drape. Place a fenestrated sterile drape over the perineal area, exposing the labia (Figure 4). (**Note:** the fenestrated drape is not shown in the remaining illustrations in order to provide a clear view of the procedure.)



**FIGURE 3.** Demonstration of side-lying position.

Gloves reduce the risk of exposure to blood and body fluids. Cleaning reduces microorganisms near the urethral meatus and provides an opportunity to visualize the perineum and landmarks before the procedure. Hand hygiene reduces the spread of microorganisms.

This facilitates connection of the catheter to the drainage system and provides for easy access.

Placement of equipment near the worksite increases efficiency. Sterile technique protects patient and prevents transmission of microorganisms.

The drape provides a sterile field close to the meatus. Covering the gloved hands will help keep the gloves sterile while placing the drape.

The drape expands the sterile field and protects against contamination. Use of a fenestrated drape may limit visualization and is considered optional by some practitioners and/or facility policies.



FIGURE 4. Patient with fenestrated drape in place over perineum.

14. Place sterile tray on drape between patient's thighs.

This provides easy access to supplies.

15. Open all the supplies. Fluff cotton balls in tray before pouring antiseptic solution over them. Alternately, open package of antiseptic swabs. Open specimen container if specimen is to be obtained.

It is necessary to open all supplies and prepare for the procedure while both hands are sterile.

16. Lubricate 1 to 2 inches of catheter tip.

Lubrication facilitates catheter insertion and reduces tissue trauma.

17. With thumb and one finger of nondominant hand, spread labia and identify meatus. **Be prepared to maintain separation of labia with one hand until catheter is inserted and urine is flowing well and continuously (Figure 5).** If the patient is in the side-lying position, lift the upper buttock and labia to expose the urinary meatus (Figure 6).

Smoothing the area immediately surrounding the meatus helps to make it visible. Allowing the labia to drop back into position may contaminate the area around the meatus, as well as the catheter. The nondominant hand is now contaminated.

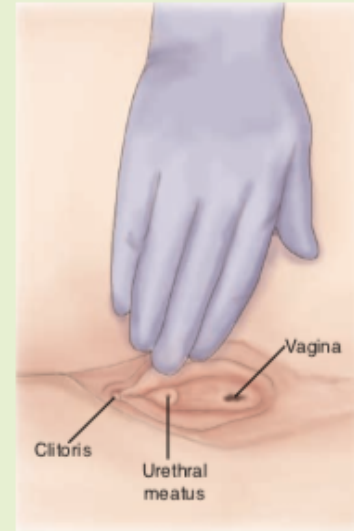


**FIGURE 5.** Using dominant hand to separate and hold labia open.

18. Use the dominant hand to pick up a cotton ball or antiseptic swab. **Clean one labial fold, top to bottom (from above the meatus down toward the rectum), then discard the cotton ball. Using a new cotton ball/swab for each stroke, continue to clean the other labial fold, then directly over the meatus (Figure 7).**

19. With your uncontaminated, dominant hand, place the drainage end of the catheter in receptacle. If the catheter is preattached to sterile tubing and drainage container (closed drainage system), position catheter and setup within easy reach on sterile field. Ensure that clamp on drainage bag is closed.

**20. Using your dominant hand, hold the catheter 2 to 3 inches from the tip and insert slowly into the urethra (Figure 8). Advance the catheter until there is a return of urine (approximately 2 to 3 inches [4.8 to 7.2 cm]). Once urine drains, advance catheter another 2 to 3 inches (4.8 to 7.2 cm). Do not force catheter through urethra into bladder.** Ask patient to breathe deeply, and rotate catheter gently if slight resistance is met as catheter reaches external sphincter.



**FIGURE 6.** Exposing the urinary meatus with the patient in the side-lying position.

Moving from an area where there is likely to be less contamination to an area where there is more contamination helps prevent the spread of microorganisms. Cleaning the meatus last helps reduce the possibility of introducing microorganisms into the bladder.

This facilitates drainage of urine and minimizes risk of contaminating sterile equipment.

The female urethra is about 1.5 to 2.5 inches (3.6 to 6.0 cm) long. Applying force on the catheter is likely to injure mucous membranes. The sphincter relaxes and the catheter can enter the bladder easily when the patient relaxes. Advancing an indwelling catheter an additional 2 to 3 inches (4.8 to 7.2 cm) ensures placement in the bladder and facilitates inflation of the balloon without damaging the urethra.





**FIGURE 7.** Wiping perineum with cotton ball held by forceps. Wipe in one direction—from top to bottom.



**FIGURE 8.** Inserting catheter with dominant hand while non-dominant hand holds labia apart.

21. Hold the catheter securely at the meatus with your nondominant hand. Use your dominant hand to inflate the catheter balloon (Figure 9). Inject entire volume of sterile water supplied in prefilled syringe.

22. Pull gently on catheter after balloon is inflated to feel resistance.

23. Attach catheter to drainage system if not already preattached (Figure 10).

24. Remove equipment and dispose of it according to facility policy. Discard syringe in sharps container. Wash and dry the perineal area, as needed.

25. Remove gloves. **Secure catheter tubing to the patient's inner thigh with Velcro leg strap or tape (Figure 11).** Leave some slack in catheter for leg movement.

26. Assist the patient to a comfortable position. Cover the patient with bed linens. Place the bed in the lowest position.

Bladder or sphincter contraction could push the catheter out. The balloon anchors the catheter in place in the bladder. Manufacturer provides appropriate amount of sterile water for the size of catheter in the kit; as a result, use entire syringe provided in the kit.

Improper inflation can cause patient discomfort and malpositioning of catheter.

Closed drainage system minimizes the risk for microorganisms being introduced into the bladder.

Proper disposal prevents the spread of microorganisms. Placing syringe in sharps container prevents reuse. Cleaning promotes comfort and appropriate personal hygiene.

Proper attachment prevents trauma to the urethra and meatus from tension on the tubing. Whether to tape the drainage tubing over or under the leg depends on gravity flow, patient's mobility, and comfort of the patient.

Positioning and covering provides warmth and promotes comfort.





**FIGURE 9.** Inflating balloon of indwelling catheter.



**FIGURE 10.** Attaching catheter to drainage bag.



**FIGURE 11.** Catheter attached to leg.

27. Secure drainage bag below the level of the bladder. Check that drainage tubing is not kinked and that movement of side rails does not interfere with catheter or drainage bag.

28. Put on clean gloves. Obtain urine specimen immediately, if needed, from drainage bag. Label specimen. Send urine specimen to the laboratory promptly or refrigerate it.

29. Remove gloves and additional PPE, if used. Perform hand hygiene.

This facilitates drainage of urine and prevents the backflow of urine.

Catheter system is sterile. Obtaining specimen immediately allows access to sterile system. Keeping urine at room temperature may cause microorganisms, if present, to grow and distort laboratory findings.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.



### Skill Variation Intermittent Female Urethral Catheterization



1. Check the medical record for the order for intermittent urethral catheterization. Review the patient's chart for any limitations in physical activity. Bring the catheter kit and other necessary equipment to the bedside. Obtain assistance from another staff member, if necessary. Perform hand hygiene. Put on PPE, as indicated, based on transmission precautions.
2. Identify the patient. Discuss the procedure with the patient and assess the patient's ability to assist with the procedure. Ask the patient if she has any allergies, especially to latex or iodine.
3. Close curtains around bed and close the door to the room, if possible.
4. Provide good lighting. Artificial light is recommended (use of a flashlight requires an assistant to hold and position it). Place a trash receptacle within easy reach.
5. Raise the bed to a comfortable working height. Stand on the patient's right side if you are right-handed, patient's left side if you are left-handed.
6. Put on disposable gloves. Assist the patient to dorsal recumbent position with knees flexed, feet about 2 feet apart, with her legs abducted. Drape patient. Alternately, use the Sims', or lateral, position. Place the patient's buttocks near the edge of the bed with her shoulders at the opposite edge and her knees drawn toward her chest. Slide waterproof drape under patient.
7. Put on clean gloves. Clean the perineal area with washcloth, skin cleanser, and warm water, using a different corner of the washcloth with each stroke. Wipe from above the orifice downward toward the sacrum (front to back). Rinse and dry. Remove gloves. Perform hand hygiene again.
8. Open sterile catheterization tray on a clean overbed table using sterile technique.
9. Put on sterile gloves. Grasp upper corners of drape and unfold drape without touching unsterile areas. Fold back a corner on each side to make a cuff over gloved hands. Ask patient to lift her buttocks and slide sterile drape under her with gloves protected by cuff.
10. Place a fenestrated sterile drape over the perineal area, exposing the labia, if appropriate.
11. Place sterile tray on drape between patient's thighs.
12. Open all the supplies. Fluff cotton balls in tray before pouring antiseptic solution over them. Alternately, open package of antiseptic swabs. Open specimen container if specimen is to be obtained.
13. Lubricate 1 to 2 inches of catheter tip.
14. With thumb and one finger of nondominant hand, spread labia and identify meatus. If the patient is in the side-lying position, lift the upper buttock and labia to expose the urinary meatus. Be prepared to maintain separation of labia with one hand until catheter is inserted and urine is flowing well and continuously.
15. Use the dominant hand to pick up a cotton ball. Clean one labial fold, top to bottom (from above the meatus down toward the rectum), then discard the cotton ball. Using a new cotton ball for each stroke, continue to clean the other labial fold, then directly over the meatus.
16. With the uncontaminated, dominant hand, place drainage end of catheter in receptacle. If a specimen is required, place the end into the specimen container in the receptacle.



### Skill Variation Intermittent Female Urethral Catheterization *continued*

17. Using the dominant hand, hold the catheter 2 to 3 inches from the tip and insert slowly into the urethra. Advance the catheter until there is a return of urine (approximately 2 to 3 inches [4.8 to 7.2 cm]). Do not force the catheter through the urethra into the bladder. Ask the patient to breathe deeply, and rotate the catheter gently if slight resistance is met as the catheter reaches external sphincter.
18. Hold the catheter securely at the meatus with the nondominant hand while the bladder empties. If a specimen is being collected, remove the drainage end of the tubing from the specimen container after required amount is obtained and allow urine to flow into receptacle. Set specimen container aside and place lid on container.
19. Allow the bladder to empty. Withdraw catheter slowly and smoothly after urine has stopped flowing. Remove equipment and dispose of it according to facility policy. Discard syringe in sharps container to prevent reuse. Wash and dry the perineal area, as needed.
20. Remove gloves. Assist the patient to a comfortable position. Cover the patient with bed linens. Place the bed in the lowest position.
21. Put on clean gloves. Secure the container lid and label specimen. Send urine specimen to the laboratory promptly or refrigerate it.
22. Remove gloves and additional PPE, if used. Perform hand hygiene.



Note: Intermittent catheterization in the home is performed using clean technique. The bladder's natural resistance to the microorganisms normally found in the home makes sterile technique unnecessary. Catheters are washed, dried, and stored for repeated use.



## Catheterizing the Male Urinary Bladder

Urinary catheterization is the introduction of a catheter (tube) through the urethra into the bladder for the purpose of withdrawing urine. Catheterization is considered the most common cause of nosocomial infections (infections acquired in a hospital). Therefore, catheterization should be avoided whenever possible. When it is deemed necessary, it should be performed using aseptic technique.

Intermittent urethral catheters, or straight catheters, are used to drain the bladder for shorter periods. If a catheter is to remain in place for continuous drainage, an indwelling urethral catheter is used. Indwelling catheters are also called *retention* or *Foley* catheters. The indwelling urethral catheter is designed so that it does not slip out of the bladder. A balloon is inflated to ensure that the catheter remains in the bladder once it is inserted (Figure 1; Skill 12-6).

### Equipment

- Sterile catheter kit that contains:
  - Sterile gloves
  - Sterile drapes (one of which is fenestrated [having a window-like opening])
  - Sterile catheter (Use the smallest appropriate-size catheter, usually a 14F to 16F catheter with a 5- to 10-mL balloon [Mercer Smith, 2003; Newman, 2008]).
  - Antiseptic cleansing solution and cotton balls or gauze squares; antiseptic swabs
  - Lubricant
  - Forceps
  - Prefilled syringe with sterile water (sufficient to inflate indwelling catheter balloon)
  - Sterile basin (usually base of kit serves as this)
  - Sterile specimen container (if specimen is required)
- Flashlight or lamp
- Waterproof, disposable pad
- Sterile, disposable urine collection bag and drainage tubing (may be connected to catheter in catheter kit)
- Velcro leg strap or tape
- Disposable gloves
- Additional PPE, as indicated
- Washcloth and warm water to perform perineal hygiene before and after catheterization





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

### Action

### Rationale

1. Review the patient's chart for any limitations in physical activity. Confirm the medical order for indwelling catheter insertion.

Physical limitations may require adaptations in performing the skill. Verifying the medical order ensures that the correct intervention is administered to the right patient.
2. Bring the catheter kit and other necessary equipment to the bedside. Obtain assistance from another staff member, if necessary.

Bringing everything to the bedside conserves time and energy. Arranging items nearby is convenient, saves time, and avoids unnecessary stretching and twisting of muscles on the part of the nurse. Assistance from another person may be required to perform the intervention safely.
3. Perform hand hygiene and put on PPE, if indicated.

Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
4. Identify the patient.

Identifying the patient ensures the right patient receives the intervention and helps prevent errors.
5. Close curtains around bed and close the door to the room, if possible. Discuss the procedure with the patient and assess the patient's ability to assist with the procedure. Ask the patient if he has any allergies, especially to latex or iodine.

This ensures the patient's privacy. This discussion promotes reassurance and provides knowledge about the procedure. Dialogue encourages patient participation and allows for individualized nursing care. Some catheters and gloves in kits are made of latex. Some antiseptic solutions contain iodine.
6. Provide good lighting. Artificial light is recommended (use of a flashlight requires an assistant to hold and position it). Place a trash receptacle within easy reach.

Good lighting is necessary to see the meatus clearly. A readily available trash receptacle allows for prompt disposal of used supplies and reduces the risk of contaminating the sterile field.
7. Adjust the bed to a comfortable working height, usually elbow height of the caregiver (VISN 8 Patient Safety Center, 2009). Stand on the patient's right side if you are right-handed, patient's left side if you are left-handed.

Having the bed at the proper height prevents back and muscle strain. Positioning allows for ease of use of dominant hand for catheter insertion.
8. Position the patient on his back with thighs slightly apart. Drape the patient so that only the area around the penis is exposed. Slide waterproof pad under patient.

This prevents unnecessary exposure and promotes warmth. The waterproof pad will protect bed linens from moisture.
9. Put on clean gloves. Clean the genital area with washcloth, skin cleanser, and warm water. Clean the tip.

Gloves reduce the risk of exposure to blood and body fluids. Cleaning the penis reduces





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

of the penis first, moving the washcloth in a circular motion from the meatus outward. Wash the shaft of the penis using downward strokes toward the pubic area. Rinse and dry. Remove gloves. Perform hand hygiene again.

10. Prepare urine drainage setup if a separate urine collection system is to be used. Secure to bed frame according to manufacturer's directions.

11. Open sterile catheterization tray on a clean overbed table, using sterile technique.

12. Put on sterile gloves. Open sterile drape and place on patient's thighs. Place fenestrated drape with opening over penis (Figure 1).



13. Place catheter set on or next to patient's legs on sterile drape.

14. Open all the supplies. Fluff cotton balls in tray before pouring antiseptic solution over them. Alternately, open package of antiseptic swabs. Open specimen container if specimen is to be obtained. Remove cap from syringe prefilled with lubricant.

microorganisms near the urethral meatus. Hand hygiene reduces the spread of microorganisms.

This facilitates connection of the catheter to the drainage system and provides for easy access.

Placement of equipment near worksite increases efficiency. Sterile technique protects patient and prevents spread of microorganisms.

This maintains a sterile working area.

**FIGURE 1.** Patient lying supine with fenestrated drape over penis.

Sterile setup should be arranged so that the nurse's back is not turned to it, nor should it be out of the nurse's range of vision.

It is necessary to open all supplies and prepare for the procedure while both hands are sterile.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

15. Place drainage end of catheter in receptacle. If the catheter is preattached to sterile tubing and drainage container (closed drainage system), position catheter and setup within easy reach on sterile field. Ensure that clamp on drainage bag is closed.

This facilitates drainage of urine and minimizes risk of contaminating sterile equipment.

16. Lift penis with nondominant hand. Retract foreskin in uncircumcised patient. **Be prepared to keep this hand in this position until catheter is inserted and urine is flowing well and continuously. Using the dominant hand and the forceps, pick up a cotton ball or antiseptic swab. Using a circular motion, clean the penis, moving from the meatus down the glans of the penis (Figure 2). Repeat this cleansing motion two more times, using a new cotton ball/swab each time. Discard each cotton ball/swab after one use.**

The hand touching the penis becomes contaminated. Cleansing the area around the meatus and under the foreskin in the uncircumcised patient helps prevent infection. Moving from the meatus toward the base of the penis prevents bringing microorganisms to the meatus.

17. Hold penis with slight upward tension and perpendicular to patient's body. Use the dominant hand to pick up the lubricant syringe. **Gently insert tip of syringe with lubricant into urethra and instill the 10 mL of lubricant** (Society of Urologic Nurses and Associates, 2005c) (Figure 3).

The lubricant causes the urethra to distend slightly and facilitates passage of the catheter without traumatizing the lining of the urethra (Mercer Smith, 2003; Society of Urologic Nurses and Associates, 2005c). If the prepackaged kit does not contain a syringe with lubricant, the nurse may need assistance in filling a syringe while keeping the lubricant sterile. Some institutions use lidocaine jelly for lubrication before insertion of the catheter. The jelly comes prepackaged in a sterile syringe and serves a dual purpose of lubricating and numbing the urethra. A medical order is necessary for the use of lidocaine jelly.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University



**FIGURE 2.** Lifting penis with gloved nondominant hand and cleaning meatus with cotton ball held with forceps in gloved dominant hand.



**FIGURE 3.** Inserting syringe with lubricant into urethra.

18. Use the dominant hand to pick up the catheter and hold it an inch or two from the tip. Ask the patient to bear down as if voiding. **Insert catheter tip into meatus (Figure 4). Ask the patient to take deep breaths. Advance the catheter to the bifurcation or “Y” level of the ports. Do not use force to introduce the catheter.** If the catheter resists entry, ask patient to breathe deeply and rotate catheter slightly.

19. Hold the catheter securely at the meatus with your nondominant hand. Use your dominant hand to inflate the catheter balloon. **Inject the entire volume of sterile water supplied in the prefilled syringe. Once the balloon is inflated, the catheter may be gently pulled back into place. Replace foreskin over catheter.**

Lower penis.

20. Pull gently on catheter after balloon is inflated to feel resistance.

21. Attach catheter to drainage system, if necessary.

22. Remove equipment and dispose of it according to facility policy. Discard syringe in sharps container.

Bearing down eases the passage of the catheter through the urethra. The male urethra is about 20 cm long. Having the patient take deep breaths or twisting the catheter slightly may ease the catheter past resistance at the sphincters. Advancing an indwelling catheter to the bifurcation ensures its placement in the bladder and facilitates inflation of the balloon without damaging the urethra.

Bladder or sphincter contraction could push the catheter out. The balloon anchors the catheter in place in the bladder. Manufacturer provides appropriate amount of solution for the size of catheter in the kit; as a result, use entire syringe provided in the kit.

Improper inflation can cause patient discomfort and malpositioning of catheter.

Closed drainage system minimizes the risk for microorganisms being introduced into the bladder.

Proper disposal prevents the spread of microorganisms. Placing syringe in sharps





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

Wash and dry the perineal area as needed.

23. Remove gloves. Secure catheter tubing to the patient's inner thigh or lower abdomen (with the penis directed toward the patient's chest) with Velcro leg strap or tape (Figure 5). Leave some slack in catheter for leg movement.

container prevents reuse. Promotes comfort and appropriate personal hygiene.

Proper attachment prevents trauma to the urethra and meatus from tension on the tubing. Whether to take the drainage tubing over or under the leg depends on gravity flow, patient's mobility, and comfort of the patient.



FIGURE 4. Inserting catheter with dominant hand.

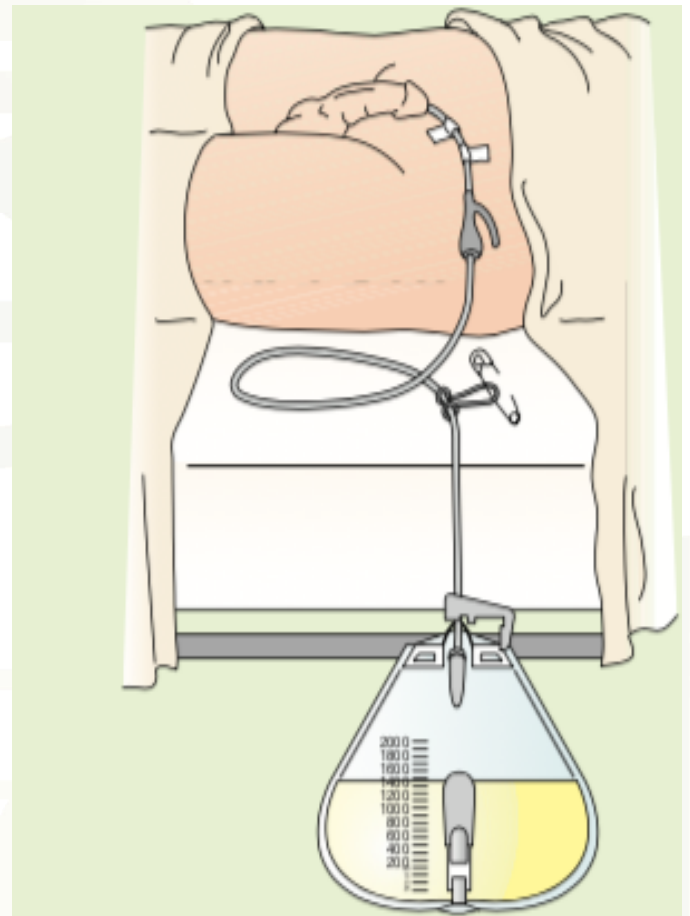


FIGURE 5. Securing tubing to patient's abdomen.

24. Assist the patient to a comfortable position. Cover the patient with bed linens. Place the bed in the lowest position.

Positioning and covering provides warmth and promotes comfort.

25. Secure drainage bag below the level of the bladder. Check that drainage tubing is not kinked and that movement of side rails does not interfere with catheter

This facilitates drainage of urine and prevents the backflow of urine.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

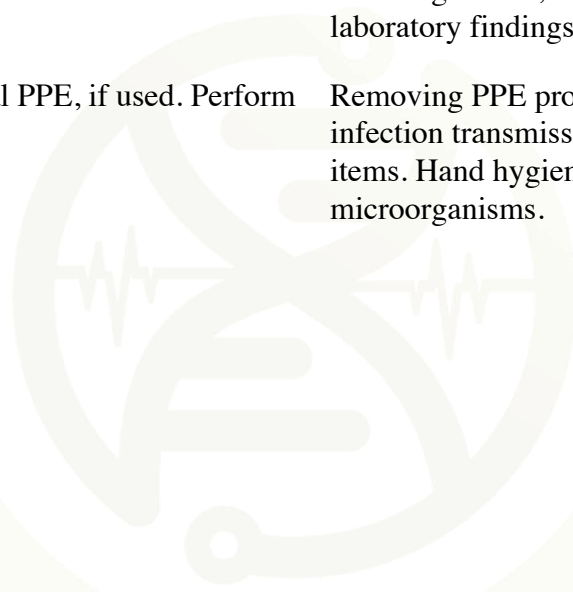
or drainage bag.

26. Put on clean gloves. Obtain urine specimen immediately, if needed, from drainage bag. Label specimen. Send urine specimen to the laboratory promptly or refrigerate it.

27. Remove gloves and additional PPE, if used. Perform hand hygiene.

Catheter system is sterile. Obtaining specimen immediately allows access to sterile system. Keeping urine at room temperature may cause microorganisms, if present, to grow and distort laboratory findings.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.





## Skill Variation Intermittent Male Urethral Catheterization



1. Check the medical record for the order for intermittent urethral catheterization. Review chart for any limitations in physical activity. Bring the catheter kit and other necessary equipment to bedside. Obtain assistance from another staff member, if necessary. Perform hand hygiene. Put on PPE, as indicated, based on transmission precautions.
2. Identify the patient. Discuss the procedure with the patient and assess the patient's ability to assist with the procedure. Discuss any allergies with the patient, especially to iodine and latex.
3. Close curtains around bed and close the door to the room, if possible.
4. Provide good lighting. Artificial light is recommended. Place a trash receptacle within easy reach.
5. Raise the bed to a comfortable working height. Stand on the patient's right side if you are right-handed, patient's left side if you are left-handed.
6. Position patient on his back with thighs slightly apart. Drape patient so that only the area around the penis is exposed. Slide waterproof pad under patient.
7. Put on clean gloves. Clean the genital area with washcloth, skin cleanser, and warm water. Clean the tip of the penis first, moving the washcloth in a circular motion from the meatus outward. Wash the shaft of the penis using downward strokes toward the pubic area. Rinse and dry. Remove gloves. Perform hand hygiene again.
8. Open sterile catheterization tray on a clean overbed table using sterile technique.
9. Put on sterile gloves. Open sterile drape and place on patient's thighs. Place fenestrated drape with opening over penis.
10. Place catheter set on or next to patient's legs on sterile drape.
11. Open all the supplies. Fluff cotton balls in tray before pouring antiseptic solution over them. Alternately, open package of antiseptic swabs. Open specimen container if specimen is to be obtained.
12. Remove cap from syringe prefilled with lubricant.
13. Lift penis with nondominant hand. Retract foreskin in uncircumcised patient. Be prepared to keep this hand in this position until catheter is inserted and urine is flowing well and continuously.



14. Using the dominant hand and the forceps, pick up a cotton ball or antiseptic swab. Using a circular motion, clean the penis, moving from the meatus down the glans of the penis. Repeat this cleansing motion two more times, using a new cotton ball/swab each time. Discard each cotton ball/swab after one use.
15. Hold penis with slight upward tension and perpendicular to patient's body. Use the dominant hand to pick up the lubricant syringe. Gently insert tip of syringe with lubricant into urethra and instill the 10 mL of lubricant.
16. With the uncontaminated, dominant hand, place drainage end of catheter in receptacle. If a specimen is required, place the end into the specimen container in the receptacle.
17. Use the dominant hand to pick up the catheter and hold it an inch or two from the tip. Ask the patient to bear down as if voiding. Insert catheter tip into meatus. Ask the patient to take deep breaths as you advance the catheter 6 to 8 inches (14.4 to 19.2 cm) or until urine flows.
18. Hold the catheter securely at the meatus with the nondominant hand while the bladder empties. If a specimen is being collected, remove the drainage end of the tubing from the specimen container after the required amount is obtained and allow urine to flow into the receptacle. Set specimen container aside.
19. Allow the bladder to empty. Withdraw catheter slowly and smoothly after urine has stopped flowing. Remove equipment and dispose of it according to facility policy. Discard syringe in sharps container to prevent reuse. Wash and dry the genital area, as needed. Replace foreskin in forward position, if necessary.
20. Remove gloves. Assist the patient to a comfortable position. Cover the patient with bed linens. Place the bed in the lowest position.
21. Put on clean gloves. Cover and label the specimen. Send the urine specimen to the laboratory promptly or refrigerate it.
22. Remove gloves and additional PPE, if used. Perform hand hygiene.



Note: Intermittent catheterization in the home is performed using clean technique. The bladder's natural resistance to the microorganisms normally found in the home makes sterile technique unnecessary. Catheters are washed, dried, and stored for repeated use.





## Removing an Indwelling Catheter

Removal of an indwelling catheter is performed using clean technique. Take care to prevent trauma to the urethra during the procedure. Completely deflate the catheter balloon before catheter removal to avoid irritation and damage to the urethra and meatus. The patient may experience burning or irritation the first few times he/she voids after removal, due to urethral irritation. If the catheter was in place for more than a few days, decreased bladder muscle tone and swelling of the urethra may cause the patient to experience difficulty voiding or an inability to void. Monitor the patient for urinary retention. It is important to encourage adequate oral fluid intake to promote adequate urinary output. Check facility policy regarding the length of time the patient is allowed to accomplish successful voiding after catheter removal.

### Equipment

- Syringe sufficiently large to accommodate the volume of solution used to inflate the balloon (balloon size/inflation volume is printed on the balloon inflation valve on the catheter at the bifurcation)
- Waterproof, disposable pad
- Disposable gloves
- Additional PPE, as indicated
- Washcloth and warm water to perform perineal hygiene after catheter removal

Action	Rationale
1. Confirm the order for catheter removal in the medical record.	Verifying the medical order ensures that the correct intervention is administered to the right patient.
2. Bring necessary equipment to the bedside.	Bringing everything to the bedside conserves time and energy. Arranging items nearby is convenient, saves time, and avoids unnecessary stretching and twisting of muscles on the part of the nurse.
3. Perform hand hygiene and put on PPE, if indicated.	Hand hygiene and PPE prevent the spread of microorganisms. PPE is required based on transmission precautions.
4. Identify the patient.	Identifying the patient ensures the right patient receives the intervention and helps prevent errors.
5. Close curtains around the bed and close the door to the room, if possible. Discuss the procedure with the patient and assess the patient's ability to assist with the procedure.	This ensures the patient's privacy. This discussion promotes reassurance and provides knowledge about the procedure. Dialogue encourages patient participation and allows for



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

individualized nursing care.

6. Adjust bed to comfortable working height, usually elbow height of the caregiver (VISN 8 Patient Safety Center, 2009). Stand on the patient's right side if you are right-handed, patient's left side if you are left-handed.

Having the bed at the proper height prevents back and muscle strain. Positioning allows for ease of use of dominant hand for catheter removal.

7. Position the patient as for catheter insertion. Drape the patient so that only the area around the catheter is exposed. Slide waterproof pad between the female patient's legs or over the male patient's thighs.

Positioning allows access to site. Draping prevents unnecessary exposure and promotes warmth. The waterproof pad will protect bed linens from moisture and serve as a receptacle for the used catheter after removal

8. Remove the leg strap, tape, or other device used to secure the catheter to the patient's thigh or abdomen.

This action permits removal of catheter.

**9. Insert the syringe into the balloon inflation port. Allow water to come back by gravity (Mercer Smith, 2003). Alternately, aspirate the entire amount of sterile water used to inflate the balloon (Figure 1). Refer to manufacturer's instructions for deflation. Do not cut the inflation port.**

Removal of sterile water deflates the balloon to allow for catheter removal. All of the sterile water must be removed to prevent injury to the patient. Aspiration by pulling on the syringe plunger may result in collapse of the inflation lumen; contribute to the formation of creases, ridges, or cuffing at the balloon area; and increase the catheter balloon diameter size on deflation, resulting in difficult removal and urethral trauma (Mercer Smith, 2003).



**FIGURE 1.** Removing fluid from balloon.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

10. Ask the patient to take several slow deep breaths.  
**Slowly and gently remove the catheter.** Place it on the waterproof pad and wrap it in the pad.

Slow deep breathing helps to relax the sphincter muscles. Slow gentle removal prevents trauma to the urethra. Using a water-proof pad prevents contact with the catheter.

11. Wash and dry the perineal area, as needed.

Cleaning promotes comfort and appropriate personal hygiene.

12. Remove gloves. Assist the patient to a comfortable position. Cover the patient with bed linens. Place the bed in the lowest position.

These actions provide warmth and promote comfort and safety.

13. Put on clean gloves. Remove equipment and dispose of it according to facility policy. Note characteristics and amount of urine in drainage bag.

Proper disposal prevents the spread of microorganisms. Observing the characteristics ensures accurate documentation.

14. Remove gloves and additional PPE, if used. Perform hand hygiene.

Removing PPE properly reduces the risk for infection transmission and contamination of other items. Hand hygiene prevents the spread of microorganisms.





## Specimen Collection

### Urine Specimen

#### 1. Clean Single Specimen / Urine Analysis / Urine Detail Report (D/R):

##### Purposes:

- To check the kidney function.
- To aid in diagnosis.
- To assess the effectiveness of therapy.
- To determine progress of patient.

##### Equipment:

- Clean specimen container (urine D/R bottle).
- Bed pan or urinal.
- Measuring jug.
- Toilet tissues.
- Disposable gloves.

##### Procedure:

- Don disposable gloves.
- Have patient void in a clean bedpan or urinal or if possible have patient void directly into the specimen container.
- Collect at least 50 ml of urine.
- Place the lid tightly on the specimen container and wash urine that splashed outside the container.
- Label the container and send to the lab as soon as possible with request slip.
- Wash hands and document / flow sheet II.

#### 2. Clean Voided / Mid Stream / Sterile Voided Specimen:

##### Purpose:

- To check the bacteriological culture.

##### Equipment:

- Sterile specimen container (urine C/S bottle).
- Disposable gloves.

##### Procedure:

- Instruct patient to drink plenty of fluid at least 30 minutes before collecting urine specimen.
- Instruct patient not to void without notification to nurse if desires to void.
- Don gloves.
- Assist patient to clean perineum, including urethral orifice and surrounding area.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

- Open specimen container to receive urine. Avoid contaminating the inside of the container by exposing it to air or unnecessary touching.
- Have patient void small amount of urine and discard it.
- Have patient void rest of the urine directly into the specimen container.
- Remove specimen container before flow of urine stops.
- Place the lid tightly on the specimen container and wash urine that splashed outside the container.
- Label specimen bottle and send to the lab with in 15 minutes with request slip.
- Wash hands and document in nurse's notes / flow sheet II.



## Urine Testing For Sugar

**Reagents:** A chemical substance used to produce a chemical reaction.

### Sr# METHODS

1. Benedict's solution test.
2. Diastix test.

### REAGENTS

- Benedict's solution.  
Chemicals impregnated over a paper strip.

### Test for Sugar

#### Purpose:

To detect the presence of sugar in the urine.

#### Benedict's Solution Test

#### Equipment:

- Test tube.
- Test tube holder.
- Test tube stand.
- Medicine dropper.
- 5 cc syringe.
- Benedict's solution.
- Fresh urine specimen.
- Disposable gloves.
- Spirit lamp.
- Match box.

#### Procedure:

- Don disposable gloves.
- Take a test tube and pour 5 cc of Benedict's solution in it.
- Add 8 drops of urine.
- Boil solution for 2 minutes. Keep the test tube scanty over the flame.
- Point the test tube away from self as urine may spurt during boiling.
- Pass the tube back and forth through the flame.
- Identify the change of urine color (use the chart provided on the Benedict solution bottle).

#### If the urine color changes to:

Clear blue	No traces of sugar
Turbid Green	0.25% Sugar
Yellow	0.50% Sugar
Brick Red	02% above



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

- Discard urine and wash hands.
- Document the findings.

### Diastix Test

**Diastix** are used to check the presence of Glucose in urine.

### Equipment:

- Fresh urine specimen in clean container.
- Diastix.
- Diastix color chart.
- Disposable gloves.
- Tissue paper.

### Procedure:

- Wash hands.
- Identify the patient and explain the procedure.
- Check the expiry date on the Multistix bottle.
- Don disposable gloves and obtain a fresh urine specimen in a clean container.
- Remove one strip from the bottle and close the bottle tightly.
- Immerse designated tip into the urine and remove it immediately.
- Tap the edge of the strip while holding it horizontally against the container.
- Wait for few seconds (as specified on the bottle).
- Compare test strip with color chart printed on the bottle in good light discard reagent strip in trash.
- Wash hands and documenting the findings.





## Fomentation

### Application of hot water bottle

#### Objective:

By the end of this skill students will be able to:

- Identify the risks to clients related to hot application.
- Demonstrate the right technique.

#### Purposes:

- Promotes blood flow to an injured part by vasodilatation.
- Promotes muscle relaxation and reduce muscle spasm and pain.
- Decreases venous congestion in an injured part.
- Decreases muscle tension.

#### Equipment:

- Rectangular tray.
- Hot water bottle with lid.
- Pillow cover / towel.
- Pint measure.
- Kettle with water.
- Bath thermometer.
- Duster.

#### Action

1. Check doctors' order or hospital policy for its use.
2. Identify the patient.
3. Explain the procedure to the patient.
4. Assess condition of skin of the body part to be immersed.
5. Collect equipment.
6. Wash hands.
7. Rinse the hot water bottle with hot water.
8. Pour the water into the pint measure and check the temperature.

#### Rationale

Ensures likelihood of safe application.  
Give right treatment to right patient.  
Helps reduce client anxiety and promote cooperation.  
Provides baseline to determine the changes in skin during therapy.  
Saves time and energy of nurse.  
Reduces risk of infection.  
Prevents rapid cooling of water.  
Correct temperature prevents accidental burns.  
Desired temperature:

- Normal adults 52°C (125°F)
- Unconscious or weak adults 40.5 – 46°C (105 – 115°F)



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

- |   |  |
|---|--|
| 9. Fill two thirds of the bottle with hot water.                            | Acts as a water cushion.   |
| 10. Expel the air by molding the bag to the body part.                      | Prevents rapid cooling from air currents.  |
| 11. Apply the screw cap tight and invert the bottle.                        | Ensures that there is no leakage of water.   |
| 12. Wipe the outside of the bag and cover with towel or pillow case.        | Moisture outside the bag will wet the cover and hasten cooling.                              |
| 13. Place the hot water bottle over patient's clothes.                      | Prevent skin burns.  |
| 14. Check the skin every 5 – 10 minutes.                                    | Identifies untoward reaction.  |
| 15. Remove after 30 – 45 minutes.   | Maximum effect occurs in 20 – 30 minutes. Continued exposure to moisture will lacerate skin. |
| 16. Document condition of the skin and patient's response to the procedure. | Communication effectiveness of therapy.  |



## Cold Compression (Application of Ice Cap)

### Objectives:

By the end of this skill students will be able to:

- Verbalizes purposes of cold compression.
- Demonstrate proper technique of cold compression.

### Purposes:

- Prevents blood flow to an injured part by vasoconstriction.
- Prevents edema.
- Decreases pain (local anesthetic effect).
- Decreases muscle tension.

### Equipment:

- A rectangular tray.
- Ice cap with lid / Ice pack.
- Pillow cover.
- Ice cubes.
- Ice pick (if large cubes to be broken).
- Water proof material (mackintosh) / Plastic bag.
- Patient's towel.

### Action

### Rationale

1. Check doctor's order or hospital policy.
2. Identify the patient.
3. Explain the procedure to the patient.
4. Assess condition of skin where it has to be applied.
5. Wash hands.
6. Collect equipment.
7. Allow sharp corners of the cubes to melt in the bowl before filling.
8. Fill the ice cap 2 / 3 with ice.
9. Expel the air and screw the lid light.
10. Invert the ice cap for leakage.
11. Wipe the outside of the ice cap and cover it.
12. Spread the mackintosh and patient's towel under the area the ice cap has to be applied.
13. Lift and check the area every 5 – 10 minutes (ask if feeling too cold).

- Ensures likelihood of safe application.  
Give right treatment to right patient.  
Reduces anxiety and gains cooperation.  
Provides baseline data.  
Prevents spread of infection.  
Saves time and energy.  
Reduces discomfort to the patient caused by pricking.  
Prevents melting of ice rapidly.  
Minimizes discomfort to the patient and prevents skin laceration.  
Prevents soiling of bed linen.  
Monitoring determines if there is adverse response to cold.



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



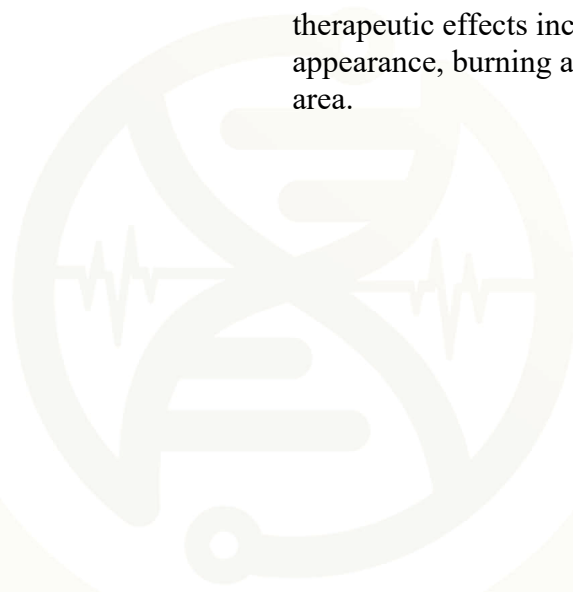
جامعة المجمعة  
Majmaah University

14. Remove after 30 – 45 minutes.

Prolonged exposure to cold may cause tissue damage.

15. Document care given, condition of skin and patient's response.

Communicates effectiveness of therapy.  
Therapeutic effects include decreased edema, less discomfort and area cool to touch non – therapeutic effects include redness, bluish appearance, burning and numbness in the affected area.







كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

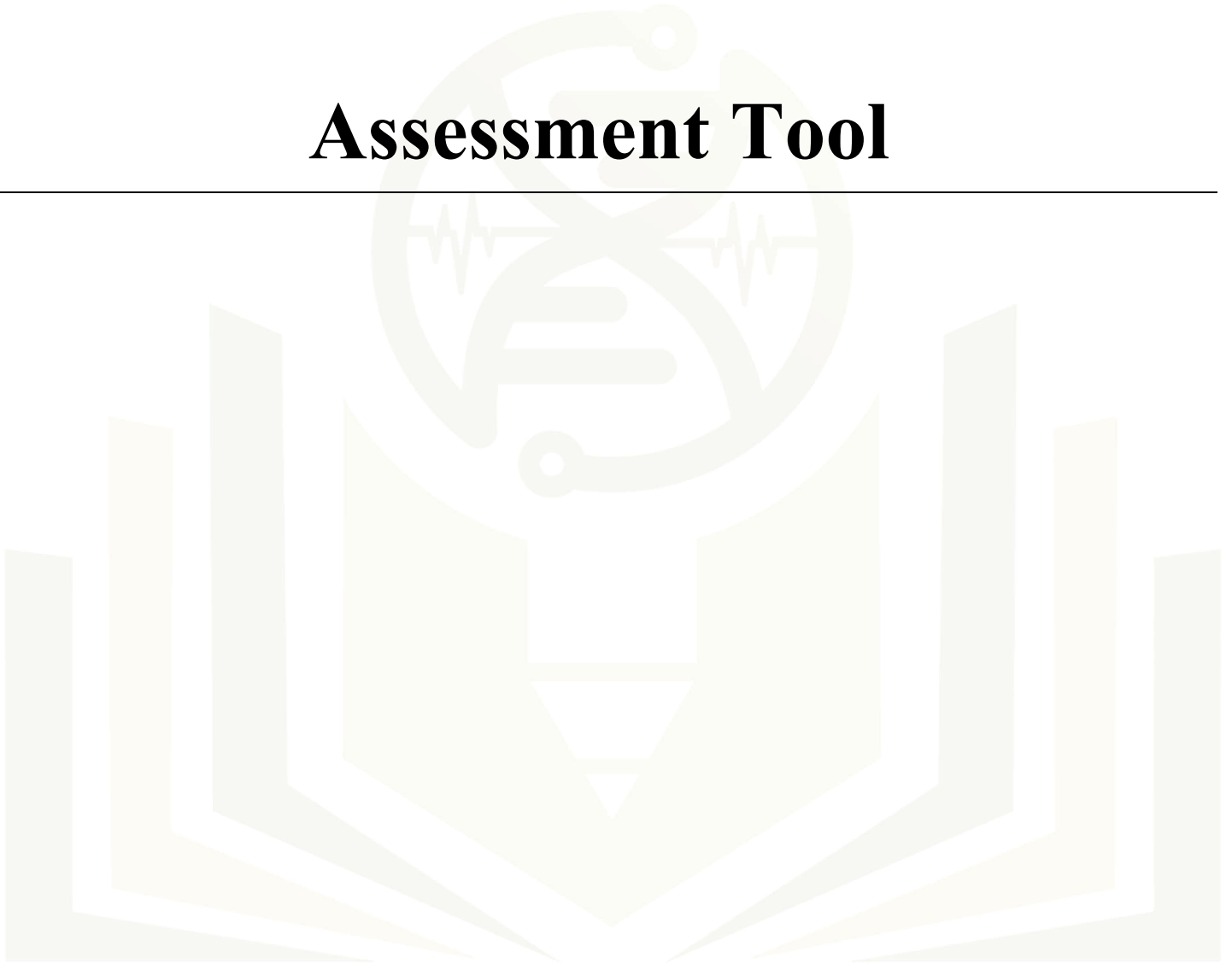
المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

# Assessment Tool

---





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## NRS 234 Practical Examination No. 1

Rubric						
CLO	Assessment Attributes (Criteria)	Levels of Attainment				Marks
		Developing	Functional	Proficient	Advanced	
		Score: 0-1	Score: 2-3	Score: 4	Score: 5	
K3.1	Knowledge	Limited understanding of required concepts. Cannot discuss concepts in their own words.	Can explain required facts and definitions. Has adequate breadth, but limited depth of understanding of basic concepts.	Exhibits breadth and depth of understanding of concepts in the knowledge domain. Can use terminologies with minor corrections.	Exhibits accurate breadth and depth of understanding of concepts in the knowledge domain.	
S4.1	Psychomotor Skills (Efficiency and Independence)	Cannot perform tasks and standard procedures unaided.	Can successfully perform most tasks and standard procedures largely unaided but demonstrates limited capacity to perform a nursing skill.	Can independently complete all tasks and standard procedures efficiently. Can adapt to standard procedures and protocols with minor corrections.	Effectively executes all procedures and skills efficiently and independently.	
S4.1	Psychomotor Skills (Safety)	The student needed more than three reminders of proper procedures during skills demonstration.	The student provided safety measures with two reminders of proper procedure. Supervision and assistance required.	The student provided safety measures with one reminder of proper procedure. Supervision only required.	The student provided safe measures independently with observation only required.	
S4.2	Application of Nursing Process (Organization / Prioritization)	The student was unable to demonstrate the correct sequence of the entire procedure. The student was unable to utilize the nursing process.	The student was unable to demonstrate the correct sequence in most parts of the procedure. The student was unable to utilize the nursing process.	The student was able to demonstrate the correct sequence in most parts of the procedure. The student was able to utilize the nursing process.	The student was able to demonstrate the correct sequence of the entire procedure. The student was able to utilize the nursing process.	
S4.2	Application of Nursing Process (Completeness)	The student was unable to complete the entire procedure. The student was unable to utilize the nursing process.	The student was unable to complete most parts of the procedure. Demonstrate shortcuts in doing each step. The student was unable to utilize the nursing process.	The student was able to complete most parts of the procedure with minor corrections. The student was able to utilize the nursing process.	The student was able to complete the entire procedure. The student was able to utilize the nursing process.	
					<b>TOTAL MARKS</b>	



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

### Feedback / Narrative Evaluation:

**Developing** is intended to describe performance of a student nurse that is not yet at the basic level of expectations. So features may be present but not enough to pass, but maybe enough to ask for further work and remedial examination.

**Functional** is intended to describe learning attainment of a student nurse that meets the basic requirements and can be carried out in part without support, although some may still be necessary as there still is a high degree of reliance on authority for guidance and very little translation or integration of concepts. It would correspond to a Pass.

**Proficient** is a desirable standard for most student nurses to reach and strongly exhibits independence, translation, integration and application. It would correspond to a credit.

**Advanced** is performance of a student nurse beyond core expectations that is highly independent, creative, critically reflective, generative and transformative. It would correspond to a distinction or high distinction.

Student Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Instructor's Signature: \_\_\_\_\_

Date: \_\_\_\_\_



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## NRS 234 Practical Examination No. 2

Rubric						
CLO	Assessment Attributes (Criteria)	Levels of Attainment				Marks
		Developing	Functional	Proficient	Advanced	
		Score: 0-1	Score: 2-3	Score: 4	Score: 5	
K3.1	Knowledge	Limited understanding of required concepts. Cannot discuss concepts in their own words.	Can explain required facts and definitions. Has adequate breadth, but limited depth of understanding of basic concepts.	Exhibits breadth and depth of understanding of concepts in the knowledge domain. Can use terminologies with minor corrections.	Exhibits accurate breadth and depth of understanding of concepts in the knowledge domain.	
S4.1	Psychomotor Skills (Efficiency and Independence)	Cannot perform tasks and standard procedures unaided.	Can successfully perform most tasks and standard procedures largely unaided but demonstrates limited capacity to perform a nursing skill.	Can independently complete all tasks and standard procedures efficiently. Can adapt to standard procedures and protocols with minor corrections.	Effectively executes all procedures and skills efficiently and independently.	
S4.1	Psychomotor Skills (Safety)	The student needed more than three reminders of proper procedures during skills demonstration.	The student provided safety measures with two reminders of proper procedure. Supervision and assistance required.	The student provided safety measures with one reminder of proper procedure. Supervision only required.	The student provided safe measures independently with observation only required.	
S4.2	Application of Nursing Process (Organization / Prioritization)	The student was unable to demonstrate the correct sequence of the entire procedure. The student was unable to utilize the nursing process.	The student was unable to demonstrate the correct sequence in most parts of the procedure. The student was unable to utilize the nursing process.	The student was able to demonstrate the correct sequence in most parts of the procedure. The student was able to utilize the nursing process.	The student was able to demonstrate the correct sequence of the entire procedure. The student was able to utilize the nursing process.	
S4.2	Application of Nursing Process (Completeness)	The student was unable to complete the entire procedure. The student was unable to utilize the nursing process.	The student was unable to complete most parts of the procedure. Demonstrate shortcuts in doing each step. The student was unable to utilize the nursing process.	The student was able to complete most parts of the procedure with minor corrections. The student was able to utilize the nursing process.	The student was able to complete the entire procedure. The student was able to utilize the nursing process.	
					<b>TOTAL MARKS</b>	





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

**Feedback / Narrative Evaluation:**

**Developing** is intended to describe performance of a student nurse that is not yet at the basic level of expectations. So features may be present but not enough to pass, but maybe enough to ask for further work and remedial examination.

**Functional** is intended to describe learning attainment of a student nurse that meets the basic requirements and can be carried out in part without support, although some may still be necessary as there still is a high degree of reliance on authority for guidance and very little translation or integration of concepts. It would correspond to a Pass.

**Proficient** is a desirable standard for most student nurses to reach and strongly exhibits independence, translation, integration and application. It would correspond to a credit.

**Advanced** is performance of a student nurse beyond core expectations that is highly independent, creative, critically reflective, generative and transformative. It would correspond to a distinction or high distinction.

Student Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Instructor's Signature: \_\_\_\_\_

Date: \_\_\_\_\_



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## NRS 234 Final Practical Examination (Station 1)

### Rubric

CLO	Assessment Attributes (Criteria)	Score				Marks
		0	Score: 1-2	Score: 3-4	Score: 5	
K3.1	Knowledge	Limited understanding of required concepts. Cannot discuss concepts in their own words.	Exhibits breadth and depth of understanding of concepts in the knowledge domain. Can use terminologies with minor corrections.	Exhibits accurate breadth and depth of understanding of concepts in the knowledge domain.		
S4.1	Psychomotor Skills	Cannot perform tasks and standard procedures unaided.	Can successfully perform most tasks and standard procedures largely unaided but demonstrates limited capacity to perform a nursing skill.	Can independently complete all tasks and standard procedures efficiently. Can adapt to standard procedures and protocols with minor corrections.	Effectively executes all procedures and skills efficiently and independently.	
S4.2	Application of Nursing Process	The student was unable to demonstrate the correct sequence of the entire procedure. The student was unable to utilize the nursing process.	The student was unable to demonstrate the correct sequence in most parts of the procedure. The student was unable to utilize the nursing process.	The student was able to demonstrate the correct sequence in most parts of the procedure. The student was able to utilize the nursing process.	The student was able to demonstrate the correct sequence of the entire procedure. The student was able to utilize the nursing process.	
					<b>Total</b>	



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

### Feedback / Narrative Evaluation:

**Developing** is intended to describe performance of a student nurse that is not yet at the basic level of expectations. So features may be present but not enough to pass, but maybe enough to ask for further work and remedial examination.

**Functional** is intended to describe learning attainment of a student nurse that meets the basic requirements and can be carried out in part without support, although some may still be necessary as there still is a high degree of reliance on authority for guidance and very little translation or integration of concepts. It would correspond to a Pass.

**Proficient** is a desirable standard for most student nurses to reach and strongly exhibits independence, translation, integration and application. It would correspond to a credit.

**Advanced** is performance of a student nurse beyond core expectations that is highly independent, creative, critically reflective, generative and transformative. It would correspond to a distinction or high distinction.

Student Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Instructor's Signature: \_\_\_\_\_

Date: \_\_\_\_\_



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## NRS 234 Final Practical Examination (Station 2)

### Rubric

CLO	Assessment Attributes (Criteria)	Score				Marks
		0	Score: 1-2	Score: 3-4	Score: 5	
K3.1	Knowledge	Limited understanding of required concepts. Cannot discuss concepts in their own words.	Exhibits breadth and depth of understanding of concepts in the knowledge domain. Can use terminologies with minor corrections.	Exhibits accurate breadth and depth of understanding of concepts in the knowledge domain.		
S4.1	Psychomotor Skills	Cannot perform tasks and standard procedures unaided.	Can successfully perform most tasks and standard procedures largely unaided but demonstrates limited capacity to perform a nursing skill.	Can independently complete all tasks and standard procedures efficiently. Can adapt to standard procedures and protocols with minor corrections.	Effectively executes all procedures and skills efficiently and independently.	
S4.2	Application of Nursing Process	The student was unable to demonstrate the correct sequence of the entire procedure. The student was unable to utilize the nursing process.	The student was unable to demonstrate the correct sequence in most parts of the procedure. The student was unable to utilize the nursing process.	The student was able to demonstrate the correct sequence in most parts of the procedure. The student was able to utilize the nursing process.	The student was able to demonstrate the correct sequence of the entire procedure. The student was able to utilize the nursing process.	
					<b>Total</b>	





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

### Feedback / Narrative Evaluation:

**Developing** is intended to describe performance of a student nurse that is not yet at the basic level of expectations. So features may be present but not enough to pass, but maybe enough to ask for further work and remedial examination.

**Functional** is intended to describe learning attainment of a student nurse that meets the basic requirements and can be carried out in part without support, although some may still be necessary as there still is a high degree of reliance on authority for guidance and very little translation or integration of concepts. It would correspond to a Pass.

**Proficient** is a desirable standard for most student nurses to reach and strongly exhibits independence, translation, integration and application. It would correspond to a credit.

**Advanced** is performance of a student nurse beyond core expectations that is highly independent, creative, critically reflective, generative and transformative. It would correspond to a distinction or high distinction.

Student Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Instructor's Signature: \_\_\_\_\_

Date: \_\_\_\_\_



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## NRS 234 Final Practical Examination (Station 3)

### Rubric

CLO	Assessment Attributes (Criteria)	Score				Marks
		0	Score: 1-2	Score: 3-4	Score: 5	
K3.1	Knowledge	Limited understanding of required concepts. Cannot discuss concepts in their own words.	Exhibits breadth and depth of understanding of concepts in the knowledge domain. Can use terminologies with minor corrections.	Exhibits accurate breadth and depth of understanding of concepts in the knowledge domain.		
S4.1	Psychomotor Skills	Cannot perform tasks and standard procedures unaided.	Can successfully perform most tasks and standard procedures largely unaided but demonstrates limited capacity to perform a nursing skill.	Can independently complete all tasks and standard procedures efficiently. Can adapt to standard procedures and protocols with minor corrections.	Effectively executes all procedures and skills efficiently and independently.	
S4.2	Application of Nursing Process	The student was unable to demonstrate the correct sequence of the entire procedure. The student was unable to utilize the nursing process.	The student was unable to demonstrate the correct sequence in most parts of the procedure. The student was unable to utilize the nursing process.	The student was able to demonstrate the correct sequence in most parts of the procedure. The student was able to utilize the nursing process.	The student was able to demonstrate the correct sequence of the entire procedure. The student was able to utilize the nursing process.	
					<b>Total</b>	



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

### Feedback / Narrative Evaluation:

**Developing** is intended to describe performance of a student nurse that is not yet at the basic level of expectations. So features may be present but not enough to pass, but maybe enough to ask for further work and remedial examination.

**Functional** is intended to describe learning attainment of a student nurse that meets the basic requirements and can be carried out in part without support, although some may still be necessary as there still is a high degree of reliance on authority for guidance and very little translation or integration of concepts. It would correspond to a Pass.

**Proficient** is a desirable standard for most student nurses to reach and strongly exhibits independence, translation, integration and application. It would correspond to a credit.

**Advanced** is performance of a student nurse beyond core expectations that is highly independent, creative, critically reflective, generative and transformative. It would correspond to a distinction or high distinction.

Student Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Instructor's Signature: \_\_\_\_\_

Date: \_\_\_\_\_



كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

STATION	PROCEDURE	Examiner	Room Assignment
1	<p><i>Student will randomly pick one procedure from the list below:</i></p> <ul style="list-style-type: none"><li>• Performing hand hygiene using soap and water</li><li>• Using personal protective equipment</li><li>• Providing range-of-motion exercises</li></ul>		Male Lab: <u>1C1</u>
2	<p><i>Student will randomly pick one procedure from the list below:</i></p> <ul style="list-style-type: none"><li>• Assessing body temperature</li><li>• Assessing peripheral pulse by palpation</li><li>• Assessing apical pulse by auscultation</li><li>• Assessing brachial artery blood pressure</li></ul>		Male Lab: <u>1C2</u>
3	<p><i>Student will randomly pick one procedure from the list below:</i></p> <ul style="list-style-type: none"><li>• Administering an intradermal injection</li><li>• Administering a subcutaneous injection</li><li>• Administering an intramuscular injection</li><li>• Administering IV medications</li></ul>		Male Lab: <u>1C3</u>





كلية العلوم الطبية التطبيقية  
College of Applied Medical Sciences

المملكة العربية السعودية  
وزارة التعليم  
جامعة المجمعة



جامعة المجمعة  
Majmaah University

## Student's Map of Completed Stations

START		STATION 1	STATION 2	STATION 3	FINISHED
	Room Number				
	Examiner's Name				
	Time Started				
	Time Finished				
	Name of Procedure				
Remarks					