DELMAR'S FUNDAMENTAL & ADVANCED NURSING SKILLS - 2nd Ed. (2004)

Front Matter

Title Page

Delmar's Fundamental & Advanced Nursing Skills
Second Edition
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Dedication

Dr. Altman would like to dedicate this book and express a special thanks to her husband, Len, and her three children, Jonathan, Matthew, and especially Katherine, who exhibited patience and understanding during this project, and to all the staff and clients at the numerous health facilities who made this book possible. Furthermore, Dr. Altman dedicates this book to professional nurses, health care providers, clients, and families who will benefit from the application of knowledge presented in this publication.

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Preface

Health care is changing at an increasingly fast pace. The cumulative effects of sophisticated technology, an aging population of clients with chronic disease and long-term sequalae, an increasingly diverse population, and a growing nursing shortage challenge nurses today as never before. Often, nurses are placed in situations that demand an increased level of performance despite a decreased amount of support from the health care system.

Delmar's Fundamental & Advanced Nursing Skills was revised with this nursing population in mind. This book was developed as a text and guideline to perform the skills used in daily nursing practice, and as a learning tool for new nurses. It was designed to be a usable volume, presenting concepts and actions clearly so that a nurse—whether a novice or experienced—may retain and master both the skill and the underlying rationale.

The second edition still serves this purpose. Nursing students, registered nurses, licensed practical/ vocational nurses, physician assistants, nurse practitioners, certified aides, medical assistants, and any health care worker charged with performing common procedures will value the useful guidelines and principles discussed within this book.

The second edition of *Delmar's Fundamental & Advanced Nursing Skills* addresses the needs of today's changing health care environment by providing nurses and other health care workers with an exciting, new, accompanying video series. Many of the skills within this text are shown in a step-by-step presentation that re-inforces the written word. Students and practicing nurses who want to review a nursing procedure may now observe how that skill is carried out by watching a step-by-step video. Over one hundred skills are presented in video format, as indicated within the text by use of an icon.

The addition of the accompanying step-by-step videos—each segment between 5 and 10 minutes in length—enhances the value of this text as a resource to acquire new skills, as a how-to manual to utilize skills, a procedure manual in a facility, a manual to familiarize a former health care worker re-entering health care, or a training manual within a facility. Rather than merely providing a step-by-step implementation, this text may be used to stimulate the reader to learn underlying rationales, analyze expected outcomes of treatment, formulate sound bases for implementation, develop critical thinking skills, and model behaviors.

This book contains 203 nursing skills divided into 11 chapters that cover basic and advanced nursing procedures. The practitioner can follow the procedural- manual-type steps presented for each skill to improve competence and comfort levels in performing skills. Standards of nursing practice are maintained in each skill. Research-based knowledge has been incorporated into nursing interventions, especially where controversy may exist.

ORGANIZATION

Each skill is presented using the nursing process: assessment, diagnosis, planning, expected outcomes, implementation, and evaluation. The nursing process is a systematic method whereby nurses can make clinical decisions and delineate a course of action based on analysis of available data. The nursing process is continual and cyclic. Evaluation of the outcome incorporates a feedback loop leading to further assessment, decision making, and implementation of care.

North American Nursing Diagnosis Association (NANDA)

The diagnosis section of the text is based on NANDA's standardized list of nursing diagnoses. Using the input of practicing clinicians, NANDA has developed and refined a standardized list of diagnostic labels for use in the nursing process. Using the standardized list as a guideline, the practitioner interprets the assessment data and derives a diagnosis. The standardized diagnoses help guide client treatment by allowing the practitioner to identify rationales for client care and anticipate potential problems.

DOCUMENTATION AND CHARTING

Documentation provides a legal record of the client's status and the care provided. This record is often used as a means for quality assurance, a utilization review of hospital practices, and statistical analysis of client outcomes in areas of infection control, medical, surgical, and nursing practices. Legal documentation of the client's status and care can be used in a court of law to verify client and health care practices.

Charting includes sheets of fact documentation on forms such as flow sheets, including vital signs, fluid intake and output, intravenous records, medication administration records, assessment checklists, and descriptive information. Charting format varies between facilities. Some examples of charting types are the nurse's notes organized around subjectively, objectively, assessment, and planning (SOAP); notes organized around client problems or problem-oriented medical record (OMR); notes organized around body systems (systems charting); or a combinations of formats. The legal requirements for charting are dictated by state laws, professional requirements, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and individual facility requirements. Most facilities have committees who approve and delineate guidelines for charting.

Client information should be recorded directly on the chart, thereby avoiding errors in transferring information. For accuracy, many facilities place daily chart forms at the bedside so information can be recorded promptly. Forms generally include flow sheets, assessments, and medication records of varying complexity. Specialized forms include coma scales, seizure precautions reports, and level of consciousness recording. Care maps and treatment plans for routine specialized care are used when the client is expected to recover in a predictable pattern with expected advances each day. Certain forms, such as consent and insurance forms, must be signed by clients or their legal guardian.

Many hospitals have incorporated computerized charting. Often computers are located in clients' rooms for immediate charting and retrieval of information. Many large facilities have adopted computerized systems for administration and charting of medications, laboratory results, and diagnostic testing. Guidelines and strategies for minimizing the risks of computerized charting are essential. Once computer entries are part of the permanent chart, they cannot be deleted; however, policies exist whereby mistaken entries or incorrect information can be explained.

With standard hard copy documentation, guidelines create consistency between facilities. Some examples of consistency are the use of black ink, correction by drawing a single line through the error to mark it, noting the time of each entry, charting the omission of medications and treatments, and signing entries with initial of first name and complete last name plus title.

CLINICAL PRACTICE GUIDELINES FOR PERFORMING A PROCEDURE

In order to utilize this text to maximize learning, the authors have provided guidelines to follow before beginning the procedure and after the procedure is completed.

Before the Procedure

- Practice the procedure with supervision in a clinical setting.
- Read the client's chart.
- Review the treatment plan or verify orders as necessary.
- Review the procedure.
- Assess the client and determine the appropriateness of the procedure.
- Take into consideration the client's/family's cultural and social background when deciding what to teach and when eliciting feedback.
- Employ the aid of a translator if there is a language barrier.
- Use visual aids such as flip charts, models, videos, if available, to explain procedure to client/family.
- If family members are to be involved, plan to instruct when they are present, if possible.
- Client and/or family members should be provided with a written set of instructions to take home with them, if needed.
- Plan the procedure.

After the Procedure

- Assess the client and his/her response to the procedure.
- Document the client's response.
- Change the treatment plan as appropriate.

NEW TO THIS EDITION

Skills

New skills have been added to this edition to clarify essential components of nursing practice. Skill 1-9, Male Genitalia, Hernia, and Rectal Examination was added in response to user feedback to enhance Chapter 1, Physical Assessment.

Features

Two new features have been added to the presentation of each nursing procedure. **Delegation Tips,** in a clear, direct manner, provide insights into what a nurse must know about the skill before it is delegated to ancillary personnel. Issues addressed include both technical concerns and legal/ethical aspects of care.

Special Considerations outline additional factors that may complicate issues or present a special hazard to either a client or nurse. These are issues that the nurse performing a procedure should be mindful of in caring for a client.

SPECIAL FEATURES/UNIQUENESS

Step-by-Step Format. The implementation section is presented in a step-by-step format with rationales for each action included. The skill is broken down into simple, easy-to-follow steps with explanations for the underlying reasons for each action. This allows even the novice to perform the skill and understand why each step is necessary. The steps presented provide specific directions for performing each skill. However, institutional

policies, client condition, environmental setting, and other variables may prompt modification of the interventions presented. When modifications are made, adherence to standards of practice and Standard Precautions must be maintained. Assess and evaluate the client throughout the procedure, modifying intervention as needed to maintain client safety and security. Rationales provide the scientific basis for each implementation. The rationale enables both the practitioner and client to understand the reason for each implementation, and thus the need to comply with protocols.

Real-life Photographs. The focus of this text is to present reality-based information with photographic examples from current clinical practice, rather than staged or rehearsed scenarios.

Real-World Anecdotes. Client situations drawn from experiences of the contributors or other practitioners add to the immediacy and practicality of the book.

Critical Thinking Skills. This feature offers performance-related scenarios to foster learning, decision making, and analytic thinking. These scenarios often help the reader anticipate possible negative outcomes involved in performing a skill and provide alternatives to avoid unwanted results.

Skill Variations. Variations for each skill are presented for geriatric and pediatric age groups, as well as home-care and long-term care settings, to allow for adaptation of the skills to various situations. For example, geriatric clients may require extra communication skills because of difficulty hearing or understanding. Pediatric clients may need psychosocial assessment of fear or anxiety, or require different sizes of equipment when performing the skill.

Common Errors and Nursing Tips. These are included to assist in improving client outcomes. These sections are presented by experienced nurses to aid and guide the novice practitioner through performing the skills, to help develop competency, and to prevent unwanted outcomes.

Equipment Needed. A list of common equipment needed is provided as an organizational tool to assist in preparation and setup. The equipment required may vary between institutions.

Estimated Time for Completion. The estimated time to complete a skill is identified to assist in planning and scheduling. The estimated time of completion should be used only as a general guide. Many factors, such as the skill of the practitioner, client cooperation, or degree of client illness, may affect the time required to accomplish a skill.

Client Education Needed. Client teaching should be routinely incorporated when performing skills. Client education is essential in promoting personal health responsibility and compliance. Education should be considered a routine part of most interventions. Informed clients are often less anxious, more cooperative, provide better histories, and are more proactive regarding their health care.

STANDARD PRECAUTIONS

Standard Precautions, formerly described as universal precautions, are mandated by either Occupational Safety and Health Administration (OSHA) guidelines or by the Centers for Disease Control (CDC). These are a set of protective guidelines designed to prevent transmission of any infection, especially blood-borne infections such as human immunodeficiency virus (HIV) and hepatitis B virus (HBV). In general, any blood or body fluids are considered potentially infective and direct contact must be avoided. The historical roots of infection control comes from the work of Semmelweis and Lister, but in the United States, the initiation of universal precautions in health care were not in effect until 1985. This came with the increasing awareness of the growing HIV epidemic and the need to protect health care workers from exposure to blood and body fluids. The CDC re-evaluated universal precautions in 1996 and issued a revised system called Standard Precautions and transmission-based precautions. Standard Precautions are implemented to reduce the risk of transmission of infection from client to health care provider and from health care provider to client. It incorporates the principles of Standard Precautions as well as body substance isolation policies and its use is recommended for all hospital clients. Standard Precautions apply to blood and all body fluids, secretions and excretions, with the exception of sweat. Body fluids can include

cerebrospinal, synovial, pleural, peritoneal, pericardial and amniotic fluids or semen. It is used on all clients indiscriminately and incorporates concepts such as: handwashing before and after each patient contact (see Skill 2-4); the use of personal protective equipment or protective barriers such as gloves, gowns, goggles (see Skill 2-5) and mouthpieces used in resuscitation efforts; the safe disposal of sharps and needles in approved containers, avoiding recapping of needles; and, the safe disposal of contaminated items and linen (see Skill 2-6).

Transmission-based precautions are used with clients who have a known or suspected infection that can be transmitted by airborne, droplet, or contact routes. Airborne precautions are used to protect against small-particle droplets that are widely distributed and remain suspended or airborne. These precautions are used when clients are suspected of having tuberculosis, measles, varicella, or disseminated varicella zoster virus. These clients require a private room (door closed) with negative air pressure and the use of a filtered mask by caregivers. Droplet precautions, used to protect against larger droplet particles which disperse into air currents, are initiated to prevent the transmission of infections caused by *Neisseria meningitidis, Haemophilus influenzae, Bordetella pertussis*, influenza, and other pathogens that are spread via droplets. These clients need a private room (door may be open) and caregiver must wear a mask when within three feet of the client. Contact precautions, refer to hand or skin transmissions, and are used for the prevention of infections related to multi-drug-resistant bacteria, and various enteric, viral or parasitic pathogens. These infections can be acquired via direct contact with a client or indirect contact with client care items or environmental surfaces, such as dressings, instruments, dirty gloves, or unwashed hands. Handwashing before and after care, as well as use of personal protective equipment (gown, gloves), are required when using contact precautions. This client will be in a private room or paired with a client with the same active infection. Guidelines and common symbols used for transmission-based precautions can be found inside the front and back covers of this book. Additional information may be obtained from the CDC at http://www.cdc.gov/ncidod/hip/ISOLAT/isolat.htm

Handwashing

Thoroughly washing hands is considered the most important measure to reduce the risk of transmission between individuals. Washing hands immediately before and after contact with clients must be practiced to prevent transmission of microorganisms. The use of gloves does not eliminate the need for hand hygiene. Besides health care workers, visitors should be encouraged to thoroughly wash hands before and after contact with clients. The CDC has developed guidelines for handwashing and alcohol-based handrubs, available at http://www.ede.gov/handhygiene/ and has recommendations that health care facilities develop and implement a system for measuring improvements in adherence to CDC guidelines. Futhermore the CDC has identified risk factors that lead to poor adherence.

Gloves

Following Standard Precautions, gloves should be worn:

- For touching blood and body fluids requiring Standard Precautions, mucous membranes, or nonintact skin of all clients,
- For handling items or surfaces soiled with blood or body fluids to which Standard Precautions apply,
- When any contact with body fluids may potentially be encountered.

Gloves are changed after contact with each client. Hands and other skin surfaces must be washed immediately, or as soon as client safety permits, if contaminated with blood or body fluids requiring Standard Precautions. Hands should be washed immediately after gloves are removed. Gloves will reduce the incidence of blood contamination of hands during phlebotomy, but they cannot prevent penetrating injuries caused by needles or other sharp instruments. In addition, the following general guidelines apply:

- Use gloves for performing phlebotomy when the health care worker has cuts, scratches, or other breaks in his/her skin.
- Use gloves in situations where the health care worker judges that contamination with blood may occur (e.g., when performing phlebotomy on an uncooperative client).
- Use gloves for performing finger and/or heel sticks on infants and children.
- Use gloves when persons are receiving training in phlebotomy.

Masks and Gowns

Masks and protective eyewear or face shields should be worn by health care workers to prevent exposure of mucous membranes of the mouth, nose, and eyes during procedures that are likely to generate droplets of blood or body fluids requiring Standard Precautions. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or body fluids requiring Standard Precautions.

Needles and Other Sharp Objects

All health care workers should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices. Precautions apply during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments after procedures. To prevent needlestick injuries, needles should not be recapped by hand, purposely bent or broken by hand, removed from disposable syringes, or otherwise manipulated by hand. After they are used, disposable syringes and needles, scalpel blades, and other sharp items should be placed in puncture-resistant containers for disposal. Puncture-resistant containers should be located as close as practical to the use area. All reusable needles should be placed in a puncture-resistant container for transport to the reprocessing area.

Infection Control

General infection control practices should further minimize the already minute risk of a salivary transmission of HIV. These infection control practices include the use of gloves for digital examination of mucous membranes and endotracheal suctioning, handwashing after exposure to saliva, and minimizing the need for emergency mouth-to-mouth resuscitation by making mouthpieces and other ventilation devices available for use in areas where the need for resuscitation is likely. Although Standard Precautions do not apply to human breast milk, gloves may be worn by health care workers in situations where exposures to breast milk might be frequent (e.g., in breast milk banking).

CONCLUSION

The skills in this book were written with current practice and standards in mind. Nursing practice should not be considered static. Even though minimum standards dictate the basis to practice, ongoing research leads to changes and advancements in practice. Therefore, it is imperative to note that skill implementation will vary with individual experience and expertise, and will vary between institutions depending on internal outcome measures and research. How a skill is performed may change or be further delineated as new research and knowledge is applied to hands-on care.

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    Front Matter

CHAPTER 1. Physical Assessment

SKILL 1-1. Physical Assessment —Carla A. Lee, PhD, ARNP C, FAAN, Claretta D. Munger, ARNP, Valerie Coxon, RN, PhD, Eileen Collins, MN, ARNP, CNOR

KEY TERMS

Assessment
Auscultation
Baseline
Examination
Health assessment
Inspection
IPPA
Palpation
Percussion
Physical

ESTIMATED TIME TO COMPLETE THE SKILL:

Variable depending on the purpose and depth of the examination: average of 20-30 minutes

OVERVIEW OF THE SKILL

A dynamic health assessment is the foundation of all nursing care with physical assessment as part of every holistic health evaluation. Assessment is the first step of the nursing process. It involves the orderly collection of objective information about the client's health status. Objective data are observable, measurable, and verifiable by more than one person. A fundamental systematic approach is used based on a combination of head-to-toe and body system assessments. These assessments are expanded as appropriate to the client's situation and setting. By using a systematic approach, one ensures that signs are not overlooked and that time is used efficiently. Through the process of data collection, meaningful information—including health status, actual and potential health problems, and areas of focus for priority health promotion—is identified. Physical assessment/examination is used in outpatient, inpatient, and/or home health services.

A complete and organized assessment is obtained by using a combination of head-to-toe and body system approaches in conjunction with the use of four basic techniques: inspection, palpation, percussion, auscultation (IPPA):

• Inspection: Observation (see, smell); starts during the health history and continues throughout the exam; always comes first (before you touch or listen); continues concurrently with PPA. First, note general observations and then specifics of each area proceeding from the outside to the inside.

• Palpation: Use touch to assess skin temperature, moisture, vibrations and organ or mass location, texture, shape, and size. Identify presence of pain, fluid, or crepitus. First light touch (1 cm), then deep (4 to 5 cm), rebound (deep with quick release). Compare symmetry for equality, such as the chest (e.g., respiratory vibrations—tactile fremitus).

• Percussion: Done to assess density or aeration. Audible sounds produced by tapping with the hyperextended middle finger on a surface with a quick, sharp wrist motion. Tap to produce vibration sounds from light to heavy. Compare areas and symmetry of the body, such as the chest. More solid areas will produce lower pitched sounds, and more air-filled areas will produce higher pitched sounds. Sounds produced:

- Tympany: loud, high pitch, drum-like (example: gastric air bubble)

- Hyperresonance: very loud, low pitch, booming (example: emphysematous lungs)

- Resonance: loud, low pitch shallow (example: normal lungs)

- Dull: medium sound, mid-pitch (example: muscle, bone)

- Flatness: soft, short duration (example: muscle, bone)

• Auscultation: Listening direct (naked ear) and indirect (acoustic stethoscope or Doppler amplification). Analyzes intensity, pitch, duration, quality, and location. The bell analyzes low-pitched sounds, and the diaphragm analyzes high-pitched sounds.

A combined body system and body area approach focuses assessment by groupings:

• General Appearance: Examine appearance in the following groups: (1) skin, hair, and nails; (2) head, face, and lymphatic; (3) eye, ear, nose, mouth, and throat; (4) neck and upper extremities; (5) chest, breasts, and axillae; (6) thorax and lungs/respiratory system; (7) heart and cardiovascular system; (8) abdomen/gastrointestinal system; (9) genitalia/genitourinary system and anus.

• Lower Extremities: Musculoskeletal system (MBJB: muscles, bones, joints, and back assessment).

• Neurologic: Reflex, sensory, cranial, cerebral, cerebellar, neurodevelopmental, neuropsychiatric.

Internal genitalia, rectum, and prostate examinations are usually included in advanced assessment and will not be addressed here.

The IPPA organization can be combined by cephalo-caudal (head-to-toe), general-to-specific, medial-to-lateral, and external-to-internal approaches within each category. The physical assessment is always correlated with the health history as well as with other assessments, such as laboratory or diagnostic data and/or developmental, psychosocial, family, and cultural assessment data. The nurse must also consider his or her own understanding of anatomy and physiology, basic nursing skills, and the nursing process. The educational preparation and clinical expertise of the nurse may, therefore, influence the extent to which the nurse participates in the physical assessment process.

ASSESSMENT

1. Assess the environment, resources, and the client's medical condition **to determine a complete and systematic examination by reducing the possibility of overlooking important findings.**

2. Assess the client's history of previous physical assessments and the availability of previous data **to provide a baseline for comparisons**.

3. Assess the client's receptiveness to being examined **to help plan to reduce anxiety and improve compliance with the examination**.

4. Assess the client's understanding of the procedure **to help plan ways to reduce anxiety and improve compliance with the examination**.

DIAGNOSIS

Disturbed Body Image—if abnormal physical findings

Risk for Situational Low Self-Esteem—if abnormal physical findings

Deficient Knowledge about normal and abnormal physical findings

Through the accurate and efficient health assessment process, normal, normal variant, and abnormal data are identified. The nurse can identify serious or life-threatening signs and critical assessment findings that require immediate attention. She or he can utilize the objective data obtained during the physical assessment process to contribute to problem-solving strategies that identify the client's current health status (acute, chronic, risk, and preventive). The nurse can institute problem-solving strategies to place the client and the client's family or community in optimal health status.

PLANNING

Expected Outcomes:

1. Identify health parameters at multiple levels for total client management and to identify acute concerns and needs.

2. Identify serious, acute, or life-threatening abnormalities or critical assessment findings that require immediate attention.

3. Identify potential or chronic abnormalities that need planned intervention.

4. Monitor chronic stable problems to detect changes from baseline assessments.

5. Identify health risks, concerns, or needs. These include risks that are related to age, gender, environment, community, personal habits, or family history.

6. Respond to health maintenance needs. This includes monitoring the client's status and comparing findings with normal health parameters for age and gender. It also includes identifying normal variations of health that do not need intervention, providing routine or scheduled assessments, immunizations, preventive or palliative health care, and health education or anticipatory guidance.

Equipment Needed (see Figure 1-1-1):

Equipment must be organized for easy accessibility. It is helpful to be able to reach each piece of equipment with one hand on the client. Short fingernails and warm hands are essential for performing a satisfactory physical examination. Equipment includes the following:

• Pen

• Assessment forms or paper to record notations as well as document findings

• Charts for recording height and weight (and head circumference for infants), age, gender, culture, and sometimes medical condition

• Well-lit, warm, private room or space

• Gown for client privacy and comfort (swimsuits work well with children and adolescents)

• Drape sheet or blanket for client privacy and comfort

• Thermometer: otic or oral/axillary digital preferred

• Stethoscope: acoustic with bell and diaphragm; ideal tubing less than 35 cm long

• Watch with a second hand

• Sphygmomanometer and blood pressure cuff (bladder width to be 40% and length 80 to 100% of the upper arm circumference)

• Ophthalmoscope

• Vision charts: Illiterate (matching letters or objects), Snellen (far vision), Rosenbaum (near vision) pocket card, Ischara (color vision), or Titmus tester (includes all four), and pupil gauge (in mm)

• Otoscope with pneumatic tube

• Audio testing equipment: watch, tuning forks (minimum of one high-pitched, 512 Hz, and one low- pitched, 128 Hz), handheld audiometer, tympanometer, or full audiometry with soundproof room

• Nasal speculum with illumination. Optional headlamp with magnification

• Penlight

• Tongue depressors

• Nonsterile gloves (possibly sterile gloves as well)

• Glass of water

• Marking pen

• Measuring tape (with cm and inches), preferably cloth or plastic

• Water-soluble lubricant

• Guaiac card for occult blood

• Specimen cup

• Reflex hammer

• Neurologic "kit": temperature (test tubes of hot and cold), touch (cotton ball, hair pin, paper clip, safety pin, key, marble, coin, low-pitched tuning fork), taste (sweet—sugar, honey; sour—lemon, lime, vinegar; bitter—alum, quinine; salty—salt, saline), smell (coffee, lemon, orange extract, flowers, perfume, mouthwash). If making your own kit, be sure to use identical-appearing containers for each category and a cotton-tipped applicator or dropper for consistent application.

• Other (these are helpful to have available although are not always used): slide, toothbrush (helpful to obtain skin scrapings), Wood's lamp, magnifying glass, small test tube, flashlight and transilluminator, head lamp, gooseneck lamp, Doppler (for amplification of body sounds), goniometer, Denver Developmental Screening Kit contents, Mini-mental status exam, fluid-resistant gowns, masks and eye covers.

Figure 1-1-1 A. Ophthalmoscopes; **B.** Otoscopes; **C.** Penlight; **D.** Tongue depressors; **E.** Coffee grounds and orange extract; **F.** Tuning forks and reflex hammers; **G.** Cotton swabs and cotton balls; **H.** Sharp items used to assess sharp and dull sensations

CLIENT EDUCATION NEEDED:

1. Introduce yourself by name and title. In some cases you may need to describe your role as well.

2. Provide the client with an explanation of what is to follow (I will be checking everything from your head to your toes) and an approximate time frame for the exam. It helps to tell children how they will know when you are done (e.g., when I tell you to put your shoes back on).

3. Inform the client if you will be jotting down notations during the examination and how these will be used. This reassures confidentiality.

4. Before performing each step in the physical assessment process, inform the client of what to expect, where to expect it, and how you anticipate it will feel (I don't think any of this will hurt, but be sure to tell me if it does hurt).

5. Inform the client of what you are looking for and why as you perform your physical assessment. You can accomplish a great deal of education about the body, how it functions, and health prevention while performing your examination.

6. Teach skin self-examination as you evaluate the skin.

7. Teach breast self-examination as you examine breasts (male and female).

8. Teach testicular self-examination and self-checking for hernias during the genital exam.

9. Teach proper urinary hygiene and basics about sexually transmitted diseases (STDs) with the genital exam.

10. Reinforce good hygiene as you wash your hands and conduct the examination.

DELEGATION TIPS

Physical assessment skills are within the practice realm and licensure of the nurse. The nurse is responsible for instructing ancillary personnel to report any changes in the client's physical appearance or condition to the nurse for further assessment and evaluation.The nurse is responsible to instruct ancillary personnel to report any changes in the client's physical appearance or condition to the nurse for assessment.

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Organize equipment.
1. Rationale: Promotes efficiency.

2. Action: Review the client's medical history (see Figure 1-1-2).
2. Rationale: The first step of holistic assessment. Provides important clues on which to focus or follow up during physical assessment.

3. Action: Wash hands, preferably in front of the client.
3. Rationale: Reduces transmission of microorganisms. Educates the client.

4. Action: Explain the plan and procedure.
4. Rationale: Educates the client. Reassures the client.

5. Action: Assist the client to a sitting position, if possible.
5. Rationale: Provides best access to begin examination.

6. Action: Examine the client.
6. Rationale: Collects information about health and disease.

7. Action: Present any appropriate findings. Ask for additional information. Answer the client's questions.
7. Rationale: Provides closure for the examination and communicates information.

8. Action: Schedule follow-up assessments, tests, or other appointments as needed.
8. Rationale: Provides for follow-up care.

9. Action: Clean, replace, and discard equipment appropriately.
9. Rationale: Promotes efficiency, organization, and reduces microorganisms.

10. Action: Wash hands.
10. Rationale: Reduces the transmission of microorganisms.

Measurements and Overall Observations

11. Action: Obtain baseline measurements and compare with normal data. Remember that normal values vary with age and normal temperatures do not rule out illness, especially with very young and elderly clients.
Check height, weight, head circumference (check normal values based on age percentiles for infants to 24 months), and temperature (palpate skin temperature during examination as well).
11. Rationale: Provides measurable objective data about health state or baseline data.

12. Action: Measure the heart rate, rhythm, and volume; the respiratory rate and rhythm; and the blood pressure bilaterally.
12. Rationale: Provides clues for additional observations or actions required later in the examination.

13. Action: Check anthropometric measurements prn, body mass index (BMI), and so forth.
13. Rationale: Body mass and height-weight proportion can be better indicators of illness than simple height and weight measurements.

14. Action: Assess the overall appearance of the client in a "once over" evaluation before you begin the detailed examination. Look for clues to poor health, such as level of consciousness, personal hygiene, nutritional status, posture, gait, symmetry, appearance, and appropriateness of clothing. Listen to the quality and appropriateness of speech. Observe facial expressions, if the client makes eye contact, and how comfortable the client is with interpersonal interaction.
Assess whether age is congruent with appearance. Observe body fat, stature, motor movements, and body and breath odors.
Assess dress, grooming, personal hygiene, speech, facial expressions, general mannerisms, mood, and affect.
Look for signs of distress, as evident by breathing patterns, speech, facial expressions, perspiration, tension, guarding, bracing, and anxiety.
14. Rationale: Provides objective clues about overall health state and clues to possible specific abnormalities to watch for later in the examination.

Skin, Hair, and Nails Examination

15. Action: Take a moment to assess initially and continue assessment as you perform the remainder of the exam.
• Inspect: color, vascularity, lesions, ulcers, scars, hair distribution, nail shape and configuration, nail bed angles. Measure, describe, draw, and/or stage abnormalities.
• Palpate: moisture, temperature, texture, turgor, capillary refill (normal capillary refill is less than 3 seconds), edema.
15. Rationale: Detects normal variation and abnormalities. Establishes a baseline for future comparisons. Skin abnormalities, including crepitus, nodules, mobility, and hydration will provide clues to illness, and are often indicators of systemic abnormalities.

Head, Face, and Lymphatics Examination

16. Action: Inspect and palpate the head, face, and lymph nodes (see Figures 1-1-3 and 1-1-4). Proceed front to back.
16. Rationale: Confirms health and identifies signs and symptoms of illness or disease, infections, old or new trauma, or other abnormalities.

17. Action: Head: Examine scalp, hair, and cranium (frontal-parietal-temporal-occipital). Examine fontanelles and sutures in newborns to 24 months. Head should be normocephalic and symmetric with no acromegaly, hydrocephalus, craniosynostosis, premature closure of sutures, masses, depressions, tenderness, or infestations.
17. Rationale: Confirms health and identifies signs and symptoms of illness or disease, infections, old or new trauma, or other abnormalities.

18. Action: Lymph nodes: Examine preauricular, postauricular, occipital, submental, submandibular, anterior cervical chain, posterior cervical chain, tonsillar, supraclavicular, and parotid. Lymph nodes should be less than 1 cm in size and nontender. Note that children may have multiple nodes less than 1 cm especially postauricular, but these will be small, nontender, and movable.
18. Rationale: Confirms health and identifies signs and symptoms of illness or disease, infections, old or new trauma, or other abnormalities.

19. Action: Temporomandibular joint: Observe the motion of opening and closing the jaw. It should articulate smoothly without crepitus, clicking, or tenderness. There should be no sign of inflammation.
19. Rationale: Confirms health and identifies signs and symptoms of illness or disease, infections, old or new trauma, or other abnormalities.

20. Action: Face: Observe for shape, symmetry, and expression. Have the client smile, frown, raise eyebrows, wrinkle forehead, show teeth, purse lips, puff cheeks, press tongue into cheek, "cluck" tongue and whistle. Inspect, percuss, and palpate frontal and maxillary sinuses. Use a wisp of cotton to assess tactile sensation over the trigeminal nerve sites and mandible bilaterally.
Facial features should be symmetric with a nasolabial fold present bilaterally. Clients of Asian descent may have slanted eyes with inner epicanthal folds. Normal sounds should be resonant. No pain should be present on percussion or palpation.
Abnormal findings include edema, disproportionate structures, or involuntary movements.
20. Rationale: Confirms health and identifies signs and symptoms of illness or disease, infections, old or new trauma, or other abnormalities.

Eye, Ear, Nose, Mouth, and Throat Examination

21. Action: Examine the eyes. Inspect and palpate external structures, including brows, lids, lacrimal gland, and puncta. Inspect eye position and palpebral fissures. Examine bulbar and palpebral conjunctivae, sclera, cornea, and iris. Assess for a corneal touch reflex.
21. Rationale: Confirms health and identifies signs and symptoms of illness or disease.
• Establishes the presence or absence of drooping, infection, or tumors. Confirms that the lid "meets" the iris, the lid margins are smooth, tears flow evenly instead of accumulating and "tearing up" the eye.
• Establishes the presence or absence of inflammation of hair follicles, hemorrhages, discharge, discolorations, ectropion, swelling, edema, blepharitis, or dacryoadenitis.
• Checks that the third cranial nerve (CN III) raises the lids symmetrically, and that the puncta are open and without inflammation.

22. Action: Extraocular mobility: Check for Hirschberg's corneal light reflex using the cover-uncover test. Check the six cardinal fields of gaze. Examine pupils, including size, shape, response to light and accommodation, both direct and consensual. Examine the lens and retinal structures. First check for a red reflex with the ophthalmoscope set on "0." Move the diopter wheel to "+" to focus on anterior ocular structures and "-" to focus on posterior structures. Locate the retina, vessels, optic disk, and macula.
22. Rationale: Checks that light reflects symmetrically from the center of corneas at 12 to 15 inches, and that the uncovered eye stays focused.
• Checks the functions of CN III, IV, and VI.
• Checks for the absence of tropia, phoria, or nystagmus.

23. Action: Have the client identify an object, such as your finger, as it enters the visual fields from each of four directions. Normal movement is temporal 90 degrees, nasal 60 degrees, superior 50 degrees, and inferior 70 degrees (see Figure 1-1-5).
23. Rationale: Checks the function of CN II.

24. Action: Check for visual acuity, including near and far sight, primary colors, and Ishihara plates (see Figure 1-1-6).
24. Rationale: Visual acuity tests are the last step in the eye examination so that physical abnormalities that might cause abnormal acuity will be detected first.

25. Action: Examine the ears. Inspect and palpate the external ear, including alignment, pinna, tragus, lobule, and neck mastoid muscle. Observe the shape, color, and size of the ear.
25. Rationale: Confirms health and identifies signs and symptoms of illness or diseases of the ear. Checks for normal alignment, that the top of the ear crosses an imaginary line from eye to occiput. Checks for abnormal findings of tags, excess wax, drainage, deformities, nodules, inflammation, pain, and a tender or "boggy" mastoid.

26. Action: Proceed with an otoscopic assessment, starting with the ear canal. Identify landmarks, the tympanic membrane, and observe tympanic membrane movement. Use tympanometry if needed to confirm visual findings.
26. Rationale: Establishes the quality of tympanic membrane (TM) movement, detects retractions, bulging, and abnormal or discolored middle ear fluid. Confirms if there are signs of infection, impaction, or other abnormalities.

27. Action: Check the client's hearing acuity. Note responses to normal sounds. In an infant, observe for a startle reflex/bell response. In adults, conduct a voice/whisper or watch-tick test at 1 to 2 feet. Conduct Weber and Rhinne tests at 512 Hz.
27. Rationale: Hearing acuity tests are the last step in the ear examination so that physical abnormalities that might cause abnormal acuity will be detected first.

28. Action: Examine the nose. Inspect and palpate for nasal patency. Have the client inhale and exhale through each nostril. Observe the external surface, nasal mucosa, turbinates, and septum.
28. Rationale: Confirms health and identifies signs and symptoms of illness or disease, including unusual or excessive discharge, damaged septum, polyps, tenderness, or nonclear drainage.

29. Action: Have the client identify common odors.
29. Rationale: Tests CN I (the olfactory nerve).

30. Action: Examine the mouth, including the teeth, tongue, and throat (see Figure 1-1-7).
30. Rationale: Confirms health and identifies signs and symptoms of illness or disease.

31. Action: Inspect and count teeth.
31. Rationale: Confirms the number and condition of teeth for age.

32. Action: Inspect and palpate lips and frenula, gums, buccal mucosa, tongue protrusion and frenulum, salivary glands, hard and soft palates, tonsils, uvula position and movement, and arches. Inspect the naso-oropharynx.
32. Rationale: Identifies lesions, color of membranes, abnormalities, cavities, odors, swelling, inflammation, swallowing difficulties, or hyperplasia.

33. Action: Conduct gag reflex response, and taste tests for sweet, sour, bitter, and salt.
33. Rationale: Tests cranial nerve functions.

34. Action: Examine the neck. Inspect and palpate the trachea. Check that the trachea runs midline down the neck by examining the trachea at the suprasternal notch.
34. Rationale: Confirms health and identifies signs and symptoms of illness or disease.

35. Action: To examine the thyroid, observe the anterior neck slightly extended, then have the client flex the neck and swallow. Palpate the anterior neck, then palpate forward from the posterior. Identify tracheal rings, isthmus, thyroid cartilage, and gland lobes as the client is swallowing.
35. Rationale: Checks for goiter, nodules, enlargement, or tenderness in the neck and thyroid.

36. Action: Palpate the temporal and carotid pulses. Assess the quality, character, rhythm, and strength of the pulse.
36. Rationale: Identifies signs and symptoms of cardiovascular illness or disease.

Upper Neuromuscular Examination

37. Action: Inspect and palpate muscles, bones, and joints. In general, evaluate from the periphery to the center of the body. Observe the configuration, symmetry, size, tone, and range of motion (ROM). Assess strength using resistive ROM.

37. Rationale: Confirms health and identifies signs and symptoms of illness or disease.

38. Action: Examine the cervical spine. Flex, extend, move lateral, and rotate the spine. Examine the spine for resistive strength by pushing your hand against the side of the client's face. Push left, right, back on the forehead, forward on the occiput, and down on the top of the head.
38. Rationale: Checks the cervical spine, sternocleidomastoid, and trapezial baseline strength, integrity, and function.

39. Action: Examine shoulders. Flex, hyperextend, abduct, adduct, turn in internal and external rotation, shrug, and push/pull against the shoulders.
39. Rationale: Detects limitations of mobility, torticollis, pain, crepitus, nodules, lumps, or pulsations in the muscles, bones, and joints.

40. Action: Examine elbows. Flex, extend, rotate, push, and pull each elbow.
40. Rationale: Checks for tenderness and mobility.

41. Action: Examine wrists. Flex, extend, and rotate each wrist.
41. Rationale: Checks for tenderness and mobility. Detects the presence of carpal tunnel.

42. Action: Examine hands by having the client grasp your hands with his/hers.
42. Rationale: Checks for tenderness and mobility.

43. Action: Examine fingers. Abduct and adduct the fingers. Perform finger thumb opposition with counting and position sense.
43. Rationale: Checks for tenderness and mobility.

44. Action: Examine the epitrochlear lymph nodes, brachial and radial pulses, and bicep, tricep, and brachioradialis reflexes.
44. Rationale: Confirms that lymph nodes are nonpalpable and nontender, and that pulses are strong and regular. Checks neurologic reflexes.

Chest and Breast Examination (See Skill 1-8, Breast Self-Examination)

45. Action: Inspect and palpate the breast, nipple, and areola. Palpate the axillary lymph nodes.
45. Rationale: Confirms health and identifies signs and symptoms of illness or disease. Detects lumps, nodules, or discharge in tissue. Detects tenderness or lumps in axillary nodes, which drain the chest and breast.

46. Action: Calculate the Tanner stage of sexual maturity if appropriate.
46. Rationale: The Tanner stage assesses appropriate breast development progression and status for age and provides an opportunity for teaching.

47. Action: Repeat breast and axillae examination while the client is in the supine position.
47. Rationale: Repeating the examination while the client is supine increases likelihood of early identification of abnormalities.

Back and Posterior Lung Examination

48. Action: Inspect and palpate the skin.
48. Rationale: Confirms health and identifies signs and symptoms of illness or disease.

49. Action: Recheck the thyroid from the posterior position.
49. Rationale: Gland lobules are easier to palpate from back.

50. Action: Examine the cervical and thoracic spine (see Figure 1-1-8), the scapulae, and the rib cage.

Observe the posterior thoracic expansion. Estimate the anteroposterior-to-transverse chest ratio. A normal ratio is 1:2.
50. Rationale: Determines normal, normal variations, and abnormal findings in alignment, flexion, spinous processes, and paravertebral muscles. Checks that the scapulae are equal, and the rib cage is symmetric.

51. Action: Feel for the presence of fremitus posteriorly and laterally. Compare sides.
51. Rationale: Checks for fremitus either increased with consolidation, or decreased with hyperinflation of the lungs. Bilateral comparison enables identification of differences.

52. Action: Use indirect percussion at a minimum of four sites, preferably in regular intervals every 5 cm from top to bottom of lung fields. Move from superior to inferior and from lateral to spine.
52. Rationale: Indirect percussion allows comparison of resonance bilaterally, and checks for tenderness over the lungs and kidneys. The organized sequence of side-to-side and superior-to-inferior increases the possibility of detecting abnormalities.

53. Action: Auscultate the lungs (see Figure 1-1-9) using a side-to-side sequence and moving down 2 to 5 cm at a time. Listen to inspiration and expiration at each site. Listen for vocal fremitus while the client makes "99" and sustained "ee" sounds.
53. Rationale: Checks for bronchial noises over trachea, bronchovesicular sounds in the first and second intercostal spaces (ICSs), and vesicular sounds over the peripheral chest. Detects abnormal sounds of rales, rhonchi, or wheezes.

Thorax, Lungs, and Respiratory Examination

54. Action: Stand in front of the client.
54. Rationale: Prepares to examine anterior lungs.

55. Action: Inspect and palpate the anterior chest. Observe position, chest movement, size, shape, and symmetry of the clavicles and ribs.
55. Rationale: Confirms health and identifies signs and symptoms of illness or disease. Checks for barrel chest, pectus excavatum, pectus carinatum, or tripod "splinting" positions. Splinting positions indicate the client is compensating for decreased oxygenation.

56. Action: Listen to the respiratory rate, including rhythm and depth of respirations. Compare rate with normal respiratory rates for the age of the client.
56. Rationale: Checks for 2:1 timing of the exhale/inhale breathing cycle. Detects shortness of breath (SOB), and abnormal respiration patterns, including Cheyne-Stokes, tachypnea, hyperpnea, and hyspnea (see Figure 1-1-10).

57. Action: Observe the diaphragmatic excursion, ICSs, respiratory muscles, respiratory effort, and expansion. Watch for pursed lips, cyanosis, or a cough. Note that abdominal breathing is normal from birth to 2 years of age.
57. Rationale: Detects accessory muscle use or stridor.

58. Action: Feel for tactile fremitus along the lung apexes and bases.
58. Rationale: Detects fremitus, which is increased with consolidation or decreased with hyperinflation.

59. Action: Use indirect percussion at intervals over ICSs, moving superior to inferior and collateral to spine. Percuss lung apexes and bases, and the cardiac border if appropriate. Note that percussion should be resonant over the lung, flat over bone, and dull over organs.
59. Rationale: Side-to-side and superior-to-inferior organized approach increases the possibility of detecting abnormalities.

60. Action: Auscultate the anterior lung fields, using the same progression as the palpation procedure. Avoid listening over bone and breast tissue. Observe intensity, pitch, ratio, quality (see Figure 1-1-11).
Listen for vocal fremitus during "99" and sustained "ee" sounds (egophony or whispered pectoriloquy).

60. Rationale: Checks for bronchial noises over trachea, bronchovesicular sounds to the left and right of the sternum in the first and second ICSs, and vesicular sounds over the peripheral chest. Detects abnormal sounds of rales, rhonchi, or wheezes.

Heart and Cardiovascular System Examination

61. Action: Inspect and palpate the precordium. Identify the point of maximal intensity (PMI) at the mitral/apical area of the heart. This pulsation, associated with ventricular contraction, is located at the left fifth ICS. Confirm synchrony with the carotid pulse. The PMI may be visible in children and thin clients. Palpation of the PMI in large or muscular persons may require leaning the client forward or to the left side.
61. Rationale: Confirms health and identifies signs and symptoms of illness or disease. Confirms the absence of cardiomegaly symptoms, visible thrills, heaves, and pulsations (except possibly 1 to 2 cm movements at mitral area during systole, especially in children, thin clients or elderly clients).

62. Action: Auscultate with the client sitting, then leaning forward. Listen with the diaphragm and then the bell.
62. Rationale: The bell detects lower pitched sounds than the diaphragm.

63. Action: Auscultate the apical heart rate and feel radial pulse at the same time. Identify rate, rhythm, regularity, amplitude, and difference between apical and radial pulses. Note carotid impulse with apical sound.
63. Rationale: A difference in apical and radial pulse (pulse deficit) reflects difference in stroke volume with each beat. Irregular rates with pulse deficit may indicate atrial fibrillation, whereby disorganization exists between atrial and ventricular electrical activity.

64. Action: Examine all valvular landmarks at least twice. First locate and identify the S_1, S_2, S_3, and S_4 heart sounds. Then listen for other sounds (murmurs, rubs, clicks, etc.). Auscultate in an orderly fashion from the apex to the base of the heart (or vice versa).
64. Rationale: Systematic progression of the examination minimizes omissions. Detects normal physiology, as the S_1 closure of mitral and tricuspid valves heralds the onset of systole. Detects any abnormal opening snap in early diastole, which could indicate mitral stenosis.

65. Action: In the mitral area identify that S_1 is louder than S_2 with the diaphragm of the stethoscope, because the left heart pressure is greater than the right, and the mitral valve closes slightly before the tricuspid valve. Use the bell to listen for a possible S_3 sound (see Figure 1-1-12).
65. Rationale: Detects S_3 sounds, which are early diastolic filling sounds from the ventricles, and could indicate diastolic gallop.

66. Action: In the tricuspid area, identify that S_1 is louder than S_2 with diaphragm, but that it is softer than at the mitral area. Listen for possible S_1 split that disappears when the client holds his/her breath. Listen for the S_3 sound with the bell.
66. Rationale: Detects the normal aortic valve closure occurring slightly before the pulmonic valve closure during inspiration as more negative intrathoracic pressure causes an increase in venous return to the right side of the heart.

67. Action: In the pulmonic area identify that S_2 is louder than S_1, but softer than at aortic area. Note that physiologic splitting of S_2, which indicates closure of the semilunar valves at this site is normal.
In the aortic area identify that S_2 is louder than S_1 with diaphragm.
67. Rationale: Finds symptoms of abnormal splits, which are wide, fixed, or paradoxic.

68. Action: Assess the epigastric, axillary, and Erb's point areas.
68. Rationale: Assesses for signs of mitral valve prolapse, which are best heard at the epigastric location. Assesses for abnormal murmurs radiating to the axilla. Checks Erb's point where both aortic and pulmonic murmurs may be heard.

69. Action: Summarize the character of S_1 and S_2 sounds. Note the presence or absence of S_3 and S_4 (gallop), murmurs, rubs, clicks, or snaps.
69. Rationale: S_3 can be normal in children, in the third trimester of pregnancy, and adults younger than 30 years old. Other sounds need

investigation.

70. Action: Assist client to left lateral position to continue the cardiac examination.
70. Rationale: Positions the heart closer to the chest wall.

71. Action: Auscultate mitral and tricuspid sites with the bell.
71. Rationale: Mitral and tricuspid abnormalities are heard best in the left lateral position.

72. Action: Assist client to return to supine position and continue cardiac examination.
72. Rationale: Facilitates next portion of cardiac examination.

73. Action: Inspect and palpate the precordium. Identify the PMI at the mitral area and confirm synchrony with carotid pulse. Assess apical, carotid, temporal, brachial, radial, femoral, popliteal, posterior tibial, and dorsalis pedis pulses (see Figure 1-1-13).
Percuss the cardiac borders, if needed.
Auscultate the heart in supine position with bell, then with diaphragm. Check the mitral, tricuspid, pulmonic, aortic, and ectopic areas. Auscultate with bell for bruits at carotid and temporal pulse sites.
73. Rationale: The PMI is best palpated in the supine position. Confirms the absence of visible thrills, heaves, and pulsations except possibly a small (1 to 2 cm) area at the mitral location during systole, especially in children, thin clients, and elderly clients. PMI may not be palpable in large and muscular clients.
The client's position determines which sounds are heard best. It is easier to hear some murmurs with the client in the supine position. The bell is best for detecting deeper sounds.
Notes unusual symmetry, rate, rhythm, pulsations, volume, or thrills of pulses.
Evaluates for cardiomegaly.

74. Action: Raise head to an angle of 30 to 45 degrees, and inspect the jugular vein distention (JVD).
74. Rationale: Detects normal jugular vein distention, which is usually 1 to 2 cm above the sternal angle when the head is elevated 45 degrees and is usually absent at 90 degrees and distended when flat. Jugular vein pressure (JVP) measurement plus 5 cm will give an estimate of the central venous pressure (CVP).

Abdominal Examination

75. Action: Inspect the size, contour, and symmetry of the abdomen. The normal abdomen is flat (except in young children), symmetric, without scars, striae, masses, nodules, peristalsis (except in very thin clients), or rectus ridge (except in young or thin clients). Note pigmentation, scars, striae, masses, nodules, the condition of the umbilicus, and any respiratory or peristaltic movement. Check the rectus abdominus muscle by having the client raise his or her head.
75. Rationale: Confirms health and identifies signs and symptoms of illness or disease.
Aortic pulsations may be seen in epigastric area in thin clients. Newborn to 2 year olds breathe with their abdominal muscles, with no retractions of the intercostal muscles during inspiration, and a smooth rhythm. The umbilicus is normally depressed.

76. Action: Auscultate with the diaphragm and then the bell. Listen for bowel sounds in each of the four quadrants. Right lower quadrant (RLQ), right upper quadrant (RUQ), left upper quadrant (LUQ), and left lower quadrant (LLQ).
76. Rationale: Auscultate before palpating, as sounds will change in response to touch.
Detects a normal frequency of sounds of 5 to 30 sounds per minute, or abnormal bruits, hums, or rubs.

77. Action: Percuss the RLQ, RUQ, gastric bubble, spleen, bladder, LLQ, LUQ, and liver span (see Figure 1-1-14).
Note the spleen, located between the sixth and tenth rib, may go undetected. The gastric air bubble (LUQ) is lower pitched than tympany of the

intestine. The tympany changes to dull at lower edge of liver, and lung resonance changes to dull at upper edge of liver. You may try to percuss the kidney posteriorly while the client is sitting, if needed.
77. Rationale: Detects size and location of internal organs as tympany changes to dull over organs.

78. Action: Palpate all four quadrants superficially first then deep and rebound palpations to identify any discomfort, tenderness, or abnormalities. Check superficial abdominal reflexes in the LLQ, LUQ, spleen (use bimanual palpation), RLQ, RUQ, liver, aorta, kidney (use bimanual technique), and bladder (see Figure 1-1-14). Evaluate for guarding on expiration.
78. Rationale: Checks for normal umbilical deviation toward the direction of palpation stroke.
Determines normal abdomen, which is smooth and soft with no masses, bulges, swelling, organomegaly, bladder distention, fluid retention, or pain. Locates normal findings of palpated liver edge, aortic pulsations, and lower pole of kidney.
Normal voluntary muscle guarding ceases on expiration.

79. Action: Check femoral pulses and superficial and deep inguinal nodes.
79. Rationale: Determines normal pulses, which are symmetric and even, with no bounding or thrills, and normal inguinal nodes, which are less than 1 cm, movable, and nontender.

External Genitalia Examination

80. Action: Assist client to modified or full lithotomy position.
80. Rationale: Lithotomy position without stirrups is usually more comfortable for the client; however, both positions provide good visibility and access.

81. Action: Inspect and palpate deep inguinal nodes.
81. Rationale: Deep nodes are more easily palpated in this position.

82. Action: Observe pubic hair distribution, color, and texture. Check the femoral and inguinal areas for hernias.
82. Rationale: Confirms normal distribution of hair in an inverse triangle, and identifies abnormalities, including infestations, rashes, edema, condylomata, vesicles, varicose veins, discharge, odor, or bulges.

83. Action: Calculate the Tanner stage of sexual maturity if appropriate.
83. Rationale: The Tanner stage assesses appropriate genital development progression and status for age and provides an opportunity for teaching.

84. Action: Check the skin and look for abnormalities. In women, examine the mons pubis, labia majora, labia minora, clitoris, urethral meatus, vaginal introitus, and perineum.
84. Rationale: Checks for abnormal color, lesions, pain, trauma, abnormal size, imperforate introitus, odor, or discharge.

85. Action: In men, check the cremasteric reflex (in infant), urethral meatus, penis (glans, foreskin, shaft), scrotum (transilluminate if hydrocele suspected), scrotal rugae, testicles, epididymis, spermatic cord, and external inguinal ring.
85. Rationale: Confirms normal appearance, where the urethral meatus is located centrally, with dorsal vein prominence, a small amount of smegma, and the left scrotal sac lower than the right. Detects a nonretractable foreskin in an uncircumcised child.
Checks for abnormal lesions, odor, swelling, inflammation, nodules, condyloma, vesicles, pustules, scaling, edema, phimosis, chordee (curvature), hernia, hydrocele, spermatocele, or varicocele.

86. Action: Examine the anus. You may need to return the client to the left lateral position or have the client stand and lean elbows on the exam table to aide in visualization.

86. Rationale: Confirms normal appearance of sacral dimpling, dark pink to brown color, puckered, and free of lesions, swelling, inflammation, tenderness, itching, fissures, rashes, masses, hemorrhoids, or skin tags.

Lower Extremity and Musculoskeletal Examination

87. Action: Assist the client down from the table to a standing position, if necessary.
87. Rationale: To observe the client's ability to change position and assist for safety when needed.

88. Action: Have the client walk across the room while observing his or her gait. Observe from the side profile, assessing cervical, thoracic, and lumbar curves. Look for differences in height of shoulders, iliac crests, and skin creases below the buttocks. Ask the client to bend forward as you observe the spine for any curvatures or deformities. Check the range of motion (ROM) of the spine. Have the client bend forward to touch toes (flexion), bend sideways (lateral bending), and then bend backward (extension). Stand beside the client for support if needed. Check rotation as the client twists from side to side. Palpate the paravertebral muscles for tenderness and spasm.
88. Rationale: To observe if gait is steady and assess if the client is at risk for falls. The normal spine has concavities in the cervical and lumbar regions and a convexity in the thorax. If iliac crests are uneven, it is suggestive of unequal leg lengths. Scoliosis may be noted if there is deviation in the line from T1 to the gluteal cleft. Decreased spinal mobility may be noted in osteoarthritis as well as other conditions.
When a paravertebral muscle is in spasm it looks prominent, feels tight, and is tender to the touch.

89. Action: Assist the client to the supine position.
89. Rationale: Prepares for the next sequence in the examination.

90. Action: Inspect and palpate the skin. Look at the skin color, check that capillary refill is less than 3 seconds, observe hair distribution, veins, temperature, and texture of skin.
Observe the size, shape, isometric muscle contraction, tone, and strength (using resistive ROM) of muscles.
90. Rationale: Detects skin atrophy, breakdown, edema, ulcerations, or varicose veins.
Determines that muscle shape is symmetric, with good tone. Detects atrophy, hypertrophy, flaccidity, spasticity, spasm, masses, or involuntary movements.

91. Action: Inspect the joints. Palpate from periphery to center. Observe contour, periarticular tissue, neutral anatomic position, ROM (active and palpate passive), and strength (resistive motion). Also evaluate the hips. Have the client do a straight leg raise. Move the hips knee to chest, internal rotation, external rotation, abduction, and adduction. Listen carefully for a hip click in infants (Ortolani's sign).
Assess the knees. Check the tibiofemoral joints by flexing the knee 90 degrees and with thumbs palpate tibial margins and collateral ligament. Check knee flexion, extension, and strength.
For the ankles and feet, palpate the Achilles tendon, at rest, in dorsiflexion and plantar flexion, eversion and inversion. Check toe flexion, abduction, and adduction. Palpate metatarsophalangeal joints and interphalangeal joints.
Check popliteal, posterior tibial, and dorsalis pedis pulses.
91. Rationale: Confirms joints articulate in proper alignment and are free from swelling, nodules, pain, warmth, deformities, masses, crepitus, grating, or popping.
Evaluates for contractures, pain, or swelling.
Evaluates for clonus, varus, valgus, planus, deviations, and inflammation.

Neurologic Examination

92. Action: Assist the client to a sitting position.
92. Rationale: Prepares for the remainder of the neurologic examination.

93. Action: Check for deep tendon reflexes, biceps, triceps, brachioradialis (if not done previously), patellar, and Achilles reflexes.
Check infantile reflexes, including rooting, suck, palmer grasp, tonic neck, stepping, plantar grasp, moro, Gallant and Landau.
Check the Babinski reflex. A positive Babinski reflex is normal until walking or 18 months of age.
93. Rationale: Measures the degree and speed of response, from 0 (absent) to 4+ (hyperactive), and the presence of clonus.
Observe fanning of toes with stroke of outer aspect of sole of foot from heel across ball.

94. Action: Examine the client's sensory abilities. Check for responses to skin sensations. Begin distally and move proximally. Touch fingers, hands, lower arms and toes, feet, legs, and abdomen as necessary. Be careful not to be "predictable." Alter the rate and rhythm of stimulation.
Compare right-to-left and proximal-to-distal sensations.
Check exteroceptive sensation, including light touch (use a cotton wisp), and sharp and dull (use a hair pin or paper clip). If the sharp/dull evaluation was abnormal, check temperature sensation as well.
Check the propioceptive sensations of vibration, motion, and position.
Check the cortical sensations of stereognosis (coin, button, key, paper clip, etc.; different object in each hand), and graphesthesia. If needed, examine two-point discrimination and extinction. Normal distances vary with the body part tested. For example, fingers are approximately 5 mm, the hand or foot is 20 mm.
94. Rationale: Confirms health and identifies signs and symptoms of illness or disease. Confirms normal sensory perceptions.
Proximal nerve transmission must be functional for distal sensations to be present.
Determines that client can feel stimuli, detect vibrations over bony prominences (this decreases after age 65), and identify changes in body position and motion. Clients should be able to identify objects with eyes closed.

95. Action: Review and recheck the cranial nerves:
CN I: Olfactory
CN II: Optic
CN III: Oculomotor
CN IV: Trochlear
CN V: Trigeminal motor and sensory
CN VI: Abducens
CN VII: Facial motor and sensory
CN VIII: Acoustic cochlear and vestibular
CN IX: Glossopharyngeal motor/sensory
CN X: Vagus motor and sensory
CN XI: Spinal accessory
CN XII: Hypoglossal A helpful acronym for the cranial nerves is:
On **O**ld **O**lympic **T**owering **T**ops **A** **F**inn **A**nd **G**erman **V**iewed **S**ome **H**ops.
95. Rationale: Identify normal versus abnormal functions:
CN I: To verify the client is able to distinguish and identify odors with each nostril.
CN II: To verify the client has normal visual acuity, visual fields, and a normal fundus or optic disk.
CN III: Checks for normal pupil reactions, cardinal fields of gaze, and eyelid elevation.
CN IV: Checks for normal extraocular movement.
CN V: Checks for strength and function of temporalis and masseter muscles, trigeminal nerve sensation, including light pain, light touch, temperature, and corneal reflex.
CN VI: Checks for normal extraocular movements, cardinal fields of gaze.
CN VII: Checks facial movements (frown, raise eyebrows) symmetrical (no palsy), and tearing.
CN VIII: Checks for normal hearing, Weber and Rinne tests. Checks vertigo, nystagmus, and good equilibrium.
CN IX and CN X: Checks for uvula rise midline, speech clear, swallow, taste in posterior third of tongue. Gag present.
CN XI: Checks for shoulders, trapezius, and sternocleidomastoid muscle movements.

CN XII: Checks for clarity of speech and tongue movements.

96. Action: Evaluate the client's mental status. Check level of consciousness, orientation to person, time, place, general appearance, behavior, affect, speech, content, memory, logic, and abstract reasoning (describe proverb), judgment, spatial perception (copy figures, identify familiar sounds, identify right versus left body parts). Mentally summarize the mental status from earlier observations during the examination.
96. Rationale: Identifies normal versus abnormal functions. Check that the client is awake, alert, and oriented to time and place, and exhibits appropriate behavior. Look for abnormal findings of drowsiness, lethargic, stuporous, comatose, or disoriented behaviors.

97. Action: Examine cerebellar status: Conduct a finger-to-nose test (have the client use the index finger to touch your finger, held 18 inches away from the client, then have client touch nose). Have client repeat this movement, gradually increasing the speed.
Observe for the client's ability to cross the midline. Look for tremor, overshoot, and undershoot. Repeat with the other hand.
Conduct a rapid alternating hand movements (RAHM) and note if the client exhibits smooth pronation-supination with increasingly rapid speed. Have the client touch fingers-to-thumb, and note if he or she can touch thumb to each of the fingers of the same hand in rapid succession from index to fifth finger and back. Note that ability depends on age.
Have the client touch heel-to-shin, foot taping rapid alternating hand movements (RAHM), and foot "figure 8" movement tests. Determine whether the client can run heel down the shin of the opposite leg.
Look for smooth rapid ankle extensions and rotation.
97. Rationale: Confirms health and identifies signs and symptoms of illness or disease. Confirms cerebellar status by evaluating coordination, balance, and checking for smooth and harmonious movement.

98. Action: Assist the client to a standing position.
98. Rationale: Prepares the client for remainder of examination.

99. Action: Inspect and/or palpate posture, weight-bearing and standing spine alignment, spinous processes, paravertebral muscles, and ROM (flexion, lateral bending, rotation, hyperextension). Do a Romberg test. Balance on one foot for 10 seconds. Repeat heel-to-shin test, and have client hop on each foot and do shallow knee bends.
99. Rationale: Determines that shoulders and hips are level, scapulae and iliac crests are symmetric, toes and knees point forward, extremities are proportionate. Confirms that head spinous processes and gluteal cleft are in alignment. Checks for scoliosis, kyphosis, lordosis, or contractures.

100. Action: Assess mobility by having the client perform a casual gait, toe and heel walk, tandem walk (forward and backward), step right, step left, walk briskly, and do jumping jacks (if client's condition permits).
100. Rationale: Assesses cerebellar and developmental status as well as musculoskeletal structure and function.
Checks that the posture and gait are erect, balanced, smooth, tandem for age with usually less than 1 to 2 inches between heel to toe steps. Estimates exercise tolerance for age and diagnosis.

101. Action: Recheck heart and respiratory sounds after exercising. Compare with resting rates.
101. Rationale: Checks for flow murmurs, cardiac rate, and recovery time.

102. Action: Compare the client's status to age-appropriate standards for activities of daily living (ADLs), gross and fine motor function, speech and language, and personal-social interaction.
102. Rationale: Confirms health and identifies signs and symptoms of illness or disease.

103. Action: Evaluate for psychiatric symptoms, including disturbed affect, aversive eye contact, symptoms of depression or anxiety, disrupted or confused thought processes, indications of delusional thoughts, and indications of suicidal thoughts.
103. Rationale: Checks that verbal and nonverbal behavior is consistent and congruent, that there is no evidence of delusions, hallucinations, or suicidal ideations.

Figure 1-1-2 Review client history. Clients are often uncomfortable and anxious in the unfamiliar clinic setting. Establishing privacy and using words and body language to create a supportive environment help place the client at ease. Listen to the client's complaint, ask pertinent questions about symptoms and medical history, and write down key information.

Figure 1-1-3 Lymph nodes of the head and neck. Arrows indicate drainage patterns.A. PreauricularB. PostauricularC. OccipitalD. SubmentalE. SubmandibularF. Anterior cervical chain

Figure 1-1-4 Palpation of lymph nodes

Figure 1-1-5 Have client identify the moment an object enters the visual field.

Figure 1-1-6 Snellen chart used to assess visual acuity

Figure 1-1-7 The mouth examination includes the teeth, tongue, throat, oral mucosa, and salivary glands.

Figure 1-1-8 Examine the cervical and thoracic spine for alignment, flexion, and symmetry with the rib cage and scapulae.

Figure 1-1-9 Auscultate the lungs, listening to inspiration and expiration at each site.

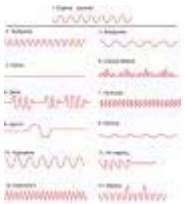

Figure 1-1-10 Normal and abnormal respiratory patterns

Figure 1-1-11 Auscultate the anterior lung fields. Listen for abnormal sounds, including rales, rhonchi, or wheezes.

Figure 1-1-12 Normal and abnormal heart sounds

Figure 1-1-13 Assess for unusual symmetry, pulsations, volume, or thrills of pulses.

Figure 1-1-14 Percuss the abdomen to assess size and location of internal organs.

REAL WORLD ANECDOTES

A nurse was doing a routine physical assessment on a client with chronic pulmonary disease, listening to lung sounds. She heard a rapid, irregular heartbeat as well. She reported her findings to the nurse practitioner, who ordered follow-up diagnostic tests. The client was later diagnosed with multifocal atrial tachycardia.

EVALUATION

• Client relates history in logical, sequential manner. Questions are answered appropriately and without distraction. Client is able to easily and accurately recall history and facts.

• Explain findings to client within nurse's scope of practice and function.

• Formulate problem list reflecting findings.

• Generate intervention plan.

DOCUMENTATION

Nurses' Notes

• All assessments and procedures must be completely documented according to institutional policy.

• Record under objective portion of assessment.

• Record in order of the category groupings used in the assessment.

• Record date and time of assessment.

• Identify information and historian.

• Indicate ability of client to assist with assessment.

• Record chief concern.

• List positive findings first followed by significant negative findings for each body system or body part examined.

• Record detailed description of assessment related to chief concern (need for visit).

• Record detailed description of abnormalities (positive findings).

• Record description of negative findings.

CRITICAL THINKING SKILL

Introduction

The client knows his own body. Often the client is the expert consultant.

Possible Scenario

A nurse was doing a routine physical exam. While the nurse was concentrating on the priorities in the exam, the client mentioned that he could feel a lump in his hamstring. He wondered if he had injured it jogging. Because the nurse was examining the client's lungs, he listened to the client's complaint, made a noncommittal comment, and continued with his assessment. The client did not bring up his concerns again.

Possible Outcome

One month later, this client was diagnosed with a rhabdomyosarcoma, a highly malignant soft tissue cancer most often seen in children. He underwent surgery, chemotherapy, and radiation, and continues to be evaluated for recurrence every 3 months.

Prevention

This man's survival was directly related to the stage of the disease at diagnosis. This cancer is often found when the client or a parent mentions feeling a lump. The nurse missed the abnormal finding, because he did not follow up on the client's comment. The nurse should have followed up on the complaint by asking for more specifics and history, examining the area carefully, and reporting the findings.

VARIATIONS

Geriatric Variations:

• Vital signs and measurements must be age-correlated to establish what "normal" is for an elderly client.

• Allow extra time for slower movement in an older client.

• An elderly client may need a warmer room to feel comfortable.

• You will find more "normal variations" in the geriatric population. This is especially true for skin conditions.

• Activities of daily living history needs to be assessed in view of visual, auditory, musculoskeletal, and neurologic findings.

• Any client with a change in neurologic function must be evaluated for dementia, depression, Alzheimer's disease, and Parkinson's disease.

• Make sure elderly clients can hear and understand what you want them to do when performing the neurologic part of the examination.

Pediatric Variations:

• Keep parents within view of the child.

• Infants and young children may be more comfortable being examined in a parent's lap. Sit facing the parent with your knees touching theirs to make a "table."

• Examine ear, nose, and throat last because the child may react to the invasiveness of the procedures.

• Allow the child some play time with your stethoscope or penlight. Clean these items before and after.

• Show the child the equipment before using it. Shine the otoscope light in the child's hand.

• Blow the air from the pneumatic tube. Sometimes demonstrating the procedure using a toy or doll helps make the child more comfortable.

• Give the child simple choices when possible. Do not bribe. Be honest.

• Allow children to cry or yell. Do not allow them to kick or bite.

• If there are two children to be examined, let them sit side by side and examine each body area on one and then on the other. You can enlist their cooperation by letting one child watch or help with the other child. Keep a careful recording of abnormal findings so you do not mix up who had what finding.

• Remember to thank the child for helping, cooperating, or just for coming in.

• Ask teens "private" questions by whispering or lowering your voice without drawing undue attention to the topic and without conveying the idea that certain topics should not be discussed with parents. You can act as a role model or help the child discuss "embarrassing" topics with the parents.

• Unclothe a child as you proceed with an examination rather than all at once. Shirt off, examine top half. Shirt on and pants off for bottom half. Leave underpants on, if possible.

• Examine the genitalia through a leg hole or by pulling the pants down halfway rather than taking off pants all the way. If you need to remove the underpants, let the child stand up on the table and hug a parent for balance while you perform the exam.

• Empower the child after the genital exam by asking the child to perform kicking motions of "exercise" while you check hips and knees. Sit the child up as soon as possible. Sit down to check reflexes, so that you are physically lower than the child, if possible.

Home Care Variations:

• The examination can be done in bed, on a couch, or a kitchen table, or even on the floor. Ask the client for suggestions and decide the best location based on the age and flexibility of the client.

• Good lighting is more important that an optimum "table" or bed. Consider bringing extra lighting, such as a gooseneck lamp.

Long-Term Care Variations:

• Examinations in the long-term care setting are usually performed with the client in bed. Be sure of good lighting and take your own equipment, if needed.

• Auditory and visual privacy is usually more of a problem in this setting. Anticipate schedules and be sure the staff and roommates know how much private time you need.

COMMON ERRORS

Possible Error:

Skipping seemingly insignificant areas and thereby missing significant information.

Prevention:

Allow enough time for the examination. Ask the client to communicate concerns. Have a systematic progression that covers all areas.

Possible Error:

Failing to follow the sequencing of techniques or omitting one of the techniques such as inspection or palpation.

Prevention:

Bring a checklist into the examination and follow it. Before moving on to the next part of the exam, review in your mind if you have covered all the techniques required to assess the current area.

NURSING TIPS

• Vocalize "a" (like apple) versus "ah" (aw) to get higher uvula rise and better pharyngeal visualization.

• Measure chest circumference, divide by one-half, and subtract transverse diameter for anteroposterior (AP) measurement.

• If you detect rhonchi on auscultation, ask client to cough, then listen again. With infants and older children check lung sounds after performing the gag reflex portion of the pharyngeal exam.

• The heart exam can be a good opportunity to teach the client about the heart. Ask the client to tell you about the heart, where it is located, its size, and its shape. Answer questions about "what a heart attack is" and teach about heart-healthy diet and exercise.

• Follow a specific order when conducting the heart examination: mitral, tricuspid, pulmonic, aortic, ectopic (epigastric and axillary), or vice versa. Remember the order with the mnemonic phrase "**M**om **T**ries **P**asta **A**gain **E**very **E**vening." You may remember the four heart valves (in reverse order) using the phrase "**A** **P**oor **T**ired **M**onkey."

• Exercise may make flow murmurs easier to hear.

• Percuss up to lower edge of liver and down to upper edge. Start palpation 2 cm below lower percussed margin and "rock" up and under the rib to look for the edge.

SPECIAL CONSIDERATIONS

• Observe the client's affect. Provide an open attitude to facilitate receiving information that the client may want to share. A victim of domestic violence may wish to seek help so the examiner should be mindful of potential verbal and nonverbal cues. Clients who abuse alcohol or drugs usually will not readily admit this information; therefore, questions regarding alcohol and drug use can be incorporated into nutrition and medication history. Ask open-ended questions as a quick denial of alcohol or drug use may arrest further questioning. Clients may have health concerns that they wish to discuss. Always ask the reason for contacting a health care provider (routine checkup, s/s of concern) and if there are any further concerns before leaving the room.

• Note the client's stress level and realize that it may be a signal for further exam (i.e., cardiovascular).

• Breast exams may be performed in a variety of ways. You may use a "roll" method where the hand never leaves the breast. The finger pads roll back and forth across the breast from sternum to axilla and advance about an inch with each forward motion. Some practitioners believe this to be a more accurate approach because no area is missed, as when hands are raised to reposition in other methods. Most lumps are found behind the nipple and in the upper outer quadrant. Special attention should be paid to these areas during the exam.

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    CHAPTER 1. Physical Assessment
    SKILL 1-1. Physical Assessment —Carla A. Lee, PhD, ARNP C, FAAN, Claretta D. Munger, ARNP, Valerie Coxon, RN, PhD, Eileen Collins, MN, ARNP, CNOR
    KEY TERMS

CHAPTER 2. Safety and Infection Control

SKILL 2-1. Proper Body Mechanics, Safe Lifting, and Transferring —Patricia Buchsel, RN, MSN, Gaylene Bouska Altman, RN, PhD

KEY TERMS

Ambulating a patient
Body mechanics
Center of gravity
Chair
Draw sheet
Safe lifting
Safety
Stretcher

ESTIMATED TIME TO COMPLETE THE SKILL:

10-25 minutes for each variation of safe lifting

OVERVIEW OF THE SKILL

Skills needed to care for clients often require that nurses/caregivers have the physical strength to provide individuals with assistance required to remain mobile. Nurses/caregivers may need to carry, pull, push, or lift clients and/or equipment to accomplish daily care. It is imperative that nurses/caregivers know and use proper lifting techniques and seek assistance as needed to avoid injury to self and clients. Body mechanics is the

term used when referring to lifting techniques. Correct body mechanics are essential to avoid work-related musculoskeletal injuries, diminish excessive strain and fatigue, and minimize the potential for injury (see Figure 2-1-1).

Body mechanics involve pushing, pulling, stooping, carrying, and lifting correctly. Knowledge of various client transfer techniques, the use of a team as needed, and the use of proper supportive equipment are included in this skill. Proper techniques of body mechanics, specialized lifting skills of transfer from bed to stretcher and from bed to chair or wheelchair, and the use of the bed transfer board and a hydraulic lift are reviewed. Specific tips for client and staff safety are highlighted. Promotion of client independence and self-help behavior as an intervention to reduce the risk of client and nurse injury is discussed. Warm-up exercises to avoid injury are reviewed (see Figure 2-1-2).

Figure 2-1-1 Always follow these eight rules for lifting. (Reprinted with permission from Ergodyne Corporation, St. Paul, MN.)

Figure 2-1-2 Follow these warm-up exercises to prepare for safe lifting. (Reprinted with permission from Ergodyne Corporation, St. Paul, MN.)

ASSESSMENT

1. Assess the need and degree to which the client requires assistance to achieve physical movement. **Identifies client's ability to attain maximum level of self-help before initiating intervention.**

2. Identify the type of physical movement required **to assure the use of proper body mechanics such as pushing, pulling, or lifting.**

3. Identify the potential need for assistive equipment to accomplish the goal of safe lifting **to minimize the risk of client/nurse injury.**

4. Identify any unusual risks to safe lifting, such as an extra heavy client or a home care setting. **Allows nurse to plan modifications to ensure good body mechanics and reduce the risk of injury.**

5. Assess the client's vital signs, pain status, and need for pain medications prior to ambulating. Assess incisional areas and/or areas of injury.

6. Check equipment to ensure that it is in working order to facilitate a safe and uninterrupted transfer. Especially check locks on wheelchair.

7. Identify all equipment and tubes connected to the client and take appropriate preventive measures. Frequently, clients that require lifting or transfer have intravenous tubing, other tubing, and/or orthopedic equipment.

8. Assess the client's understanding of the steps required to achieve the goal of a safe transfer and the ability to assist. Explanation of the steps in a clear, concise fashion will decrease anxiety, secure cooperation, and ease physical requirements for both the client and the nurse/caregiver.

DIAGNOSIS

Risk for Injury

Impaired Physical Mobility

PLANNING

Expected Outcomes:

1. Clients will be safely lifted/transferred by staff utilizing appropriate equipment and correct body mechanics.

2. Accidents during lifting of clients will be avoided by using proper body alignment and mechanics.

3. Heavy lifting will be facilitated by mechanical devices and a team effort.

4. Clients and families will be taught safe lifting/transfer techniques to facilitate this process in home and extended-care environments.

5. The nurse will practice safe lifting and proper body mechanics when performing nursing care that requires bending or lifting.

Equipment Needed (see Figures 2-1-3A, B, C, and D):

• Transfer or gait belts

• Wheelchair equipped with working locks

• Transfer board

• Draw or lift sheet

• Nonslip shoes or slippers

• Safety or gait belt

• Stretcher equipped with working locks

• Hydraulic lift

Figure 2-1-3A Wheelchair

Figure 2-1-3B Transfer boards

Figure 2-1-3C Nonskid footwear

Figure 2-1-3D Stretcher

CLIENT EDUCATION NEEDED:

1. Advise clients of the plan to transfer them from one position to another.

2. Explain the procedure, provide a demonstration, and describe the individual client's specific participation requirements.

3. Explain that the ultimate goals of safe lifting and transfers are to encourage independence and to facilitate self-achievement.

4. If lifting requires the use of equipment, demonstrate the equipment before the application occurs.

5. Reassure client that every effort will be made to maintain individual privacy and dignity and that his or her body will be covered throughout the move and upon completion.

6. Allay fear of falling, fear of isolation, and potential for the loss of well-being.

7. Encourage family member participation in order to facilitate safe lifting at sites external to the acute-care setting.

8. Advise client to inform the nurse immediately if he or she becomes dizzy or lightheaded. Do not wait and hope that it will go away.

9. Advise client to inform the nurse if more blankets are needed for warmth while being transported to other parts of the hospital.

10. Instruct client not to lean forward in the wheelchair because it may cause the wheelchair to tip.

DELEGATION TIPS

Delegation to ancillary personnel of the moving, transferring, and lifting of clients is an expectation of their role after proper instruction and/or certification. Ancillary personnel are routinely expected to place the bed at proper height, use a wide base of support, properly position the client, and safely use assistive devices. After repositioning the client, ancillary personnel are expected to evaluate the client's level of comfort. The client that requires complex turning or lifting devices needs the supervision of the professional nurse.

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Wash hands.
1. Rationale: Reduces the transmission of microorganisms.

2. Action: Assess the situation for obstacles, heavy clients, poor handholds, or equipment or objects in the way. Reduce or remove safety hazards prior to lifting the client or object. Assess for any tubing or equipment connected to the client.
2. Rationale: Good planning helps prevent accidental injury.

3. Action: Assess the situation for slippery surfaces, including wet floors; slippery shoes on client, helper, or nurse; and towels, linen, or paper on the floor. Resolve the slippery surface prior to lifting the client or object.
3. Rationale: Removes the cause of many falls and slips.

4. Action: Assess the situation for hidden risks, including client confusion, combativeness, orthostatic hypotension, drug effects, pain, or fear (see Figure 2-1-4).
4. Rationale: Allows the nurse to anticipate and plan for unexpected events.

5. Action: Maintain low center of gravity by bending at the hips and knees, not the waist. Squat down rather than bend over to lift and lower (see Figure 2-1-5).
5. Rationale: Provides for the equal distribution of body weight and assists in maintaining safe balance.

6. Action: Establish a wide support base with feet spread apart (see Figure 2-1-6).
6. Rationale: Provides stability and lowers the center of gravity.

7. Action: Use feet to move, not a twisting or bending motion from the waist.
7. Rationale: Assists in maintaining correct body alignment, which increases strength to lift, push, pull, and carry.

8. Action: When pushing or pulling, stand near the object and stagger one foot partially ahead of the other.
8. Rationale: Provides a safety net for avoiding potential back injuries.

9. Action: When pushing a client or an object, lean into the client or object and apply continuous light pressure (see Figure 2-1-7). When pulling a client or an object, lean away and grasp with light pressure. Never jerk or twist your body to force a weight to move.
9. Rationale: Firm pressure will provide continuous movement of the object and will avoid abrupt movements that require the expenditure of increased energy.

10. Action: When stooping to move an object, maintain a wide base of support with feet, flex knees to lower body, and maintain straight upper body.
10. Rationale: Provides the appropriate mechanics for the strength and endurance to achieve the task and to stand up straight upon completion.

11. Action: When lifting or carrying an object, bend the knees in front of the object, take a firm hold, and assume a standing position by using the leg muscles and keeping the back straight.
11. Rationale: This stance will avoid the use of the back, diminish the potential for spinal twisting, and provide the lifter with a firm center of gravity and strength to lift the required weight.

12. Action: When rising up from a squatting position, arch your back slightly. Keep the buttocks and abdomen tucked in and rise up with your head first.
12. Rationale: Keeps the back from bowing and increasing the strain on the back muscles.

13. Action: When lifting or carrying heavy objects, keep the weight as close to your center of gravity as possible (see Figure 2-1-8).
13. Rationale: Reduces the strain on arm, leg, and back muscles.

14. Action: When reaching for a client or an object, keep the back straight. If the client or object is heavy, do not try to lift the client or object without repositioning yourself closer to the weight (see Figure 2-1-9).
14. Rationale: Avoids straining the back and arm muscles.

15. Action: Use safety aids and equipment. Use gait belts (see Figure 2-1-10), lifts (seeFigure 2-1-11), drawsheets, and other transfer assistance devices (see Figure 2-1-12). Encourage clients to use handrails and grab bars (see Figure 2-1-13). Wheelchair, cart, and stretcher wheels should be locked when they are not actually being moved.
15. Rationale: Reduces the strain on the nurse and improves the safety for the client.

Figure 2-1-4 Assess the client and the setting for safety risks before moving, lifting, or transferring the client.

Figure 2-1-5 Squat, rather than bend, to maintain good posture.

Figure 2-1-6 Spread feet apart to establish a wide base of support.

Figure 2-1-7 Lean into the client or object being pushed.

Figure 2-1-8 Hold weight close to your center of gravity.

Figure 2-1-9 Keep your back straight when reaching.

Figure 2-1-10 Use gait belts for better grip and control.

Figure 2-1-11 Use lifts to carry the weight of the client. Monitor equipment, lines, tubes, and drains and adjust as needed to prevent them from being dislodged.

Figure 2-1-12 Use transfer boards to reduce shearing forces and to reduce the effort needed to slide the client.

Figure 2-1-13 Encourage the client to use handrails and grab bars to reduce the risk of slipping or falling.

REAL WORLD ANECDOTES

Scenario 1

When Marsha moved from an inpatient hospital setting to a skilled nursing facility, she found the job required almost three times the amount of lifting and moving of clients. Her lower back began to ache by the end of her shift, and she was thinking of quitting. Her supervisor knew about lower back injuries. Together they worked out a schedule to spread her lifting chores out over the shift, to use hydraulic lifts with specific clients, and to get help for any client who could not assist by standing and supporting his or her own weight. An in-service where staff practiced lifting and moving techniques and exercising outside of work completed the intervention. Marsha stayed on the job with no further problems.

Scenario 2

A nurse was working in the home setting. Her elderly client was taking a tub bath, which he generally did every evening. This evening, the client felt dizzy after getting into the tub and started to get out unassisted. The nurse was in the bathroom. She saw her client stand up, sway, and start to lose his balance. She stepped forward, placed one foot into the bathwater, set her feet wide, bent her knees, and started to assist her client to sit on the edge of the tub safely. The bathtub had nonslip protection, but her other foot, on the wet bathroom floor, slid out from under her. They both fell into the tub. Fortunately, neither was seriously hurt.

Scenario 3

Annabel, a client with breast cancer that has metastasized to her spine, is also hearing impaired. Although medicated with continuous opioids with a transdermal fentanyl patch, she has break-through pain. The health care team has planned to move her from her bed to undergo radiation palliation for her pain. The team decides to move Annabel from the bed to a stretcher using three assistants, one at the head of the bed, one at the side of the bed, and the third by the stretcher. Because Annabel is hearing impaired, her nurse writes the plan down for Annabel to read, thereby decreasing the client's anxiety and maximizing her ability to assist with the transfer. The nurse also plans to coordinate the transfer at a time when Annabel is pain-free and can help herself move onto the stretcher. Summoning adequate assistance and enabling the client to assist and cooperate reduces the risk of back injury for the staff.

Scenario 4

Bobby is a hefty 16-year-old male who has sustained a crushing injury to his leg and foot from a lawn mower accident. He is taken to the hospital, the extremity is cleaned, hematomas are drained, lacerations are sutured, and the wounds dressed. His dressings require changing every 24 hours and he needs to be turned in bed to accomplish this task. The nurses caring for Bobby determine that their safety will require using two nurses and a draw sheet to turn and hold him. Bobby will be turned by both nurses. One nurse will hold and distract, and the other nurse will change the dressings. One nurse working alone would risk a twist or strain injury if she tried to hold, distract, restrain, and change a large dressing over a painful wound.

Scenario 5

A client is walking in the hall and becomes dizzy. She reaches out to grab onto the medication cart. The nurse had not locked the wheels of the cart. It rolls away, and the client falls to the floor.

EVALUATION

• The client or object is lifted and/or moved without sustaining injury or damage.

• The nurse who is lifting and moving clients or objects is not injured.

DOCUMENTATION

Nurses' Notes

• Document type of lift or transfer in the progress notes.

• Document client's tolerance of the lift or move in the progress notes.

CRITICAL THINKING SKILL

Introduction

Plan ahead to avoid back strain.

Possible Scenario

Angela is 2 days status post a bilateral mastectomy and has been getting up to the bathroom alone for over 24 hours. During the night she puts on her call light to ask for assistance to the bathroom because she feels "groggy." She weighs 250 pounds. The nurse is concerned that the client seems confused. She checks the medication chart and notes that Angela was given chloral hydrate, a sleeping pill, at 10 PM.

Possible Outcome

The nurse notes that chloral hydrate can often cause clients to hallucinate or become confused. In addition, the client is obese. The nurse asks another nurse to come in and assist. Angela stands up and lurches forward. She grabs the IV pole, thinking it is the bathroom door handle. Both nurses move into position to catch her before she falls, bracing their feet apart and bending at the knees. Injury to both nurses and the client is averted.

Prevention

In this case, the nurse realized there was an additional safety hazard and took the steps to prevent a fall and possible serious injury.

VARIATIONS

Geriatric Variations:

• Elderly clients often have reduced flexibility and muscle strength.

• While frail-looking elderly are assumed to have lower muscle strength, obesity may hide poor muscle tone as well.

• Elderly clients often live alone and are very independent. They know what their bodies can and cannot do. When assessing an elderly client, ask him or her their normal routine. Assist, but follow his or her lead when possible to promote independence, control, and exercise.

Pediatric Variations:

• Younger children are often moved and carried by parents in the hospital setting. Make sure the parent is used to carrying the child and that the child has not grown too heavy for safe lifting and carrying by one adult.

Home Care Variations:

• The home care setting poses special challenges for safe lifting and moving. Often the nurse is the only person in the setting physically able to move and lift. Furniture, especially beds and chairs, may not be designed for client care.

• Know the policies and procedures for obtaining assistance and alternatives to lifting and moving heavy clients at home.

• Instruct home caregivers about the basics of good body mechanics. Practice and have the home caregiver demonstrate proper techniques.

• Many safety risks not considered in the hospital can be present in the home. Scatter rugs, slippery tile, older furniture in poor repair, narrow hallways, and confined spaces with reduced maneuverability must all be considered when planning to move or lift the client.

Long-Term Care Variations:

• Workers in long-term care settings may have to do greater amounts of heavy lifting with less staffing, especially during night or evening shifts. Make sure lifting equipment is in good repair, gait belts are available, and personnel know how and when to use equipment safely.

COMMON ERRORS

Possible Error:

The client is moved but Foley catheters, pumps, drainage tubes, and IVs are not considered in the move and the client or nurse is injured by traumatic removal of or falling equipment.

Prevention:

Do a mental checklist of all tubes, drains, braces, and other devices. Mentally plan the move before you begin. Do not be in a hurry. If more than one nurse is involved in the move, do not assume that someone else has readied the tubes and equipment. Ensure that brakes are secured on wheelchairs, beds, and stretchers, reducing the client's risk for injury.

Possible Error:

Underestimating the strain or force required to assist a client.

Prevention:

Often nurses focus on the task and time schedule and consider how difficult it would be to summon help versus performing the task. Instead, consider the weight, level of consciousness, and physical impairment of the client. A good rule of thumb is not to lift or move any client by yourself who cannot bear his or her own weight.

Possible Error:

Slipping on spilled liquids on the floor.

Prevention:

Make sure none of your nursing techniques, such as priming IV tubing, wringing out wet dressings or wet compresses, and giving bed baths systematically, allows water to spill. Clean up spills immediately, and warn others of the spill.

NURSING TIPS

• Lock elevator doors before entering and exiting with clients in wheelchairs or stretchers. This will help avoid twisting to prevent the door from closing on a client, and prevent injury.

• Use portable IV poles on stretchers and wheelchairs instead of independent IV poles. This will help you focus your attention on ambulating the client instead of the IV pole.

• All assistive devices used to facilitate safe lifting must receive periodic safety checks by the appropriate department assigned. It is imperative that staff oversee this effort and report equipment that may cause potential danger for clients and staff.

• Keep yourself strong and healthy. Nursing is a physical job. Nurses must have physical ability in order to avoid fatigue and injury associated with pushing, pulling, lifting, and carrying clients. Stay in shape and practice basic health habits. Poor eating habits, not enough sleep, stress, obesity, and inactivity all decrease strength, flexibility, and judgment, which increases the risk of injury.

• Be sure the bed is aligned to the same height as the stretcher.

• Be sure client is kept in alignment when lifting or transferring. Always seek help if in doubt.

SPECIAL CONSIDERATIONS

• If the client has an indwelling catheter, secure it and the drainage bag to the client. Do not disconnect or attach above the level of the bladder to avoid an increased risk of contamination.

• If the client is on oxygen, assure that the tubing is long enough or that portable oxygen is available.

• If the nurse/caregiver has prior back pain, back injury, or other injuries that may lead to future disability, seek assistance. If the nurse/caregiver is pregnant, seek assistance for lifting.

• Certain clients with spinal injuries or spinal surgery may require "logrolling," a technique of moving or turning a client, whereby the body is kept in a protected straight alignment during the transfer.

• Hydraulic lifts will be necessary for large clients or for more difficult transfers.

• Special protocols are generally available for clients with orthopedic procedures, such as avoidance of adduction and internal rotation in clients with total hip replacement. Use pillow splints or trochanter roll as appropriate. Know the protocol for weight bearing on surgical hip. Clients with knee surgery generally require splinting before ambulation.

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    CHAPTER 2. Safety and Infection Control
    SKILL 2-1. Proper Body Mechanics, Safe Lifting, and Transferring —Patricia Buchsel, RN, MSN, Gaylene Bouska Altman, RN, PhD
    KEY TERMS

CHAPTER 3. Client Care and Comfort

SKILL 3-1. The Effective Communication Process —Valerie Coxon, RN, PhD, Gaylene Bouska Altman, RN, PhD

KEY TERMS

Active listening
Feedback
Interaction
Interpersonal
Medium
Message
Nonverbal
Receiver
Sender
Verbal

ESTIMATED TIME TO COMPLETE THE SKILL:

1-60 minutes, depending on the nature and content of the communication.

OVERVIEW OF THE SKILL

Communication is a foundation of nursing care. Effective nursing requires clear communication with the client, the family, and other members of the health care team. Communication is a basic ingredient of the nursing process. Assessing, mediating, problem solving, teaching, planning, implementing care, receiving feedback, and many other nursing tasks require clear communication.

The essential components of communication include the sender, the receiver, the message, the message channel, and the feedback to the message (see Figure 3-1-1). The sender is the individual who generates and communicates the message. The sender senses a need to communicate—to express a feeling, to relate to another, to seek to understand, or to request information from another person. The message is generated mentally, then encoded into a form that can be communicated. Eye movements, gestures, words, sounds, facial expressions, and body postures are all forms of communication.

The receiver is the person who receives and interprets the message. The message is heard, seen, or felt, then mentally interpreted, or decoded, as the individual decides what is being communicated. How messages are received and interpreted depends on many factors, including the receiver's vision, hearing, level of anxiety, mood, beliefs, values, expectations, and previous experiences.

The message is defined as the package of information being transferred from the sender to the receiver via one or more communication channels. Although messages are often thought of as written or spoken words, a message can be verbal, nonverbal, written, drawn, or sculpted. Verbal messages can be words, language, sounds, songs, or noises. Nonverbal messages include hand and body gestures, facial expressions, and postures. Written and artistic messages include the written word, drawings, photos, and models.

Most messages are packets of information communicated via multiple channels. A verbal message, for example, is a selection of spoken words of certain loudness, pitch, and rate, communicated via the auditory channel, accompanied by facial expressions, posture, and gestures, communicated via the visual channel.

Therapeutic communication is the use of purposeful dialogue directed toward an outcome to improve a client's insight into his or her condition, to manage symptoms and promote healing.

Its two basic goals are: 1) to formulate and send clear messages and 2) to receive, interpret, clarify, and respond to messages sent by the client and other members of the health care team. Two key elements of this process are active listening and communication barriers.

Active listening is the dynamic process individuals engage in when they desire to receive accurate messages. It consists of hearing and interpreting words; watching for and interpreting gestures and postures; and identifying and surfacing feelings, undercurrents, or themes in a communication sequence. The goal of active listening is to accurately hear the complete message being sent. Other examples of therapeutic communication skills are listed in Table 3-1-1.

Barriers to communication block or distort communication. Some examples include gender and sociocultural differences, language differences, pain, and cognitive or sensory deficits. More subtle barriers include differences in knowledge, daydreaming, environmental noise, privacy, fatigue, fear, or the use of jargon. Individuals can introduce barriers to communication as they communicate. Blaming or belittling, pressuring, being defensive, using cliches, changing the topic to a more comfortable one, or using "yes or no" questions are all examples of communication blocks. Other examples are given in Table 3-1-2.

Figure 3-1-1 The nurse and client each act as a sender and receiver, communicating messages and feedback.

ASSESSMENT

1. Assess the client's ability to send clear messages. Check for physical barriers such as mental confusion, sedation, or the restricted ability to speak or gesture. Check for emotional or social barriers such as the fear of communicating certain messages, doubts about the appropriateness of when

and how to communicate with health care members, or embarrassment over the content of the message. **Determines how to intervene to remove barriers to communication.**

2. Check the ability to receive messages. Look for hearing or vision difficulties. Check for confusion, anxiety, dizziness, or sedation. Check for emotions that may block or skew incoming messages, such as anger, frustration, depression, or doubt. **Determines how to intervene to remove or decrease barriers to communication.**

3. Assess for the amount of information that may effectively be delivered or received and processed in a time block. Sedation, pain, anxiety, and distractions all reduce the amount of information the client can process at one time. Difficult concepts or complicated or detailed information must be delivered at a rate and clarity level that the client can absorb. The nurse must be able to focus on the communication process without distraction. Competing demands may necessitate moving the communication to a different time. **Allows the nurse to select the most appropriate time and amount of information to send and receive.**

4. Check for impediments to communication in the surrounding environment. Ambient noise, bright or dim lighting, the presence of strangers or family members, the lack of privacy, task-oriented "busy" staff, and isolation precautions such as masks and goggles can all impede effective communication. **Allows interventions and modifications to the environment to reduce barriers to communication.**

5. Assess your own ability to receive and send messages. Check for internal biases or beliefs about clients that may cause you to skew or distort your interpretation of the messages they are sending. Check for your openness to receive messages, including your focus on other tasks, priorities, comfort level with the subject matter, and ability to understand the words and gestures of the client. **Determines how to interpret or seek additional communication.**

DIAGNOSIS

Impaired Verbal Communication

Powerlessness

Anxiety

Deficient Knowledge

Confusion

Disturbed Thought Processes

PLANNING

Expected Outcomes:

1. The client's environment will be as free from barriers to communication as is possible given the client's physical condition and immediate environment.

2. The nurse will communicate internally generated messages successfully as evident by feedback that confirms the intended message was received by the client or health care team member.

3. The client or health care team member will communicate internally generated messages successfully as evident by feedback that confirms the intended message was received by the nurse.

Equipment Needed:

• Quiet, private area free of distractions or interruptions

• Aids to communication as necessary, including glasses, hearing aids, pencil and paper, computer, sign board, or interpreters

• Comfortable chair or bed for the client and chair for the nurse that places him or her at eye level with the client

CLIENT EDUCATION NEEDED:

1. Explain the need to communicate and the nature of the messages to the client such as assessment, counseling, teaching, delivering or receiving information, or planning.

2. Arrive at mutually agreed upon goals for the communication session: understanding the nature and level of client distress, understanding teaching needs, understanding postoperative exercises, open-ended discussion about client frustrations, and so on.

3. Assure the clients that they are in control of the situation and that they may stop or modify the communication session at any time.

4. Inform the client of the need to provide feedback for messages sent by the nurse. Discuss the nature of feedback, and inform the client how you will signal the need for feedback from the client.

5. Remind clients that even though it is often easier to let a family member communicate for them, it is OK to speak up directly.

6. Teach clients that it is normal to forget information about their care and condition in the stressful hospital setting. Let them know it is OK to ask questions.

7. Remind clients that there are no "dumb" questions.

DELEGATION TIPS

Therapeutic communication is the goal of all professional interactions with clients. Ancillary personnel can greatly facilitate communication with the client if they are properly prepared to do so. To maintain confidentiality, client problems and issues and concerns should be communicated to the nurse for evaluation. All communication should be culturally sensitive, caring, and respectful.

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Wash hands.
1. Rationale: Reduces the transmission of microorganisms.

2. Action: Arrange for an uninterrupted time block.
2. Rationale: Interruptions disrupt the process.

3. Action: Prepare to be an effective communicator:
• Decide what information you wish to communicate or solicit.
• Determine the appropriate difficulty level for your language and how much information you should attempt to communicate at any one time.
• Decide how long the session will be and at what pace to provide messages.
• Review the tenants of active listening.
• Do a quick internal check for beliefs or prejudices that might affect the ability to communicate.
3. Rationale: Facilitates successful communication.

4. Action: Assess the environment for barriers to communication. Adjust the environment to facilitate the communication process. Close doors for privacy and move sources of noise away (see Figure 3-1-2) or turn them off if possible. Provide glasses or hearing aids, turn off TV, remove visual distractions, and so on. Adjust lighting so the client can see you (see Figure 3-1-3), and do not stand with your back to a sunlit window or a bright light (see Figure 3-1-4).
4. Rationale: Facilitates the transmission of messages.

5. Action: Assess the client for barriers to communication, and intervene where possible. Intervene for pain (see Figure 3-1-5), nausea, anxiety, or chills. If appropriate, select a time when the client is feeling alert, awake, and ready and willing to communicate.
5. Rationale: Establishes the best available environment for the type of communication desired.

6. Action: Sit in a comfortable chair, or squat close to the client (see Figure 3-1-6). You should be at eye level to allow eye contact, to hear and be heard, and to use touch if appropriate (see Figure 3-1-7). Make sure the client is warm and comfortable.
6. Rationale: Increases client comfort.

7. Action: Provide similar seating to an interpreter or other person participating in the communication.
7. Rationale: Allows messages to be clearly transmitted.

8. Action: Introduce yourself, and state the purpose of your communication.
8. Rationale: Reduces confusion.

9. Action: Using the purpose of the communication as a guide, draw the client into the communication session with you. Use techniques that allow the client to set the pace, encourage spontaneity, focus on the client, and encourage the expression of feelings.
9. Rationale: Initiates the process of communication.

10. Action: At regular intervals during the communication session, request feedback from the client to assess if your communication is being received as you intended it.
10. Rationale: Gathering feedback enables the nurse to modify the communication and detect barriers.

11. Action: At regular intervals during the session, provide feedback to the client that states what you are hearing the client communicate, both verbally and nonverbally. Request clarification when needed.
11. Rationale: Providing feedback helps clients assess if they are communicating the message intended. Providing feedback allows the nurse to communicate active listening. The focus of the feedback helps the nurse direct the conversation toward areas not completely understood or communicated.

12. Action: Monitor yourself and your client for nonverbal messages (see Figures 3-1-8 and 3-1-9).
12. Rationale: Allows further clarification of the messages being communicated. Allows detection of thoughts or emotions that you or the client may be reluctant to verbalize.

13. Action: Assess for signs of boredom, distraction, confusion, or emotional responses. Ask for feedback and clarification. Adjust your communication or terminate the session, if needed.
13. Rationale: Allows early detection of barriers that might reduce the quality of or end the communication.

14. Action: If the communication session is interrupted, terminate the session if the interruption is a higher priority, or at the client's request. Identify a time and place to resume.
14. Rationale: Reduces confusion and establishes the importance of the communication.

15. Action: When the information has been communicated by the client, nurse, or family and adequate feedback has been obtained on both sides, terminate the communication session.
• Review information if appropriate.
• Schedule follow-up communication if appropriate.
• Confirm follow-up actions or third-party communications as planned. If information to be passed along is confidential, verify the client's consent.
15. Rationale: Provides closure to the communication session.

Figure 3-1-2 Noisy equipment or environments can interfere with verbal communication.

Figure 3-1-3 Poor lighting can interfere with nonverbal communication.

Figure 3-1-4 Standing in front of a bright window or light can prevent the client from seeing your face or gestures.

Figure 3-1-5 Pain or anxiety can distract the client from sending and receiving clear messages.

Figure 3-1-6 Squat or sit close to the client to facilitate seeing and hearing messages.

Figure 3-1-7 Position yourself at eye level so both of you can hear, read lips, and observe facial expressions.

Figure 3-1-8 Crossed arms can communicate a defensive nonverbal message.

Figure 3-1-9 A hand covering your mouth can interfere with verbal communication.

REAL WORLD ANECDOTES

David was a newly hired night-shift nurse who abused drugs. Bad days consisted of wild mood swings punctuated by angry outbursts and long silent stares. Other nurses on the lightly staffed unit were afraid of David and concerned about the care he was providing. One nurse who had worked with David in another facility went to the supervisor with her concerns. The supervisor did not keep the information confidential, and the nurse was so harassed by David for "squealing" on him that she requested a transfer.

Things came to a head one night when David restrained an alert and conscious elderly client who was on the unit for telemetry. David would not let him up and he became more and more agitated. Another nurse intervened. The client called family members who reported the incident to the hospital administrator. David was fired on the spot, and the nurses were reprimanded for not reporting the situation.

Communication about this potentially dangerous situation was suppressed by a barrier of fear. The nurses feared that the supervisor would "tattle," yet "do nothing," and they feared reprisals from David. The nurses needed to communicate with each other to define the problem, identify the barriers, and plan a solution. In this case, putting their concerns in writing and going to the supervisor as a group may have been effective ways to overcome these potentially disastrous communication barriers.

EVALUATION

• If the communication was about a client concern, have the client evaluate, on a 1-10 rating scale how well the client feels the message was heard and how satisfied the client is with the response.

• Review the discussion. Determine what worked well and whether any distractions were evident. Identify the emotions that arose during the session, and describe any nonverbal gestures that were noted.

• Evaluate the outcome of the communication. Determine whether behaviors or nonverbal communications have changed and whether learning has occurred.

DOCUMENTATION

Nurses' Notes

• Document the type of communication such as client education, support, planning.

• Document the subject matter, the feedback, and the outcomes, if any.

• Note any barriers to communication such as pain, anxiety, or hearing or visual impairments.

CRITICAL THINKING SKILL

Introduction

Nonverbal communication can be ambiguous. Clarify with verbal communication when possible.

Possible Scenario

Joy is on your unit recovering from a hysterectomy. She is not on client-controlled analgesia (PCA) and has requested pain medication. You enter her room about 10 minutes after her request, and she is resting in bed with her eyes closed.

Possible Outcome

Assuming that she has fallen asleep, you pause in the doorway. After a few seconds, you conclude that she is not in pain and leave the room. A half-hour later, she calls again. When you arrive and ask how her nap was, she bursts into tears. "I can't sleep! I hurt so much and you forgot to bring me a pain shot! I keep trying to doze off to escape the pain, but it is no use! Where have you been?"

Prevention

The nurse needed to assess this client for pain. This requires sending and receiving clear messages, both verbal and nonverbal. The nonverbal messages of closing the eyes and holding still were misread by the nurse as indicating that the client was asleep and that she no longer desired medication for the pain. The nurse needed to assess the nonverbal messages while standing at the bedside, then send a quiet verbal message, along with nonverbal touch, announcing her presence and confirming the request for pain medication.

VARIATIONS

Geriatric Variations:

• Geriatric clients are much more likely to have hearing and visual difficulties that make communication more difficult. Be sure to assess the cognitive and sensory abilities.

• Geriatric clients may not be as familiar with the "jargon" used by younger generations. This could lead to confusing messages.

• Geriatric clients with sensory deficits may have more stress and anxiety caused by the difficulty of maintaining good communication and feedback about unfamiliar procedures and environments.

• If elderly clients are hard-of-hearing, remember to stand in front of them at eye level so they can see your lips. Keep your hands away from your mouth. Speak slowly and distinctly. Do not shout.

Pediatric Variations:

• Match the difficulty of the words you choose with the age of the child.

• Remember that younger children will more likely take what you say literally.

• Ask the parent to tell you special words or phrases that have meaning for the child.

• The parent can often help interpret complex nonverbal behaviors that indicate the child is afraid, tired, or in pain.

• Assessing the needs of the preverbal, nonverbal, or sensory-impaired child can be a challenge. Do not assume needs are not present just because they are not communicated verbally.

Home Care Variations:

• Remember that as a caregiver, you are a guest in the client's home. The client may need some time to evaluate you and establish trust prior to communicating important messages. Facilitate this by using nonjudgmental, open, and friendly words or gestures. Keep communication short and friendly, and select nonthreatening topics while trust is being established.

• Communications and education in the stressful hospital environment are often poorly received. A posthospitalization home visit is a good time to review and clarify education and information received in the hospital.

Long-Term Care Variations:

• Smaller staffing in long-term facilities may limit the communication a staff member can engage in with a client. Staff members need to take every

opportunity to communicate while other tasks are being performed such as eating or bathing.

• Staff members in task-oriented positions may find it difficult to practice active listening, especially with clients who have physical or mental communication restrictions. Setting aside time for one-on-one communication is important nursing care.

COMMON ERRORS

Possible Error:

Reassuring the client before completely listening to the concern.

Prevention:

Recognize your desire to make the client feel better. Recognize that the real concerns may not come up in the first few sentences. Use open-ended questions to gently explore the concern.

Possible Error:

Avoiding an uncomfortable message: "Nurse, I think I am dying."

Prevention:

Learn to recognize how you react internally to a threatening or uncomfortable message. Learn to recognize ways you avoid dealing with uncomfortable messages. Set a priority on communication over tasks, especially when you detect that the message is important.

Respond by stopping your task and expressing your desire to hear more. Communicate quietly and gently to the client the message you heard, and ask for feedback and confirmation. Ask open-ended questions, and ask if the client wishes to discuss the message further. If necessary, schedule a time to return to the client later. Do not forget.

Possible Error:

The client cannot hear your words.

Prevention:

Position yourself close to the client. Speak clearly but do not yell. Speak into the client's ear if helpful. Make sure your voice does not lower in volume at the end of a sentence.

NURSING TIPS

• As a rule of thumb, when soliciting information, ask two to three open-ended questions for every statement you make.

• As a rule of thumb, when providing education, try to ask one open-ended question for every three points you make.

• At a sunny bedside, stand away from the window so the light shines on your face and not behind your back. This will reduce the glare and make it

easier for the client to see you.

• When practicing active listening, restate what you have heard in your own words. Rather than saying, "I hear you," say, "This is what I am hearing . . . is this correct?"

• Understand that angry messages often hide fear and vulnerability. Find and respond to the underlying messages as well as the communicated one.

• Communication is a complex subject. To truly learn therapeutic communication, seek out additional learning resources. Practice your skills in a variety of settings, then apply what you have learned to your nursing care.

• Drawing pictures as you speak, or having the client draw or point to pictures to illustrate concepts, helps minimize daydreaming and provides another avenue of communication.

• Remember that a client can speak the same language but be from a different culture or country. Words may have different meanings.

• Maintain eye contact when speaking with clients.

SPECIAL CONSIDERATIONS

• When interviewing a cognitively capable client whose spouse or significant other answers all or many of the questions, the nurse should suspect that the client may be a victim of domestic abuse. The client might look at the partner before answering questions as well. The nurse should find a way to isolate the client from the spouse or significant other and tactfully ask if the client feels safe at home, or feels threatened in any way. This can be done by developing a policy where part of the exam is always done with only the client in the room or you can request, if the client is female, that she go to the bathroom for a urine sample (if appropriate) where you might assist her and talk with her.

• When a child presents with injuries inconsistent with the history given by the parent, the nurse should suspect child abuse and would be remiss not to follow up. Abusive parents are usually overly attentive when they have injured a child, and this communication should be noted as well.

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    CHAPTER 3. Client Care and Comfort
    SKILL 3-1. The Effective Communication Process —Valerie Coxon, RN, PhD, Gaylene Bouska Altman, RN, PhD
    KEY TERMS

CHAPTER 4. Basic Care

SKILL 4-1. Changing Linens in an Unoccupied Bed —Karrin Johnson, RN, Gaylene Bouska Altman, RN, PhD

KEY TERMS

Draw sheet
Fan-fold
Fitted sheet
Mattress pad
Miter
Top sheet
Unoccupied bed

ESTIMATED TIME TO COMPLETE THE SKILL:

15 minutes

OVERVIEW OF THE SKILL

After a bath, clean linens are placed on the bed to promote comfort and decrease transmission of microorganisms. If the client is able to get out of bed, assist the client to a chair and proceed with making the bed. After surgery, the client should be returned to a clean bed with the linens folded to the foot of the bed to promote easy client transfer.

ASSESSMENT

1. Assess your equipment. Check for all linens necessary to change the bed. Check for a dirty linen hamper. **Facilitates a smooth procedure.**

2. Assess whether the bed itself needs cleaning prior to placing clean sheets on it. **Reduces the transmission of microorganisms.**

3. Assess the client's needs in the bed. Check for profuse drainage, incontinence, or special needs for comfort or skin integrity. **Determines how the procedure will be performed.**

4. Assess the client's ability to be out of bed in a safe place while changing linens.

DIAGNOSIS

Risk for Impaired Skin Integrity

PLANNING

Expected Outcomes:

1. The client will have clean linens on the bed.

2. The clean linens will be appropriate to the client's needs and condition.

Equipment Needed (see Figure 4-1-1):

- Bottom sheet (fitted, if available)
- Top sheet
- Draw sheet (regular top sheet may be used)
- Pillowcase (each pillow on the bed)
- Mattress pad
- Antiseptic solution, washcloth, and towel
- Linen bag hamper outside the room
- Nonsterile gloves

Figure 4-1-1 Clean linens and a laundry hamper for used linens are brought to the bedside to make the unoccupied bed. Gloves help reduce the transmission of microorganisms.

CLIENT EDUCATION NEEDED:

Educate the client about the need for clean linen to increase comfort and to help prevent skin complications.

DELEGATION TIPS

Bed making is usually delegated to ancillary personnel. Their instruction should include safety precautions for themselves and the client, and understanding the appropriate use of Standard Precautions.

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Place hamper by client's door if linen bags are not available. Explain procedure to client. Assess condition of blanket and/or bedspread.
1. Rationale: Provides for proper disposal of soiled linens. Encourages client cooperation. Allows for organization of supplies.

2. Action: Gather linens and gloves. Place linens on a clean, dry surface in reverse order of usage at the client's bedside (pillowcases, top sheet, draw sheet, bottom sheet).
2. Rationale: Provides easy access to items.

3. Action: Apply gloves.
3. Rationale: Reduces risk of infection from soiled, contaminated linens.

4. Action: Inquire about the client's toileting needs and attend as necessary.
4. Rationale: Provides for client comfort and prevents interruptions during bed making.

5. Action: Assist client to a safe, comfortable chair.
5. Rationale: Increases client's comfort and decreases risk of falls.

6. Action: Position bed: flat, side rails down, adjust height to waist level.
6. Rationale: Promotes good body mechanics and decreases back strain.

7. Action: Remove and fold blanket and/or bedspread. If clean and reusable, place on clean work area.
7. Rationale: Keeps reusable bed linens clean.

8. Action: Remove soiled pillowcases by grasping the closed end with one hand and slipping the pillow out with the other. Place the soiled cases on top of the soiled sheet, and place the pillows on clean work area.
8. Rationale: Allows easy removal of the pillowcases without contamination of uniform by soiled linens and keeps pillows clean.

9. Action: Remove soiled linens: Start on the side of the bed closest to you; free the bottom sheet and mattress pad by lifting the mattress and rolling soiled linens to the middle of the bed. Go to the other side of the bed, repeat action.
9. Rationale: Prevents tearing and fanning of linens. Linens are folded from cleanest area to most soiled to prevent contamination.

10. Action: Fold (do not fan or flap) soiled linens: head of bed to middle, foot of bed to middle. Place in linen bag or hamper, keeping soiled linens away from uniform.
10. Rationale: Fanning or flapping linens increases the number of microorganisms in the air. Folding linens reduces the risk of transmission of infection to others.

11. Action: Check mattress. If the mattress is soiled, clean it with an antiseptic solution and dry it thoroughly.
11. Rationale: Reduces the transmission of microorganisms.

12. Action: Remove gloves, wash hands, and apply a second pair of clean gloves (when appropriate).
12. Rationale: Reduces the transmission of microorganisms to clean linens.

13. Action: Open the clean mattress pad lengthwise onto the bed with the seamed side of the sheet toward the mattress. Unfold half the pad's width to the center crease and smooth the pad flat. If there are elastic bands to hold the pad in place, slide them under the corners of the mattress.
13. Rationale: Facilitates making bed in an organized, time-saving manner by not having to go from one side of the bed to the other.

14. Action: Proceed with placing the bottom sheet onto the mattress. Linens differ from facility to facility. Bottom sheets may be fitted or they may be flat. Proceed to the appropriate Action for the linen available.
14. Rationale: Use linen available at the facility.

Fitted Bottom Sheet

15. Action: Position yourself diagonally toward the head of the bed.
15. Rationale: Ensures good body mechanics and efficient procedure.

16. Action: Start at the head with seamed side of the fitted sheet toward the mattress.
16. Rationale: Placement of seamed side toward mattress prevents irritation to the client's skin.

17. Action: Lift the mattress corner with your hand closest to the bed; with your other hand, pull and tuck the fitted sheet over the mattress corner; secure at the head of the bed.
17. Rationale: Prevents straining of back muscles; decreases the chance that the sheet will pull out from under the mattress.

18. Action: Pull and tuck the fitted sheet over the mattress corners at the foot of the bed.
18. Rationale: Prevents straining of back muscles; decreases the chance that the sheet will pull out from under the mattress.

Flat Regular Sheet

19. Action: Unfold the bottom sheet with the seamed side toward the mattress. Align the bottom edge of the sheet with the edge of the mattress at the foot of the bed.
19. Rationale: Placement of the seamed side toward the mattress prevents irritation to the client's skin. Ensure proper placement of the sheet so that it can be tightly secured at the top and on both sides of the bed.

20. Action: Allow the sheet to hang 10 inches (25 cm) over the mattress on the side and at the top of the bed.
20. Rationale: Proper placement of linens ensures adequate sheeting for all sides of the bed.

21. Action: Position yourself diagonally toward the head of the bed. Lift the top of the mattress corner with the hand closest to the bed and smoothly tuck the sheet under the mattress.
21. Rationale: Prevents straining of back muscles; decreases the chance that the sheet will pull out from under the mattress.

22. Action: Miter the corner at the head of the bed using the following technique.
22. Rationale: Secures sheet tightly to the mattress, with the triangular fold providing a smooth tuck to keep the linen in place.

23. Action: Face the side of bed and lift and lay the top edge of the sheet onto the bed to form a triangular fold.
23. Rationale: Forms the base for the tuck.

24. Action: With your palms down, tuck the lower edge of sheet (hanging free at the side of the mattress) under the mattress.
24. Rationale: Forms the first half of the tuck.

25. Action: Grasp the triangular fold, bring it down over the side of the mattress. Allow the sheet to hang free at the side of the mattress.
25. Rationale: Will form the final portion of the mitered corner when tucked in.

26. Action: Place the draw sheet on the bottom sheet and unfold it to the middle crease (see Figure 4-1-2).
26. Rationale: Provides a sheet to lift and move the client in bed without having to use the bottom sheet and remake the bed. Helps to keep the bottom sheet clean.

27. Action: Face the side of the bed, palms of hands down. Tuck both the bottom and draw sheets under the mattress. Ensure that the bottom sheet is tucked smoothly under the mattress all the way to the foot of the bed.
27. Rationale: Keeps sheet taut, in place, and wrinkle-free, thereby decreasing the risk of skin irritation.

28. Action: Go to the other side of the bed, unfold the bottom sheet, and repeat the actions used to apply the mattress pad and bottom sheet.
28. Rationale: Unfolding decreases air current; air currents can spread microorganisms.

29. Action: Unfold the draw sheet, if used, and grasp the free-hanging sides of both the bottom and draw sheets. Pull toward you, keeping your back straight, and with a firm grasp (sheets taut) tuck both sheets under the mattress. Use your arms and open palms to extend the linen under the mattress. Place the protective pad on the bottom sheet.
29. Rationale: Uses your body's weight in pulling the sheet taut and prevents strain on your back muscles.

30. Action: Place the top sheet on the bed and unfold lengthwise, placing the center crease (width) of the sheet in the middle of the bed. Place the top edge of the sheet (seam up) even with the top of the mattress at the head of the bed. Pull the remaining length toward the bottom of the bed.
30. Rationale: Saves time and movement, making one side of the bed at a time. Seam will be folded down to prevent contact with the client's skin, which can result in irritation.

31. Action: Unfold and apply the blanket or spread. Follow the same technique as used in applying the top sheet (see Figure 4-1-3).
31. Rationale: Provides warmth.

32. Action: Miter the bottom corners. With your palms down, tuck the lower edge of the sheet under the mattress. Grasp the triangular fold and bring it down over the side of the mattress. Allow the sheet to hang free at the side of the mattress (see Figures 4-1-4, 4-1-5, and 4-1-6).
32. Rationale: Secures linen at the foot of the bed.

33. Action: Face the head of the bed and fold the top sheet and blanket over 6 inches (15 cm). Fan-fold the sheet and blanket (from the foot to the middle of the bed) (see Figure 4-1-7).
33. Rationale: Allows the client easy access to the bed.

34. Action: Apply a clean pillowcase on each pillow (see Figure 4-1-8). With one hand, grasp the closed end of the pillowcase. Gather the pillowcase and turn it inside out over hand. With same hand, grasp the middle of one end of the pillow. With the other hand, pull the case over the length of the pillow. The corners of the pillow should fit snugly into the corners of the case.
34. Rationale: Keeps clean pillowcase away from your uniform.

35. Action: Return the bed to the lowest position and elevate the head of the bed 30° to 45°. Put side rails up on side, farthest from client.
35. Rationale: Provides for client safety.

36. Action: Inquire about toileting needs of the client; assist as necessary.
36. Rationale: Saves client energy and provides time to care for the client's needs.

37. Action: Assist the client back into the bed and pull up the side rails; place call light in reach; take vital signs.
37. Rationale: Promotes client safety and a means to call for assistance. Sitting up in a chair and movement may cause changes in the client's vital signs.

38. Action: Remove gloves and wash hands.
38. Rationale: Reduces the transmission of microorganisms.

39. Action: Document your actions and the client's response during the procedure and to sitting up in a chair.
39. Rationale: Documents completion of procedure and assessment findings of client's tolerance.

Figure 4-1-2 The clean draw sheet is placed on top of the bottom sheet.

Figure 4-1-3 Place the blanket or spread over the top sheet.

Figure 4-1-4 Lift and lay the hem of the sheet and blanket on the bed to form a triangular fold.

Figure 4-1-5 Tuck the lower edge of the sheet and blanket under the mattress.

Figure 4-1-6 Bring the triangular fold down and let it hang freely at the side of the mattress.

Figure 4-1-7 Fold the top sheet and blanket 6 inches.

Figure 4-1-8 Place a clean pillowcase on each pillow while keeping the clean pillowcase away from your uniform.

REAL WORLD ANECDOTES

Scenario 1

An elderly woman in a long-term care facility is using a silicone sand bed. The nurse's aides change her bed linens daily. The linens are simply laid on top of the sand mattress in accordance with the manufacturer's recommendations. Unnoticed by the aide, the fabric covering the sand is becoming frayed and worn. It finally tears, releasing sand into the client area of the bed. The sand slowly engulfs the client, drowning her in quicksand. The nurse needed to be aware of new equipment requirements and hazards.

Scenario 2

The nurse has just finished removing soiled linen from an incontinent client's bed and replacing it with clean linen. She then picks up the soiled linen, tucks it under her arm, and takes it out to the dirty linen hamper in the hallway. As she is washing her hands afterward, she notices that the stool from the client's sheets has smeared her arm and uniform. She washes her arm but is unable to change her uniform. This nurse learned not to carry dirty linen too close to herself or her uniform.

EVALUATION

• Confirm that fresh linens were placed on the bed in a manner appropriate to the client's needs.

DOCUMENTATION

Nurses' Notes

• Document the linen change and the client's tolerance to being out of bed.

CRITICAL THINKING SKILL

Introduction

Throwing dirty linen on the floors endangers the nurse.

Possible Scenario

You have gotten Mr. Nelson out of bed and into a chair. You are changing the soiled linen on his bed. As you strip the dirty linens off the bed, you realize that you do not have a dirty linen hamper nearby. Mr. Nelson is confused and cannot be trusted to stay in the chair if you leave the room. You are not comfortable leaving the soiled linen on his bedside table or other clean surface, so you put the dirty linens on the floor. You finish changing the bed linens, return Mr. Nelson to bed, and then take the soiled linen to a dirty linen hamper.

Possible Outcome

Dirty linen on the floor can be a safety hazard to the nurse as she or he moves about the room or to clients if they are moving around the room. Putting dirty linen on the floor is also a violation of the health code in most states and can lead to infraction citations if discovered by a health inspector.

Prevention

Be prepared with everything you will need before you start a procedure. If you discover you need something and cannot leave the room, request assistance. Turn on the call light or call out the door for some help.

VARIATIONS

Geriatric Variation:

• Geriatric clients often have thin, easily damaged skin. Be sure to use linen that does not have jagged tags or rough edges.

Pediatric Variation:

• Be aware that children put things in their mouths and use only linens that a child could safely chew on. Also be sure that there are no decorations or patches that a child could chew off and swallow.

Home Care Variation:

• In home care situations, a nurse does not usually make the bed. It is part of the nurse's function to examine the conditions, including the bed, and make suggestions regarding the safety and comfort of the client. The nurse should check for bed rails, linens that the client could become entangled in, or a bed that is structurally unsafe.

Long-Term Care Variation:

• Be sure to keep the linen smooth and fairly unwrinkled to prevent unwanted pressure areas in long-term clients.

COMMON ERRORS

Possible Error:

While making a client's bed, the nurse flaps the linen to unfold it and to cover the bed.

Prevention:

Think about what you may be stirring up with the flapping linen. Remember you are possibly spreading bacteria around the room as well as into the air you are breathing. Unfold linen on the bed, gently. Do not flap the bed linens around while making the bed.

Possible Error:

While making the bed, the nurse tucks the pillow under her chin to apply the pillowcase.

Prevention:

Think about where this pillow has been and if you may be infecting yourself by placing this pillow under your chin. Consider the possibility that you may be infecting pillows from different rooms using this technique. Put the pillowcase on by grasping the closed end of the pillowcase with one hand. Gather the case and turn it inside out over your hand. With the same hand, grasp the middle of one end of the pillow. With the other hand, pull the case over the length of the pillow (see Figure 4-1-8).

NURSING TIPS

- If the bed raises and lowers, raise it up to a comfortable height to prevent back strain (see Figure 4-1-9).
- Make one side of the bed completely and then move to the other side to save time and steps.
- Be careful not to carry the dirty linen close to your uniform to prevent contamination.

Figure 4-1-9 Raise bed to a comfortable height to prevent back strain.

SPECIAL CONSIDERATIONS

- Some facilities do not change clients' sheets daily. Know your hospital's policy and be comfortable with explaining it to clients if asked.
- Institution-laundered linen may be coarse on the client's skin (especially for elderly clients). Some institutions allow clients to bring linen from

home to make their stay more comfortable.

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    CHAPTER 4. Basic Care
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    KEY TERMS

CHAPTER 5. Medication Administration

SKILL 5-1. Administering Oral, Sublingual, and Buccal Medications —Kathryn Lilleby, RN, Gaylene Bouska Altman, RN, PhD

KEY TERMS

Buccal
Capsule
Enteric coated
Liquid
Medication administration record (MAR)
Mortar
Oral
Pestle
Powder
Prescription
Sublingual
Tablet

ESTIMATED TIME TO COMPLETE THE SKILL:

5-10 minutes

OVERVIEW OF THE SKILL

The easiest and most common method of administering a medication is usually by mouth. Clients may be taught to administer the medication by themselves at home or a nurse can prepare the medications and dispense to clients. Oral medications are contraindicated for clients with

gastrointestinal alterations, using nasogastric tube or gastrostomy tube, or who have a poor gag reflex. Clients with an inability to swallow because of neuromuscular disorder, esophageal stricture, or lesion of the mouth or those who are unresponsive or comatose are also ineligible to receive oral administration of medication.

Nurses need to know the action, normal dosage, side effects, and nursing implications for each drug they administer. In some settings, medications for several clients may be prepared at one time in the medication room or medication cart by carefully identifying each client's doses (see Figure 5-1-1). Most hospitals use a computerized limited access medication system.

Figure 5-1-1 In some settings, medications for several patients are prepared at the medication cart at one time.

ASSESSMENT

1. Assess the five rights: right client, right medication, right route, right dose, and right time. **Prevents errors in medication administration.**

2. Review the action, purpose, normal dosage and route, common side effects, time of onset and peak action, and nursing implications of each drug **so the client's response to the medication may be monitored.**

3. Assess the client's condition to be sure the order of the health care provider is appropriate **as the client's condition may have changed since the order was written.**

4. Assess the client's ability to swallow food and fluid **as he or she may be unable to swallow a pill and an alternate route for medication may be needed.**

5. Assess for any contraindications for administering an oral medication such as nausea and vomiting, gastric suction, or gastric surgery resulting in decreased peristalsis **as alterations in gastrointestinal function may interfere with drug absorption and excretion.**

6. Assess the client's medical record for a history of allergies to food or medications **so these medications can be avoided.**

7. Assess the client's knowledge about the use of medications **so client teaching can be tailored to his or her needs. This may also assess compliance for taking the drugs at home or reveal drug dependence or abuse.**

8. Assess the client's age **as pediatric or geriatric clients may have special needs according to their ability to swallow a pill.**

9. Assess the client's need for fluids **as swallowing a pill is usually easier with fluid and promotes fluid intake. However, fluid restrictions may be necessary to observe.**

10. Assess the client's ability to sit or turn to the side. **The client must be able to swallow the pill without aspiration.**

DIAGNOSIS

Noncompliance, related to the client's medication regimen

Impaired Swallowing

Deficient Knowledge, related to the client's medication regimen

PLANNING

Expected Outcomes:

1. The client will swallow the prescribed medication.

2. The client will be able to explain the purpose and schedule for taking the medication.

3. The client will have no gastrointestinal discomfort or alterations in function.

4. The client will show the desired response to the medication such as pain relief, regular heart rate, or stable blood pressure.

Equipment Needed (see Figure 5-1-1):

- Health care provider's order for the medication
- Medication administration record (MAR)
- Medication cart or dispensing computer
- Medication tray
- Disposable medication cups
- Glass of water, juice, or other liquid
- Drinking straw
- Mortar and pestle, if needed
- Paper towels

CLIENT EDUCATION NEEDED:

1. Provide written information regarding each medication as requested.

2. Clients should be taught the basic guidelines for drug safety:

- Keep each drug in its original, labeled container.
- Discard any outdated medication through approved methods.
- Always finish a prescribed drug unless instructed otherwise.
- Never save a drug for future use or give it to another person.
- Keep drugs out of reach of children.
- Refrigerate medications that require it.
- Read labels carefully and follow all instructions.

3. Instruct clients on which foods, medications, or other elements, such as alcohol or sunlight, are to be avoided while taking this medication.

4. Teach client how to store the medication at home such as in the refrigerator or in a clean, dry place.

5. Clients need to be cautioned on which drugs can cause gastric irritation and need to be taken with food.

6. Remind client that medications taken sublingually should not be swallowed or they will have little effect as gastric juices will destroy them.

7. Caution clients taking medications intended for buccal administration to allow them to dissolve against the mucous membrane of the cheek and swallow the saliva.

8. Instruct clients to allow lozenges to dissolve and not to chew or swallow them whole as the drug acts slowly through oral absorption and not through gastric mucosa.

9. Clients with drug allergies should wear an identification bracelet listing the drugs to which they have an allergy.

DELEGATION TIPS

The skill of medication administration and assessment of effects is not delegated to ancillary personnel in acute care settings. This may vary in state or federal institutions. Ancillary personnel are generally informed about the medications the client is receiving if adverse effects are anticipated or are being monitored

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Wash hands and put on clean gloves.
1. Rationale: Reduces the number of microorganisms.

2. Action: Arrange the medication tray and cups in the medication room or on the medication cart outside the client's room. Most hospitals use a computerized limited access medication cart. Follow institutional protocol.
2. Rationale: Organizing medications and equipment saves time and reduces the possibility of error.

3. Action: Unlock the medication cart or log on to the computer.
3. Rationale: Medications need to be safeguarded.

4. Action: Prepare the medication for one client at a time following the five rights. Select the correct drug from the medication drawer according to the MAR (see Figure 5-1-2). Calculate the drug dosage if needed.
4. Rationale: The five rights are right patient, right time, right medication, right dose, and right route. Comparing the MAR with the label reduces error. Double checking reduces error in calculation.

5. Action: To prepare a tablet or capsule: Pour the required number of tablets or capsules into the bottle cap and transfer the medication to a medication cup without touching them.
• Scored tablets may be broken, if necessary, using gloved hands or with a pill cutting device (see Figure 5-1-3).
• A unit-dose tablet should be placed directly into the medicine cup *without* opening it until it is administered to the client.
• For clients with difficulty in swallowing, some tablets may be crushed into a powder using a mortar and pestle or by being placed between two paper medication cups and ground with a blunt object, then mixed in a small amount of applesauce or custard. Be aware that time-released or specially coated medications must not be crushed. Check with the pharmacy if you are uncertain (see Figure 5-1-4).
5. Rationale: Avoids wasting expensive medications and avoids contamination of medication.
• Tablets that are not scored are not meant to be broken. The medication's effectiveness would be diminished if the tablet were broken or crushed.
• The wrapper maintains cleanliness and identification until it is administered.
• A large tablet is usually easier to swallow if it is ground and mixed with soft food.

6. Action: To prepare a liquid medication: Remove the bottle cap from the container and place cap upside down on the cart. Hold the bottle with the label up and the medication cup at eye level while pouring (see Figure 5-1-5). Fill the cup to the desired level using the surface or base of the meniscus as the scale, not the edge of the liquid on the cup. Wipe lip of bottle with paper towel.
6. Rationale: Placing the bottle cap upside down on the cart prevents contamination of the inside of the container. Holding the bottle with the label up keeps spilled liquid from obliterating the label. Holding the medication cup at eye level ensures an accurate dose. Wiping the lip of the bottle prevents the bottle cap from sticking.

7. Action: To prepare a narcotic, obtain the key to the narcotic drawer and check the narcotic record for the drug count when signing out the dose (see Figure 5-1-6). If the drug count does not agree with records report to charge nurse immediately. Institution may require an incident report be filed.≥
7. Rationale: Controlled substance laws require records of each dose dispensed. Early identification of errors assists in corrective action.

8. Action: Check expiration date on all medications.
• Double-check the MAR with the prepared drugs.
• Return stock medications to their shelf or drawer.
• Place MARs with the client's medications.
• Do not leave drugs unattended.
8. Rationale: Expired medications may lose their effectiveness.
• Reduces risk of error.
• Ensures safety of stock medications.
• Ensures identification of medications.
• Drugs are safeguarded by nurse.

9. Action: Administer medications to client: Observe the correct time to give the medication.
• Identify the client by reading the client's name bracelet, repeating the name, and/ or asking the client to state his or her name (see Figure 5-1-7).

Additionally, check the hospital number if name alert or client is not reliable.
• Check the drug packaging if it is present to ensure the medication type and dosage.
• Assess the client's condition and the form of the medication.
• Perform any assessment required for specific medications such as a pulse or blood pressure.
• Explain the purpose of the drug and ask if the client has any questions.
• Assist the client to a sitting or lateral position.
• Allow client to hold the tablet or medication cup.
• Give a glass of water or other liquid, and straw if needed, to help the client swallow the medication (see Figure 5-1-8).
• For *sublingual* medications, instruct client to place medication under the tongue and allow it to dissolve completely.
• For *buccal* administration of drugs, instruct the client to place the medication in the mouth against the cheek until it dissolves completely.
• For oral medications given through a *nasogastric tube*, crush tablets or open capsules and dissolve powder with 20 to 30 ml of warm water in a cup. Be sure medication will still be properly absorbed if crushed and dissolved. Check placement of the feeding tube or nasogastric tube before instilling anything but air into the tube.
• Remain with the client until each medication has been swallowed or dissolved.
• Assist the client into a comfortable position.
9. Rationale: Ensures the therapeutic effect of the drug when given within 30 minutes of the prescribed time. *(Right time.)*
• Identification bracelets made at the time of admission are the most reliable source of identification even if the client is unable to state his or her name. *(Right client.)*
• Prevents giving the wrong medication or wrong dose. *(Right medication, right dose.)*
• Allows you to assess the route of the medication and if this route is appropriate. *(Right route.)*
• Determines whether the medication should be given at that time or not.
• Improves compliance with drug therapy.
• Prevents aspiration during swallowing.
• Client becomes familiar with medications.
• Promotes client comfort in swallowing and can improve fluid intake.
• Drug is absorbed through the mucous membranes into the blood vessels. If swallowed, the drug may be destroyed by gastric juices or detoxified in the liver too quickly so that its intended effects will not occur.
• Promotes local activity on mucous membranes.
• Allows medication administration via NG or feeding tube. Ensures that the medication is absorbed and utilized correctly.
• Nurse is responsible for ensuring that the client receives the dose and does not save it or discard it.
• Maintains client's comfort.

10. Action: Dispose of soiled supplies and wash hands.
10. Rationale: Reduces transmission of organisms.

11. Action: Record the time and route of administration on the MAR and return it to the client's file.
11. Rationale: Prevents administration error.

12. Action: Return the cart to the medicine room; restock the supplies as needed. Clean the work area.
12. Rationale: Assists other staff in completing duties efficiently.

Figure 5-1-2 Prepare oral medications following the five rights—right client, time, medication, dose, and route.

Figure 5-1-3 Scored tablets may be broken, if necessary.

Figure 5-1-4 Some medications may be crushed and mixed with a soft food, such as applesauce, for clients with difficulty in swallowing.

Figure 5-1-5 Measure oral medications at eye level.

Figure 5-1-6 Controlled substance laws require records of each narcotic dose dispensed.

Figure 5-1-7 Identify the client by reading the client's name bracelet and asking his or her name before administering medication.

Figure 5-1-8 Allow the client to hold the tablet, and give water or juice to help him swallow the medication.

REAL WORLD ANECDOTES

Fred was a 91-year-old resident of a long-term care facility who was having increasing difficulty swallowing following a series of small strokes. His favorite breakfast consisted of a bowl of bran buds with milk and two glasses of prune juice. The tablets his physician ordered for him were large, so the nurse crushed them by putting them between two paper medication cups and crushing them with a pestle. This made it easy to remove the top cup and add a teaspoon of applesauce to the powder just before she approached Fred to give him his medications. She gave him the cup and he spooned the medication-containing applesauce into his mouth and washed it down with his prune juice.

EVALUATION

- Evaluate the client's response to the drug within 30 minutes of administration or sooner if an allergic reaction is anticipated.
- Ask client or caregiver to discuss the purpose, action, dosage schedule, and side effects of the drug.

DOCUMENTATION

Medication Administration Record

- Date and time each drug was administered including initials and signature
- If drug is withheld, circle the time the drug was scheduled on the MAR.

Nurses' Notes

Document:

- Date, time, and reason a drug was withheld
- Response to drug administered

CRITICAL THINKING SKILL

Introduction

Oral medications are manufactured under aseptic conditions. They should be administered under the same conditions. The nurse does not touch the

medications with fingers during the preparation of the medications.

Possible Scenario

The nurse prepares the medications for a client. When handing the medication cup containing two tablets and one capsule to the client, one of the tablets falls to the floor.

Possible Outcome

The nurse administers the tablet and capsule to the client, then picks up and discards the contaminated tablet and goes back to the medication cart to obtain another tablet, following the same procedure as before. After returning to the client, the nurse administers the remaining tablet.

Prevention

The client's ability to handle the medication cup needs to be assessed. The nurse may assist the client to a comfortable position in order to take the prescribed dose.

VARIATIONS

Geriatric Variations:

• Elderly clients may be more at risk for fluid overload; if so, any fluid intake restrictions should be considered when giving oral medications.

• Older clients may have increased difficulty swallowing and therefore be at greater risk of aspiration.

• Older clients should be encouraged to take one tablet at a time and not rush.

• Elderly clients may have dry mouth caused by loss of elasticity in oral mucosa or reduction in parotid gland secretion.

• Difficulty swallowing may be caused by delayed esophageal clearance.

• Physiologic changes with aging may include reduction in gastric acidity and stomach peristalsis and reduced colon motility, which may slow drug absorption and excretion.

Pediatric Variations:

• Liquid oral medications are the preferred route of administration for children.

• Solid preparations such as tablets and capsules are not recommended for children less than 5 years old.

• An oral syringe (without needle), plastic cup, and teaspoon for dispensing liquid medication are helpful in administering medications to pediatric clients.

• Offering carbonated beverages poured over finely crushed ice after giving medications to a client may reduce nausea in both children and adults.

• Use small amounts of flavorings when mixing with medications.

Home Care Variations:

• Clients need to be compliant in order to successfully self-administer their medications.

• Clients may benefit from a special medication container with compartments for times of the day and days of the week to assist them in remembering and complying with the medication schedule.

Long-Term Care Variations:

• Maintain medication cart with a mortar and pestle, spoons, and a supply of applesauce.

• Keep a record on each client's MAR of how they need their medications given.

COMMON ERRORS

Possible Error:

The teenager with pain after arthroscopic knee surgery holds on to his pain pill so he can take several doses at one time.

Prevention:

Careful assessment of the client may reveal a drug abuse problem. When a client requests a repeat dose of pain medication sooner than the medication is ordered, the nurse may question the client's level of pain. The nurse may also ask the client about previous use of pain medication. If a pain tablet is found in the client's possession, the nurse should remain with the client until sure the client has taken it. The nurse can then record that it was taken so that the next dose can be administered according to the orders.

Possible Error:

The client takes a tablet but becomes nauseated and vomits it 10 minutes later.

Prevention:

The client should be assessed for nausea before administering the medication. If the client complains of nausea, give an antiemetic first, wait for a positive response, and then administer the medication ordered. If the nausea is mild, giving the medication with a saltine cracker may help reduce the nausea so the medication can be taken.

NURSING TIPS

• Remember that checking a medication five times reduces the risk of a medication error by:

-Checking the medication name with the order

-Calculating or verifying the dose

-Determining the ordered route of the medication

-Checking the name of the client the medication is ordered for with the client's identification bracelet

-Checking the frequency and times the medication is ordered

• Obtain the key to the narcotics drawer if you are anticipating the client's need for a controlled medication.

• Keep a calculator on the medication cart for use in dosage calculations. If in doubt about a medication calculation, have a second nurse perform the calculations as well.

• Maintain a pill cutting device, a mortar, and pestle and a supply of gloves on the medication cart for use in breaking scored tablets.

• Powdered medications such as Metamucil should be mixed with liquid immediately before administration or it will become thick or even solid, making swallowing impossible.

• Effervescent powders and tablets should be given immediately after dissolving as this improves its taste and is therapeutic.

• If the client is alert, call the client by name or ask his or her name prior to giving the medication to ensure the right client gets the medication.

• Enteric-coated pills should not be crushed as the purpose of the coating is to delay absorption, thus preventing gastric irritation.

• Tablets for buccal or sublingual administration should not be crushed.

• Offering a nonfat snack with medications that can be taken with food will reduce gastric distress.

SPECIAL CONSIDERATIONS

• To facilitate the client swallowing medication tablets, fluid such as carbonated water may be used to assist passing the tablet through the esophagus. However, be aware of the medication specifications as some medications can only be taken with plain water.

• Be aware of the cultural variation; some clients may prefer ice water while others may favor warm water. Ask client's preference before administering the oral medication.

• Always obtain information and perform a thorough assessment about the medication or vitamin supplements that clients are taking other than those prescribed. Clients may consume over-the-counter medications or vitamins on a regular basis and not realize that interactions or counter-effects among medications may occur.

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    CHAPTER 5. Medication Administration
    SKILL 5-1. Administering Oral, Sublingual, and Buccal Medications —Kathryn Lilleby, RN, Gaylene Bouska Altman, RN, PhD
    KEY TERMS

CHAPTER 6. Nutrition and Elimination

SKILL 6-1. Inserting and Maintaining a Nasogastric Tube —Hsin-Yi (Jean) Tang, RN, PhD, Jung-Chen Change, RN, PhD

KEY TERMS

Decompression
Double-lumen
Gastric content
Gastrointestinal surgery
Levin's tube
Nasogastric tube
Peptic ulcer
Salem sump tube
Single-lumen
Tube feeding

ESTIMATED TIME TO COMPLETE THE SKILL:

15-20 minutes

OVERVIEW OF THE SKILL

Nasogastric (NG) tubes are used for several purposes, including feeding for nutrition when the client is comatose, semiconscious, or unable to consume sufficient nutrition orally. Nasogastric suction tubes are used for decompression of gastric content after gastrointestinal surgery, and to obtain gastric specimens for diagnosis of peptic ulcer. Tubes are used for irrigation to clean and flush the stomach after oral ingestion of poisonous substances. Finally, NG tubes are used to document the presence of blood in the stomach, monitor the amount of bleeding from the stomach, and identify the recurrence of bleeding in the stomach.

The two most commonly used NG tubes are the single-lumen Levin's tube and the double-lumen Salem sump tube.

The gastrointestinal tract is considered to be a clean area rather than a sterile one. The procedure to place an NG tube is performed using clean technique unless it is performed in conjunction with gastrointestinal surgery.

ASSESSMENT

1. Assess client's consciousness level **to determine the ability of the client to cooperate during the procedure.**

2. Check the client's chart for any previous medical history of nostril surgery or injury or unusual nostril bleeding. **Reduces risk of injury from the tube.**

3. Use a penlight to assess nostrils for a deviated septum. **Facilitates choice of nostril and size of tube.**

4. Ask the client to breathe through each nostril occluding the other with a finger. **Facilitates choice of nostril and decreases chance that tube will interfere with respirations.**

5. Assess for latex allergy. **Prevents reaction to latex and determines need to use latex-free tubes and gloves.**

DIAGNOSIS

Imbalanced Nutrition: Less Than Body Requirement

Swallowing Impairment

Risk for Aspiration

Risk for Diarrhea

Imbalanced Oral Mucous Membranes

Risk for Deficient Fluid Volume

Pain

Impaired Skin Integrity

PLANNING

Expected Outcomes:

1. Client's nutritional status will improve, as indicated by increased body weight, physical strength, and mental status.

2. Client's nutritional needs will be met with the assistance of tube feeding.

3. Client will maintain a patent airway, as evident by absence of coughing, no shortness of breath, and no aspiration.

4. Client will not have diarrhea caused by nasogastric feeding.

5. Mouth mucous membranes will remain moist and intact.

6. Client will maintain a normal fluid volume, as evident by good skin texture, muscle tone, and blood volume.

7. Client's comfort level will increase.

8. Skin around the tube will remain intact, with no redness or blisters.

Equipment Needed:

• Nasogastric tube: adult, 14 to 18 French; child/ infant, 5 to 10 French; single-lumen (Levin's sump): feeding; double-lumen (Salem sump tube): feeding, suction, irrigation (see Figure 6-1-1)

• Water-soluble lubricant

• Syringe with catheter tip or adapter, 50 cc

• Glass of tap water with straw, or ice

• Towel or tissue

• Emesis basin with ice chips

• Tongue blade

• pH chemstrip

• Stethoscope

• Disposable, latex-free gloves (nonsterile), goggles

• Hypoallergenic tape, rubber band, and safety pin

• Penlight or flashlight

• Disposable irrigation set (if needed)

• Wall mount or portable suction equipment (if needed)

• Administration set with pump or controller for feeding tube

Figure 6-1-1 Double-lumen nasogastric tube

CLIENT EDUCATION NEEDED:

1. Inform the client of the purpose of the NG tube.

2. Explain the procedure of insertion and any expected discomfort.

3. Establish and clarify a "hand signal" to indicate the need to temporarily stop the NG insertion.

4. Explain how the client can cooperate during tube insertion, especially by swallowing water when asked to do so.

5. Explain potential complications, such as diarrhea, mouth dryness, and nostril irritation.

6. Review the skills and procedures of maintaining tube.

7. Instruct to chew on ice chips to satisfy the basic need to eat (if there is no fluid intake restriction).

8. Encourage physical activity to enhance gastrointestinal mobility (if there is no activity restriction).

9. If a client with dentures is conscious, encourage client to wear the dentures to maintain the normal shape of the oral cavity.

DELEGATION TIPS

Inserting and maintaining a nasogastric tube is the responsibility of a nurse. Oral hygiene for the client may be delegated.

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Review client's medical history.
1. Rationale: To assess for any nostril surgery and abnormal bleeding.

2. Action: Assess client's consciousness and ability to understand. Explain the procedure and develop a hand signal (see Figure 6-1-2).
2. Rationale: Decreases anxiety and promotes cooperation.

3. Action: Prepare the equipment, putting tissues, a cup of water, and an emesis basin nearby (see Figure 6-1-3).
3. Rationale: Facilitates an efficient procedure.

4. Action: Prepare the environment; raise the bed and place it in a high Fowler's position (45 to 60 degrees). Cover the chest with a towel.
4. Rationale: Facilitates insertion and prevents back strain.

5. Action: Wash hands and then put on gloves.
5. Rationale: Practices clean technique.

6. Action: Use a penlight to view the client's nostrils. Assess client's nostrils with penlight and have the client blow nose one nostril at a time (see Figure 6-1-4).
6. Rationale: Choosing the more patent nostril for insertion decreases discomfort and unnecessary trauma.

7. Action: Using the NG tube, measure the distance from the tip of the nose to the earlobe and then to the xiphoid process of the sternum and mark this distance on the tube with a piece of tape (see Figure 6-1-5).
7. Rationale: Determines the approximate amount of tube needed to reach the stomach.

8. Action: Lubricate first 4 inches of the tube with water-soluble lubricant.
8. Rationale: Facilitates passage into the naris.

9. Action: Ask the client to slightly flex the neck forward.
9. Rationale: Makes insertion easier.

10. Action: Gently insert the tube into a naris (see Figure 6-1-6).
10. Rationale: Promotes passage of tube with minimal trauma to mucosa.

11. Action: Ask the client to tip the head forward once the tube reaches the nasopharynx—this is usually where the client starts to gag. If the client continues to gag, stop a moment.
11. Rationale: Tipping the head forward facilitates passage of the tube into the esophagus instead of the trachea. Tube may stimulate gag reflex. Allows the client to rest, reduces anxiety, and prevents vomiting.

12. Action: Advance the tube several inches at a time as the client swallows water or ice chips (see Figure 6-1-7).
12. Rationale: Assists in advancing the tube past the oropharynx. The action of swallowing facilitates the insertion process. With each swallow, the tracheal opening is closed to prevent inspiration.

13. Action: Withdraw the tube immediately if there are signs of respiratory distress.
13. Rationale: Prevents trauma to bronchus or lung.

14. Action: Advance the tube until the taped mark is reached (see Figure 6-1-8).
14. Rationale: Enables the tube to reach the stomach.

15. Action: Wipe or wash body oils off tip of nose and allow to dry. Split a 4-inch strip of tape lengthwise 2 inches. Secure the tube with the tape by placing the wide portion of the tape on the bridge of the nose and wrapping the split ends around the tube (see Figure 6-1-9). Tape to cheek as well if desired (see Figure 6-1-10).
15. Rationale: Prevents tube displacement.

16. Action: Check the placement of the tube:
• Attach the syringe to the end of the tube and rapidly inject 30 cc of air and at the same time auscultate over the epigastric area (upper left quadrant); see Figure 6-1-11.
• Aspirate for gastric content, assess the color and quality of the content. If required, measure with pH indicator strip (see Figure 6-1-12). Follow protocol regarding re-insertion of contents versus discarding.

• Prepare the client for X-ray check-up, if prescribed.
16. Rationale: Ensures correct placement. A "whoosh" sound will be heard if the tube is correctly placed. (A pH below 4 indicates the tube is in the stomach; a pH range of 6-7 indicates intestinal sites.) Amount of air varies for pediatric client and if client has had gastric surgery.

17. Action: Connect the distal end of the tube to suction, draining bag, or adapter according to the purpose of this nursing intervention (see Figure 6-1-13).
17. Rationale: Establishes an appropriate pathway for intervention.

18. Action: Secure the tube with tape, or with rubber band and safety pin, to client's gown or bed sheet.
18. Rationale: Enhances the level of comfort and secures the tubing system.

19. Action: Remove gloves, dispose of contaminated materials in proper container, and wash hands.
19. Rationale: Implements the principles of infection control.

20. Action: Position client comfortably and place the call light in easy reach.
20. Rationale: Decreases client's anxiety and provides access to help if needed.

21. Action: Document procedure.
21. Rationale: Records implementation of intervention and promotes continuity of care.

Maintaining a Nasogastric Tube

22. Action: Wash hands and apply gloves.
22. Rationale: Reduces the transmission of microorganisms.

23. Action: Follow the steps in Action 16 to check the proper tubing position before instilling anything per NG tube or at least every 8 hours.
23. Rationale: Prevents complications from dislocation of the tube.

24. Action: Assess for signs that the tube has become blocked, including epigastric pain and vomiting, and/or the inability to pass medications or feedings through the tube.
24. Rationale: Prevents complications from the loss of beneficial effects from the tube.

25. Action: Remember never to irrigate or rotate a tube that has been placed by the health care provider during gastric or esophageal surgery.
25. Rationale: Rotation or irrigation may disturb incisions.

26. Action: Provide oral hygiene and assist client to clean nares daily.
26. Rationale: Enhances client's comfort and the integrity of skin and nose mucosa.

27. Action: Remove gloves, dispose of contaminated materials in proper container, and wash hands.
27. Rationale: Reduces the transmission of microorganisms.

Figure 6-1-2 Explain the procedure; demonstrate head position and tube insertion.

Figure 6-1-3 Put an emesis basin, cup with straw, and tissues nearby.

Figure 6-1-4 Assess the client's nostrils before introducing the nasogastric tube.

Figure 6-1-5 Measure the distance from nose to earlobe to the xiphoid process to determine how much tube will need to be inserted to reach the stomach.

Figure 6-1-6 Gently insert the tube into the naris.

Figure 6-1-7 Advance the tube slowly. The client swallows small sips of water to assist in pushing the tube past the oropharnyx.

Figure 6-1-8 Advance the tube until the taped mark is at the opening of the naris.

Figure 6-1-9 Secure the tube to the nose.

Figure 6-1-10 Tape the tube to the cheek as well, if desired, to provide extra support.

Figure 6-1-11 Auscultate over the epigastric area.

Figure 6-1-12 Aspirate a sample of gastric content to check for pH.

Figure 6-1-13 Connect the distal end of the tube to suction or drainage to complete the procedure.

REAL WORLD ANECDOTES

Mr. Klotz had just been admitted to the hospital with severe abdominal distention. NG tube placement was ordered for abdominal decompression. Mr. Klotz was not to have any fluids by mouth but he could have ice chips. The nurse provided Mr. Klotz with ice chips and instructed him to suck on a few chips and swallow as she inserted the NG tube. The nurse inserted the NG tube into Mr. Klotz's right naris but was unable to advance the tube any farther than an inch. After several attempts to advance the tube, the nurse tried Mr. Klotz's left naris. It required several gentle attempts and lots of lubricant to pass the tube into the nasopharynx, but the nurse was finally able to advance the tube into Mr. Klotz's stomach. After Mr. Klotz had received some relief from his distention, he did mention to the nurse that he had broken his nose many years earlier.

EVALUATION

• Client's nutritional status improves, as indicated by increased body weight, physical strength, and mental status.

• Client's nutritional needs are met with the assistance of tube feeding.

• Client maintains a patent airway, as evident by absence of coughing, no shortness of breath, and no aspiration.

• Client does not have diarrhea caused by nasogastric feeding.

• Mouth mucous membranes remain moist and intact.

• Client maintains a normal fluid volume, as evident by good skin texture, muscle tone, and blood volume.

• Client's comfort level increases.

• Skin around the tube remains intact, with no redness or blisters.

DOCUMENTATION

Nurses' Notes

• Document the type of NG tube inserted, the naris used, how the client tolerated the procedure, and the methods used to verify placement.

• Document care provided to the client to increase comfort of the NG insertion naris.

• Note any unusual findings.

Intake and Output Record

• Note the amount of fluid the client drank to aid insertion of the NG tube.

• Note the amount of gastric contents removed for testing.

CRITICAL THINKING SKILL

Introduction

Nurses must be able to evaluate the effectiveness of NG tube insertion, maintenance, or removal.

Possible Scenario

The family of your home care client has been assisting in her care, including the care of her feeding tube. You have educated them on the tube and its placement. Although they state they secured the tube in a proper place and the end of the tube is currently positioned higher than the stomach,

you observe the tube is filled with gastric content.

Possible Outcome

Client has a continuous risk for infection, electrolyte imbalance, and potential aspiration.

Prevention

Assess that the caregiver is properly securing the end of the tube at a level higher than the stomach. Assess the client's vital signs and respiratory pattern for infection, electrolyte imbalance, or aspiration. Re-educate the caregivers on assessing for correct tube placement, and review with them common situations where the tube might move.

VARIATIONS

Geriatric Variation:

• For elderly clients who wear dentures, oral hygiene and denture care should not be overlooked simply because an NG tube is in place.

Pediatric Variations:

• Dispose of or securely tape any small parts such as plastic connectors or plugs, to prevent small children from accidentally aspirating or swallowing them.

• Amount of air needed to assess placement is proportionate to client's size.

Home Care Variation:

• Periodically assess the family member's ability to check the placement of the tube, check residual gastric contents, administer tube feedings, or connect the tube properly with suction.

Long-Term Care Variation:

• Teach family members or caregivers to assess client's nutritional status and assess for any sign of complications related to the NG tube.

COMMON ERRORS

Possible Error:

The nurse is unable to auscultate air bubbles but assumes the NG tube is in place.

Prevention:

If you are unable to verify NG tube position by auscultating air, use another method of verification. Attempt to aspirate gastric contents. If you are unable to verify NG tube placement, **do not** instill anything through the tube. Notify the client's health care provider. Send the client for an X-ray to verify placement if this is within institutional guidelines.

NURSING TIPS

• Adjust the height of the bed to eliminate back strain.

• Prepare the split tape before putting on gloves.

• This can be an anxiety-provoking procedure. Good communication skills decrease anxiety and promote the client's cooperation.

• The size of the NG tube used depends on client size, client history of damage to the structure of the nose, and the purpose of the procedure.

• Tincture of benzoin (if iodine allergy is not present) may be used to prep the skin on the bridge of the nose. This acts as an adhesive as well as a skin prep.

• Carefully observe client's verbal and nonverbal responses during the entire procedure.

• When feasible, engage family members or caregivers to assist in NG tube insertion.

• Remove air used to check tube placement if NG tube is not connected to suction.

SPECIAL CONSIDERATIONS

• Cold water with ice chips can be used to stiffen the tip of single-lumen Levin's tube to smooth the insertion process.

• Avoid using safety pin with psychiatric clients; self-harm behavior could be initiated by leaving harmful object by the bedside. Use tape instead to secure the nasogastric tube in this case.

• Tube placement **must** be assessed **every** time anything will be placed down the nasogastric tube to prevent insertion of foreign products in the lungs.

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    CHAPTER 6. Nutrition and Elimination
    SKILL 6-1. Inserting and Maintaining a Nasogastric Tube —Hsin-Yi (Jean) Tang, RN, PhD, Jung-Chen Change, RN, PhD
    KEY TERMS

CHAPTER 7. Oxygenation

SKILL 7-1. Administering Oxygen Therapy —Joan M. Mack, RN, MSN, CS, Gaylene Bouska Altman, RN, PhD

KEY TERMS

Diffusion
FIO_2 (fraction of inspired air that is oxygen)
Hypercapnia
Hypoventilation
Hypoxic drive
Oxygen saturation
Room air
Ventilation
Venturi

ESTIMATED TIME TO COMPLETE THE SKILL:

6-10 minutes

OVERVIEW OF THE SKILL

Administration of oxygen must be ordered by the physician or qualified practitioner. Some areas will have protocols that govern oxygen therapy and allow the nurse to begin therapy independently. Oxygen is a drug, so medication administration criteria are followed in addition to the steps unique to oxygen therapy. Clients unable to maintain adequate PO_2 and O_2 saturation levels on room air are candidates for oxygen therapy. An adequate airway is essential to effectiveness of the treatment. It is best to treat the hypoxia with the lowest oxygen dose possible. Some clients with normal oxygen levels are also given oxygen if they are at risk for complications related to hypoxia; for example, the myocardial infarction client often receives oxygen therapy to prevent dysrhythmias.

The health care provider will order the oxygen delivery system and flow rate, and the nurse will monitor response to the therapy. The dosage of oxygen may be ordered as an FIO_2 (fraction of inspired oxygen), which is expressed as a percentage or as liters per minute (lpm). Respiratory therapists may be available to assist in the administration and client assessment of oxygen therapy.

ASSESSMENT

1. Determine client history and acute and chronic health problems. **Clients with carbon dioxide retaining chronic obstructive pulmonary disease (COPD) will need lower amounts of oxygen so as not to obliterate their hypoxic respiratory drive. They may already be on oxygen and need long-term continuous therapy.**

2. Assess the client's baseline respiratory signs, including airway, respiratory pattern, rate, depth, and rhythm, noting indications of increased work of breathing. **This will help determine the client's need for oxygen as well as response to the therapy.**

3. Check the extremities and mucous membranes closely for color. **This gives some indication of oxygenation, although problems with circulation and tissue perfusion can alter these factors also.**

4. Review arterial blood gas (ABG) and pulse oximetry results. **These are the most important determinants of the effectiveness of the pulmonary system and determine the need for therapy as well as changes in therapy.**

5. Note lung sounds for rales/crackles. **Secretions will interfere with airway patency and diffusion of oxygen and carbon dioxide across the alveolar-capillary bed.**

6. Assess the nares, behind the earlobes, cheek, tracheostomy site, or other places where oxygen tubing or equipment is in constant contact with the skin **to look for signs of skin irritation or breakdown.**

DIAGNOSIS

Impaired Gas Exchange

Ineffective Breathing Pattern

Risk for Injury

Ineffective Airway Clearance

Risk for Impaired Skin Integrity

Activity Intolerance

PLANNING

Expected Outcomes:

1. Oxygen levels will return to normal in blood and tissues as evident by oxygen saturation ≥ 92%, skin color normal.

2. Respiratory rate, pattern, and depth will be within the normal range for client.

3. The client will not develop any skin or tissue irritation or breakdown.

4. The client will demonstrate methods to clear secretions and maintain optimal oxygenation.

5. Breathing efficiency and activity tolerance will be increased.

6. The client will understand the rationale for the therapy.

Equipment Needed (see Figures 7-1-1A, B, and C):

- Stethoscope
- Oxygen source—portable or in-line
- Oxygen flow meter
- Oxygen delivery device: nasal cannula, mask, tent, or T-tube with adapter for artificial airway
- Oxygen tubing
- Pulse oximetry
- Humidifier and distilled or sterile water (not needed with low flow rates per nasal cannula)

Figure 7-1-1A Stethoscope

Figure 7-1-1B In-line oxygen and flow meter

Figure 7-1-1C Humidifier, reservoir bag, tracheostomy mask, T-tube, and a simple face mask are used when administering oxygen therapy.

CLIENT EDUCATION NEEDED:

1. Clearly explain to the client the reason for oxygen therapy.

2. Help the client understand the importance of leaving the delivery system on.

3. Use pictures to help clients understand their lungs and airway so they will be more likely to cooperate with the therapy.

4. Make sure clients know what signs and symptoms to report that indicate therapy is not effective and needs to be changed.

5. Reinforce safety issues—do not make clients overly afraid of a fire, but make sure they understand that oxygen supports combustion.

6. Show clients methods to increase oxygenation such as pursed-lip breathing, deep breathing, coughing, and changes in positioning.

DELEGATION TIPS

The initiation of oxygen therapy requires assessment by a nurse or respiratory care practitioner. All personnel are responsible to maintain fire/safety precautions when oxygen is in use. Ancillary personnel should be instructed to report dyspnea, tachycardia, any changes in the client's activity tolerance, a respiratory rate less than 12 or greater than 20 breaths per minute in the adult client, or changes in mental status. Ancillary personnel should be instructed how to properly reapply respiratory therapy equipment, how to initiate assistance with activities of daily living for the client requiring oxygen therapy, and to report any abnormal client responses.

IMPLEMENTATION-ACTION/RATIONALE

Nasal Cannula (see Figure 7-1-2)

1. Action: Wash hands.
1. Rationale: Reduces the transmission of microorganisms.

2. Action: Verify the health care provider's order.
2. Rationale: Ensures correct dosage and route.

3. Action: Explain procedure and hazards to the client. Remind clients who smoke of the reasons for not smoking while O_2 is in use.
3. Rationale: Increases compliance with procedures. Oxygen supports combustion.

4. Action: If using humidity, fill humidifier to fill line with distilled water and close container.
4. Rationale: Prevents drying of the client's airway and thins any secretions.

5. Action: Attach humidifier to oxygen flow meter.
5. Rationale: Allows the oxygen to pass through the water and become humidified.

6. Action: Insert humidifier and flow meter into oxygen source in wall or portable unit.
6. Rationale: For access to oxygen. Many institutions also have compressed air available from outlets very similar in appearance to oxygen outlets. Green always stands for oxygen. Be sure to plug the flow meter into the green outlet.

7. Action: Attach the oxygen tubing and nasal cannula to the flow meter and turn it on to the prescribed flow rate (1 to 5 liters/min). Use extension tubing for ambulatory clients so they can get up to go to the bathroom (see Figure 7-1-3).
7. Rationale: Rates above 6 liters/min are not efficacious and can dry the nasal mucosa.

8. Action: Check for bubbling in the humidifier.
8. Rationale: Ensures proper functioning.

9. Action: Place the nasal prongs in the client's nostrils. Secure the cannula in place by adjusting the tubing around the client's ears and using the slip ring to stabilize it under the client's chin.
9. Rationale: Keeps delivery system in place so client receives the amount of oxygen ordered.

10. Action: Check for proper flow rate every 4 hours and when the client returns from procedures.
10. Rationale: Ensures that client receives proper dose. The nasal cannula is a low flow system because it administers oxygen while the client also inspires room air. The actual dose of oxygen received by the client will vary depending on the client's respiratory pattern. The delivery rate may be changed during procedures.

11. Action: Assess client nostrils every 8 hours. If the client
complains of dryness or has signs of irritation, use sterile lubricant to keep mucous membranes moist. Add humidifier if not already in place.
11. Rationale: Dry membranes are more prone to breakdown by friction or pressure from nasal cannula.

12. Action: Monitor vital signs, oxygen saturation, and client condition every 4 to 8 hours (or as indicated or ordered) for signs and symptoms of hypoxia.
12. Rationale: Detects any untoward effects from therapy.

13. Action: Wean client from oxygen as soon as possible using standard protocols.
13. Rationale: Oxygen is not without side effects and should be used only as long as needed. Problems with reimbursement may develop if criteria for therapy are not met.

Mask: Venturi (high flow device), simple mask (low flow), partial rebreather mask, nonrebreather mask, and face tent

14. Action: Wash hands.
14. Rationale: Reduces the transmission of microorganisms.

15. Action: Repeat Actions 2-6.
15. Rationale: See Rationales 2-6.

16. Action: Attach appropriately sized mask (see Figure 7-1-4) or face tent to oxygen tubing and turn on flow meter to prescribed flow rate. The Venturi mask will have color-coded inserts that list the flow rate necessary to obtain the desired percentage of oxygen. Allow the reservoir bag of

the nonrebreathing or partial rebreathing mask to fill completely. Figure 7-1-5 shows several types of oxygen masks.
16. Rationale: Ensures proper fit; size needed is based on the client's size. Checks the oxygen source and primes the tubing and mask or tent.

17. Action: Check for bubbling in the humidifier.
17. Rationale: Ensures proper functioning.

18. Action: Place the mask or tent on the client's face, fasten the elastic band around the client's ears and tighten until the mask fits snugly.
18. Rationale: Prevents loss of oxygen from the sides of the mask.

19. Action: Check for proper flow rate every 4 hours.
19. Rationale: Ensures that client is receiving the proper dose.

20. Action: Ensure that the ports of the Venturi mask are not under covers or impeded by any other source.
20. Rationale: Air must be entrained to mix room air and oxygen coming from source to ensure proper oxygen percentage (FIO_2).

21. Action: Assess client's face and ears for pressure from the mask and use padding as needed.
21. Rationale: Provides client comfort and prevents skin breakdown.

22. Action: Wean client to nasal cannula and then wean off oxygen per protocol.
22. Rationale: Oxygen is not without side effects and should be used only as long as needed. The nasal cannula provides a lower FIO_2 than the mask. Problems with reimbursement may develop if criteria for therapy are not met.

Oxygen via an Artificial Airway (tracheostomy or endotracheal tube)

23. Action: Wash hands.
23. Rationale: Reduces the transmission of microorganisms.

24. Action: Verify the physician's or qualified practitioner's order.
24. Rationale: Ensures correct dosage and time.

25. Action: Fill the humidifier with sterile water and close the container.
25. Rationale: Avoids contamination of the water.

26. Action: Attach humidifier and warmer to the oxygen flow meter (see Figure 7-1-6).
26. Rationale: Humidification and warming of the air are essential with an artificial airway because the upper airway is bypassed by the tube.

27. Action: Attach the wide bore oxygen tubing and T-tube adapter or tracheostomy mask to the flow meter and turn the meter to the flow rate needed to achieve the prescribed oxygen concentration. An oxygen analyzer may be used to check the actual oxygen percentage being delivered.
27. Rationale: Checks the oxygen source and primes the tubing and adapter.

28. Action: Check for bubbling in the humidifier and a fine mist from the adapter.
28. Rationale: Ensures proper functioning.

29. Action: Attach the T-piece to the client's artificial airway or place the mask over the client's airway. Be sure the T-piece is firmly attached to the airway (see Figure 7-1-7).
29. Rationale: Ensures that client will not develop complications related to an interrupted oxygen supply.

30. Action: Position tubing so that it is not pulling client's airway.
30. Rationale: Provides for client comfort and prevents dislodgment of the artificial airway.

31. Action: Check for proper flow rate and patency of the system every 1 to 2 hours depending on the acuity of the client. Suction as needed to maintain a patent airway.
31. Rationale: Ensures that client is receiving proper dose.

32. Action: Monitor airway patency, vital signs, oxygen saturation, and for signs and symptoms of hypoxia every 2 hours, or more frequently as necessary or as ordered. Additionally, monitor breath sounds and tube position every 4 hours.
32. Rationale: Detects response to or any untoward effects from therapy. Determines whether tube is in place.

33. Action: Wean client from therapy as ordered by physician or qualified practitioner. The client will probably receive oxygen via another route once the tube is removed. Some clients have tracheotomies permanently.
33. Rationale: Prevents untoward effects of oxygen.

Figure 7-1-2 Nasal cannula and oxygen tubing attached to a humidifier

Figure 7-1-3 Oxygen delivered via a nasal cannula

Figure 7-1-4 Make sure the mask used is the appropriate size for the client.

Figure 7-1-5 Different types of oxygen masks: simple oxygen mask, tracheostomy mask, pediatric mask, and Venturi mask

Figure 7-1-6 Oxygen humidifier and warmer

Figure 7-1-7 Attach the T-piece to the oxygen tubing.

REAL WORLD ANECDOTES

A client came to the unit with an extremely low arterial oxygen level and a slightly high arterial carbon dioxide level. He was at risk for needing mechanical ventilation, but because he had chronic obstructive lung disease and there was a good chance that he would become dependent on the ventilator, the physician elected to treat him with oxygen therapy and bronchodilator aerosol treatments only. An antibiotic was also started until pneumonia could be ruled out. The client was continuously monitored with pulse oximetry, and his oxygen saturation levels slowly rose and stayed around 90%. Everyone was pleased, but as the day went on, the client became less and less responsive. When arterial blood gases were drawn midafternoon, his arterial carbon dioxide levels had risen above 100 mm Hg. The health care team was reminded of two major effects. First, pulse oximetry is not the panacea in monitoring. In clients who are prone to CO_2 retention, more frequent ABG analysis is necessary to detect changes before levels get too high. Additionally, the nurse needs to assess other indicators of PCO_2, including decreased sensorium, headache, and flushing. Second, the nurse was reminded of the changes that occur in the ventilatory drive of clients with COPD. Because their respiratory center is "numbed" to elevations in CO_2, it is the hypoxic drive that stimulates respirations. Because the oxygen satisfied his hypoxic drive, the client began to hypoventilate and retain carbon dioxide. COPD clients need low oxygen concentrations, usually 1 to 2 liters/min or ≥ 24% and astute monitoring of their respiratory rate and sensorium.

EVALUATION

- Oxygen levels returned to normal in blood and tissues as evident by oxygen saturation ≥ 92%; skin color normal for client.
- Respiratory rate, pattern, and depth are within the normal range.
- The client did not develop any skin or tissue irritation or breakdown.
- Breathing efficiency and activity tolerance are increased.
- The client understands the rationale for the therapy.

DOCUMENTATION

Nurses' Notes

- Record O_2 saturation and respiratory status.
- Note method of oxygen delivery and rate.
- Document client's assessment parameters and response to treatment.
- Note and record changes in mental status.

CRITICAL THINKING SKILL

Introduction

Look at an example in which the nurse prevents potential cardiac arrest in a client receiving oxygen via a tracheostomy.

Possible Scenario

The client is receiving oxygen at 40% via a tracheostomy mask. The client's respirations are increased with intercostal retractions and tachycardia, and are very flushed to cyanotic color. The nurse quickly checks to make sure the oxygen is hooked up to the wall and connected to the client properly. The oxygen source is attached correctly, but the humidification bottle is dry. There are no visible secretions in the tracheostomy or T-tube adapter. When assessing the client's breath sounds, she or he notices very diminished sounds, and the client is in more and more distress. While calling for help, the nurse tries to pass a suction catheter down the tracheostomy, but is unable to pass the catheter or ventilate with a manual resuscitation bag (Ambu®-bag). Finally, the nurse removes the inner cannula and finds a large, solid mucus plug attached to the cannula. The client's respiratory distress subsides and the cannula is cleaned and replaced.

Possible Outcome

Cardiopulmonary arrest and death of the client resulting from an obstructed airway, could result.

Prevention

Ensure that clients with tracheostomies receive humidification to prevent secretions from thickening and obstructing the airway.

VARIATIONS

Geriatric Variations:

- Clients may pull at tubes; they need frequent reorientation and explanation.

Pediatric Variations:

- Clients may be frightened and pull off the O_2 mask and increase respiratory effort with crying. Try putting the mask on yourself and make a game

out of it so the child is less frightened.

Home Care Variations:

• Oxygen may be provided by a high pressure cylinder, an oxygen concentrator, or a liquid oxygen system. Spare tanks and a backup power source are recommended. Compressed oxygen gas in a cylinder is available in sizes H or K for large stationary tanks and sizes D and E for travel and in the event of a power failure. Portable carts and carrying shoulder cases are also available. The company supplying the equipment will usually have personnel that will help with the setup and specific cleaning needs of the oxygen source.

• While any delivery system may be used in the home, nasal cannulas and tracheostomy tents/ masks are the most commonly used. Home care clients may receive oxygen via a Spofford Christopher Oxygen Optimizing Prosthesis transtracheal system (SCOOP) catheter placed down into the trachea via a small stoma. It is held in place by a bead chain necklace and needs regular cleaning. Tubing, delivery system, and humidifier container should be washed regularly every 2 to 7 days with soap and water, disinfected, and dried before reuse, so an alternate setup should be available. Post safety precautions in the home. Oxygen sources should be kept from heating units, walls, drapes, and combustible substances such as hair spray.

Long-Term Care Variations:

• Long-term clients are more likely to develop skin irritation and mucous membrane dryness from oxygen therapy. Padding may be needed at friction sites. Humidity may be needed to reduce dryness.

COMMON ERRORS

Possible Error:

The wrong flow rates are used.

Prevention:

Be sure to administer the flow rate ordered. Be aware of client history of lung disease. Clients with lung disease cannot tolerate high flow rates of oxygen.

Possible Error:

The wrong delivery system is used.

Prevention:

Double-check the order. Assess the client's needs. Is the client a mouth breather? Does the client have an artificial airway in place? Does the client need humidified oxygen?

Possible Error:

The wrong client receives treatment.

Prevention:

Double-check the wristband, or ask the client to tell you his or her name. Double-check written orders.

NURSING TIPS

• Recognize which equipment to use; keep a chart on the unit that gives information on flow rates and settings of different devices.

• Promote client comfort by adjusting tubing or padding so that clients are more likely to leave oxygen therapy equipment on.

• Water will often collect in the corrugated tubing used for masks, T-tubes, and tracheostomy tents, and creates pulls on the devices and bubbling noises. Try to avoid dependent loops and empty the water from the tubing into the appropriate container. Do not empty water back into the humidifier container because this can cause contamination of the humidifier.

SPECIAL CONSIDERATIONS

• When clients with lung disease or serious medical conditions are considering air travel, they should be encouraged to consult their health care provider. Clients at risk may need supplemental oxygen during the flight as flying at high altitudes can induce significant hypoxia.

• The goal of oxygen supplementation is to use the lowest concentration of oxygen required to meet oxygenation goals. Clients requiring oxygen should be monitored with pulse oximetry and arterial blood gas analysis. The nurse should be aware that clients may experience oxygen toxicity as evident by substernal heaviness, pleuritic chest pain, cough, and dyspnea within 24 hours of breathing pure oxygen. The nurse must understand how each mask works and not rely solely on respiratory therapy personnel.

• The nurse should be cognizant of the potential for decreased respiratory drive and CO_2 retention in clients with COPD as exhibited by tachycardia, tachypnea, increased BP, lack of mental alertness, or confusion. Clients with COPD may be maintained at low levels of PaO_2 (65-80 mm Hg) to protect their respiratory drive and receive only minimal levels of oxygen delivery (usually less than 2 liters/minute).

• Oxygen toxicity, which causes damage to the hyaline membrane lining in the lungs, can occur when a high concentration of oxygen (greater than 50%) is administered for more than 48 hours. The symptoms are restlessness, dyspnea, paresthesia, fatigue, malaise, and progressive respiratory distress and may culminate in pulmonary disease.

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    KEY TERMS

CHAPTER 8. Circulatory

SKILL 8-1. Performing Venipuncture (Blood Drawing) —Catherine H. Kelley, RN, MSN, OCN, Susan Randolph, RN, MSN, CS

KEY TERMS

Blood draw
Hematoma
Needle stick
Palpation
Specimen collection
Tourniquet
Vacutainer
Venipuncture

ESTIMATED TIME TO COMPLETE THE SKILL:

Approximately 10 minutes

OVERVIEW OF THE SKILL

Obtaining a sample of blood through venipuncture is a commonly used procedure for many diagnostic tests. Blood test results are a source of valuable information to screen clients for disease, to evaluate the progress of therapy, and to monitor the well-being of the client. The nurse is often required to obtain a variety of specimens. As some specimens require special handling, it is important for the nurse to be familiar with the particular test that is ordered.

There are three primary methods of obtaining blood specimens: venipuncture, skin puncture, and arterial stick. Venipuncture is the most common method and involves inserting a large-bore needle into a vein. The nurse attaches either a syringe or a vacutainer tube for the collection of the blood

specimen. Skin puncture is the easiest way to obtain a small specimen from the finger, toe, or heel. A lancet is used for the puncture and a drop of blood is collected through a capillary tube. An arterial stick is the most complicated and requires special assessment skills and techniques.

As with any procedure, it is important that nurses review their employer's policies and procedures as well as their state's nurse practice act.

ASSESSMENT

1. Determine which test(s) is ordered and be familiar with any special conditions associated with the timing of the collection or the handling of the specimen. Many specimens may be collected at very specific times, that is, prior to or after administration of a drug, while the patient is NPO, or after fasting. Other specimens may require special handling; that is, ice is used to transport ammonia levels; heparinized collection containers are needed for platelet counts; and so on. **Using a damaged vein may cause further injury to the vein. A compromised site may**

not provide an adequate amount of blood for the specimen and may lead to another venipuncture for the client.

2. Assess the integrity of the veins that may be used in the procedure. Identify any conditions that may contraindicate venipuncture. Avoid veins injured by infiltration or phlebitis or compromised by surgery (i.e., modified radical mastectomy). In addition, **drawing samples from sites near IV infusion solutions may alter the composition of the blood sample.**

3. Review the client's medical history to determine if there are any expected complications from the venipuncture. **Clients with a history of abnormal clotting disorders, low platelets, or related disorders (hemophilia) may be at risk for increased bleeding at the site or hematoma formation.**

4. Determine the client's ability to cooperate with the procedure. **Many clients are fearful of needles—especially children—and additional help may be needed. Very young children may need to have the extremity restrained during the procedure.**

5. Review the physician's or qualified practitioner's order. Check for appropriateness of the test as well as the frequency of the test. Critically ill clients may require frequent blood tests and venipuncture. **Combining tests and carefully evaluating frequency may reduce unnecessary blood loss for the client.**

DIAGNOSIS

Deficient Knowledge, related to the purpose of the blood sample and the procedure

Risk for Infection

Impaired Tissue Integrity—risk of bleeding and hematoma at the site

Anxiety related to the procedure

PLANNING

Expected Outcomes:

1. Venipuncture site will show no evidence of continued bleeding or hematoma.

2. The venipuncture site will show no evidence of signs and symptoms of infection.

3. The laboratory test will be properly acquired and appropriately handled after collection.

4. The client will be able to discuss the purpose of the test and describe the procedure.

5. The client will report minimal anxiety associated with the procedure.

Equipment Needed (see Figure 8-1-1):

- Disposable gloves
- Alcohol swabs
- Rubber tourniquet
- Sterile 2 × 2 gauze pads
- Band-Aid or adhesive tape (precut)
- Appropriate blood collection tubes
- Labels for each collection tube with the appropriate client information included
- Completed laboratory requisition forms
- Needle/equipment disposal container
- Small pillow or folded towel to support the extremity if needed
- Syringe method: sterile needles: 20 to 21-gauge for adults, 23 to 25-gauge butterfly for older adults, 23 to 25-gauge butterfly for children
- Vacutainer method: Vacutainer tube with needle holder; sterile double needles (20 to 21-gauge for adults, 23 to 25-gauge for children)

Figure 8-1-1 Nonsterile gloves, sponges, povidone-iodine, alcohol swabs, blood collection tubes, vacutainer tube, vacutainer needle, and rubber tourniquet

CLIENT EDUCATION NEEDED:

1. Explain the purpose of the test.

2. Describe the procedure for collection. Show the client the equipment.

3. Explain the sensations the client will experience with the tourniquet placement, alcohol swab, and needle stick.

4. Explain when the client may expect results from the diagnostic tests.

5. Instruct the client to apply direct pressure to the venipuncture site postprocedure for 3 to 5 minutes. Clients with bleeding disorders should be instructed to alert health care providers of those specifics prior to any procedures. They should also expect to apply pressure to the site for at least 5 minutes.

6. Teach the client deep-breathing techniques for relaxation prior to any procedure. This will provide the client with some "control" in the situation and also provide the client with some distraction during the procedure.

7. Teach the young child how to "draw blood" on a toy before performing the procedure on the child. Play therapy is commonly used in pediatrics as a way to help reduce anxiety in the child. Including a favorite toy into the action helps the child see what the procedure involves.

8. Explain to the client that the site may be slightly sore for a day or two following the stick. Encourage the client to report any symptoms that may be of concern.

DELEGATION TIPS

The procedure of performing a venipuncture for the purposes of blood drawing is frequently delegated to properly trained ancillary personnel. Documentation of their competency and skill should be available to the nurse and periodic re-evaluation should occur according to agency and state policy. The ancillary personnel should be reminded to not obtain blood specimens from an extremity above the site of infusing fluids and to report to the nurse any complications or concerns the client might express postprocedure.

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Greet client by name and validate client's identification.
1. Rationale: Proper client identification ensures safety for the client and the nurse.

2. Action: Explain the procedure to the client (see Client Education Needed).
2. Rationale: Client rights dictate that any action be explained to the client. The client always has the right to refuse a procedure. Information decreases anxiety.

3. Action: Wash hands.
3. Rationale: Reduces transmission of microorganisms.

4. Action: Bring equipment to bedside or client exam room. Transfer client to the procedure room, especially for small children, as it is important to keep their hospital room a "safe haven."
4. Rationale: Provides an organized approach to the procedure.

5. Action: Close curtain or door.
5. Rationale: Provides privacy.

6. Action: Raise or lower bed/table to comfortable working height.

6. Rationale: Maintains good body mechanics for the nurse during the procedure.

7. Action: Position client's arm; extend arm to form a straight line from shoulder to wrist. Place pillow or towel under upper arm to enhance extension. Client should be in a supine or semi-Fowler's position.
7. Rationale: Helps stabilize the arm. The bed should support the client's body (when possible) in case client should feel faint during the procedure.

8. Action: Apply disposable gloves.
8. Rationale: Reduces the risk of infection to both the client and the nurse (Standard Precautions).

9. Action: Apply the tourniquet 3 to 4 inches above the venipuncture site. Most often the antecubital fossa site is used. The tourniquet should be able to be removed by pulling the end with a single motion.
9. Rationale: Tourniquet provides improved visibility of the veins as they dilate in response to decreased venous return of blood flow from the extremity to the heart.

10. Action: Check for the distal pulse. If there is no pulse felt, then the tourniquet is applied too tightly and must be reapplied more loosely.
10. Rationale: If the pressure is too tight, it may impede arterial flow to the extremity.

11. Action: Have client open and close fist several times, leaving fist clenched prior to venipuncture.
11. Rationale: Increases the venous distension and enhances visibility of the vein. Vigorous motion, however, may result in hemoconcentration of the specimen.

12. Action: Maintain tourniquet for only 1 to 2 minutes.
12. Rationale: Prolonged time may increase client discomfort and alter some laboratory results (i.e., falsely elevated serum potassium).

13. Action: Identify the best venipuncture site through palpation; the ideal site is a straight prominent vein that feels firm and slightly rebounds when palpated. Palpate potential site.
13. Rationale: Straight, intact veins are easier to puncture. A thrombosed vein is rigid, or rolls easily, and is difficult to stick.

14. Action: Select the vein for venipuncture. (If the tourniquet has been on too long, release it and let the client rest for 1 to 2 minutes before reapplying the tourniquet.)
14. Rationale: Allowing the client to rest increases client comfort and ensures accurate laboratory results.

15. Action: Prepare to obtain the blood sample. Technique varies depending on equipment used:
• Syringe method: Have syringe with appropriate needle attached.
• Vacutainer method: Attach double-ended needle to vacutainer tube and have the proper blood specimen tube resting inside the vacutainer. Do not puncture the rubber stopper yet.
15. Rationale:
• A needle with a very small bore can damage the red cells as the blood is drawn and lead to inaccurate test results.
• The long end of the needle is used to puncture the vein and the short end enters the blood tube.

16. Action: Cleanse the venipuncture site with alcohol swab or chlorhexidine alcohol using a circular method at the site and extending the motion 2 inches beyond the site (see Figure 8-1-2). Allow the alcohol to dry.
16. Rationale: The alcohol solution and mechanical cleaning motion cleans the skin surface of bacteria that may cause infection at the site. Allowing the alcohol to dry reduces the stinging sensation that the client may experience.

17. Action: Remove the needle cover and warn that client will feel the needle stick for a few seconds.

17. Rationale: Clients will be better able to control their reaction if they know what to expect.

18. Action: Place the thumb or forefinger of the nondominant hand 1 inch below the site and pull the skin taut.
18. Rationale: Helps stabilize the vein during insertion.

19. Action: Hold syringe needle or vacutainer at a 15 to 30° angle from the skin with the bevel up.
19. Rationale: This angle reduces the chance of penetrating though the vein during insertion. The needle causes less trauma to the skin and vein when the bevel is up during insertion.

20. Action: Slowly insert needle/vacutainer (see Figure 8-1-3).
20. Rationale: Prevents puncture through the other side of the vein.

21. Action: Technique varies depending on equipment used:
• Syringe method: Gently pull back on syringe plunger and look for blood return. Obtain desired amount of blood into the syringe.
• Vacutainer method: Hold vacutainer securely and advance specimen tube into needle of holder. Be careful not to advance the needle into the vein. The blood should flow into the collection tube. After the collection tube is full, grasp the vacutainer firmly, remove the tube, and insert additional specimen collection tubes as indicated (see Figures 8-1-3 and 8-1-4).
21. Rationale:
• If blood does not appear, the needle is not in the vein.
• Pushing the needle through the stopper breaks the vacuum and causes the flow of blood into the collection tube. Failure of blood to appear in the collection tube indicates the vacuum in the tube has been lost or the needle is not in the vein.

22. Action: After the specimen collection is completed, release the tourniquet.
22. Rationale: Reduces bleeding from pressure when the needle is removed.

23. Action: Apply 2 × 2 gauze over the puncture site without applying pressure and quickly withdraw the needle from the vein.
23. Rationale: Positions the gauze for removal and helps to gently prevent the skin from pulling with the needle removal.

24. Action: Immediately apply pressure over the venipuncture site with the gauze for 2 to 3 minutes or until the bleeding has stopped. Tape the gauze dressing over the site (or apply the Band-Aid).
24. Rationale: Direct pressure stops the bleeding and minimizes formation of a hematoma. You may avoid using tape or a Band-Aid if after applying pressure no bleeding is present. Many clients are sensitive to tape and its removal can be painful.

25. Action: Syringe method:
• Using one hand, insert the syringe needle into the appropriate collection tube and allow vacuum to fill. You may also remove the stopper from each vacutainer collection tube, remove the needle from the syringe, fill the tube, and replace the stopper.
25. Rationale: Using a one-handed method to fill the syringe helps reduce the chance of needlestick injury.
• This alternative method allows you to control the speed and amount of fill in the collection tubes.

26. Action: If any of the blood tubes contain additives, gently rotate back and forth 8 to 10 times.
26. Rationale: Ensures that the additive is properly mixed throughout the specimen.

27. Action: Inspect the client's puncture site for bleeding. Reapply clean gauze and tape if necessary.
27. Rationale: Keeps site clean and dry.

28. Action: Assist client into a comfortable position. Return bed to low position with side rails up if appropriate.

28. Rationale: Provides comfort and safety for the client.

29. Action: Check tubes for any external blood and decontaminate with alcohol as appropriate.
29. Rationale: Prevents contamination to other equipment and personnel.

30. Action: Check tubes for proper labeling. Place tubes into appropriate bags/containers for transport to the laboratory.
30. Rationale: Ensures the specimens are properly identified.

31. Action: Dispose of needles, syringe, and soiled equipment into proper container.
31. Rationale: Prevents spread of disease and needlestick injury.

32. Action: Remove and dispose of gloves.
32. Rationale: Reduces transmission of microorganisms.

33. Action: Wash hands after the procedure.
33. Rationale: Reduces transmission of microorganisms.

34. Action: Send specimens to the laboratory.
34. Rationale: Facilitates timely handling of specimens and accurate results.

Figure 8-1-2 After applying the tourniquet, cleanse the skin at the venipuncture site. Do not let the tourniquet stay on longer than 2 minutes. If you need more time, remove the tourniquet for a couple of minutes to allow the client to rest, and begin again.

Figure 8-1-3 Hold the vacutainer and needle assembly securely and press the specimen tube into the holder. The needle inside the holder will pierce the specimen tube and blood should begin to flow into the tube.

Figure 8-1-4 Allow the tube to fill with blood. When it is full, remove the tube and insert additional tubes if needed.

REAL WORLD ANECDOTES

Scenario 1

The nurse went into Mrs. Smith's room, introduced herself, and proceeded to draw a CBC and platelet count. After completing the procedure, the nurse went out to the nurse's station and processed the specimens. The nurse went to cross the orders off the unit laboratory sheet and noticed that

there was another client by the name of Smith down the hall. Unfortunately for the client, the nurse had not checked the patient's ID band and had obtained the specimen from the wrong client. This could have resulted in the wrong information being posted in the client's record, and inappropriate treatment based on those results.

Scenario 2

A nurse was helping a busy colleague and offered to draw a specimen of blood from Mr. Van Hook. The client was properly identified and the procedure went very smoothly. The nurse processed the specimens and went back to recheck the venipuncture site on Mr. Van Hook. He reported some tenderness and the nurse noted a large hematoma at the site. The nurse had failed to check the medical record and did not realize that Mr. Van Hook was on heparin therapy. The venipuncture site for Mr. Van Hook would have required direct pressure for at least 5 minutes.

EVALUATION

• Venipuncture site shows no evidence of continued bleeding or hematoma.

• Venipuncture site shows no signs or symptoms of infection.

• The laboratory test is properly acquired and appropriately handled after collection.

• The client is able to discuss the purpose of the test and describe the procedure.

• The client reports minimal anxiety associated with the procedure.

DOCUMENTATION

Nurses' Notes

• Record the date and time of the venipuncture, the site used for the procedure, any complications, the tests obtained, and the disposition of the specimens.

• Note the client's reaction to the procedure and the condition in which the client was left (i.e., bed lowered with side rails up).

CRITICAL THINKING SKILL

Introduction

Understanding the specific requirements for collection of blood specimens is crucial. Failure to do so may result in inaccurate results, which can lead to errors in treatment of the client or a repeat of the venipuncture test.

Possible Scenario

The home care nurse received orders to draw a cyclosporine level on Mr. Jones. Mr. Jones was day 42 postallogeneic blood cell transplant and receiving infusions of cyclosporine every 12 hours for the prevention of graft-versus-host disease. Mr. Jones was independent with his infusion administration and had scheduled nursing visits for laboratory draws twice a week. The nurse scheduled a visit to draw the blood for 11 AM. The drug level was collected and the specimen dropped off to the transplant center for processing.

Possible Outcome

The home care nurse received the cyclosporine level results the following day and called Mr. Jones's physician with the results. Upon receiving the results, the physician was alarmed that the cyclosporine level was so high and concerned that Mr. Jones might have symptoms of toxicity. During further discussion with the nurse, it was determined that the cyclosporine level was drawn 2 hours *after* Mr. Jones had completed his morning infusion.

Prevention

Cyclosporine levels are drawn *prior* to the next dose. As with many drug levels, the timing of the blood sample in relation to the dose is essential for accurate results. In this case, the home care nurse should have instructed Mr. Jones to hold his morning dose of cyclosporine until after the blood sample. The home care nurse would then schedule the visit in accordance with the scheduled timing of the dose.

VARIATIONS

Geriatric Variations:

• Older clients often have very fragile veins or veins that roll. Vein integrity is very important to access and veins need to be secured carefully before venipuncture.

• These clients may also need direct pressure post-needle-stick for a longer period of time as they are prone to bruising and hematoma development.

Pediatric Variations:

• Dorsal surfaces of the hands and feet are the most frequently selected venipuncuture sites in children.

• Select a site that requires the least amount of restraint for the child/infant.

• Have another nurse (not the parent) assist you with restraint of the child during the procedure as necessary.

• Scalp veins may be used for neonates or infants, but this site is often the least desired site by the parent.

• Use topical transdermal numbing medications at least 30 minutes prior to the needle stick.

Home Care Variations:

• Teach the client/caregiver to recognize signs and symptoms of infection or phlebitis and to report pain, redness, or significant bruising.

• Home care clients who have been on infusion therapy for a long period of time will often provide the nurse with information related to which veins

are the "best" to use for venipuncture. Evaluate the sites carefully and include the client's preferences when possible.

Long-Term Care Variation:

• These clients may be scheduled for venipuncture on a regular basis and may also have vein preference or poor venous access at some sites. Consider the client's suggestions carefully and listen to what the client tells you; often an experienced client is right.

COMMON ERRORS

Possible Error:

Piercing through the other side of the vein during venipuncture.

Prevention:

Hold the syringe and needle at a 15 to 30° angle from the client's arm with the bevel up. This position should reduce the chance of penetrating both sides of the vein.

Possible Error:

Sample results diluted from IV fluids near the site of venipuncture.

Prevention:

Select a site away from the IV infusion site. An alternative may be to stop the infusion during the venipuncture procedure (depending on the therapy and the venous access used).

NURSING TIPS

• Apply warm packs (wet compresses or dry chemical packs) for 10 to 15 minutes to the site, allowing for venous distension and easier visual location of the site.

• Neonates and infants may need to be wrapped in a warm blanket or placed under an infant warming light for 10 to 15 minutes before attempting venipuncture to facilitate visual location of sites.

• The client should be in a comfortable, relaxed position.

• The nurse should approach the client with confidence, as this will reduce the client's anxiety level.

• For obese clients with difficult veins to locate, create a visual image of venous anatomy and use palpation to guide you through venipuncture.

• With experience the nurse will feel the vein "pop" as the needle enters.

• Avoid any site that pulsates with palpation as this indicates the site is an artery.

• To avoid prolonged use of the tourniquet, release it as you prepare the site and then reapply it before the actual venipuncture.

SPECIAL CONSIDERATIONS

• Confidence is essential when drawing blood. Approach the task with self-assurance and the client will feel less frightened.

• Labeling the lab specimen with the correct client name is the first step to a successful blood draw. If the client is getting a type and cross-match for blood and receives the wrong blood type because of a labeling error, the client can die as a result of incompatible blood. The phlebotomist must always be vigilant when labeling a specimen.

• When drawing blood for an HIV test, the phlebotomist must ensure that HIV testing is informed, voluntary, and consented and that counseling and information are provided *prior* to taking the test. Certain laws at the local, state, and federal levels may regulate how HIV testing is done and it is important for the nurse to become familiar with these laws and mandates (i.e., testing of the minor, the intubated client, etc.).

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    CHAPTER 8. Circulatory
    SKILL 8-1. Performing Venipuncture (Blood Drawing) —Catherine H. Kelley, RN, MSN, OCN, Susan Randolph, RN, MSN, CS
    KEY TERMS

CHAPTER 9. Skin Integrity and Wound Care

SKILL 9-1. Bandaging —Patricia Abbott, RN, ARNP, MSN, Gaylene Bouska Altman, RN, PhD

KEY TERMS

Bandages
Elastic bandages
Figure-eight bandage
Gauze bandages
Hypovolemia
Immobilization
Kerlix
Neurovascular status
Reverse spiral bandage
Spiral bandage
Stump bandage

ESTIMATED TIME TO COMPLETE THE SKILL:

5-15 minutes depending on whether a wound is involved and the complexity of the bandage, which is dependent on the body part involved

OVERVIEW OF THE SKILL

Bandages are narrow strips of fabric, gauze, or elastic material used on wounds to aid and promote the healing process. Bandages are used to cover wounded areas, hold dressings in place, and reduce edema. Bandages may also be used to apply pressure or support to a specific area without compromising circulation, alignment, or mobility. Gauze bandages are readily available in a variety of widths, so the size of the bandage can be chosen to correspond to the size of the wound and body part involved. Another advantage of gauze is that it is porous, which promotes healing by allowing circulation of air to the wound.

Elastic bandages are also available in a variety of widths and have the added advantage of applying more pressure/compression because of their elastic quality. Therefore, they are used more often to prevent edema on lower extremities (see Skill 10-1 on applying elastic bandages).

Fabric bandages are not routinely used. Fabric bandages can be made from many available sources and can be used in emergency situations.

ASSESSMENT

1. Assess the wound to be covered if a wound is involved. **If there is active bleeding, the bleeding must be controlled to prevent hemorrhage and possible hypovolemia. A pressure dressing can be applied using a bandage to hold the pressure compress in place if necessary. A bandage should not be applied to a wound that does not have a dressing over the bleeding area. Immobilizing a joint or broken bone is one of the most important factors in controlling blood loss, and a properly applied bandage can aid in immobilization.**

2. Assess the client's level of consciousness. **This is important so that the client can report if the bandage is too tight and is possibly restricting circulation.** If the client has a decreased level of consciousness, use extra caution to ascertain that the dressing is not too constricting.

3. Assess the client's skin integrity, paying special attention to the presence of edema, ecchymosis, uticaria, lacerations, abrasions, any bony prominence, and the condition of the skin (dry, cracked, infected, thin). **These factors will help determine what bandage products and techniques to use.**

4. Assess neurovascular status. Check capillary refill, temperature, and color of the skin in the area surrounding and distal to the bandage. Check motion, sensation, and pulses. **These factors will help determine a baseline for future assessments as well as what type of bandaging product or technique to use.**

5. Assess that client is not allergic to latex products. **Elastic bandages often contain latex and may cause local irritation or anaphylaxis in the presence of severe latex allergy.**

DIAGNOSIS

Risk for Deficient Fluid Volume

Impaired Skin Integrity

Ineffective Tissue Perfusion, related to wound, skin, and structures distal to area involved

Impaired Physical Mobility

Pain

PLANNING

Expected Outcomes:

1. The client does not become hypovolemic, and bleeding is controlled.

2. The wound is supported and in alignment.

3. The bandage is applied properly, with adequate anchoring and no loose or dangling ends.

4. The client does not experience pain or discomfort from the bandaging.

5. There is adequate circulation to the wound and distal body parts before, during, and after application of the bandage.

6. The client does not report any numbness or tingling.

7. The wound heals, without breakdown of skin or neurovascular status.

Equipment Needed (see Figures 9-1-1 and 9-1-2):

- Dressing for wound, if present
- Bandage, either gauze, elastic, or fabric (emergency situation)
- Gloves to maintain body fluid precautions if there is the potential for body fluids
- Tape or clips to secure bandage

Figure 9-1-1 Select the appropriate size bandage for the body part.

Figure 9-1-2 Kling gauze bandage

CLIENT EDUCATION NEEDED:

1. It is important that clients understand what the nurse is doing and why the bandage is being applied (to control the bleeding, support the wound/limb, hold a dressing in place, reduce edema). If clients are part of the process, they will experience less discomfort, will be of more assistance in applying the bandage, and will be more compliant in keeping the bandage in place after the nurse has finished applying it.

2. Teach the client the importance of having the bandage smooth to avoid any unwanted constriction.

3. The client needs to understand the importance of reporting any numbness, tingling, or discoloration of skin in the area of the bandage or distal to it.

4. Clients need to understand that they should report any drainage that has soaked through the bandage. Active bleeding needs to be controlled and reported. It is important to maintain a clean wound with less potential for secondary infection.

DELEGATION TIPS

The application of bandages to the client is not delegated to ancillary personnel. Family members may be taught this skill prior to the client's discharge. Occasionally, ancillary personnel will be delegated the task of applying a clean dry gauze as skin protection, but the nurse is responsible for the assessment of the integrity of the client's skin.

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Provide privacy for client, then wash hands and apply gloves.
1. Rationale: Reduces the transmission of microorganisms and ensures client comfort.

2. Action: Provide wound care as ordered or required. Determine the need for the bandage. Will it be used to:
- Cover a wound?
- Hold a dressing in place?
- Apply pressure?
- Support a wound/limb?
- Maintain circulation?
- Decrease edema?

2. Rationale: If the need is to control bleeding and the risk of hemorrhage exists, the nurse must apply a pressure dressing immediately. A clean bandage can be used to control the bleeding in emergency situations, but use a sterile dressing when available.

3. Action: Assess the neurovascular status. Check pulse, capillary refill, skin color, and warmth. Check sensation. Neurovascular status needs to be assessed at wound or area to be bandaged and body part distal to the area.
3. Rationale: If the neurovascular status is compromised, it will be necessary for the nurse to fully assess and document this prior to applying the bandage and to correct the compromised status if possible.

4. Action: Assess skin integrity. Check for dryness, fragility of skin, any apparent breakdown, and signs of bleeding or infection.
4. Rationale: If there is excessive dryness or fragility, extra care will be needed to prevent breakdown of skin. If the skin around the existing wound is already impaired as evident by swelling, bleeding, or infection, this breakdown must be dealt with before applying the bandage.

5. Action: Assess need for immobilization.
5. Rationale: Proper immobilization is essential for controlling bleeding, supporting the area, protecting the wound from further damage, and maintaining client comfort.

6. Action: Assess client's comfort and level of consciousness. Explain procedure to client.
6. Rationale: Makes client more comfortable and determines how aware the client is and able to understand and cooperate with the nurse during the process of bandaging.

7. Action: Gather supplies needed, based on above assessment.
7. Rationale: If the nurse knows what will be needed, the process will be more effective and time efficient.

8. Action: Apply the bandage. The technique will vary depending on the area of body to be bandaged.

• Hold roll of bandage in dominant hand, with the loose end on the distal portion of the area to be bandaged (see Figure 9-1-3). This end is held with nondominant hand.
• The roll of bandage is then unrolled proximally, applying slight tension as it is unrolled round the body part.
• The first two or three turns of the bandage should overlap to secure the loose end.
• The roll of bandage can be transferred from hand to hand and should be applied evenly and firmly, but caution should be taken to avoid the bandage being too tight (see Figure 9-1-4).
8. Rationale: If the bandage is properly applied, it will be more effective in doing what it was applied for: controlling bleeding, covering the wound, applying necessary pressure or compression, reducing edema, supporting wound/limb to maintain circulation and immobilization if needed.
• Wrap with the dominant hand for dexterity.
• Bandages are applied starting at the distal and moving toward the proximal part of the body.
• Prevents the bandage from unwrapping.
• A bandage that is uneven or too tight can create a tourniquet effect, reducing circulation, with the possibility of causing skin breakdown and nerve damage.

9. Action: Common Bandaging Methods
• **Figure eight:** Anchor bandage at center of joint. Ascend obliquely in circular fashion around extremity above and below joint, in a figure-eight fashion, overlapping until necessary immobilization is obtained. Secure end of bandage (see Figure 9-1-6).
• **Spiral:** Anchor bandage at distal aspect with two or three circular turns. Then proceed upward, overlapping one-half to two-thirds the width of the bandage with each turn (see Figure 9-1-5). Secure end of bandage (see Figure 9-1-6).
• **Recurrent turns (also known as the stump method):** Anchor bandage with two circular turns around proximal end of area to be bandaged. Then make a reverse turn at center front, taking roll of bandage over the distal end of the area to the center back. Then make another reverse turn and take roll of bandage over the distal end to the center front. Continue front to back with reverse turns in this fashion until the wound is covered. Then anchor with two more circular turns and secure end of bandage (see Figure 9-1-6).
• **Reverse spiral:** Anchor bandage at distal border with 2 to 3 turns. Advance roll of bandage proximally at about a 30° angle. Halfway through each turn, fold bandage toward the nurse and continue in a downward fashion. Continue bandaging proximally in this manner until the area to be bandaged is covered. Secure the end of the bandage (see Figure 9-1-6).
9. Rationale:
• Used for bandaging joints and providing immobilization.
• Used to cover cylindric body parts.
• Used to cover top of head or stump wounds.
• Used to cover cone-shaped body parts, such as the forearm and lower leg.

10. Action: Remove and appropriately dispose of gloves and wash hands.
10. Rationale: Reduces the transmission of microorganisms.

Figure 9-1-3 Hold the bandage in the dominant hand and loosen the end of the bandage.

Figure 9-1-4 Wrap the bandage from distal to proximal. Do not wrap the bandage too tightly.

Figure 9-1-5 Anchor bandage at the center of joint.

Figure 9-1-6 Common bandaging methods. **A.** *Circular turns* are wrapped around a body part several times to anchor a bandage or supply support. **B.** *Spiral turns* begin with one or two circular turns, then proceed up the body part, with each turn covering two-thirds the width of the previous turn. **C.** *Reverse spiral turns* begin with a circular turn. Then the bandage is reversed or twisted once each turn to accommodate a limb that gets larger as the bandaging progresses. **D.** Figure-eight turns criss-cross in the shape of a figure eight and are used on a joint that requires movement. **E.** *Recurrent turns* are anchored with circular turns and follow a back-and-forth motion, and are completed with circular turns; used to cover a fingertip, head, or amputated stump.

REAL WORLD ANECDOTES

Joe is a 36-year-old painter who fell off his painting platform 2 hours prior to arriving in the emergency room. He is complaining of left elbow pain and bleeding. He is holding a towel on the wound, which is not actively bleeding at the time of arrival. Joe is alert and oriented, and his vital signs are stable. He has decreased range of motion of his left elbow and arm. It is determined that he needs an X-ray. The nurse checks the wound and determines that with a proper bandage, it will be safe for Joe to go to X-ray prior to having the laceration sutured. A light-pressure, sterile dressing is applied over the wound. The nurse then proceeds to bandage the wound and limb to keep the dressing in place, which will control bleeding and immobilize the elbow. The nurse applies a figure-eight bandage with 2.5 cm gauze over the dressing, checking neurovascular status prior to applying the bandage. After she is done she asks Joe if he has any numbness or tingling in the arm and fingers distal to the wound. Capillary refill is checked and appears to be brisk. His radial and ulnar pulses are full and intact. When Joe returns from X-ray, the bandage is reassessed. The bandage is now wrinkled and has been reapplied tightly, causing some intermittent tingling in Joe's left fingers. The bandage is removed to improve circulation and so the wound can be further assessed and sutured as necessary.

EVALUATION

• Check the bandage for wrinkles. Wrinkles create areas of increased pressure and can lead to skin breakdown.

• Assess the distal part of the wound to ascertain neurovascular status. Check for skin temperature, pulses, color, movement, and sensation, often referred to as CMS.

• Whenever possible, it is advisable to leave the distal area free of bandages to assess neurovascular status (fingers, toes are easily observed if left open).

- Assess degree of immobilization if that was the desired outcome.
- Assess client's level of comfort and understanding of care of bandage.

DOCUMENTATION

Nurses' Notes

- Record the need for the bandage.
- Record the condition of the wound/area to be bandaged prior to the bandaging.
- Record the type of material used and the technique used.
- Record the neurovascular status of the wound before, immediately after, and 20 minutes after the bandage was applied.
- Record the client's comfort level.

CRITICAL THINKING SKILL

Introduction

A nurse's timely assessment prevented well-intentioned first aid interventions from increasing the victim's injuries.

Possible Scenario

You are out hiking on your day off. A climber has fallen from a rock ledge and is unconscious with a head injury and an obviously fractured left arm. A fellow climber has taken appropriate first aid measures, which include splinting the arm very tightly.

Possible Outcome

Because this climber is unconscious, he cannot report the tingling and numbness in his fingers. His neurovascular status could become compromised. You assess his neurovascular status, adjust the splint, and return your attention to his head injury while awaiting the search-and-rescue team.

Prevention

If the bone was broken and the joint had not been immobilized, the climber could have had further trauma to the area and increased bleeding, thus increasing his risk of hypovolemia. In this case, a splint was applied along with the bandage to ensure proper alignment as well as immobilization.

It is always necessary to evaluate and re-evaluate the neurovascular status of the wound and the area distal to the affected area.

Proper bandaging in this scenario applied pressure to a bleeding wound; kept the dressing in place; reduced edema; helped to support, immobilize, and align the limb; and helped to reduce the pain that the climber was experiencing.

VARIATIONS

Geriatric Variations:

• Normal increased fragility of skin in elderly clients can make skin more likely to break down. Apply dressing with less pressure.

• Less resilient cardiovascular status may increase the risk of hypovolemia, so the bleeding must be closely watched.

Pediatric Variations:

• Be aware of increased movement and the fact that a child may take off the bandage. A child's bandage needs to be more secure (but not tighter) than an adult's.

• Explaining what you are doing is very helpful and helps to decrease the child's anxiety.

Home Care Variations:

• Make sure the care provider knows where to purchase supplies, if needed. Research available options for cost and location prior to the home care visit.

• A plastic storage bin with a lid will help keep bandage supplies together, clean, and dry in the home setting.

• Store liquids in a different container to reduce the chance of spillage and contamination of the sterile dressings.

• Teach the client or home caregiver to frequently launder reusable bandages, such as Ace wraps or stockinette, to keep them clean.

Long-Term Care Variations:

• Discuss alternatives to taping and removing tape several times a day if the bandage will be in place for the long term. Mesh net, ties, or a light Ace wrap may be solutions that will be easier on the skin surrounding the bandage.

• Choose the lightest tape that will do the job. Check for allergies to the tape, which do not necessarily show up immediately but may appear over the long term.

• Teach the client the proper techniques and allow as much bandaging self-care as possible to promote a sense of independence and control.

COMMON ERRORS

Possible Error:

The bandage slips out of place.

Prevention:

Select the proper bandage for the area. Make sure the bandage is not too loose.

Possible Error:

The bandage impairs circulation distal to the site.

Prevention:

Do not apply the bandage too tightly. Select a bandage large enough to cover the area without applying too much pressure. If a circular or spiral wrap is used, make sure it is applied from distal to proximal and has not been wrapped too tightly.

NURSING TIPS

• Assess need for a bandage, the wound, and the area involved before attempting to bandage to determine the technique that will be best suited to the situation.

• When applying a bandage, hold the rolled bandage so that it unrolls from the bottom of the roll (see Figure 9-1-3) making application easier.

• Gather all needed supplies before starting.

• Explain what you are doing and why to the client.

SPECIAL CONSIDERATIONS

• At times topical skin products may be used as a protectant for the lower limbs. These products are called Dome paste bandage, Unna's boot, or Zinc gelatin boot. The dressing comes as a 3" ≥ 10 yards or 4" ≥ 10 yards bandage and is applied as an occlusive boot. It provides support to variscosities or lesions on the legs. The dressing remains on for approximately 2 weeks, after which it is removed by soaking the boot in warm water.

• Elastic and stretchable bandages generally contain natural rubber latex. Avoid use if client has history of latex allergy, uticaria, or rash.

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    CHAPTER 9. Skin Integrity and Wound Care
    SKILL 9-1. Bandaging —Patricia Abbott, RN, ARNP, MSN, Gaylene Bouska Altman, RN, PhD
    KEY TERMS

CHAPTER 10. Immobilization and Support

SKILL 10-1. Applying an Elastic Bandage —Gaylene Bouska Altman, RN, PhD

KEY TERMS

Bandages
Compression wraps
Elastic bandage
Elastic wrap
Ace wraps
Reverse spiral
Splinting
Varicose veins

ESTIMATED TIME TO COMPLETE THE SKILL:

10 minutes for elastic wrap; if dressing change is involved, more time will be needed depending on the type of wound

OVERVIEW OF THE SKILL

Elastic bandages or wraps are used to secure dressings in place, immobilize joints, decrease swelling, maintain circulation, support or immobilize a body part, stabilize an extremity, or secure equipment, such as traction, to a body part. Elastic bandages can be used on any body part and to apply compression to any area, with the exception of the neck. The type and size will vary with the body part or area to be covered. Elastic bandages are often used on the lower extremities to prevent edema and to support varicose veins. Elastic bandages can also be used to support the knee, ankle, elbow, and wrist for conditions such as strains and sprains. They can also be used to support fractured ribs.

ASSESSMENT

1. Check the client's skin integrity and previous reactions to bandages to establish a baseline and avoid allergic reactions to bandages. Inspect the

site to be bandaged. Indications of edema, abrasions, discoloration, or bony prominences need to be noted prior to bandaging. **These assessments will affect the type of bandage used and how the bandage is placed** (see Figure 10-1-1).

2. Assess circulation. Inspect skin temperature, color, pulses, and sensation of body parts to be covered **to determine a baseline neurovascular status.**

3. Assess for the presence of a wound. If a dressing is to be applied under an elastic bandage, assess that wound prior to application of elastic bandage. **Determines if the bandage will put pressure on the wound, or compromise the sterile wound dressing.** Make sure there is a sterile bandage between the elastic bandage and an open wound.

Figure 10-1-1 Examine the site to assess the condition of the skin and to determine the size and type of bandage needed.

DIAGNOSIS

Ineffective Tissue Perfusion

Impaired Physical Mobility

Pain

PLANNING

Expected Outcomes:

1. The client will have decreased edema.

2. The client will have decreased pain.

3. The client's body will be supported and in good alignment.

4. The client will not experience tingling or numbness distal to the elastic bandage.

5. The client will have good perfusion in parts distal to the elastic bandage.

6. The bandage will be properly anchored and the ends secured with no looseness or stricture.

7. The client will not experience skin irritation or decreased skin integrity related to the bandage.

Equipment Needed (see Figure 10-1-2):

- Elastic bandage (latex-free)
- Gloves, if body fluids or wounds are involved
- Dressings, as appropriate, if covering open wounds
- Clips or tape to secure bandage in place

Figure 10-1-2 Elastic bandages

CLIENT EDUCATION NEEDED:

1. Client understands the purpose of the elastic bandage (e.g., for support, to decrease edema, or to secure dressing in place).

2. Client understands the need to keep bandage smooth and wrinkle-free, and to avoid constriction.

3. Client understands the need to report any tingling, numbness, discoloration, or any increased pain.

4. Client understands the need to report any oozing of blood through the elastic bandage.

5. Client understands the need to report cool extremity, blanching, or mottling.

DELEGATION TIPS

Application of bandages over wounds is not delegated to ancillary personnel but may be taught to family members/caregivers for the provision of long-term or home care. Ancillary personnel should be aware of the purpose of the elastic bandage and any reportable conditions such as complaints of pain, tingling, rubbing, pressure, edema, changes in skin condition, or any indications of neurovascular compromise.

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Assess size of material needed and gather materials (see Figure 10-1-3). Elastic bandages are available in 2, 21/2, 3, 4, 6, and 8 inch widths. Lengths are usually available in 3 yards. Assess client's reaction to elastic products, and use latex-free wraps if indicated.
1. Rationale: Provides appropriate support, which will depend on the purpose, injury, or stabilization required. Elastic products may contain latex and are contraindicated if a history of latex allergy or contact dermatitis to latex products.

2. Action: Wash hands.

2. Rationale: Reduces the transmission of microorganisms.

3. Action: Explain purpose and need for bandages to client.
3. Rationale: Understanding the need to keep a bandage in place can facilitate cooperation. The purpose can be for support, alignment, decreasing edema, or securing dressings.

4. Action: Assess the skin to be covered for redness, swelling, or open lesions. Assess that the client is in a correct position for application; for example, if supporting a fracture, arm, or other body part, it must be anatomically aligned. If elastic wrap is for edema of the lower extremity or for varicose veins, the client's leg must be elevated.
4. Rationale: Avoids increased injury, infection, or improper alignment. Promotes healing, decreased edema, and proper support for varicosities.

5. Action: Apply the bandage. Technique may vary depending on the body part to be covered and the purpose of the bandage.
• Hold roll of elastic bandage in dominant hand while using the other hand to lightly grasp the start of the bandage to distal starting point (see Figure 10-1-4). Begin by wrapping around body part twice to stabilize start of bandage, then begin working toward the proximal point by transferring hand-to-hand, making sure to overlap at least one-third of bandage on each pass. Bandage should be stretched slightly as it is wrapped; however, two fingers should still fit between bandage and skin to ensure it is not too tight (see Figure 10-1-5). Toes or fingertips must be visible to allow follow-up assessment (see Figure 10-1-6). Secure first bandage before applying additional rolls. Apply additional rolls without exposing any skin surface.
• If the legs and feet are to be covered, wrap twice around the foot initially. Use a figure-eight pattern, leaving the toes exposed. Continue wrapping the leg until all bandage is used (see Figure 10-1-7).
• A figure-eight pattern is also useful to cover and immobilize joints (see Figure 10-1-8).
• Use a circular pattern to bandage digits or wrists.
• Use spiral turns to apply a bandage to cover areas such as slender wrists or the forearms.
• If securing equipment in place, such as Buck's traction, use a circular pattern around the leg and traction.
• Spiral reverse turns are used to cover parts of the body that are the shape of an inverted cone, such as the thigh or forearm.
• Recurrent turns are used to bandage the head or the stump of an amputated limb.
5. Rationale: Proper application maintains consistent bandage tension, conforms to body part, promotes stabilization of body part, and promotes venous return.

6. Action: Secure in place with tape, pins, or hooks provided with bandage (see Figure 10-1-9).
6. Rationale: Prevents loose ends and unraveling of dressing.

7. Action: Check whether wrinkles are present; if so, smooth out.
• Check that no constrictive areas are present.
• Check warmth, color, and CMS (circulation, movement, sensation) distal to wrap.
• If an elastic wrap is used for arm support see Skills 10-2 and 10-3.
• If elastic wrap is used for traction, see Skills 10-7 and 10-9.
7. Rationale: Prevents skin breakdown and decreased circulation.

8. Action: Wash hands.
8. Rationale: Reduces the transmission of microorganisms.

Figure 10-1-3 Remove material from packaging and set the clips aside where they may be easily reached.

Figure 10-1-4 Hold the bandage in the dominant hand and anchor the end of the bandage against the skin with the nondominant hand.

Figure 10-1-5 Apply the bandage from the distal to proximal area. You may transfer the bandage from hand to hand as you wrap.

Figure 10-1-6 Wrap the bandage up the limb. Keep the toes visible to allow assessment of circulation.

Figure 10-1-7 Continue until the entire elastic bandage is used.

Figure 10-1-8 The bandage is wrapped using the figure-eight method.

Figure 10-1-9 Secure the bandage with clips. When applying clips be careful they do not scratch the skin.

REAL WORLD ANECDOTES

Chai recently attended an in-service seminar given by a nurse with 20 years of experience in an orthopedic clinic. Chai learned about several problems with elastic bandages, or Ace wraps, commonly seen in both inpatient and outpatient settings. The most serious problem is when a client develops tingling in the fingers or toes if the bandage is wrapped too tightly. This can also occur if swelling continues after the bandage is placed. It is often seen when clients rewrap their own bandages at home.

Younger clients especially will move around extensively and disrupt the smoothness of the bandage, which can lead to variations in pressure. The friction of the bedsheets can also disrupt the smoothness of elastic bandages. If the elastic bandage becomes wrinkled, skin tissue injury can occur at the points of compression. Sometimes a client will have a wound and dressing under the elastic wrap. If the dressing is inadequate or not changed often enough, oozing is noted through the elastic wrap. The wrap becomes contaminated with wound exudate and must be cleaned. The wound is not protected against infection, because bacteria can enter the wound.

EVALUATION

- The client has decreased edema.
- The client has decreased pain.
- The client's body is supported and in good alignment.
- The client does not experience tingling or numbness distal to the elastic bandage.
- The client has good perfusion in parts distal to the elastic bandage.
- The bandage is properly anchored and the ends secured with no looseness or stricture.

DOCUMENTATION

Nurses' Notes

Document:

- Procedure, type of wrap, and reason for wrapping.
- Assessment of color, movement, warmth, and sensation initially, and 20 minutes later.
- Distal pulses, if applicable.
- Vital signs, if needed, in acute injury situation.

CRITICAL THINKING SKILL

Introduction

Assessment after the bandage is applied must include all possible complications of the injury.

Possible Scenario

A client is admitted to the unit after a motor vehicle accident. He fractured his leg, which is now wrapped in an elastic bandage. He rings his call light and complains of deep throbbing pain in his calf.

Possible Outcome

The nurse rewraps the leg, explains to the client that fractures can be painful, and offers medications. The client continues to develop a deep venous thrombosis as a result of the injury.

Prevention

The nurse needed to listen to the client's complaints of pain and should have done a thorough assessment, including assessing the leg for deep venous thrombosis by checking for pain, warmth, redness, discoloration, or pain in calf.

VARIATIONS

Geriatric Variations:

• Elderly clients have very frail skin and may find elastic bandages useful in enabling the healing process.

• Elderly clients may find more comfort and added support from elastic bandages than from elastic stocking for varicose veins because elastic stockings may roll at the top and are difficult to put on.

• Elderly clients usually require assistance with elastic bandages.

• Elastic bandages may be useful in securing dressings in elderly clients with skin that is frail or tears easily.

Pediatric Variations:

• Children often do not like feeling constricted; therefore, assess frequently if the child plays with the bandage.

• A younger child can assist with the procedure by holding the clips used to secure the bandage, by counting and feeling the toes or fingers, or by counting the number of "wraps" taken.

• If the bandage does not stay on during active play, extra tape or clips can be used.

• If the parents will be rewrapping the bandage, teach them how to assess neurovascular status, the basics of handwashing, and keeping the

bandage clean.

• Remind parents not to wrap the bandage "extra tight" in an effort to keep it in place.

• Younger clients may not be able to complain of pain or tingling. These clients need extra careful assessment.

• An older child or adolescent can be taught how to rewrap the bandage. This teaching must include how to assess neurovascular status, the basics of handwashing, and keeping the bandage clean.

Home Care Variations:

• Some clients find elastic bandages more useful than stockings and less expensive.

• Put bandages in a mesh "delicates" laundry bag before putting them in the washing machine. This keeps them from getting twisted and tangled in the laundry. Also, bandages may be hand-washed in the sink and rolled between towels to dry.

• Make sure client is not using a bandage that is too large or too small for the limb being treated. Bandages that are too small will constrict circulation and will not stay in place. Bandages that are too large will not properly support the injured limb.

Long-Term Care Variations:

• Elastic bandages lose their elasticity over time. Replace as needed.

• Same as home care variations.

COMMON ERRORS

Possible Error:

The bandage is wrapped too tightly or too loosely.

Prevention:

Use a steady, gentle stretch as you wrap the bandage. Do not tug at a bandage that is too short to cover an area. Add a second bandage if needed. Keep pins and clips within reach so you can anchor the bandage when you finish the wrap.

Possible Error:

Edges are not overlapped properly.

Prevention:

Pay attention to the wrapping process. Visualize ahead where the next wrap will go. If you run out of bandage before you run out of limb to cover, add a second bandage.

NURSING TIPS

• Gently stretch the bandage as you apply it to make sure it is secure.

• If wounds are involved, check under bandages periodically.

SPECIAL CONSIDERATIONS

• If the bandage is placed soon after injury, swelling is likely to occur and bandage may need to be rewrapped.

• Bandages lose elasticity after a time; be sure to replace them periodically.

• When wrapping the tip of a digit or a stump, be sure there is enough pressure at the end, but not too much around the circumference; this can act as a tourniquet instead of an anchor for the rest of the bandage.

• In the past, Homans' sign was used to rule out deep vein thrombosis. However, positive Homans' sign alone is no longer considered a diagnostic tool. Considering the entire clinical picture Homans' sign can be used as a guide for the need for further assessment, addition of diagnostic tools, or treatment.

• Latex-free bandages are available and should be used if the client has a history of latex allergy or contact dermatitis related to previous bandage use.

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CHAPTER 11. Special Procedures

SKILL 11-1. Administering an Electrocardiogram —Susan Boyce Gilmore, MN, RN, CCRN, Gaylene Bouska Altman, RN, PhD

KEY TERMS

ECG/EKG
Electrocardiogram
Electrode gel
Electrode paste
Electrodes
Leads
Limb leads
Precordial leads

ESTIMATED TIME TO COMPLETE THE SKILL:

10 minutes

OVERVIEW OF THE SKILL

The 12-lead electrocardiogram (ECG or EKG) is a standardized noninvasive diagnostic tool used to record the electrical activity of the heart. Electrodes are placed in designated positions on the surface of the body and attached to a monitor that allows for visualization of electrical activity of the heart, primarily of the left ventricle. As the ECG measures electrical changes of the cardiac muscle with a graph tracing, it can be used to identify rhythm disturbances and many types of cardiac abnormalities, such as myocardial ischemia or infarction, structural changes such as hypertrophy, axis deviation, certain drug effects, and electrolyte imbalances, all of which affect the electrical activity of the cardiac muscle. The ECG offers only initial screening information for cardiac abnormalities that result in aberrations of the flow of electrical activity in the heart and little information regarding the contractile or hemodynamic function. Nonetheless, the ECG is the most frequently used screening tool, other than pulse and blood pressure determination. The placement of 10 electrodes (4 on the limbs and 6 on the chest) in standardize locations provides "views" of cardiac activity from 12 different vantage points on the body surface. It is noninvasive, painless, and can be obtained within a few minutes. Training is

required to identify placement of the electrodes and proper operation of ECG machines. Even though most current machines provide a computer-derived interpretation simultaneous with the graph tracing, this preliminary data should be sent to a cardiologist or trained provider who "overreads" and professionally interprets the tracing.

ASSESSMENT

1. Assess age, gender, and current medication history for any medications with possible cardiac or hemodynamic effects. Gather other data that may be required by unit/institution protocol (height, weight, recent blood pressure, operator identification). **Reference standards are tailored to age and gender. Some medications cause abnormalities in portions of the ECG complex that must be recognized as medication effect.**

2. Determine that the client is able to tolerate a supine position and that adequate exposure of chest and limbs is possible for electrode placement. **Correct location of electrodes is enhanced by comfortable, stable position.**

3. Determine presence of neck, arm, jaw, or other pain with possible cardiac origin. **Chest or other pain may provide additional information useful in serial comparison of ECGs.**

4. Assess client's need for information about the procedure, purpose, and requirements, and ability to cooperate. The client should lie still and refrain from talking. Electrode attachment and procedure lasts only a few minutes and is painless. **Anxiety may be relieved by simple explanation of intent, duration, and purpose.**

DIAGNOSIS

Deficient Knowledge regarding the ECG procedure

Anxiety related to the procedure or to the diagnosis and treatment

Decreased Cardiac Output

PLANNING

Expected Outcomes:

1. The client will be able to lie quietly and cooperate with procedure.

2. The client will not be anxious.

3. The client will be able to describe the reason for the ECG.

Equipment Needed (see Figure 11-1-1):

- Twelve-lead ECG machine with charged batteries, cables and leads, and the correct recording paper for the machine.
- Disposable electrodes and gel or paste, if not already on the electrodes.
- Alcohol wipes

- Pillows
- Sheet or drape
- Towel and washcloth
- Disposable razor

Figure 11-1-1 Enter the demographic data into the ECG machine.

CLIENT EDUCATION NEEDED:

1. Assure the client that no electrical current goes through the body from the machine.

2. Explain to the client that he or she will need to be in the supine position and lie still during this test.

3. Explain to client that he or she will need to breathe normally and refrain from talking.

4. Instruct the client to report chest pain or other symptoms to the nurse or physician.

5. Explain to client that it may be necessary to shave body hair at some sites where electrodes are to be placed to provide good contact.

6. Tell the client that he or she will have to remove clothes from the waist up and expose arms and legs during the procedure.

7. Assure the client that his or her privacy will be guarded.

DELEGATION TIPS

Specially trained technicians may perform electrocardiograms. The nurse should explain the procedure to the client before the technician performs the examination and assure the client the health care provider will inform him or her of the test results.

IMPLEMENTATION-ACTION/RATIONALE

1. Action: Wash hands.
1. Rationale: Reduces the transmission of microorganisms.

2. Action: Close door and curtains.
2. Rationale: Provides privacy.

3. Action: Explain the procedure and rationale for ECG.
3. Rationale: Decreases anxiety and promotes cooperation.

4. Action: Review machine operation requirements. Bring ECG machine to the bedside and open electrode packages.
4. Rationale: Ensures smooth procedure.

5. Action: Enter all demographic data into the machine (see Figure 11-1-1).
5. Rationale: Ensures accurate diagnosis for correct client.

6. Action: Position the client in a supine and relaxed position (see Figure 11-1-2).
6. Rationale: Provides comfort and privacy and ensures accurate ECG.

7. Action: Remove moisture, oil, and excess hair from site at electrode sites.
7. Rationale: Promotes adherence of leads to chest and extremities.

8. Action: Attach 4 electrodes to the extremities—1 on each arm and 1 on each leg; attach 6 electrodes to the chest (Figure 11-1-3 and Figure 11-1-4).
- V_1—4th intercostal space (ICS) at right sternal border. Females: Choose a site as close to standard position as possible.
- V_2—4th ICS at left sternal border.
- V_3—Midway between V_2 and V_4.
- V_4—5th ICS at midclavicular line.
- V_5—Left anterior axillary line at level of V_4 horizontally.
- V_6—Left midaxillary line at level of V_4 horizontally (see Figure 11-1-2).

8. Rationale: Proper placement of electrodes allows for proper recording of electrical activity of the heart on ECG paper.
- In females, breast tissue obscures sternal border.

9. Action: Attach electrodes to the chest (Figure 11-1-5).
9. Rationale: Promotes proper display of chest leads on graph.

10. Action: Obtain tracing by following the instructions from the physician or qualified practitioner. In general, a 2.5 second strip from each lead, plus a 10-second rhythm strip, is required.
10. Rationale: Data are gathered and transferred onto paper for analysis.

11. Action: Inspect tracing for adequate quality.
11. Rationale: Muscle movements may cause "fuzzy" waveforms.

12. Action: Remove leads and electrodes. Wipe paste from skin.
12. Rationale: Promotes comfort and hygiene, and minimizes skin irritation.

13. Action: Notify physician or qualified practitioner of abnormalities.
13. Rationale: Certain changes may require prompt treatment.

14. Action: Wash hands.
14. Rationale: Reduces the transmission of microorganisms.

15. Action: Return machine and replace supplies.
15. Rationale: Ensures equipment is ready for next use.

Figure 11-1-2 Position client in relaxed position before placing electrodes.

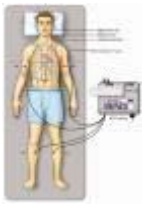

Figure 11-1-3 ECG placement for standard 12-lead ECG.

Figure 11-1-4 Bipolar frontal plate leads (I, II, III) and unipolar frontal plane leads (aV_R, aV_L, and aV_F) comprise the 6 limb leads by using 4 electrodes.

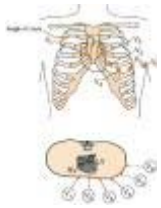

Figure 11-1-5 Electrodes placed on the chest wall comprise the 6 recordial leads.

REAL WORLD ANECDOTES

Scenario 1

Alonzo, a 73-year-old client with known coronary artery disease, hypertension, and chronic obstructive pulmonary disease, was admitted to the cardiac care unit 12 hours earlier with chest pain and pneumonia. He now notified the nurse that he was having chest pain and felt lightheaded. In assessing him, the nurse found his apical pulse to be 160 and irregular, blood pressure 134/92. He admitted that his chest pain had returned approximately 10 minutes earlier when he began to feel slightly dizzy. The nurse took an ECG, the protocol for recurrent chest pain, which confirmed a rate of 145 to 175 beats/minute, and a rhythm interpretation confirmed atrial fibrillation with premature ventricular contractions. Alonzo's physician was notified and Alonzo was given medication to control his tachycardia and dysrhythmias.

Scenario 2

Esther, a 58-year-old woman with history of non-insulin-dependent diabetes mellitus, obesity, chronic low back pain, and mild congestive heart failure, was admitted 24 hours earlier for continuous IV heparin therapy for deep vein thrombosis in her left leg. The nurse's aide now reports that Esther is sitting up in bed, is "sweaty," and has pain in her chest and is breathing rapidly. The nurse finds that Esther is tachycardic, short of breath, and extremely diaphoretic with a blood pressure of 94/62 and pulse oximetry of 84%. Breath sounds are clear throughout all lung fields. Oxygen by mask is started, and a 12-lead ECG is obtained while the physician is paged. The ECG reveals sinus tachycardia, rate 132 beats/minute. Her QRS axis has changed from ≥30° to ≥110° and computer interpretation reveals nonspecific ST changes. The nurse reported all these findings to the physician when he arrived at the client's bedside.

EVALUATION

- The client tolerated the ECG procedure.
- The client is able to state purpose of ECG.
- An accurate tracing was obtained for analysis.

DOCUMENTATION

Nurses' Notes

- Note the date and time of the ECG.
- Describe the reason for the ECG and any significant findings.
- Record the time the tracing results were reported to the physician or qualified practitioner.

Medication Administration Record

- Note the date and time of any cardiac medication.

CRITICAL THINKING SKILL

Introduction

Quick response to any cardiac symptoms or complaints is essential in giving appropriate and timely treatment. Taking an ECG should be second nature to staff in emergency rooms, medical units, and cardiac care units.

Possible Scenario

A woman being treated for recently diagnosed diabetes on the medical unit had just eaten her lunch when she mentioned to the nurse that she had heartburn. She said she often got it after eating and it always went away when she reclined in her chair. The nurse noted that she looked comfortable and went to the next client.

Possible Outcome

An hour later, the client put on her call light and told the nurse that her heartburn had not disappeared as it usually did. The nurse then took her vital signs and called the doctor. He ordered an ECG and the nurse called the ECG technician. The preliminary result showed possible cardiac ischemia. When the doctor was notified, he ordered the client to be transferred to the cardiac care unit for further evaluation.

Prevention

The nurse should have listened to the client's complaint and acted immediately by calling the doctor or doing the ECG him or herself if the institution policy allowed it.

VARIATIONS

Geriatric Variations:

- Elderly clients may have difficulty lying on their backs.
- Older clients with respiratory problems may have the ECG taken while sitting.
- Some clients may have had amputation of a limb, so the extremity electrodes will require adjustment of the electrode placement.
- An elderly client with surgical dressings or appliances may require repositioning of the electrodes.
- The skin of older clients may be fragile, so care should be taken when applying and removing the electrodes and cleaning the skin of the gel.

Pediatric Variations:

- Infant or pediatric electrodes should be the appropriate size.
- Reassure the child that the ECG will not hurt and that it will take only a few minutes.
- Young children may need to be offered a pacifier or bottle so they can relax and breathe normally.
- Children may be distracted by a video or a story read to them.
- Careful electrode placement is essential as ECG computers recognize age and include age-appropriate algorithms in the computer interpretation.

Home Care Variation:

- ECGs are not commonly done in the home setting; however, clients with arrhythmia or other symptoms that occur intermittently may use portable

units at home. Cardiac event recorders, such as King of Hearts, or a portable ECG machine, such as a Holter monitor, record ECG data at home. Clients transmit the data over the telephone or bring the units to the facility.

 **Long-Term Care Variation:**

- Clients in long-term care facilities may have skin or musculoskeletal disturbances that will need special attention when doing an ECG.

COMMON ERRORS

Possible Error:

You attach the electrodes for the arms onto the legs and the electrodes for the legs onto the arms, causing a faulty interpretation.

Prevention:

Read the labels or look at the color coding on each electrode and verify that they are attached to the correct extremity. If you believe the electrodes are incorrectly placed, remove the electrodes and start over again.

Possible Error:

You attach the lead wires to the wrong chest electrodes, causing a misinterpretation.

Prevention:

Pay close attention to the electrodes and wires as you prepare to attach them to the client. Laying them out on the bed or client so you can see them will make it easier to identify the correct leads.

NURSING TIPS

- Gain the client's cooperation so he or she will lie still and be relaxed so as to minimize artifact caused by muscle movement.
- Use diagrams and instructions for correct electrode placement.
- Palpation of ribs and intercostal spaces and visual references to clavicle and axilla are necessary to place electrodes correctly.
- Dry diaphoretic skin before the ECG as it may hinder attachment of electrodes; one loose lead can cause the tracing to be faulty.
- Shave body hair in any area where it prevents good skin contact of the electrode.
- Attach the lead wire to button-type electrodes first so you do not have to press it into the client.
- Use the ECG machine's display messages to guide you during the ECG.

• Remember that skeletal muscle tremors interfere with detection of cardiac electrical activity and may produce artifact in the tracing.

SPECIAL CONSIDERATIONS

• Placement of the electrodes with good contact may be difficult in women with large breasts. Be sure they are as close to standard position as possible.

• If a rhythm looks unexpectedly abnormal, check lead placement/attachment and contact the health care provider if life-threatening abnormalities are present.

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  - http://online.statref.com/document.aspx?fxid=82&docid=1425
- **Location In Book:**
  - DELMAR'S FUNDAMENTAL & ADVANCED NURSING SKILLS - 2nd Ed. (2004)
    CHAPTER 11. Special Procedures
    SKILL 11-1. Administering an Electrocardiogram —Susan Boyce Gilmore, MN, RN, CCRN, Gaylene Bouska Altman, RN, PhD

KEY TERMS