



**Indiana**  
**Department**  
**of**  
**Health**

**Qualified  
Medication Aide  
(QMA) Training  
Curriculum  
Student Manual**

January 22, 2025

# **TABLE OF CONTENTS**

## **HISTORY OF QMA PROGRAM**

## **BASIC CURRICULUM**

Lesson 1:	Role and Responsibilities of the Qualified Medication Aide
Lesson 2:	Legal and Ethical Issues
Lesson 3:	Resident Rights/Prohibition of Abuse, Neglect, and Misappropriation of Resident Property
Lesson 4:	Communication and Interpersonal Skills
Lesson 5:	Caring for the Cognitively Impaired and/or Combative Resident
Lesson 6:	Infection Control and Hand Hygiene
Lesson 7:	Safety and Emergency Procedures/Intervention for Airway Obstruction
Lesson 8:	The Dying Process
Lesson 9:	Introduction to Pharmacology/Medication Classification
Lesson 10:	Factors that Influence Medication Effectiveness (Care of the Long-Term Resident/Monitoring for Effects of Medication Usage)
Lesson 11:	Medication Supply and Storage
Lesson 12:	Medication Orders
Lesson 13:	Weights, Measures and Simple Mathematics
Lesson 14:	Abbreviations Used to Designate Time and Frequency of Medication Administration
Lesson 15:	The Gastrointestinal System
Lesson 16:	The Musculoskeletal System
Lesson 17:	The Skin and Sensory System/Pressure Ulcers (Pressure Injuries)
Lesson 18:	The Urinary System
Lesson 19:	The Cardiovascular System
Lesson 20:	The Respiratory System
Lesson 21:	The Endocrine System
Lesson 22:	The Male and Female Reproductive Systems
Lesson 23:	The Nervous System
Lesson 24:	Nutrition/Nutritional Disorders
Lesson 25:	Immunity
Lesson 26:	Inflammation and Infection
Lesson 27:	Malignant Disease
Lesson 28:	Overview of Psychotic Conditions, Neurocognitive Disorder, and Psychoactive Medications
Lesson 29:	Alzheimer's Disease

- Lesson 30: Principles of Administering Medications
- Lesson 31: Documentation
- Lesson 32: Positioning Resident for Medication/Treatment Administration
- Lesson 33: Temperatures Obtained by Oral, Axillary, Aural, Temporal or Rectal Route
- Lesson 34: Obtaining the Pulse and Respiratory Rate
- Lesson 35: Obtaining the Blood Pressure
- Lesson 36: Preparing Oral Tablets or Capsules
- Lesson 37: Preparing Liquid Medications
- Lesson 38: Preparing Powdered Medications
- Lesson 39: Crushing Tablets
- Lesson 40: Altering Capsules
- Lesson 41: Preparing Controlled Substances for Administration
- Lesson 42: Counting Controlled Substances and Responding to Errors in a Controlled Substance Count
- Lesson 43: Applying Lotion, Liniment, Ointment or Cream
- Lesson 44: Applying a Transdermal Patch
- Lesson 45: Instilling Eyedrops and Instilling Ophthalmic Ointment
- Lesson 46: Instilling Eardrops
- Lesson 47: Instilling Nasal Drops and Instilling Nasal Medications by Atomizer
- Lesson 48: Inserting a Vaginal Suppository and Administering a Vaginal Cream
- Lesson 49: Inserting a Rectal Suppository
- Lesson 50: Observing and Reporting to the Licensed Nurse
- Lesson 51: Administering Medications via the Gastrostomy Tube (G-Tube) or Jejunum Tube (J-Tube)
- Lesson 52: Applying a Dressing to a Healed Gastrostomy Tube (G-Tube) or Jejunum Tube (J-Tube) Site
- Lesson 53: Administration of Medication via Metered Dose Inhaler
- Lesson 54: Applying a Dressing to a Minor Skin Tear
- Lesson 55: Treatment for Minor Skin Conditions (Dermatitis, Scabies, Pediculosis, Fungal Infection, Psoriasis, Eczema, First Degree Burn, Stage I Pressure Ulcer)
- Lesson 56: Emptying and Changing a Colostomy Bag
- Lesson 57: Applying a Cold, Dry Compress
- Lesson 58: Diabetic Testing (Finger Stick)
- Lesson 59: Collecting Fecal or Urine Specimens/Hemoccult Testing
- Lesson 60: Pulse Oximetry and Oxygen Saturation/Application of Oxygen per Nasal Cannula/Non-Sealing Mask
- Lesson 61: Instilling a Commercially Prepared Enema

## **GLOSSARY OF KEY TERMS**

## **BIBLIOGRAPHY**

### **Course Documents:**

- Documentation of Classroom/Laboratory Hours and Topics Covered
- Documentation of Practicum
  - Procedure Performance Checklist
- Student QMA Record of Annual In-service Training

### **Acknowledgments**

The Indiana Department of Health (IDOH) would like to recognize and thank those involved in the development of this revised edition of the QMA curriculum:

Sara Caudell, RN, IDOH Training Supervisor, Arron Caquelin, RN, IDOH Aides Training Surveyor, and Suzanne Williams, RN, IDOH Division of Program Performance and Development Director.

Thank you to IDOH Chief Medical Officer Guy Crowder, MD and IDOH Long-term Care Medical Director Shireesha Vuppalandhi, MD for providing clinical review of this curriculum.

Special thanks go to Rebecca Bartle, RN, Special Consultant to HOPE (Hoosier Owners and Providers for the Elderly) and Leading Age; Lori Davenport, Director of Regulatory Clinical Affairs, Indiana Health Care Association; Chris Taylor, RN, Long Term Care Educator, Suburban Health; Charlene Mantock, RN, Ivy Tech Community College; Krista Lickey, VP of Clinical Services, Millers Health Systems; Linda Abdalla, Director of Clinical Training, American Senior Communities; and Nancy Adams, RN and Janet Terrill, RN, Healthcare Education Consultants, who participated in reviewing, providing feedback and revising the curriculum.

## **History of the Qualified Medication Aide (QMA) Program**

The Qualified Medication Aide (QMA) program in Indiana was established in 1977 and administered by the Department of Education. The program was designed to educate and certify unlicensed health care workers in the administration of medications. These individuals were then permitted to work in long term care facilities and pass medications to residents in those facilities. Funded primarily through grants, the Department of Education developed the guidelines and criteria for QMAs.

In January 1986, the QMA program was transferred to the Indiana Department of Health and administered by what was then called the Division of Health Facilities and is now the Division of Long-Term Care. The training department for that division guided the development of a new curriculum and administered the program.

In 1989, the Indiana General Assembly passed a law that became Indiana Code §16-10-4-5.5. The statute was re-codified in 1993 as Indiana Code § 16-28-1-11. This statute authorized the Indiana Health Facilities Council to adopt rules for QMAs in the area of course requirements, necessary fees and the standards for the functions QMAs could perform. The authority of the Indiana Health Facilities Council to write rules regarding QMAs was expanded in the 2002 legislative session.

The rule writing process was begun in 2001. Due to the limited authority in the original law, rules regarding QMAs were promulgated in two parts with the first part becoming effective 5/20/02, and the second part effective 2/23/03. Prior to the rules, the QMA program was guided by standards developed by the Indiana Department of Health.

The Indiana Department of Health would like to recognize and thank Joan Esarey, RN, MSN, Dorothy Klineman, RN, Mary Jane Koch, Suzanne Hornstein, Director, IDOH Long Term Care Division and Faith Laird, RN, IHCA (Indiana Health Care Association) Vice President of Regulatory Affairs, who served on the QMA Subcommittee of the Health Facilities Council.

The development of the October 2003 Basic QMA Curriculum was a collaborative effort that involved the talent and effort of many individuals: Sandra Marcum, RN, IDOH Training Director, Kim Rhoades, IDOH Survey Manager, David Miller, IDOH Training Officer and Rebecca J. Bartle, RN, Special Consultant to HOPE (Hoosier Owners and Providers for the Elderly), participated in the drafting of the content of the curriculum. Special thanks go to Barbara King, RN, Leslie Levell, RN, and staff of Professional Resources who gave of their time and talents to review and critique the curriculum. Thanks also to Cheryl Toomey and DeDe Davis, administrative secretaries and Julie Travelstead and Nancy Gilbert, IDOH Administrative Assistants, who were responsible for the typing and formatting of the curriculum.

IDOH has maintained a registry of QMAs with the Indiana Aides Registry for several years, with over 7,000 active QMAs on the registry as of September 2023.

# Lesson 1: Role and Responsibilities of the Qualified Medication Aide

## Student Overview

### Lesson Objectives:

- Acknowledge the QMA Scope of Practice.
- Identify those tasks that the QMA is prohibited from performing.
- Identify necessary preparation for each classroom session.

### Key Terms:

Assess:

Controlled Substance:

Nasal Cannula:

Nasogastric Tube:

Observation:

Oximeter:

Pro Re Nata (PRN):

Vital Signs:

# **Lesson 1: Role and Responsibilities of the Qualified Medication Aide**

## **Introduction**

Physicians, advanced practice providers, nurse practitioners, pharmacists, nurses and other specified health care workers are all members of a team that is responsible for giving residents the correct medications. They must therefore understand how to properly give (administer) medications and record their actions (effects). Congratulations on your decision to become a qualified medication aide and thereby become a member of that team.

## **Overall Requirements of the Program**

1. Topics to be covered (refer to Table of Contents)
2. Skills to be learned.
3. Methods for evaluating progress (e.g., quizzes, student activities, etc.)
4. Classroom Instruction (Minimum of 60 hours)
5. Practicum (40 hours completed within 3 months of completion of classroom instruction)
6. Competency Evaluation Test
  - a. Must apply within 6 months of classroom completion.
  - b. Passing score = 80%; application must be submitted within thirty (30) days of practicum completion
  - c. May be taken three (3) times within one (1) year of the completion date of classroom training
7. For recertification, the individual must complete the following:  
Complete a minimum of six (6) hours per year of in-service training directly related to Medication, Medication Administration and tasks within the QMA Scope of Practice. This training:
  - a. must be completed between January 1 and December 31 of every year.
  - b. period begins on January 1 of the following year for an initial certification.
  - c. must be documented on the IDOH approved "QMA Record of Annual Inservice Training" form.
    - i. It is the responsibility of QMA to ensure the six (6) hours per year of in-service training are completed and documented. The QMA must not depend on the place of employment to ensure completion. Upon certification renewal, the QMA must upload the annual in-service training documentation for the preceding 2 years to the department.

## **Types of Training and Clinical Experiences Students will have During the Training**

1. Classroom lecture
2. Student activities (independent and group)
3. Simulated experience (utilizing a mock medication cart)
4. Supervised practicum

## **Tasks the QMA is PROHIBITED from Performing**

1. Assess a resident's condition.

2. Contact a provider.
3. Assuming responsibility for receiving a written, verbal or telephone order.
4. Administer medication by injection except as authorized in IC 16-28-1-11.5. If a QMA has the additional training and certification for QMA-Insulin as authorized in IC 16-28-1-11.5, the QMA may administer insulin subcutaneous injections.
5. Administer any medication inhalation treatment other than metered dose inhalers.
6. Administer medication per ***nasogastric tube***.
7. Instill irrigation fluids of any type including, but not limited to, colostomy, catheter, and enema, except a commercially prepared disposable enema.
8. Administer a treatment that involves an advanced skin condition, including Stage II, III and IV pressure ulcers.

## The QMA Scope of Practice

1. Observe and report to the facility's licensed nurse reactions and side effects to medications exhibited by a resident.
2. Measure and document ***vital signs*** prior to the administration of medication that could affect or change the vital signs. Report any abnormalities to the licensed nurse that would prohibit medication administration.
3. Administer provider-ordered oral, ophthalmic, aural, nasal, vaginal, and rectal medications, which the QMA has been trained to administer, only after personally preparing the medication to be administered. The QMA shall document in a resident's clinical record all medications that the QMA personally administered. The QMA shall not document in a resident's clinical record any medication that was administered by another person or not administered at all.
4. Initiate oxygen per ***nasal cannula*** or non-sealing mask only in an emergency. Immediately after the emergency, the QMA shall verbally notify the licensed nurse on duty or on call and appropriately document the action and notification.
5. Obtain oxygen saturation utilizing an ***oximeter*** that has been calibrated by a licensed or certified professional and report results to the licensed nurse.
6. Crush tablets and administer the medications if such preparation is appropriate per manufacturer's instructions or advanced practice provider's order.
7. Alter capsules if prescribed to be administered in this altered manner by the provider.
8. Count, administer, and document-controlled ***substances***.
9. Administer medications per G-tube or J-tube.
10. Administer previously ordered ***pro re nata (PRN)*** medication only if authorization is obtained from the facility's licensed nurse on duty or on call. If authorization is obtained, the QMA must perform the following:
  - a. Document in the resident record symptoms indicating the need for the medication and time the symptoms occurred.
  - b. Document in the resident record that the facility's licensed nurse was contacted, symptoms were described, and permission was granted to administer the medication, including the time of contact.
  - c. Obtain permission to administer the medication each time the symptoms occur in the resident.



- d. Ensure that the resident's record is cosigned by the licensed nurse who gave permission by the end of the nurse's shift, or if the nurse was on call, by the end of the nurse's next tour of duty.
11. Apply topical medication to minor skin conditions such as dermatitis, scabies, pediculosis, fungal-infection, psoriasis, eczema, first-degree burn, stage one pressure ulcer.
12. Administer medication via metered dose inhaler.
13. Conduct hemoccult testing and report result to the licensed nurse.
14. Conduct finger stick blood glucose testing (specific to the glucose meter used), reporting result to the licensed nurse.
15. Apply a dressing to a minor skin tear that has been assessed by a licensed nurse.
16. Provide ordered site care and apply a dressing to a healed G-tube and J-tube site.
17. Empty and change colostomy bag.
18. Instill a commercially prepared disposable enema (approximately one hundred twenty (120) milliliters or four and one-half (4.5) ounces) after the resident has been assessed by the licensed nurse (for bowel sounds and potential impaction) and the licensed nurse has instructed the QMA to instill the enema.
19. Apply a cold, dry compress as directed by the provider or by the licensed nurse in emergency situations requiring first-aid treatment.
20. Collect fecal or urine specimens as ordered by the provider.
21. Document in the clinical record the QMA **observations**, including what the QMA sees, hears, or smells and document what is reported to the QMA by the resident.

### **Prepare for Each Classroom Session and Maintain Necessary Records**

1. Lesson objectives – found at the beginning of each lesson.
2. Key terms – to be defined utilizing the glossary of terms.
3. Lesson content – to be read/referenced during lecture.
4. Student activities – to be completed per instructor's directive.
5. Prepare for quiz and/or method to evaluate progress per instructor's directive.
6. Document classroom/laboratory hours prior to exiting each classroom session.

### **Considerations for the QMA Employed at a Residential Facility**

The QMA Basic Curriculum is written as if the setting is one in which the QMA is working with a licensed nurse accessible for direct reporting. This may not be the case in a residential setting. Should a QMA be employed in a residential setting, he/she must identify the manner of reporting required of the specific work environment.

For example, regarding medical issues, the QMA may be responsible to notify the nurse "on-call" rather than "on-site". In the case of a non-medical issue (e.g., a breach of resident's rights), the QMA may be responsible for contacting designated administrative personnel rather than the nurse "on-call". Upon accepting employment in any setting, the QMA must verify the appropriate chain of command and necessary reporting mechanisms specific to the facility.

The Basic Curriculum also addresses the use of the resident's "care plan"; however, in a residential setting, the "service plan" would be the tool utilized to address the needs of the resident. Thus, one

should consider the care plan and the service plan synonymous when the term "care plan" is addressed in the QMA Basic Curriculum.

Specifics regarding documentation (both content and frequency) may vary from facility to facility. Additionally, the anticipated charting/medical record requirements may be less in a residential facility than that of a comprehensive long term care facility. The QMA must verify the policies and procedures of the facility in which he/she is employed regarding documentation and ensure compliance therewith.

Certain practices, such as normal counting of controlled substances by two qualified staff members at the beginning and end of each shift will have to be altered in a residential setting in which only one qualified staff member is present. Again, the QMA must verify the policies and procedures of the facility in which he/she is employed regarding practices that would normally be conducted by two qualified persons and ensure compliance with the specified facility practices.

\*For the purpose of this training document, a provider is defined as someone who makes clinical care decisions and has prescriptive authority. Examples include a physician or an advanced practice provider such as a nurse practitioner or a physician assistant.

**Notes:**

## Lesson 2: Legal and Ethical Issues

### Student Overview

#### Lesson Objectives:

- Identify what actions constitute negligence and malpractice.
- Identify the "six rights" of medication administration.

#### Key Terms:

Assault and Battery:

Code of Ethics:

Duty of Care:

Euthanasia:

Libel:

Living Will:

Malpractice:

Negligence:

Reasonable Care:

Slander:

Standard of Care:

## Lesson 2: Legal and Ethical Issues

### Introduction

Taking medication is an important part of health care for most residents. Residents have the right to expect that the medications they receive are the same as those prescribed by their providers and that persons who administer their medications are qualified to perform that function. In addition, residents are guaranteed by federal nursing facility regulations "[T]he right to be treated with consideration, respect and full recognition of his dignity and individuality including privacy in treatment and personal care." It is the obligation of everyone administering medications to know and respect the rights of residents.

### Legal Obligations of Medical Personnel

1. State and federal regulations set forth the rights of residents.
2. Health facilities and all personnel are required to respect residents' rights, which include, but are not limited to:
  - a. The right to refuse medication and treatment.
  - b. The right to be informed of consequences of refusing medication and treatment.
  - c. Freedom from physical and mental abuse and neglect
  - d. Freedom from restraint without an advanced practice provider's written order
  - e. The right to privacy
  - f. The right to confidential treatment
3. All individuals are legally protected from:
  - a. **Libel** and **slander**
  - b. **Assault** and **battery**

### Negligence and Malpractice

1. **Negligence** is the omission or neglect of any reasonable precaution, care or action.
  - a. By law, residents can expect safe and efficient care. Residents expect qualified personnel to administer medications accurately.
2. Residents are protected from health care negligence-malpractice by a law called "**Duty of Care**".
  - a. **Malpractice** is any improper or injurious practice, or any unskillful or faulty medical or surgical treatment.
  - b. The health care worker is obligated to perform care that meets minimum standards.
  - c. The health care worker is negligent if "reasonable" care is not given or if "unreasonable" care is given.
3. Both health care workers and residents are protected by the standard of "**reasonable care**".
  - a. Residents can expect "reasonable care," which is care administered according to minimum standards.
4. To avoid being negligent:
  - a. Perform only those tasks you have been trained to perform and that are within your scope of practice.
  - b. Observe the legal rights of every resident.
  - c. Complete all records carefully.

- d. Be knowledgeable of the medications you administer, including their actions and potential adverse effects.
  - e. Follow the policies of your facility.
- 5. Examples of negligence include, but are not limited to:
  - a. Leaving a dependent resident unattended in a shower or bath.
  - b. Failing to report an observation or occurrence to the nurse that could have profound consequences for the resident's health.
  - c. Causing an injury by using defective/broken equipment or supplies.
- 6. Accountability for Negligence
  - a. All persons are accountable for their own actions. Supervisory personnel are accountable for the actions of whomever they direct and supervise. The health facility is legally obligated to ensure all residents are free from physical and mental abuse and restraints.
- 7. Legal Action
  - a. May result from claims of negligence and/or malpractice. Action can be brought against the health facility, supervisory personnel and/or individual who is considered negligent or does not perform per the **Standard of Care**. If the resident proves an "intent to harm" or the resident's injury is severe, the health care worker:
    - i. may be terminated from employment.
    - ii. may lose qualifications, such as license or registration as a nurse or qualification as a medication aide.
    - iii. may be accused of criminal action if a crime is committed, such as:
      - 1. battery
      - 2. neglect
      - 3. misuse of controlled substances

## Ethical Considerations

- 1. "**Code of Ethics**" is a voluntary set of rules that influence relationships between people. They are based on dignity and respect for each individual's rights.
- 2. Words that describe ethical behavior:
  - a. Honesty
  - b. Sincerity
  - c. Loyalty
  - d. Dependability
- 3. Unethical behavior results in discipline of the worker or group.
- 4. "Golden Rule" for ethical behavior— "Do to others as you would have them do to you, or one of yours."

## Ethical Issues in Health Care

- 1. **Euthanasia**
- 2. **Living will**
- 3. Right to refuse medications, treatment, and resuscitation.
- 4. Death with dignity versus preserving life with extraordinary measures, such as a tube feeding.

## Medication Errors

Medication errors sometimes occur. They usually happen when haste and habit replace caution and care. Whatever the cause, there are legal and ethical obligations that must be fulfilled when a medication error occurs.

Medication errors can be the result of not following the "six rights" of medication administration. The "six rights" of medication administration are:

1. Give the Right Medication.
2. Give the Right Dose.
3. Give medication to the Right Resident.
4. Give medication by the Right Route.
5. Give the medication at the Right Time.
6. Right Documentation.

Medication errors can also be caused by:

1. lack of concentration
2. lack of knowledge
3. failure to follow correct procedure.
4. poor communication
5. performing a job beyond your scope of practice

## Responsibilities regarding medication errors:

1. Reporting an error is mandatory.
  - a. The resident could be protected from harmful effects by immediate action.
  - b. The situation can be reviewed, and similar errors avoided in the future.
2. Reporting – the first thing to do if you make or discover a medication error is **REPORT IT TO THE LICENSED NURSE IMMEDIATELY**.
  - a. The nurse will notify the provider, receive orders, and document the medication error as necessary per facility policy. The nurse will also notify the family/responsible party.
  - b. The nurse will likely instruct you to assist to observe the resident for adverse effects.
3. Observing the resident for undesirable effects:
  - a. Check the current medication reference for desired action, adverse effects and toxic effects of the medication that was administered.
  - b. Observe for general symptoms, such as nausea, vomiting, difficult breathing, dizziness, itching, hives, drowsiness, and others listed in the current medication reference under the administered medication.
  - c. Obtain and record the resident's vital signs.
4. Documentation
  - a. Medication Error Report
    - i. Completed by whomever is the most familiar with the situation, usually the person who committed or discovered the error. Follow your facility policy.
    - ii. Report is sent to the Director of Nursing or Administrator.

- iii. Reports are reviewed by the Medical Director and the Director of Nursing, who design plans that will avoid future incidents.

**Notes:**



# Worksheet

## Lesson 2: Legal and Ethical Issues

Name \_\_\_\_\_ Date \_\_\_\_\_

### 1. Match the key terms to the definitions.

- |   |   |
|---|---|
| a. ____ Six rights                        | 1. Not providing goods or services needed by a person to prevent injury, emotional pain, mental distress, or physical illness                           |
| b. ____ Licensed health care professional | 2. Getting the right dose of the right medication via the right route to the right resident, at the right time, and completing the right documentation. |
| c. ____ Medication aide                   | 3. Anticipated, desired effect of a medicine  |
| d. ____ Neglect                           | 4. Any unintended reaction to a medication  |
| e. ____ Medication action                 | 5. A person who has received specialized training in the process of assisting with administering medications  |
| f. ____ Side effect                       | 6. A licensed individual for whom administration of medication is included in his/her scope of practice   |

### 2. Beth Nelson is a medication aide at Allcare Assisted Living. She works the evening shift and has an LPN on call if needed. In which situation should Beth call the LPN, and why?

- A resident has fallen to the floor. Beth sees no sign of injury. The resident is alert and competent. The resident declines further assistance, gets up, and returns to her room on her own.
- The pharmacy sent a medication that is the wrong dose for the resident.
- Beth accidentally gave a resident a morning medication at 5:00 p.m.

### 3. Which example would be considered a violation of a basic competency, and why?

- Mrs. Jones lives in your facility. She was diagnosed with lung cancer and recently decided to stop all treatment. She is alert and competent. Her daughter calls the facility and wants to know what is going on with her mother and her health status. Should the medication aide inform the daughter of Mrs. Jones recent activities and decisions?
- The facility has a policy about destroying outdated and discontinued medications with an RN present. Old medications have been piling up in the med room for several months. You, the medication aide, and an LPN are working the night shift and decide to clean out the med room. Following facility procedure, the medications are documented and flushed down the hopper.

4. Mrs. Cayton, a resident in your facility, has been alert and able to take her medications without difficulty. She recently started a new blood pressure medication for her high blood pressure. This morning she is difficult to arouse and is unable to swallow without choking. What is the medication aide's next step?
5. You have just given Mr. Clark all his scheduled 0800 medications. Please document each medication provided.

<b>Routine Medication Order</b> <b>Date</b> <b>Reason</b>	<b>Freq.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Digoxin 25 mg po q am6/21/04 atrial fib. Hold Apical HR<60	0800							
Coumadin 5 mg po q am6/21/04 blood clots	0800							
Lotensin 20 mg po qid6/21/04 blood pressure	0800 1200 1600 2000							
Lasix 40 mg po q am6/21/04 edema	0800							
Doctor: Virgil	Allergies: Coumadin							
Diagnosis: Depression, ASHD, Afib								
Resident Name: Clark, Jack	Room number: 208							

6. A resident has the right to refuse treatment. This includes the right to refuse medications. Provide an example of what a medication aide can do to encourage a person to take his or her medication without infringing on this right.
7. How are medications stored in the work setting?
8. What are the four basic routes of medication provision?
9. What is the most important thing you can do to prevent the spread of infection?

10. List the six rights of medication administration.
11. If a resident refuses a medication, what should the medication aide's response be?

## **Lesson 3: Resident Rights/Prohibition of Abuse, Neglect and Misappropriation of Resident Property**

### **Student Overview**

#### **Lesson Objectives:**

- Know and understand the resident's rights.
- Know and understand facility policies and procedures for prevention and reporting of abuse.
- Know and uphold resident dignity during provision of care.

#### **Key Terms:**

Abuse:

Exploitation:

Involuntary Seclusion:

Mental Abuse:

Mistreatment:

Misappropriation of Resident Property:

Neglect:

Physical Abuse:

Sexual Abuse:

Verbal Abuse:

## **Lesson 3: Resident Rights/Prohibition of Abuse, Neglect and Misappropriation of Resident Property**

### **Introduction**

Residents have the same rights as any citizen of this country. They have the right to be treated with dignity and respect. A facility must inform residents of their rights.

### **Resident's Rights include, but are not limited to, the right to:**

1. Confidentiality of personal information, medical records, written and verbal communications, medical treatment, personal care, and behavior. To maintain a resident's confidentiality:
  - a. Never discuss a resident's personal or medical information with anyone other than medical staff of the facility authorized to receive the information, the resident, or the resident's authorized representative.
  - b. Always discuss resident information in a private place in the facility.
  - c. Maintain resident privacy by covering medication administration record or computer screen when not present at the medication cart.
2. Privacy of the person and of property. To maintain a resident's privacy:
  - a. Knock on room door, announce identity, pull curtains, close door, and drape the resident when appropriate.
  - b. Ask visitors to step out of the room when providing personal care, if appropriate.
  - c. Never open mail or go through resident's belongings unless requested. For your protection, you may choose to document the resident's request and your response.
3. Be informed of personal and medical information including total health status in language the resident understands, resident's financial records and services available. To keep residents informed:
  - a. Know where to find the information requested or who to ask.
  - b. Assist residents to obtain answers to questions.
  - c. Take residents to areas where information is maintained and offer to read the information to them, if needed.
  - d. Inform the nurse of a resident's specific questions or concerns about health, medical treatment, or medications.
4. Choice including refusing treatment, self-administering medications, choosing a personal physician, participating in care planning, maintaining personal possessions, having visitors, participating in activities in and out of the facility, and having private family meetings. To maintain a resident's right to choose:
  - a. Make the resident aware of choices.
  - b. Keep the resident informed of activities available.
  - c. Discover the resident's preferences and attempt to follow them if safe and applicable.
  - d. Identify which residents have been deemed by the facility to safely self-administer medications.
  - e. Honor refusal of treatments or medications, document the refusal and notify the nurse. The nurse will then explain to the resident the consequences (i.e., potential negative outcomes) of refusal (e.g., fluid retention if diuretic refused, etc.) and notify the provider.

5. Voice grievances about services without fear of retaliation. To support the resident's right to voice grievances:
  - a. Inform the nurse if the resident or resident's representative voices a complaint.
  - b. Never let a resident's complaint affect the care the resident receives, including how the resident is addressed.
  - c. Understand that all grievances must be investigated.
6. Freedom from abuse and restraint including physical and chemical restraint for discipline or convenience, verbal, mental or physical abuse, corporal punishment, or seclusion. Residents must not be subjected to abuse by anyone, including, but not limited to, facility staff, other residents, consultants or volunteers, staff of other agencies serving the resident, family members or legal guardians, friends, or other individuals.
  - **Abuse** is the willful infliction of injury, unreasonable confinement, intimidation or punishment with resulting physical harm, pain, or mental anguish. Abuse also includes the deprivation by an individual, including a caretaker, of goods or services that are necessary to attain or maintain physical, mental, and psychosocial well-being.
  - **Exploitation** means taking advantage of a resident for personal gain by manipulation, intimidation, threats, or coercion.
  - **Involuntary seclusion** is defined as separation of a resident from other residents or from his/her room or confinement to his/her room (with or without roommates) against the resident's will, or the will of the resident's legal representative. Emergency or short term monitored separation from other residents will not be considered involuntary seclusion and may be permitted if used for a limited period of time as a therapeutic intervention to reduce agitation until professional staff can develop a plan of care to meet the resident's needs.
  - **Mental abuse** includes, but is not limited to, humiliation, harassment, threats of punishment or deprivation.
  - **Misappropriation of resident property** means the deliberate misplacement, exploitation or wrongful, temporary or permanent use of a resident's belongings, or money without the resident's consent. This would include stealing or diversion of medication.
  - **Mistreatment** means inappropriate treatment or exploitation of a resident.
  - **Neglect** means failure to provide goods and services necessary to avoid physical harm, mental anguish, or mental illness.
  - **Physical abuse** includes hitting, slapping, pinching and kicking. It also includes controlling behavior through corporal punishment.
  - **Sexual abuse** is non-consensual sexual contact of any type with a resident. Sexual abuse includes, but is not limited to, sexual harassment, sexual coercion, or sexual assault. Nursing home staff are expected to recognize that engaging in a sexual relationship with a resident, even an apparently willingly engaged and consensual relationship, is not consistent with the staff member's role as a caregiver and will be considered an abuse of power.
  - **Verbal abuse** is defined as the use of oral, written, or gestured language that willfully includes disparaging and derogatory terms to residents or their families, or within their hearing distance, regardless of their age, ability to comprehend or disability. Examples of verbal abuse include but are not limited to threats of harm or saying things to frighten

a resident such as telling a resident that he/she will never be able to see his/her family again.

To protect the resident from abuse:

- a. Know the facility's abuse prohibition policy and procedure.
- b. Report all instances of suspected abuse to the nurse/administration IMMEDIATELY.
- c. Request assistance if a resident becomes aggressive or resistive to care.
- d. Never use a restraint or protective device without verifying the order and obtaining the nurse's permission.

### **Maintaining Resident Dignity**

1. The facility must promote care for residents in a manner and in an environment that maintains or enhances each resident's dignity and respect in full recognition of his/her individuality.
2. Dignity means that in their interactions with residents, staff carry out activities which assist the resident to maintain and enhance his/her self-esteem and self-worth. For example:
  - a. Grooming residents as they wish to be groomed (e.g., hair combed and styled, beards shaved/trimmed, nails clean and clipped)
  - b. Assisting residents to dress in their own clothes appropriate to the time of day and individual preferences.
  - c. Assisting residents to attend activities of their own choosing.
  - d. Labeling each resident's clothing in a way that respects his or her dignity.
  - e. Promoting resident independence and dignity in dining (such as avoidance of day-to-day use of plastic cutlery and paper/plastic dishware, dining room conducive to pleasant dining, etc.)
  - f. Respecting resident's private space and property (e.g., not changing radio or television station without resident's permission, knocking on doors and requesting permission to enter, closing doors as requested by the resident, and not moving or inspecting resident's personal possessions without permission)
  - g. Respecting resident's social status, speaking respectfully, listening carefully, treating residents with respect (e.g., addressing the resident with a name of the resident's choice, not excluding residents from conversations, or discussing residents in community setting)
  - h. Focusing on residents as individuals when speaking with them and addressing residents as individuals when providing care and services

### **Performance of INITIAL and FINAL STEPS**

To respect the rights of the resident and promote privacy/dignity, certain actions are consistent prior to any interaction (e.g., medication administration, treatment, procedure) with a resident. These actions are referred to within the curriculum as the INITIAL STEPS. INITIAL STEPS are as follows:

1. Obtain information from the licensed facility nurse about the resident's needs, abilities, limitations and known allergies.
2. Gather supplies and equipment.



3. Knock on resident's door.
4. Identify resident.
5. Identify self.
6. Explain procedure to the resident.
7. Wash your hands or use alcohol-based hand rub (ABHR).
8. Wear gloves to maintain Standard Precautions as necessary. Don appropriate PPE as required if the resident is in isolation.

Actions taken following the completion of an interaction (e.g., medication administration, treatment, procedure) with a resident are referred to within the curriculum as the FINAL STEPS. FINAL STEPS are as follows:

1. Observe resident for any immediate reaction to medication or procedure.
2. Assure the resident is in a comfortable position.
3. Make certain the call light is within resident's reach.
4. Inquire about resident's immediate needs.
5. Remove supplies and discard medication cups/disposable supplies.
6. Perform a visual safety check of the resident and environment.
7. Thank resident for cooperating.
8. Remove gloves/PPE, if applicable.
9. Wash your hands or use alcohol-based hand rub (ABHR).
10. Document medication administration/procedure.
11. Report any abnormalities to the licensed nurse.

The QMA will be required to follow INITIAL and FINAL STEPS in performance of all procedures within the scope of practice of the QMA.

**Notes:**

## Lesson 4: Communication and Interpersonal Skills

### Student Overview

**Lesson Objectives:**

- Understand the four elements of successful communication.
- Understand the steps to effective communication.
- Identify the need for listening skills.
- Identify barriers to communication and necessary interventions in response to those barriers.

**Key Terms:**

Communication:

Nonverbal communication:

Verbal communication:

## Lesson 4: Communication and Interpersonal Skills

### Introduction

**Communication** is the exchange of information and messages. Communication with residents, families, supervisors, and co-workers is the responsibility of every member of the staff in a facility. Effective communication completes a cycle between two people.

### Four Elements of Successful Communication

1. Formulating the message-organized, complete, and understandable.
2. Sending the message through:
  - a. **Verbal communication**-written or spoken words.
  - b. **Nonverbal communication**-facial expressions, tone of voice, eye movement, posture, gestures (e.g., body language), touching, and call lights.
3. Receiving the message-listener must actively listen, receive the message, and concentrate on its content.
4. Observing the feedback-sender must interpret the verbal and nonverbal response of the listener.

### Steps to Effective Communication

- Speak clearly and slowly using gentle tones.
- Be at eye level looking directly at the person.
- Use appropriate nonverbal communication.
- Ask others how they want to be addressed.
- Use language with which the listener is familiar.
- Try to use words that have only one meaning.
- Allow time for the listener to process the information before adding more and risk information overload.
- Give facts, not opinions, unless otherwise asked.
- Repeat the message, using the same words, if necessary.

### Active Listening

Listening skills are important to learning more about other people. Active listening leads to positive relationships. To actively listen:

- Use body language that shows interest and concern (eye contact, lean forward, etc.).
- Avoid interrupting the speaker. Let the individual finish his/her thought.
- Give the speaker verbal and nonverbal feedback to show that the message was being heard.
- Avoid judging others based on personal beliefs and biases.

### Barriers to Communication

- Cultural differences - beliefs, values, habits, diets, rituals, and health practices differ depending upon race, religion, age, or social background.

- People of different ages often have differing values, communication styles and beliefs.
- Impairments, such as physical or mental limitations, require special consideration when communicating.
  - The vision impaired resident relies on verbal cues, including words and tone of voice.
    - Clearly state name before beginning conversation.
    - Describe persons, things, and environment.
    - Inform the resident when entering or leaving the room.
    - Explain service to be performed in detail.
    - If appropriate, touch resident.
    - Offer to read aloud the resident's mail or personal documents.
    - Sit within range of sight if resident has partial vision.
  - The hearing-impaired resident relies on nonverbal cues, including body language, sign language and written words.
    - Speak slowly and distinctly.
    - Use short sentences.
    - Face the resident.
    - Ensure that there is sufficient light.
    - Use facial expressions and gestures.
    - Reduce or eliminate distractions.
    - Use sign language, communication boards or written notes if appropriate.
    - Check resident's hearing aid.
  - The cognitively impaired resident relies on both verbal and nonverbal communication.
    - Repeat the message frequently using exactly the same words.
    - Use short sentences.
    - Use simple words.

### **Interpersonal Skills Needed to Form Positive Relationships**

- Patience – the capacity to be even-tempered and calm.
- Courtesy – the capacity to have respect and consideration for others.
- Tact – a sense of what to do or say in order to maintain good relations with others and avoid offense.
- Empathy – the ability to understand another's point of view and share in another's feelings or emotions.

**Notes:**

## **Lesson 5: Caring for the Cognitively Impaired and/or Combative Resident**

### **Student Overview**

#### **Lesson Objectives:**

- Recognize behaviors which are common with cognitive impairment.
- Describe various interventions to employ in response to difficult behavior(s) exhibited by a resident.

#### **Key Terms:**

Catastrophic Reaction:

Delusions:

Hallucinations:

Sundowning:

## Lesson 5: Caring for the Cognitively Impaired and/or Combative Resident

### Introduction

Cognitive impairment is a temporary or permanent change within the brain affecting the resident's ability to think, reason, learn or communicate.

### Possible Causes

- Possible causes of temporary cognitive impairment may include:
  - Stress
  - Medication
  - Depression
  - vitamin deficiency
  - thyroid dysfunction
  - alcohol
  - head trauma
  - infection (e.g., UTI)
- Possible causes of permanent cognitive impairment may include:
  - severe head trauma
  - stroke
  - brain disease
- Disorders that may result in cognitive impairment:
  - Depression - emotional sadness and withdrawal usually caused by loss (of person, possession, health, choice, and/or self-esteem).
  - Anxiety - persistent feelings of fear and nervousness.
  - Paranoia - irrational feeling of being persecuted; suspicious and hostile.
  - Delusion - belief not supported by reality.
  - Schizophrenia - suspiciousness, paranoia, and delusion.
  - Intellectually Disabled - process which slows or stops a child's brain from maturing. Common causes include difficult birth, Down's Syndrome, high fever, environment, and drug or alcohol abuse during pregnancy.
  - Dementia - progressive mental deterioration due to organic brain disease. Alzheimer's Disease is a common form of dementia.

### Dementia

Residents with dementia have progressively deteriorating memory, judgment, orientation to person, place and time, physical skills, appetite, language, and communication. Behaviors common to residents with advanced dementia include:

- **Sundowning** - increased confusion and restlessness in the late afternoon, evening, and night.
- **Catastrophic reaction** - the resident is abnormally overwhelmed by stimuli; easily startled.
- Wandering - aimlessly wandering the hallways or attempting to exit the building.

- Pacing - repeatedly walking in the same area.
- Pillaging - taking items from other residents' rooms or nurses' stations.
- Hoarding - accumulating and hiding items, including food.
- Agitation - being overly excited, fidgeting or picking at clothing.
- Anxiety - worrying or uneasiness about what may happen.
- **Hallucinations** - hearing, smelling, or seeing something that is not there. False sensory perceptions.
- **Delusions** – false fixed beliefs that the resident holds even when there is obvious proof or evidence to the contrary (e.g., believes food is being poisoned by facility; believes he/she is the facility physician, etc.).

Difficult behavior may result from too much stimulation, change in routine or environment, physical pain or discomfort, reactions to medications and fatigue. Responses to difficult behavior include:

- Remain calm and speak softly, clearly, and slowly.
- Avoid approaching resident from side or back.
- Attempt to calm the resident by holding hands, patting, or singing, if appropriate.
- Try to distract the resident and redirect behavior.
- Allow the resident to express feelings if talking appears to reduce agitation.
- Leave the resident (if he/she is safe) and return later to attempt the task at hand.

### **When Caring for the Cognitively Impaired Resident**

- Focus on what the resident can perform.
- Treat each resident as an adult, with respect and dignity.
- Speak and move slowly; do not rush the resident.
- Be consistent in approach; do not force care. Remain calm and speak softly if a resident becomes agitated. If the resident is agitated and/or refuses medication, stop, and try again later. Never argue with the resident.
- Give the resident one short, simple direction at a time and give the resident extra time to process the information and respond.
- Use eye contact and appropriate body language. The resident can sense impatience and frustration.
- Monitor the resident's facial expressions and body language for feelings and moods.
- Learn each resident's past routines and patterns.
- Understand that the resident's behavior has some meaning and try to determine why the resident is exhibiting that behavior.

### **When Interacting with an Anxious Resident**

- Provide a quiet, calm environment, away from groups of people and activity.
- Allow ample personal space.
- Acknowledge and take care of the anxious resident's physical and emotional discomfort but avoid dwelling on physical complaints.
- Create a climate of warmth and acceptance.
  - Maintain composure during interaction.

- Stay with the resident or check frequently if he/she is experiencing extreme anxiety.
  - Demonstrate genuineness and respect.
- Use physical attending.
  - Sit in comfortable chair near the resident.
  - Maintain same eye level with the resident, facing him/her.
  - Maintain "open" position (avoid crossing your legs and arms), leaning toward the resident and remaining relaxed.
- Use psychological attending.
  - Listen to the resident's verbal behavior. Take time to listen, concentrate. Don't interrupt; listen "between the lines".
- Provide a brief, simple introduction. Introduce yourself and state who you are. Explain the purpose of interaction.
- Use communication techniques and tools to respond to an anxious resident.
  - Anticipate needs.
  - Make replies simple, clear, and relative to the situation.
  - Avoid introducing anything new.
  - Limit the amount of decision making.
  - Provide for physical activity, such as walking.
  - Use accurate empathy. State what you understand message to be (e.g., "I understand you to say...". "I hear you saying...").

## **When Interacting with an Angry Resident**

- Physically prepare angry resident and environment
  - Encourage other people, particularly those who provoke his/her anger, to leave the room or area.
  - Maintain an adequate distance between yourself and the resident.
  - Maintain an open exit.
  - Make certain that your gestures are slow and deliberate rather than sudden and abrupt.
  - Reduce disturbing factors in his/her room (e.g., noise, drafts, inadequate lighting).
  - Take care of physical and emotional needs and discomforts.
- Use physical attending.
  - Begin with minimal intensity and gradually increase.
  - Begin with the same type of position as resident (when possible). Example: If the resident is standing, you stand. If the resident is sitting, you sit.
  - Gradually move to a more relaxed position for both you and the resident. Example: If standing, eventually sitting.
  - Keep your shoulders slightly down or relaxed.
  - Look toward the resident but avoid glaring or eye contact that is too intense.
  - Maintain "open" position. Avoid crossing your legs and arms. Keep hands unclenched and relaxed. Face slightly toward resident.
- Use psychological attending.
  - Avoid defensive listening with an angry resident.
- Introduce yourself and state who you are. Be brief and to the point.
- Respond to angry resident.
  - Use therapeutic silence.



- Use responses based on this hierarchy: Description of experience, thoughts about experience, feelings that experience has generated.
- Make vague statements more explicit or specific. For example:
 

Resident: Nobody cares around here.

Nurse: I'm not sure what you mean, Mr. Jones. Could you tell me more?

Resident: Everybody is just too busy.

Nurse: What do you mean, everybody is just too busy?

Resident: I haven't seen anybody for three hours and I need my dressing changed before I go to lunch.
- Practice accurate empathy.
- Explore alternatives to situation or feelings of anger.
- Present your perspective or point of view calmly and firmly.
- Use repeated assertion. Firmly repeat original response rather than argue each point.

### **When Interacting with a Combative Resident**

- Remain calm and in control. Being out of control yourself will only cause the resident, who often may be terrified of his/her own behavior, to become more frightened. Your calmness will help calm him/her.
- Try not to touch the resident. Touching the resident may cause the resident to become more agitated.
- Talk in soothing tones to the resident, addressing the feelings behind the behavior such as: "You're really frightened aren't you...?" Getting a person who is behaving irrationally to talk about his/her feelings may have a calming effect.
- Redirect a resident who is out of control in a common area public space to move into a smaller, more private area. It will offer some privacy to the resident and staff and spare other residents from becoming upset.
- Protect yourself. Do not turn your back on the resident.
- Always take threats seriously.
- Call for assistance if needed.

**Notes:**

## Lesson 6: Infection Control and Hand Hygiene

### Student Overview

#### Lesson Objectives:

- Recognize the way infection is spread.
- Identify interventions which will break the chain of infection.

#### Key Terms:

Antibiotic Stewardship:

Enhanced Barrier Precautions:

Infection Control:

Medical Asepsis:

Microorganism:

Nosocomial infection/Healthcare Associated Infection (HAI):

Pathogen:

Standard Precautions:

Transmission-Based Precautions:

## Lesson 6: Infection Control and Hand Hygiene

### Introduction

**Infection control** means preventing the spread of **microorganisms** by following certain practices and procedures.

### Microorganisms

Microorganisms are tiny living things that can only be seen with a microscope.

- Compose the largest population of life forms on earth.
- Are everywhere-water, air, soil, plants, animals, minerals, and humans.
- Cannot be seen with the naked eye.
- May be harmful. Harmful microorganisms that may cause infection are called **pathogens** (germs) and include bacteria, viruses, fungi, and protozoa.

### Infection Chain

The "Infection Chain," or sometimes called "The Chain of Infection," explains how pathogens move from one place to another. The 6 links that make up the chain are:

1. Pathogen: the causative agent
  - Bacteria
  - Viruses
  - Fungi
  - Protozoa
2. Reservoir: the place where pathogens live and multiply
  - places that are warm, dark, and moist
  - linen, medical equipment, surfaces, animals, and humans
3. Portal of exit: the way pathogens leave the body.
  - Urine
  - Feces
  - Saliva
  - Tears
  - drainage from wounds
  - sores
  - blood
  - excretion from respiratory tract or genitals
4. Route of transmission: how pathogens travel
  - through the air (airborne)
  - in contaminated soil and water
  - on objects (dirty linen, clothing, equipment)
  - by insects (flies, mosquitoes, maggots)
  - on people, especially hands
5. Portal of entry: the way pathogens get into the body.

- cuts or breaks in the skin or mucous membranes.
  - respiratory tract
  - gastrointestinal tract
  - genital or urinary tract
  - circulatory system
6. Host: The individual who acquires the pathogen
- A susceptible host is unable to resist the pathogen, and the pathogen begins to reproduce and cause infection.
  - Susceptible hosts include the very young, the elderly, people who are not in good health, people who are exposed to large numbers of pathogens, and people who do not follow proper infection control practices.

## Infection Control

To control the spread of infection, the chain must be broken.

- Good hand hygiene technique is the best way to stop the spread of infection.
- Follow employee health policies.
  - Stay home when sick.
  - Get vaccinations as recommended.
- Practice good health habits.
  - Maintain good personal hygiene.
  - Practice good nutrition.
  - Consume adequate fluid.
  - Obtain rest.
  - Exercise regularly.
- Practice **medical asepsis**. Medical asepsis is the state of being free from disease causing microorganisms. Medical aseptic practices are involved in all nursing activities because microorganisms are always present in the environment. An awareness of how microorganisms are transmitted is essential for safe caregiving practices. Essential components of maintaining medical asepsis include:
  - Hand hygiene.
  - Handle linen in ways that prevent germs from spreading.
    - Soiled linens are to be contained at the source.
    - Clean linens must be carried away from the uniform of the caregiver to prevent potential contamination.
    - Linens are to be stored and transported in a manner to prevent the spread of harmful microorganisms.
  - Cleaning equipment.
  - Handle food and food trays properly.
  - Utilizing gloves, gowns, and mask as indicated.
- Follow procedures for disposal of medical waste.
- Health care facilities have infection control policies and procedures which personnel must follow in an attempt to control the spread of germs/infection. You will need to become familiar with these policies.

- Separate persons with infections from others to prevent **healthcare associated infections (HAI)**. **HAI** are also called **nosocomial infections** and are acquired while receiving health care for another condition.
- Disinfect or sterilize equipment (example: shower chair), surfaces, dishes, and utensils.
- Each caregiver must be knowledgeable of solutions/chemicals to be used as well as correct use (example: length of time necessary to soak, etc.) to prevent the spread of harmful microorganisms.
- Use **Standard Precautions**.

## Standard Precautions

Guidelines developed by the Center for Disease Control (CDC) to reduce the risk of transmission of pathogens from both known and unknown sources of infection.

- Treat every resident as though he/she is potentially infectious.
- Sources of infection include all blood, all body fluids, secretions, and excretions (regardless of whether they contain visible blood), non-intact skin, and mucous membranes.
- Standard Precautions include:
  - Wearing gloves when indicated for resident care.
  - Wearing a gown, mask, and protective eyewear in situations or during procedures when splashing or contamination may occur.
  - Washing hands at appropriate times.
  - Transporting infected residents using indicated safeguards.
  - Cleaning common use equipment between residents.

## Transmission-Based Precautions

Transmission-Based Precautions (a.k.a. Isolation Precautions) are actions (precautions) implemented, in addition to standard precautions, based upon the means of transmission (airborne, contact, or droplet) to prevent or control infections.

- Airborne precautions – pathogens are transmitted on dust particles in air currents. Examples of conditions requiring airborne precautions include tuberculosis, chickenpox, and measles.
- Droplet precautions – pathogens are transmitted in droplets when a person coughs, sneezes, or talks. Examples of conditions requiring droplet precautions include pneumonia, influenza, and scarlet fever.
- Contact precautions – pathogens are transmitted by direct contact (skin-to-skin) with the resident or by indirect contact with surfaces or care items in the resident's environment. Examples of conditions requiring contact precautions include conjunctivitis, scabies, impetigo, *C. difficile*, pediculosis, and MRSA.
- Enhanced Barrier Precautions – used when engaging in high-contact resident care activities with residents who have been infected with or have a colonized targeted multidrug-resistant organism (MDRO). These include pan-resistant organisms, carbapenemase-producing carbapenem-resistant *Enterobacteriales*, carbapenemase-producing carbapenem-resistant *Pseudomonas* spp, carbapenemase-producing carbapenem-resistant *Acinetobacter baumannii*, and *Candida auris*. Enhanced Barrier Precautions include:

- Wearing gloves when caring for the resident
- Wearing a gown during high contact activities in which your body may come into contact with the resident.
- Thorough hand hygiene upon removal of PPE.

## Hand Hygiene

Hand hygiene means cleaning your hands by either washing your hands with soap and water or using alcohol-based hand rub. The Centers for Disease Control (CDC) released guidelines to improve adherence to hand hygiene in health care settings. In addition to traditional hand washing with soap and water, the CDC is recommending the use of alcohol-based hand rubs by health care personnel for resident care because they address some of the obstacles that health care professionals face when taking care of residents.

One must remember that the use of gloves does not eliminate the need for hand hygiene. Likewise, the use of hand hygiene does not eliminate the need for gloves. Hand rubs should be used before and after each resident, just as gloves should be changed before and after each resident. The CDC instructs that health care personnel should avoid wearing artificial nails and keep natural nails less than 1/4 inch long if they care for residents at high risk of acquiring infection.

The hand hygiene guidelines are part of an overall CDC strategy to reduce infections in health care settings to promote resident safety.

Wash hands with soap and water:

- When hands are visibly soiled.
- After caring for a resident with known or suspected infectious diarrhea.
- After known or suspected exposure to spores (e.g., B. anthracis, C. difficile outbreaks)

Handwashing with good technique is the best way to prevent the spread of infection.

1. Turn on faucet with a clean paper towel.
2. Adjust water to acceptable temperature.
3. Angle arms down holding hands lower than elbows. Wet hands and wrists.
4. Apply enough soap to cover all hand and wrist surfaces. Work up a lather.
  - Note: Direct care givers must rub hands together vigorously, as follows, for at least 20 seconds, covering all surfaces of the hands and fingers.
5. Rub hands palm to palm.
6. Right palm over top of left hand which interlaced fingers and vice versa.
7. Palm to palm with fingers interlaced.
8. Backs of fingers to opposing palms with fingers interlocked.
9. Rotational rubbing of left thumb clasped and right palm and vice versa.
10. Rotational rubbing, backwards and forwards, with clasped fingers of right hand and left palm and vice versa. Clean fingernails.
11. Rinse hands with water down from wrist to fingertips.
12. Dry thoroughly with single use towels.

13. Use towel to turn off faucet and discard towel.

#### Important Handwashing Considerations:

- Faucets may be operated either by knee control, foot pedal or hand levers. These are the three types of faucets commonly found in health care facilities.
- Use warm water. Hot or cold water tends to dry the skin.
- Once you begin washing your hands, do not touch the sink, faucets, counters or your clothing. If you touch anything that is not aseptic, your hands will become contaminated, and you must start over again.
- Be cautious not to get your uniform wet while you are washing your hands in that when it is wet, it is more susceptible to carry microorganisms.
- Most soaps found in your home and in health care facilities are non-antiseptic soaps. These do not kill pathogens but only help loosen them so that you can rinse them away. When you wash with a non-antiseptic soap, you must use friction and rotary motions to help loosen and remove pathogens. You must also rinse thoroughly in that any pathogens remaining on your hands will re-contaminate them. Antiseptic soaps kill many microorganisms.
- Point your hands and wrists downward as you rinse to prevent the soap from running back onto the clean part of your hands and re-contaminating them.
- If there are hand levers on the sinks, use the last paper towel you used to dry your hands to turn off the faucet. The water on the paper towel provides a water barrier between your clean hands and the dirty faucet.

#### Alcohol Based Hand Rub (ABHR)

- Use ABHR containing at least 60% alcohol:
  - Immediately before touching a resident.
  - Before moving from work on a soiled body site to a clean body site on the same resident.
  - After touching a resident or the resident's immediate environment.
  - After contact with blood, body fluids, or contaminated surfaces.
  - Immediately after glove removal.
- When using ABHR:
  1. Put products on hands and rub hands together.
  2. Cover all surfaces until hands feel dry.
  3. This should take around 20 seconds.

#### Putting on Gloves

1. Perform hand hygiene.
2. Put on gloves; look for holes or tears.
3. Perform treatment or service.
4. Remove one glove by grasping the outer surface just below the cuff with the other gloved hand.
5. Pull off glove so that it is inside out.
6. Hold removed glove in gloved hand.

7. Place two fingers of ungloved hand under cuff of the other glove and pull down so that first glove is inside of second glove.
8. Dispose of gloves without contaminating hands.
9. Perform hand hygiene.
10. Never re-use gloves or use the same pair of gloves to provide services or treatment for more than one resident. Discard and re-glove as necessary when moving from a soiled area to clean area to prevent cross contamination.

### **Putting on a Gown**

1. Perform hand hygiene.
2. Let the clean gown unfold without touching any surface.
3. Slide your hands and arms through the sleeves.
4. Tie neck ties.
5. Overlap back of the gown and tie waist ties.
6. If gloves are required, put them on last.
7. Perform procedure.
8. If wearing gloves, remove them.
9. Untie the waist ties.
10. Untie the neck ties.
11. Pull the sleeves off by grasping each shoulder at the neckline and turn the sleeves inside out as you remove them from your arms. Do not contaminate your hands by touching the outside of the gown.
12. Fold down with clean side out and place in laundry or discard if disposable.
13. Perform hand hygiene.

### **Putting on a Mask**

1. Perform hand hygiene.
2. Place the upper edge of the mask over the bridge of your nose and tie the upper ties.
3. Place the lower edge of the mask under your chin and tie the lower ties at the nape of your neck.
4. If the mask has a metal strip in the upper edge, form it to your nose.
5. Perform the procedure.
6. If the mask becomes damp or if the procedure takes more than 30 minutes, you must change your mask.
7. If wearing gloves, remove them first.
8. Perform hand hygiene.
9. Untie each set of ties and discard the mask by touching only the ties. Masks are appropriate for one time use only.
10. Perform hand hygiene.

### **Infections of Concern in Long Term Care**



- Hepatitis – contagious disease of the liver usually caused by a virus and spread by exposure to infected blood, sexual contact, or fecal/oral contact. Symptoms may include flu-like symptoms, jaundice, and dark yellow urine. Severe infection can cause permanent liver damage and death.
- Scabies – skin infection caused by a mite and spread by direct contact. Symptoms include itching, skin irritation in the form of a rash. All contacts, bedding and clothing must be treated to prevent spread and re-infestation.
- Tuberculosis (TB) – chronic bacterial infection that usually affects the lung but may affect other parts of the body such as the kidneys, bones, and the brain. TB is spread through air in aerosolized droplet nuclei from sputum of persons with active disease. Symptoms include fever, loss of appetite, fatigue, productive cough, and night sweats.
- Acquired Immune Deficiency Syndrome (AIDS) – results from infection with Human Immunodeficiency Virus (HIV) which destroys the body's ability to fight infection. The virus is spread through infected blood and body fluid. Early symptoms are flu-like followed by a symptom free period which can last many years (one to ten or more). No cure is known; however, new effective medications and treatments are available to manage the condition.
- Methicillin Resistant *Staphylococcus aureus* (MRSA) – bacteria that no longer responds to Methicillin and possibly other antibiotics normally used to treat staphylococcal infections. It is spread on the hands of health care workers. To prevent spread, follow Standard Precautions.
- Vancomycin Resistant Enterococcus (VRE) – bacteria that no longer responds to the antibiotic Vancomycin. It can spread via the hands of healthcare workers. To prevent spread, follow Standard Precautions.
- *Clostridium difficile* (*C. diff*, *C. difficile*) – an infection from a bacterium that causes colitis, an inflammation of the colon, causing diarrhea. Hand washing is the only appropriate form of hand hygiene to eliminate the spread of *C. diff*. Environmental disinfection must be done by using a *C. difficile* sporicidal agent (EPA List K agent). (Refer to Lesson 26 for further details.)
- COVID-19 – a respiratory disease caused by SARS-CoV-2; a coronavirus discovered in 2019. The virus spreads mainly from person to person through respiratory droplets produced when an infected person coughs, sneezes, or talks. Some people may not have any symptoms. (Refer to Lesson 26 for further details.)
- *Candida auris* (*C. auris*) – a species of fungus that grows as yeast. It is one of the few species of *Candida* which cause candidiasis in humans. It is spread in healthcare facilities through contact with contaminated surfaces or equipment or from physical contact with a person who has *C. auris*. (Refer to Lesson 26 for further details.)

## Antibiotic Stewardship

- A set of commitments and actions designed to optimize the treatment of infections while reducing the adverse events associated with antibiotic use.
- This can be accomplished through improving antibiotic prescribing, administration, and management practices. Antibiotic Stewardship assists in reducing the inappropriate use of antibiotics to ensure residents receive the right antibiotic, for the right indication, at the correct dosage, and for the appropriate amount of time. Effective antibiotic steward practices/programs are proven to reduce/assist in reducing the development of antibiotic-resistant organisms.
- Facilities must develop an Antibiotic Stewardship Program that promotes the appropriate use of antibiotics and includes a system of monitoring to improve resident outcomes and reduce antibiotic resistance.

**Notes:**

## **Lesson 7: Safety and Emergency Procedures/Intervention for Airway Obstruction**

### **Student Overview**

#### **Lesson Objectives:**

- Be prepared to assist in any disaster or emergency by:
  - Knowing the appropriate procedures/interventions to respond to a health emergency.
  - Knowing the facility's emergency plan and evacuation procedures.

#### **Key Terms:**

Abdominal Thrusts:

Back Blows:

Choking:

Disaster Emergency:

## **Lesson 7: Safety and Emergency Procedures/Intervention for Airway Obstruction**

### **Introduction**

An emergency is a sudden, unexpected severe problem that endangers residents, staff, and visitors. Emergencies can occur anywhere at any time. Each employee must strive to maintain a safe environment to prevent an emergency and must know how to respond should an emergency occur.

### **Safety**

Ensuring a safe and secure environment for each resident is the job of every member of a facility's staff.

#### **1. Environment**

- Keep hallways and the residents' rooms free of clutter.
- Walk, don't run, and stay to the right in hallways.
- Make certain that spills are cleaned up immediately.
- Monitor for frayed electrical cords.
- Check that equipment is working properly before use.
- Use equipment safely and according to manufacturer's guidelines.
- Never use electrical equipment near water or oxygen.
- Approach swinging doors with caution.
- Report potentially hazardous conditions immediately.

#### **2. Call Lights**

- Check call lights to be sure they are working and within the resident's reach.
- Answer the call lights promptly.

#### **3. Infection Control**

- Perform hand hygiene.
- Always use Standard Precautions.
- Handle linens, supplies, and equipment properly to prevent cross contamination.

#### **4. Body Mechanics/Resident Safety**

- Never turn the dependent resident toward the side of the bed to perform a procedure with the side rail down. Raise the side rail, walk to the other side of the bed, and assist the resident to turn toward the raised side rail.
- Never lean over the resident to perform any procedure. This can lead to injury to the resident or cross contamination between clothing and linens.
- Be certain the resident is wearing non-slip shoes or slippers when getting out of bed.
- Allow the resident to sit on the side of the bed with feet flat on the floor for 10-15 seconds and check for dizziness before moving the resident.
- Never move the resident by grabbing under the arms.
- Place a pillow against the headboard when moving the resident up in bed.
- Prepare the resident for the move by counting: "1, 2, 3."

#### **5. Understand the Purpose of Side Rails**

- As a safety aid, they must be up if the bed is elevated to working height.
- As a self-help device, they assist the resident to move independently.

- As a restraint, if used solely to confine the resident in bed. A restraint requires an advanced practice provider's order.
  - Must be used according to manufacturer's guidelines.
  - A restraint must be checked for proper fit and comfort by placing an open hand flat between the resident and the restraint.
  - Residents in a restraint must be checked at least every hour and the restraint released at least every 2 hours.
- 6. Oxygen Use
  - Oxygen is highly flammable.
  - Keep open flames (matches, candles, lighters, and cigarettes) away from oxygen.
  - "No Smoking, Oxygen in Use" signs should be posted on the inside and outside of a resident's door.
- 7. Resident Identification
  - Always verify the identity of the resident before performing any procedure or treatment.

## Emergency Procedures – Fire Emergencies

Common causes of fire in a health care facility include:

- Faulty electrical wiring or equipment
- Careless or unsupervised cigarette smoking
- Fire prevention for oxygen use:
  - Post "No Smoking, Oxygen in Use" signs on the inside and outside of applicable doors.
  - Do not allow any smoking or open flames near oxygen.
  - Do not use electrical appliances such as electric razors or hair dryers when oxygen is in use. Caution should be used in and around the beauty shop.
  - Remove flammable liquids from the room.
  - Use cotton clothing and bed linens instead of wool or synthetics to reduce static electricity.
- Follow smoking regulations.
  - If the facility permits smoking outside, smoke only in designated areas. Refer to facility policy.
  - Provide ashtrays made of noncombustible material and dispose of contents into approved containers.
  - Supervise residents while they smoke, unless assessed as able to smoke unsupervised.
  - Supply smoking aprons as per facility policy.
- In the event of a fire, follow the four principles.
  - R = remove residents from the immediate fire area to a place of safety.
  - A = activate the alarm.
  - C = contain the fire by closing all doors and windows.
  - E = extinguish the fire.
- Fire extinguishers
  - Extinguishers are rated A, B or C according to the type of fire they may put out. Most in a health facility are rated all 3 (ABC) and may be used for all types of fire.
    - A = paper, wood, cloth
    - B = oil, grease
    - C = electrical

- To use an extinguisher:
  - P = pull pin
  - A = aim nozzle
  - S = squeeze handle
  - S = sweep from side to side
- Never use an elevator during a fire emergency.
- Avoid inhaling smoke. Stay low and cover your mouth with a wet cloth.
- If clothing is on fire, STOP, DROP AND ROLL to smother flames.
- Be familiar with the facility's emergency policies and procedures.
- Know which residents will require the most assistance due to physical or cognitive impairment.

## **Emergency Procedures – Other Emergencies**

Resident emergencies such as choking, falls, shock, burns, seizures, fainting, hemorrhage (an escape of blood from a ruptured blood vessel, especially when profuse), or cardiac arrest (the heart suddenly stops beating) require immediate action:

- Know your limitations. Do not perform any procedure for which you have not been trained.
- Call for assistance immediately.
- Remain calm and reassure the resident.
- Observe the resident for life-threatening problems (breathing, pulse, and/or bleeding).
- Keep the resident in the same position. Movement could cause further injury.
- Keep the resident warm.
- Do not give the resident any food or fluids.
- Follow the nurse's instructions.

## **Points to remember when responding to specific resident emergencies:**

**Choking:** a complete blockage of the airway requiring immediate action.

- Resident cannot breathe, speak, or cough and has no chest movement.
- Resident grasps or clutches at throat.

**PLEASE NOTE: IDOH does not mandate American Heart Association (AHA) or American Red Cross choking protocol. Follow your facility's training and protocol.**

### **The American Red Cross recommends: Abdominal Thrusts and Back Blows**

- Call for a nurse and stay with the resident.
- Ask the resident if he/she can speak or cough.
- If the resident cannot speak or cough, bend the resident forward at the waist and give 5 back blows between the shoulder blades with the heel of one hand.
- If the resident continues to be unable to speak or cough, place a fist with the thumb side against the middle of the resident's abdomen, just above the navel.
- Grasp fist with the other hand.
- Press fist into abdomen with 5 quick inward and upward thrusts.
- Repeat sets of 5 back blows and 5 abdominal thrusts until the object is expelled, the resident can cough forcefully or breathe, or becomes unconscious.
- Assist the nurse with documentation of the event by providing your observation.

### **The American Heart Association (AHA) recommends: Abdominal Thrusts Only**

- Call for a nurse and stay with the resident.
- Ask the resident if he/she can speak or cough.
- If the resident cannot speak or cough, place a fist with the thumb side against the middle of the resident's abdomen, just above the navel.
- Grasp fist with the other hand.
- Press fist into abdomen with 5 quick inward and upward thrusts.
- Continue abdominal thrusts until the object is expelled, the resident can cough forcefully or breathe, or becomes unconscious.
- Assist the nurse with documentation of the event by providing your observation.

- **A choking resident who is lying down:**

- Place the resident face up.
- Kneel astride the resident's thighs. If the resident is too large to straddle, kneel close to his/her side with your knees parallel to the resident's hips.
- Place the heel of one hand on the resident's abdomen in the midline between the navel and the rib cage. Place the second hand on top of the first hand.
- Press into the abdomen with quick upward thrusts.
- Repeat several times, if necessary, until the object is ejected

- **A choking resident who goes unconscious and stops breathing:**

- Start standard cardiopulmonary resuscitation (CPR)
- Assist in the resident's transfer to the hospital, if necessary.
- Assist the nurse with documentation of the event by providing your observation.



**Falls:** If a resident begins to fall, do not try to stop the fall. Gently ease resident to the floor and:

1. Call for help immediately.
2. Keep the resident still (in the same position) until the nurse assesses the resident.
3. Stay calm, reassure the resident, and follow the nurse's instructions.

**Shock:** occurs when vital parts of the body (brain, heart, and lungs) do not get enough blood.

Signs/Symptoms of shock include rapid heartbeat (tachycardia), pallor, perspiration, light-headedness, chills, fainting, low blood pressure (hypotension), confusion, and mental status changes. Should signs/symptoms be observed:

1. Call for help immediately.
2. Keep the resident lying down.
3. If there is visible bleeding, apply direct pressure to the bleeding site using Standard Precautions.
4. Keep the resident warm and offer reassurance.

**Burns:** cigarettes, spilled hot liquids or bath water may cause burns.

1. Call for help immediately.
2. Follow the nurse's instructions.

**Seizures (convulsions):** sudden involuntary contractions of muscles due to a disturbance in the brain.

1. Call for help, stay with the resident, and note the time the seizure-like activity began.
2. Protect the resident from injury.
  - Remove objects from vicinity.
  - Loosen clothing, especially around the neck.
  - Never restrain the resident or place anything in the resident's mouth.
  - After the seizure, turn the resident to the side to prevent choking and allow the resident to rest.
  - Assist the nurse in documenting the incident by providing your observation.



**Poisoning:** many products in a health facility are hazardous if consumed or used improperly.

- Never use anything from an unlabeled container.
- Keep toxic substances and cleaning supplies locked and out of reach of residents.
- In case of suspected poisoning, take container to nurse immediately.
- Call for help and report observations to the nurse.
- Know the location of MSDS

\*All medication carts and rooms must be locked when left unattended.

\*Identify the facility location for the telephone number of the poison control center.

**Fainting:** sudden loss of consciousness due to inadequate blood supply to the brain. Causes include hunger, low blood sugar (hypoglycemia), low blood pressure, fatigue, pain, and fear. Dizziness, a feeling of warmth, and resulting perspiration may be associated symptoms, especially prior to fainting.

1. Call for help.
2. Have the resident sit or lie down before fainting occurs, if possible. If sitting, have the resident bend forward and place his/her head between knees. If lying down, slightly elevate the resident's legs.
3. Loosen tight clothing.
4. Keep the resident lying or sitting until assessed by a nurse.

**Hemorrhage:** excessive loss of blood.

1. Call for help immediately.
2. Use Standard Precautions.
3. Apply direct pressure over the area with a sterile dressing or a clean piece of linen.
4. Stay with the resident, offer reassurance, and follow nurse's instruction.

**Cardiac Arrest:** heart function and circulation stop. The resident is unresponsive, with no chest movement or pulse, pupils dilated and fixed, skin may be cyanotic.

1. Call for help immediately. Notify nurse on duty.
2. Touch or tap collar bones and talk to the resident.
3. Check for signs of breathing, including rise and fall of the chest wall. If absent, initiate CPR if qualified to do so.
4. Ask staff to obtain the AED (if available).

**Disaster emergency:** a sudden event that has widespread damage to property and injuries or deaths. May include flood, tornado, earthquake, blizzard, fire, or explosion.

- Be familiar with the community and facility disaster plans.
- Know the facility evacuation plan.
- Remain calm.
- Remove the residents from immediate danger.
- Follow the nurse's instruction.
- Secure medications and records as directed.

**Notes:**

## Lesson 8: The Dying Process

### Student Overview

**Lesson Objectives:**

- Identify necessary interventions to provide as much comfort and support as possible to the dying resident.
- Recognize symptoms of impending death.

**Key Terms:**

Apnea:

Cheyne-Stokes:

Palliative:

Pruritus:

Stomatitis:

## Lesson 8: The Dying Process

### Introduction

Dying and grief are normal processes. Dying is such a significant event that most people develop personal philosophical, moral, or religious beliefs to cope with it. Pain, symptoms of incurable disease or symptoms of the death process itself can be addressed by the caregiver. Family and friends' participation in the care of the resident can be an important part of **palliative** care, which is utilized to provide comfort, support, and management of symptoms. The quality of your care for dying residents affects the comfort of the resident and family. The resident's comfort is the top priority at this time.

Caregivers must be responsible and attentive in assuming the care of a terminal resident.

### Misconceptions About Pain

*Myth: There will always be visible signs of pain.*

Reality: We adapt to our discomforts, leading to periods of very minimal signs of discomfort. The lack of pain expression does not mean lack of pain.

The resident may present with non-verbal indicators of pain such as moaning/groaning, grimacing, yelling or calling out, agitation, restlessness, increased heart rate, or increased blood pressure.

*Myth: Everyone feels the same intensity of pain from the same stimuli.*

Reality: The same stimuli does not produce the same intensity of pain. Pain tolerance is the duration or intensity of pain a person is willing to or can endure. Pain is subjective and a highly individualized experience. Unless the resident is unable to verbalize his/her intensity of pain, the caregiver should not question the validity of his/her reports of pain because the resident may express pain in ways the caregiver does not anticipate.

### Symptoms to Consider when Caring for the Terminally Ill

Symptoms that accompany the terminal illness may be controlled. Your attitude as you care for the dying may be as important as the care given. Address each symptom independently.

The most common complications associated with terminal illness:

1. Sleeping – a terminal resident may become oblivious to time, resting more during the day and less during the night. It is important to keep the resident comfortable. Proper positioning can assist in this comfort.
2. Lack of appetite – the resident's tastes may change; the foods that the resident prefers may be unavailable; the gastrointestinal tract activity slows down.
  - Try to provide foods that the resident prefers.

- Give five or six small meals instead of three large ones. Make certain the resident is treated for nausea if warranted.
  - Encourage the resident to take liquids such as ice chips and sips of water. A cloth soaked with water can be used to keep the mouth area moist.
  - Make snacks readily available to the resident.
3. Nausea and vomiting – may be caused by metastasis, treatments, anxiety, bowel problems, medications, or pain. The cause of nausea and vomiting may not be eliminated, but the symptoms can be controlled. If a resident is nauseated late at night, it is likely that he or she has been nauseated all day. A terminal resident will inform you that it is often harder to live with constant nausea than the actual vomiting. Interventions:
    - popsicles and ice chips.
    - do not give the resident caffeine, chocolate, and acidic juices unless resident requests.
    - If ordered, discuss the administration of PRN anti-emetics, such as Zofran (ondansetron), with the nurse.
  4. Constipation and diarrhea – these may be caused by medication, disease, a decrease in eating, a decrease in activity, additional food supplements or a combination of the above. It is important to keep the resident clean and dry if bowel control has been lost.
    - If ordered, discuss the administration of PRN anti-diarrheals in the case of diarrhea or stool softeners, laxatives, or enemas in the case of constipation, with the nurse.
  5. **Stomatitis** is an inflammation of the mouth. Residents who have stomatitis must receive:
    - more frequent mouth care.
    - removal of excess mucous from the mouth.
    - If ordered, discuss the administration of PRN mouth rinses, such as Mary's Magic, or other medications intended to alleviate mouth pain, with the nurse.
  6. **Pruritus** is severe itching without evidence of a rash on the skin. It may occur over the entire body. Residents who have pruritis must receive the following care:
    - proper positioning.
    - good skin care.
    - If ordered, discuss the administration of PRN medications, such as hydroxyzine (Ataraz), intended to alleviate pruritis, with the nurse.
  7. Restlessness/anxiety – are often caused by discomfort or pain.
    - Avoid talking to others who are in the room about the resident. Instead, talk directly to the resident.
    - Explain the care you give to the resident's family.
    - Communicate with the family as often as possible.
    - If ordered, discuss the administration of PRN medications, such as Klonopin (clonazepam), intended to alleviate symptoms of anxiety, with the nurse.
  8. Symptoms of Impending Death
    - Circulatory system symptoms are caused by poor perfusion of the blood:
      - Skin – cool, clammy, excessive perspiration, white or purple in color (mottled)
      - Nails – blue or purple, circumoral pallor
      - Pulse – changing from rapid (tachycardia) to slow (bradycardia) and/or irregular rhythm (arrhythmia)
    - Respiratory system symptoms:
      - Respirations – changing from rapid (tachypnea) to slow (bradypnea) to long periods without respirations (**apnea**).

- **Cheyne-Stokes** – an abnormal pattern of breathing characterized by progressively deeper, sometimes faster, breathing followed by a gradual decrease in respirations resulting in apnea
- Digestive system symptoms:
  - Difficulty in swallowing
  - Trouble controlling excessive oral secretions.
  - Increased episodes of incontinence
  - Constipation/diarrhea
- Urinary system symptoms:
  - Incontinence
  - Decrease in output.
- Sensory system symptoms:
  - Eyes may develop a “fixed” appearance.
  - Hearing is one of the most acute senses. Often residents are able to hear even when comatose.
  - Body temperature may decrease or be elevated (fever or febrile) and may vacillate from one extreme to the other.

**Notes:**

## Lesson 9: Introduction to Pharmacology/Medication Classification

### Student Overview

**Lesson Objectives:**

- Identify manners in which medications may affect the resident.
- Identify the need to observe for potential adverse effects of medication.

**Key Terms:**

Adverse Effect:

Pharmacology:

Side Effect:

## Lesson 9: Introduction to Pharmacology/Medication Classification

### Introduction

Taking medication is an important part of health care for most residents. Residents have the right to expect that the personnel who administer their medications are informed about the uses, actions, and side effects of the medications. Personnel who administer medications must recognize the limits of their ability and knowledge and seek the advice and assistance of supervisors when needed.

As a QMA, you will become familiar with the names and appearance of many medications. You will also frequently encounter new medications. It is essential for you to know where to find information about an unfamiliar medication. Several medications have more than one name. You must learn the different methods of naming medications in order to use sources of medication information.

Medications have different names and are made from different materials. One medication may be manufactured in general forms for different methods of administration. Because there are so many different medications being given today, QMAs need to understand the source of medications, be able to recognize the standard forms of medications, and be aware of the method in which each form is administered.

Each person reacts in his or her own way to medications. Factors such as health, age, body size and internal functions can and do alter the effectiveness of medications. Residents' responses to medications must be considered on an individual basis.

### Pharmacology

**Pharmacology** is the study of medications and their effect on the body.

- Medications are substances or mixtures used to diagnose, treat, or prevent disease or illness.
- The accurate administration of medications is an important part of the health of residents in a facility.
- Medications come in many forms and have many methods of administration.
- Some medications have more than one name, more than one form and more than one route for administration.
- Knowledge about sources and origins of medications, medications' systemic or local actions, and the forms and modes of administration is essential to medication aides.

### Names of Medications

- Chemical name
  - Meaningful only to a chemist.
  - Indicates the ingredients in the medication.
  - Usually written in symbols and letters that stand for the ingredients.
- Trade or brand name (first letter is capitalized)
  - Identified with the symbol ® which indicates the name is registered or patented by a company or individual.



- Generic name (first letter is lower case)
  - Official name of medication.
  - Usually, a combination of chemicals in the medication.
  - Not patented.
- Examples:
  - brand name = Lasix; generic name = furosemide
  - brand name = Tylenol; generic name = acetaminophen

## Sources of Medication

- Plants – any part of a plant
  - Leaves
  - Roots
  - Seeds
  - Oils
  - Blooms
  - Examples: digitalis, opium
- Animals
  - Blood
  - Urine
  - Hormones
  - Venom
  - Examples: cortisone, insulin, thyroid
- Minerals – from the earth
  - Examples: iron, magnesium
- Synthetic – man-made
  - Examples: aspirin, acetaminophen
- Semi-synthetic – combination of man-made and plants, animals, or minerals
  - Examples: Norco (hydrocodone (derived from opium poppy seeds) and acetaminophen)

## Medication Actions and How the Action is Caused

- Three types of effects:
  1. Local effect-limited to the area of the body where the medication is applied.
  2. Systemic effect-affects the entire body.
  3. Emotional effect-change in the body because of the individual's belief that the medication is working. A placebo is an example of a medication that effects change through emotion.
- How the action is caused:
  - Stimulate body cells.
  - Slow down body cells.
  - Kill or weaken invading organisms.
  - Replace substances.
  - Irritate body cells.

## Effects of Medications

The effect of medication is the observable results of changes in the body caused by a systemic or local action.

- Effects of a single medication:
  - Primary or desired effect
  - Secondary effect
  - Tolerance
  - Idiosyncrasy
  - Psychological or emotional dependency
  - Addiction
  - Antagonistic effect
- **Side Effect** – outcomes that are not intended; the action or effect of a medication other than that desired. Commonly undesirable, such as nausea, headache, insomnia, etc.
- Adverse Effect (ADR) - An **undesired** side effect or toxicity.
- Allergic Effect or hypersensitivity
  - This can be life threatening or a simple reaction.
  - If a resident has breathing problems or a skin rash after a medication was administered, the nurse must be notified immediately.
- Toxic Effect
  - Occurs when too much of a medication is absorbed by the body.
  - Can be life threatening.
  - The provider and nurse must be notified of any signs and symptoms of toxicity in order to correct the situation.
- Cumulative Effect – build-up of a substance that could lead to toxicity.
- Medication-Food Reactions
  - Occur when medications and food create a chemical reaction.
  - Follow instructions which may indicate if a medication is to be administered before meals (ac) or not to be given with certain foods.
  - Example: Tetracycline should not be administered with milk or milk products.
- Medication-Medication Reactions: Occur when two or more medications create a chemical reaction which could result in a life-threatening situation.
- Synergistic Effects: Occur when a combination of factors evokes a change in a specific condition. An example is the combination of diet and medication. For instance, residents who are prescribed Coumadin (warfarin), which may be given for arrhythmia such as atrial fibrillation or other conditions, must have blood (serum) levels of the drug monitored closely. Increases/decreases of Vitamin K through diet interrupts the effectiveness of Warfarin (coumadin). Thus, diet should be closely monitored for foods rich in Vitamin K, such as spinach.
- Idiosyncratic Reaction: unusual or unexplained effect.

## Factors that influence medication action

1. Dosage strength: Strength and dosage of a medication can often be titrated (modified) to taper a resident off a specific medication, or to decrease a resident's reaction to a specific medication.
2. Presence of food in the stomach

- Some medications are given with food in order to increase maximum absorption of the medication.
  - Other medications can have a decreased absorption rate with food or enteral nutritional content in the stomach.
  - The QMA must be aware of specific absorption problems of medications and report this to the nurse. The QMA must not adjust the time of medication administration unless instructed to do so by the licensed nurse.
3. Interaction with other medications
  4. Solubility of the medicine can be affected by failure to follow manufacturer's instructions.
    - Was a medication supplied in a bottle shaken before administration if the instruction directs to do so?
    - Was a metered dose inhaler shaken between puffs of the medication?
  5. Disease state of the resident
  6. Aging: As the body ages, specific organs may not respond to medications exactly as they have in the past.
  7. Ostomates (medications administered via an ostomy)
    - Residents with a colostomy, ileostomy or other type of ostomy may have medications given by other routes to assure the effectiveness of their medications.
    - Medications may not be administered via a surgical ostomy by a QMA.

### **Conditions of resident which may modify dosage**

1. Age, weight, and physical condition
  - The age of the resident can have an effect on the dosage used, side effects of medications and sensitivity to a particular medication.
  - The resident's weight can affect the calculation of medication dosages.
  - Alterations in body functions can result from the use of some medications. (Examples: diarrhea, constipation, nausea/vomiting, alopecia, weight loss)
2. Time of administration: Consider the frequency of PRN (as needed) medications for effects and long-term benefits.
3. Route of administering medication
  - Consider medications that may or may not be crushed for administration through a resident's gastrostomy feeding tube, or to a resident who has difficulty swallowing.
4. Rate excreted from the body
  - Medication response may be altered by disease of the liver where medications may be detoxified or metabolized.
  - Medication response may be altered by disease of the kidneys which excrete most medications.
  - Conditions, such as kidney and liver diseases, that alter the rate of excretion may result in excessive build-up on the medication within the body and lead to toxicity.
5. Medication combinations
  - Example: Psychotropic medications given in combination with sedative medications can mask the effectiveness of the medications individually.
6. Medication interaction
  - Medications are chemical compounds intended to elicit a specific response.

- An example of a chemical reaction that is beneficial to the human body is K<sup>+</sup> (Potassium) and Na<sup>+</sup> (Sodium). The desired interaction between the two chemicals, at the correct ratios, causes the heart to beat. However, a chemical imbalance can cause an arrhythmia, severe harm or death if not monitored appropriately.
  - A medication that might lead to such chemical imbalance is Lasix (furosemide), a diuretic. The administration of Lasix (furosemide) may lead to several chemical imbalances, but most importantly, hypokalemia (low potassium serum levels) and/or hypernatremia (high sodium serum levels). Thus, residents who receive diuretics must have serum chemical levels monitored routinely.
  - An example of a food/medication interaction that could pose a negative response would be serving a resident spinach frequently if the resident is on a blood thinner such as Coumadin (warfarin). Spinach is rich in Vitamin K, which plays a role in forming blood clots.
7. Medication absorption: Medication absorption can be affected by the amount of food in the gastrointestinal system as well as the route of administration.

## Medication Forms

Forms (see glossary for definitions)

- Liquid
  - fluid extracts
  - tincture
  - syrup
  - elixirs
  - suspensions
  - milks
  - emulsions
    - Used as the base for other preparations, such as cosmetics and dermatologics (Example – cod liver oil)
  - Liniments
    - For external application only
  - topical analgesics
    - Can be used in a liniment.
    - Heat effect is caused by menthol (Examples – Icy Hot, Ben Gay)
  - Lotions
    - To reduce irritation and friction (Example – Calamine Lotion)
  - Sprays
    - Used mostly to treat the nose, throat, and skin membranes (Examples – Neo-synephrine nasal spray)
  - solution – saline solution
- Solid
  - Tablets, including caplets
    - Compressed (example – aspirin)
    - Coated – improves taste, increases durability and eases consumption (example – Advil)

- Enteric coated – to prevent irritation or absorption in the stomach (examples – ASA, Ecotrin)
  - Timed-release/Extended release (ER) – to cause slower absorption and longer lasting effect (example – Dimetane Extentabs)
  - Immediate Release (IR) – are those wherein  $\geq 85\%$  of labeled amount dissolves within 30 minutes to provide rapid relief of symptoms. (example – Roxicodone (oxycontin (IR))
- Capsules
  - Regular – tasteless, dissolve rapidly (examples – Dilantin, Achromycin)
  - Timed-release/Extended Release (ER) – to cause slower absorption and a longer lasting effect. One end of a capsule is clear, one end is colored. (example – Theobid Duracaps)
  - Immediate release (IR) – are those wherein  $\geq 85\%$  of labeled amount dissolves within 30 minutes to provide rapid relief of symptoms. (example – Zegrid (omeprazole/sodium bicarbonate)
- Lozenges
  - Dissolve in mouth
  - Used to soothe throat (Examples – Cepacol lozenges, cough drops)
- Semi-solid
  - Powders – oral and topical
    - Oral – nearly always mixed with water or fluid when taken orally. (Examples – Metamucil, K-Lor)
    - Topical example – Tinactin
  - Ointments
    - Must be soft enough to spread at room temperature and melt at body temperature (Examples – zinc oxide ointment, vaseline).
    - When used for the eye must be marked “ophthalmic”
  - Creams – such as cold cream, zinc oxide cream
  - Suppositories
    - Molded into a shape that is easy to be inserted.
    - Melt at body temperature (Examples – Dulcolax suppository, acetaminophen suppository)
  - Transdermal patch
    - Applied to the skin.
    - The medication absorbs slowly into the bloodstream (Examples – Transderm-Nitro, Duragesic)
- Gas
  - Inhaled into the lungs, then absorbed into the bloodstream (Examples – oxygen, anesthetics)

## Medication Modes of Administration

- Oral – by mouth
- Topical – particular location of body
- Parenteral – by injection
- Instillation – administering a liquid drop by drop.

- Insertion – placed into a specific area of the body.
- Inhalation – draw in by breathing.
- Transdermal – absorbs through the skin.
- Enteral – tube feedings

## **Rationale for Administration of Medications**

- Cure illness/treat disease.
- Relieve symptoms of illness (\*palliative care)
- Aid in the diagnosis of illness
- Replace body fluids.
- Prevent illness.
- Maintain quality of life

\*Palliative care is very important for the long-term care resident. Palliative care serves to relieve or alleviate symptoms without providing a cure.

## **Types of Medications**

- Scheduled (controlled) medications-medication that may be addictive, and which must be counted and secured.
- Legend medications-medication that can only be obtained with a prescription filled by a licensed pharmacist.
- Non-legend medications- “over-the-counter” medication.

## **Six Rights of Medication Administration**

1. Right medication.
2. Right dose.
3. Right resident.
4. Right route or method.
5. Right time.
6. Right documentation.

## **Persons Involved in Resident's Medication Therapy**

1. Physician/nurse practitioner/physician assistant
  - Diagnoses illness.
  - Prescribes, or orders, medication to be administered.
    - Type of medication
    - Amount of medication
    - Form of medication
    - Route of administration
    - Time and frequency of administration
    - Duration
2. Pharmacist

- Fills prescription.
  - Monitors for medication interactions.
3. RN and LPN
    - Receives orders from provider.
    - Transcribes orders on MAR.
    - Prepares medications for administration.
    - Administers and documents medication administration.
    - Observes and documents resident response.
  4. QMA
    - Prepares medications for administration.
    - Administers and documents medication administration.
    - Observes, documents and reports response to the licensed nurse.
  5. Resident or resident's representative
    - Informed of and in agreement with the treatment regimen and any changes made therewith.
    - If the resident or resident representative is not in agreement with the treatment regimen, notify the nurse.

### **Residents Must be Treated as Individuals**

- Be knowledgeable of each resident and his/her medication and treatment orders.
- Be able to identify each resident in any setting in the facility.
- Learn each resident's normal behavior and be able to recognize changes in the resident that may be a result of medication.

### **Problems in Medication Administration**

- Medication availability
- Medication affordability
- Self-medicating although deemed unsafe to do so.
- Attitudes toward medications
  - \*An example is the belief that the use of controlled substances for pain management may lead to addiction. This belief may cause some residents and/or families to resist their use even when necessary to alleviate the resident's pain.
- Adverse reactions to medications
- Resident's right to refuse medications.

### **Resources for Medication Information**

- Physician's Desk Reference (PDR)
- Nursing Drug Reference

\*Resources are updated yearly.

**Notes:**



## Solid Drug Forms

### Capsules (cap. or caps.)



Medication enclosed in a gelatin capsule.

**Enteric coated (EC)**  
**Sustained release (SR)**  
**Timed release (TR)**  
**Sustained action (SA)**  
**Long-acting (LA)**  
**Spanules (span.)**



Tablet covered with a special coating designed to dissolve at different rates. Used to prolong the effects of the drug. These drugs should not be crushed.

### Lozenges (loz.)



Disc of medication intended to be dissolved inside the mouth.

### Ointment (oint. or ung.)



Medication mixed in a semi-solid form used for external application.

### Powder



Ground into fine particles.

### Scored



A tablet that has been marked with an indentation for cutting. Unscored tablets should not be cut or broken.

### Sublingual (SL or subl.)



Tablet designed to dissolve under the tongue.

### Tablets (tabs)



Medication is molded or compressed into a solid form.

### Transdermal



Medication on a patch that is applied to the skin. The medication absorbs over time.

## Liquid Drug Forms

### Aerosol



Medication in which gas under pressure is used to dispense a liquid spray. Examples:

### Drops (gtt.)



Medication given by the drop. Examples: ear drops, eye drops

### Elixir (elix.)



Medication dissolved in alcohol and flavored with sugar. Example: cough syrup

### Solution (sol.)



Medication evenly dissolved in liquid. Example: saline

### Spray



Medication given in a fine mist. Example: nasal spray

### Suspension (susp.)



*(before mixing)*

Medication floats in a liquid but is not dissolved; needs mixing. Example: liquid



*(after mixing)*

### Syrup (syr.)



Medication dissolved in sugar water. Example: cough syrup

### Tincture (TR or tinct.)



Medication dissolved in alcohol. Example: tincture of benzoin

Student Name: .....

### Medication Names

Using the medication reference tool provided, locate the following information for the medications listed below.

Medication	Generic Name	Trade Name	Chemical Class
Lasix			
Motrin			
Pepcid			
Lanoxin			

### Medication Information

Using the medication reference tool provided, locate the information about the following drugs.

Medication	Action	Side Effects/Adverse Reactions
Phenergan		
Dulcolax		
Dilantin		

Student Name: .....

## MEDICATION CATEGORY STUDY

List the category/classification and form(s) of medications listed below using the medication reference tool provided.

Medication	Category/Classification	Form(s)
Nitroglycerin		
Aldactone		
Risperdal		
Abilify		
Celebrex		
Celexa		
Mylicon		
Axid		
Dilantin		
Colace		
Lortab		

# Worksheet

## Lesson 9: Introduction to

## Pharmacology/Medication Classification

## Lesson 10: Factors that Influence Medication Effectiveness

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions.

- |                            |   |
|----------------------------|---|
| a. _____ Allergic reaction | 1. Non-proprietary name for a drug  |
| b. _____ Generic name      | 2. Passage of substances across and into tissues  |
| c. _____ Trade name        | 3. Brand name of a drug   |
| d. _____ Dependence        | 4. The chemical changes in living cells by which energy is provided for vital processes, and activities and new materials created |
| e. _____ Metabolism        | 5. Location of medications in various organs or tissues after administration  |
| f. _____ Excretion         | 6. Acquired need for a drug that may produce symptoms of withdrawal when the drug is stopped                                      |
| g. _____ Absorption        | 7. The process of eliminating or getting rid of substances by the body  |
| h. _____ Distribution      | 8. The body's immune system over response to a foreign substance such as a food or drug   |

2. If a medication is topical, how is it absorbed?

3. If a medication is oral, how is it absorbed?

4. What is the most common way of distributing or transporting a medication to the site of action?

5. Which organ is most responsible for drug metabolism?

6. Which organ is most responsible for excretion of a drug?

7. List at least five factors that can affect how a drug works in the body.
8. The signs and symptoms of an allergic reaction include:
9. What should the medication aide do first if an allergic reaction is suspected?
10. How does age affect a person's response to drugs?

## **Lesson 10: Factors that Influence Medication Effectiveness (Care of the Long-Term Resident/Monitoring for Effects of Medication Usage)**

### **Student Overview**

#### **Lesson Objectives:**

- Understand how medications are absorbed, distributed, and excreted by the body.
- Identify the effects of aging on medication effectiveness.

#### **Key Terms:**

Absorption:

Distribution:

Edema:

Excretion:

Half Life:

Metabolism:

Sublingual:

## Lesson 10: Factors that Influence Medication Effectiveness (Care of the Long-Term Resident/Monitoring for Effects of Medication Usage)

### Absorption

**Absorption** occurs when medication moves from the site of administration into the bloodstream.

- Route of administration affects absorption.
  - Oral medications are absorbed the slowest.
  - **Sublingual** is faster than oral.
  - Injectable medications are absorbed faster and more completely than oral medications.
  - Inhaled medications are absorbed rapidly.
- The form of an oral medication affects how fast it is absorbed.
  - Oral medications often must be mixed with fluids to be absorbed.
  - Liquid medications absorb more rapidly than solids.
  - Sustained release tablets and capsules absorb slowly.
  - Enteric coated tablets are not absorbed until they reach the small intestine.
- The chemical composition of a medication determines whether it will be absorbed in the stomach or the intestine.
  - Acidic medications are absorbed in the stomach or the intestine. (example - aspirin)
  - Alkaline medications are absorbed in the small intestine. (example – Klor-Con (potassium chloride))
- The higher the dosage, the more rapidly the medication is absorbed.
  - Dosage is usually calculated by body weight.
  - Changes in body weight may require a dosage of medication to be adjusted to elicit the desired effect.
- The rate at which a medication is absorbed may change given the following factors:
  - Decreased saliva production.
  - Decreased gastric juice in the stomach.
    - Oral medications usually absorb faster if the stomach is empty.
    - Absorption may be delayed by food.
    - Food may prevent some medications from being absorbed (example – levothyroxine must be administered at least 30 minutes prior to breakfast and/or consuming caffeine).
  - Decreased movement of the esophagus and stomach muscles.
  - One medication may delay or prevent another from being absorbed (examples – antacids with tetracyclines; antacids with iron).
  - Fluids consumed with oral medications increase the rate of absorption.

### Distribution

**Distribution** – medication is carried to body cells through the bloodstream.

- When a medication is circulating free in the bloodstream, it is called a bio-available or free medication.



- Some medications become bound to the protein in blood plasma. When the medication is protein-bound, it is not bio-available, but is stored in the body for future use.
  - As a free medication moves into cells from the bloodstream, more of the protein-bound medication becomes bio-available.
  - Protein – bound medications remain in the body longer and therefore have a longer lasting effect.
- **Half-life** of a medication – the time it takes half of the medication to leave the bloodstream.
  - If the half-life is two hours, then 50 percent of the medication will be gone from the bloodstream in two hours.
  - The shorter the half-life, the more often a medication must be given to maintain a constant action.
- Medications are not absorbed equally by all types of cells.
  - A medication is received into a cell through its receptor site.
  - Muscle and fat cells accept and accumulate many medications.
  - Brain cells are receptive to few medications. For example, penicillin enters brain cells very slowly.
- How the body distributes medication may change with age due to several factors such as:
  - When there is less protein in the blood for protein-binding medications, a smaller dosage is required.
  - There may be a greater amount of body fat present to absorb medications.
  - Heart disease may cause edema or swelling – medications can become trapped in these fluids and be unavailable to the cells.

## Metabolism

**Metabolism** or biotransformation is the process by which a substance is changed into a form that is more easily excreted by the body.

- Most medications are metabolized by the liver.
- Kidneys, lungs, and intestines also help metabolize medications.
- Some medications can be excreted unchanged, but most must be metabolized.
- Different medications are metabolized at different rates.
- If metabolism is decreased, medication will accumulate in the blood and cells.
- If metabolism is increased, more medication will be required to produce the same effect (tolerance).
- The age of the resident can affect the rate of metabolism of the medication.
- Liver and kidney impairment may affect metabolism and increase the possibility of adverse effects.

## Excretion

**Excretion** is the process by which a medication is eliminated from the body.

- Most oral and parenteral medications are excreted by the kidneys through the urine.
  - Some medications are excreted in their original form and are changed by metabolism before excretion.

- All medications excreted by the kidneys are dissolved in the urine relative to the amount of fluid intake.
- Some oral medications are excreted by the intestines through the feces.
- Inhalant medications, such as ether, are excreted by the lungs through breathing.

### Other Factors that may Affect Effectiveness of Medications

- The amount of physical activity is thought to affect the rate of medication action.
- Chronic illness, such as diabetes and heart failure, may change the body's response to medication.
- Pain and anxiety may increase the amount of medication required to bring about a desired effect.
- Other emotional factors such as worry, fear and sorrow, may change the amount of medication required.
- Other chemicals present in the body may affect the potency of a medication.
  - Example: alcohol decreases the effect of some antibiotics but increases the effect of tranquilizers, such as Valium (diazepam) and Librium (chlordiazepoxide).

### Medication Interactions

- Medication interactions can have an unpredictable result, sometimes a greater effect and sometimes less. Some may cause a minor side effect, or the side effect may be of a greater magnitude causing an adverse effect.
  - An example of such an effect of a medication would be an allergic reaction to a medication.
    - Example: Levaquin (levofloxacin), which is used to treat pneumonia, may cause seizures.
  - Another example of a medication having a side effect which could escalate to an adverse effect is Lasix (furosemide). Lasix is used as a diuretic for **edema** (swelling), but may cause the resident to excrete a large volume of K<sup>+</sup> (potassium) which could lead to chemical imbalance (hypokalemia) and cardiac problems, such as arrhythmia. When left untreated, severe hypokalemia may lead to cardiac arrest.
- Medications that are contraindicated when used in combination with other medications can cause adverse reactions.
  - Example: Rayos (prednisone), a class of medication known as a corticosteroid, is contraindicated for use with a resident who has had a systemic reaction to the medication in the past or who has a systemic fungal infection.

### Factors That Influence the Effectiveness of Medications in the Elderly

- Failure of elderly persons to take medications as ordered can cause an undesirable effect.
  - The resident may refuse to take a certain medication. If so,
    - The licensed nurse must be notified.
    - New orders from the provider may need to be obtained in response to the refusal.

- Techniques to encourage a resident to take the medication and avoid refusals should be implemented. Such techniques include:
  1. Explain to the resident the importance of taking the medication as prescribed as well as potential negative outcomes of refusal.
  2. Encourage the resident to cooperate; offer food or fluid of choice, unless contraindicated due to interactions.
  3. If family or friends are involved in the care of the resident, seek their assistance.
  4. Do not force the resident to take medication; offer to return later.
  5. Call the nurse and follow his/her instructions.
  6. Document incident as required by facility procedure.
- Factors Related to Aging Which Influence Medication Effectiveness
  - Decrease in lung capacity.
  - Deterioration of muscle and nerve cells
  - Loss of muscle size
  - Increase in brittleness of bones.
  - Increase in body fat.
  - Decrease in blood flow to internal organs.
  - Decrease in kidney function.
  - Decrease in the ability to recover from illness.

**Notes:**

## REVIEW OF SYSTEMIC ACTIONS

(What happens to medication in the body)

<b>RECEPTION</b>	<i>Medication is introduced into the body</i>	<i>Methods of Administration</i> Oral, Rectal, Inhalation, Parenteral, Skin
<b>ABSORPTION</b>	<i>Medication is transferred into the bloodstream</i>	<i>Where it Happens</i> Stomach and Intestines Lungs, Cells
<b>DISTRIBUTION</b>	<i>Medication is carried by the blood to body cells</i>	<i>Where it Happens</i> Bloodstream
<b>METABOLISM</b>	<i>Medication is broken down to substances that can be excreted by the kidneys</i>	<i>Where it Happens</i> Liver
<b>EXCRETION</b>	<i>Excess medication and waste products are eliminated by the body</i>	<i>Where it Happens</i> Kidneys, Intestines, Lungs

## Lesson 11: Medication Supply and Storage

### Student Overview

**Lesson Objectives:**

- Identify the responsibility of the QMA to ensure medications remain properly stored and secure at all times.
- Understand the meaning of drug diversion and consequences thereof.

**Key Terms:**

Controlled Substance:

Drug Diversion:

EDK (Emergency Drug Kit):

Medication:

## Lesson 11: Medication Supply and Storage

### Forms in which medications can be supplied

- Multiple dose containers-a one week or one month supply of medication in a vial or bottle.
- Unit Dose packaging
  - Examples include: "bingo card," "bubble pack," or individually sealed doses of a medication that are sent by the pharmacy in a box.
- Multi-dose packaging: Includes all of a resident's scheduled medications in a sealed packet.
- Aerosols - dispensed in a multi-dose metered dose inhaler (MDI).
- Bulk non-legend medications - medications supplied in large containers. (\*Example: Metamucil)
- Liquid medications - can be dispensed in unit dose packaging or in 120 cc bottles.
- Aural, ophthalmic, nasal special type containers
  - Aural medications (ear drops) are usually dispensed in 1-ounce containers.
  - Ophthalmic medications are medications that are dispensed in liquid or ointment forms. Eye medications are sterile medications.
  - Nasal medications are instilled into the nares and can be in the form of sprays or drops.
- Enteric coated tablets are coated with a candy-like shell.
  - These medications are not recommended for crushing.
  - The coating may be either for taste purposes or to delay the absorption of the medication in the gastrointestinal tract.
  - Examples of these medications include Aspirin, Motrin, and some potassium supplements.
- Capsules are cylinder shaped and have a gelatin type of dissolvable covering.
  - Capsules should not be opened or crushed unless specifically recommended by the manufacturer or prescribing provider.
  - Capsules often contain time-released medications.
  - Examples of medications housed in capsules include Dilantin, Nitro-bid and iron preparations.
- Injectable Medications
  - To be administered ONLY BY LICENSED NURSES OR ADVANCED PRACTICE PROVIDERS/ PHYSICIANS (except as authorized in IC 16-28-1-11.5)
  - These medications are administered:
    - Subcutaneous (SQ) (slightly under the skin)
    - Intramuscular (IM) (within the muscle)
  - Intravenous (IV) medications are administered through intravenous solutions.
  - These medications are not to be prepared or administered by QMAs.
- Topical Medications such as creams, ointments and emulsions are suspended in a petroleum base to allow for absorption in the skin.
  - Examples of these medications include nitro patches, dandruff shampoos & Lidex ointment.
  - These products usually contain multiple doses of medications. The QMA should always wear gloves when applying these types of products.
  - If patches are prescribed, it is imperative the QMA remove the current patch from the resident's skin before applying a new patch. Medication administered in patches, such as nitroglycerin or analgesics, can easily be absorbed into healthcare workers' systems

when the patches are removed. Thus, the QMA should always wear gloves when handling transdermal or topical patches. Unless prescribed, or ordered, to a specific location of the body, patch application sites should be rotated to avoid skin irritation. For patches that require site alternation, it is important to document the location on the body where the patch was placed to alert other licensed personnel of its placement, so they, too, may avoid repeated application at the same site.

- Suppositories are medications within a semi-solid material that melts at body temperature.
  - Suppositories can be used to administer medications vaginally or rectally for absorption into the body.
  - Examples of medications that can be administered in the suppository form include Dulcolax, Aspirin and Tylenol.

## **Labeling of the Medication Container**

1. Resident's full name.
2. Prescriber's name.
3. Pharmacy prescription number.
4. Name, strength and amount of the medication dispensed.
5. Expiration date of all time-dated medications.
6. Date of issuance (date the prescription was filled or refilled).
7. Warning labels if needed.
8. Advanced practice provider's direction for use, including amount to be administered, route of administration, frequency to be administered and any special instructions.
  - For instance, a properly written order should read as follows:
  - Synthroid (levothyroxine) 25 mcg tablet
  - Give 1 tablet by mouth (or "PO") every morning 30 minutes prior to breakfast and caffeine containing beverages.
9. Labels on containers of controlled substances must have the following warning: "Caution: Federal Law prohibits the transfer of this medication to any person other than the person for whom it was prescribed."
10. Name, address, and telephone number of the issuing pharmacy.

NOTE\* If the medication is an over-the-counter medication which was not delivered by the pharmacy, a handwritten legible label with the resident's name and advanced practice provider's name must be present. The expiration date, name of the medication and strength should be printed on the container and not obscured by the handwritten label.

## **Medication Storage**

- Medication room - only authorized personnel may have access. The medication room must remain locked. Keys must remain with the staff member (licensed nurse or QMA) responsible for medication administration on each shift. Do not lay keys down on medication cart, at nurse's station, etc. Some facilities may use coded entries to medication rooms and/or carts. Do not share the code with unauthorized personnel.
- Medication cart or individual storage bin - must be locked when not attended or within visual range.

- Schedule II controlled substances - must be stored in the locked medication room or the locked medication cart and routinely counted every shift. Schedule III and IV medications may also be secured per facility policy.
- Some medications require refrigeration or protection from light.
- Emergency Drug Kit (**EDK**) or Medication Dispensing Machine (PYXIS)
  - Provided by the facility's pharmacy.
  - Ideally, 3 different kits are kept in a facility:
    1. A large kit containing a variety of medications that do not require refrigeration.
    2. A small kit, containing medications that must remain refrigerated.
    3. A kit containing I.V. supplies.
  - Utilized to start a newly ordered medication needed to be administered immediately or in the event a currently ordered medication is out of supply. Refer to the facility policy as to retrieving and accounting for medications taken from the EDK.
- Overflow or back-up meds - medication stored in a designated area of the medication room; to be utilized when the supply on the medication cart is exhausted.

\*Care and cleaning of medication room, cart and refrigerator is normally dictated by facility cleaning policies.

## Controlled Substances

The pharmacist must maintain records of the amount of controlled medications filled for each resident for whom he/she provides the medication. Each pharmacist and provider/physician have a special number which allows close monitoring of all controlled medications by the DEA (Drug Enforcement Agency).

Each facility has policies and procedures that account for controlled medications and a quality assurance system to assure a valid counting system.

Medications classified under the law as **controlled substances** are categorized in the following classifications:

1. Schedule I medications
  - a. Have the highest potential for abuse.
  - b. These medications could also be called high market street medications.
  - c. Examples of these medications include heroin and marijuana (cannabis).
2. Schedule II medications
  - a. Have a high potential for abuse.
  - b. Examples of these medications include methadone (Dolophine), oxycodone (OxyContin), morphine (MS Contin), fentanyl (Duragesic).
3. Schedule III medications
  - a. Have a moderate potential for abuse.
  - b. An example of this medication is Tylenol with codeine, as it has less than 90 milligrams (mg) of codeine per dosage unit.
  - c. Another example is buprenorphine (Suboxone).
4. Schedule IV medications



- a. Have minimal potential for abuse.
  - b. Examples of these medications include Xanax, Valium, Ativan, Tramadol.
5. Schedule V medications
- a. Are routinely administered medications.
  - b. Examples of these medications include Robitussin AC and Lyrica.

Schedule I, II, III and IV medications must be counted at the beginning and end of each shift. The count is normally conducted with one "off-going" staff member and one "on-coming" staff member. This can be two licensed nurses or one licensed nurse and one QMA. Refer to facility policy regarding facility-specific practices in counting scheduled medications.

- These medications must be signed out for each administration with the amount remaining accurately documented.
- A QMA may administer controlled substances if the task has been addressed in the facility's policy and procedure.
- Should a QMA discover the medication count is wrong or that pills are missing, the QMA must IMMEDIATELY notify the nurse for further investigation.

Administering controlled substances to an individual other than the person for whom they were prescribed is a crime under Indiana law. This offense is referred to as ***drug diversion***, a form of misappropriation. **Healthcare workers associated with drug diversion undergo investigation and risk the revocation of licensure/certification as well as being incarcerated if found guilty.**

**Notes:**

## Lesson 12: Medication Orders

### Student Overview

**Lesson Objectives:**

- Understand the need to accurately review orders and administer medications accordingly.
- Acknowledge the prohibition of the QMA transcribing advanced practice provider's orders.

**Key Terms:**

PRN – Pro Re Nata:

STAT Orders:

## Lesson 12: Medication Orders

### Introduction

A provider's order is required before any member of the health care team can administer a medication. Whether the medication is ordered on a prescription blank or an order sheet in the nursing facility, seven basic parts must be included to make it valid. Abbreviations and symbols are commonly used in medical orders. E-prescribing is a common practice health care professionals use to order or change prescription orders. This involves prescriptions being sent electronically to the pharmacy for dispensing of the medication.

Knowledge of abbreviations and symbols is essential for accurate interpretation of an order and medication administration. It is also helpful to become knowledgeable of commonly used medical word elements (roots, pre-fixes, and suffixes). This knowledge will assist the QMA in understanding the condition and diagnoses of the resident.

### Medication Orders

Medication orders are written on the resident's chart by a provider, such as a medical physician, a physician of dentistry, a physician of osteopathy, podiatrist, physician assistant or nurse practitioner.

May be given by a provider to a licensed nurse or pharmacist verbally or per telephone order when the provider is not available to write the order. The provider then signs the verbal/telephone order on his/her next visit to the facility.

### **Qualified Medication Aides are prohibited from taking written, verbal or telephone orders from physicians/providers.**

- A medication can be ordered on a prescription blank or on an order sheet in the health care facility.
  - The advanced practice provider will order medications by either brand (generic) or trade (the name a company specifically gives a medication) name.
    - The generic name will always be in small case lettering.
    - The first letter of the trade name will be in upper case lettering.
    - Examples of some medications' trade and generic names are Atarax (hydroxyzine), Prozac (fluoxetine hydrochloride), Cipro (ciprofloxacin)
    - Some medications are combinations of two medications such as: Sinemet (carbidopa and levodopa).
    - Electronic prescribing (E-prescribing) is becoming common and involves the healthcare provider ordering medications electronically directly to the dispensing pharmacy. This is the preferred method of prescribing controlled substances.
- It is the responsibility of the personnel administering the medications to follow an advanced practice provider's written order.
  - The QMA has the right and the responsibility to question any medication order he/she is not comfortable in following.

- When in doubt, ask a licensed nurse in the facility before administering any medication. Communicate before you medicate!

## Types of Medication Orders

- Advanced practice provider's written orders on a resident's current clinical record.
- Prescription orders
  - The resident may return from the advanced practice provider's office or a nurse practitioner's office with a new written prescription or a newly filled prescription. If so, the licensed nurse must be notified for transcription and initiation of the new order.
- **STAT orders** – orders that are received from the provider to be carried out immediately.
- Verbal Orders (QMAs may not take verbal orders.)
  - These orders are written on a verbal order/telephone order form by a licensed nurse and transcribed by the nurse to the appropriate form (medication administration record, treatment administration record, etc.).
- Routine orders to be administered daily per the advanced practice provider's recapitulation of orders (i.e., recap).
- **PRN – Pro re nata** (as needed)
  - To be given as requested by resident or for conditions exhibited by the resident (e.g., pain, elevated temperature, nausea, etc.).
  - Administration of all PRN medications by the QMA must be approved by the licensed nurse. This approval must be documented in the medical record.
- Stop orders on medications – Some orders are stopped automatically after a specified time due to facility or pharmacy policy or medical provider. (example – antibiotics are usually prescribed for a period of 3-10 days)
- Refill instructions.

## Checking the Medication Orders

- If the dosage of a resident's medication has changed, it may be necessary to return the current medication to the facility pharmacy. The pharmacy will then deliver the medication in the correct dose.
- In all instances, the QMA should follow the facility policy regarding any discontinued or unused medications.
- Each resident has medication administration records (MAR) that contain the original orders for each medication the resident is to receive. These orders may be in paper or electronic form (eMAR). These orders are then carried over to a monthly recapitulation (i.e., recap).
- If there is a discrepancy between the dosage on the pharmacy label and the MAR, notify the nurse.
- DO NOT GIVE the medication if you are uncertain about the correct dosage— CALL THE NURSE FIRST.
- If the nurse informs you that a medication has been discontinued, the resident should stop taking the medication. The nurse is responsible to transcribe this discontinuance on the medical record of the resident.
  - If the resident returns from the advanced practice provider's office with orders to discontinue a medication, notify the nurse.

- Explain to the resident that the medication has been discontinued. Return any unused portion of the resident's medication to the pharmacy per the facility's policy.

## **SIX RIGHTS of Medication Administration**

When preparing to administer medications per the orders of the provider, the QMA must follow the "six rights" of medication administration.

1. Give the Right Medication – compare the label on the medication with the medication order or the resident's medication administration record.
2. Give the Right Dose – compare the order with the label on the medication if different, ask the nurse for further instructions.
3. Give medication to the Right Resident – compare the name on the medication administration record with the resident's I.D. band or other means of identifying the resident.
4. Give medication by the Right Route – compare the medication order, the medication administration record, and the label.
5. Give the medication at the Right Time – compare the medication order, the medication administration record, and the label. The medication is to be administered within 60 minutes before or after the prescribed time. Refer to the facility policy as it pertains to medication administration times, as some facilities may utilize "AM" and "PM" administration versus exact times, adhering to person centered care.
6. Right Documentation – record medication as soon as it is administered.

**Notes:**

# Worksheet

## Lesson 12: Medication Orders

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions.

- |                     |                                    |
|---------------------|------------------------------------|
| a. _____ Inhale     | 1. Interface between air and water |
| b. _____ Exhale     | 2. Referring to the ear            |
| c. _____ Meniscus   | 3. To breathe in                   |
| d. _____ Ophthalmic | 4. Under the tongue                |
| e. _____ Aural      | 5. Referring to the mouth          |
| f. _____ Sublingual | 6. To breathe out                  |
| g. _____ Oral       | 7. Referring to the eye            |

2. When are the three safety checks performed during medication setup?

3. Fill in the blanks of the following lists of precautions.

- Do not touch medications with your \_\_\_\_\_ hands.
- Always \_\_\_\_\_ the medication room or cart when leaving the area.
- Do not give a drug if the resident is \_\_\_\_\_ to it.
- Do not give a drug if you are not positive of the resident's \_\_\_\_\_.
- Do not \_\_\_\_\_ sustained release, enteric coated, buccal, or sublingual medications.
- Report and record any possible \_\_\_\_\_ to drugs.
- Wash hands as needed \_\_\_\_\_ residents.
- Report \_\_\_\_\_ controlled drugs immediately.

4. Review and practice the skills of all basic routes. Be prepared to demonstrate these skills.

## Lesson 13: Weights, Measures and Simple Mathematics

### Student Overview

**Lesson Objectives:**

- Commit to memory common abbreviations for weights and measures.
- Correctly identify common equivalents.

**Key Terms:**

Apothecary System:

Metric System:

## Lesson 13: Weights, Measures and Simple Mathematics

### Introduction

There are several systems of measurement, including:

### Household System

- Less exact than other systems.
- Used in the home for administering medication.
- Uses varying sizes of measuring devices.
- Uses numbers and fractions to designate amounts, i.e., 1 teaspoon, 1 ½ tablespoons.

Units of measure:

- Dry measurement
  - pinch
  - teaspoon      t or tsp
  - tablespoon    T or Tbs
  - ounce          oz
  - pound          lb
- Wet measurement – liquid
  - drop            gtt
  - drops           gtt
  - teaspoon       t or tsp
  - tablespoon    T or TBS
  - ounce          oz
  - cup             c
  - pint            pt
  - quart          qt

### Apothecary System

The apothecary system is an old English system brought to America by the colonists. The apothecary system is no longer widely used and is gradually being replaced in medicine by the **metric system**.

### Metric System and Medications

Units of metric measurement and abbreviations:

- Dry ingredients – measured by weight
  - kilogram          kg
  - gram                g
  - milligram          mg
  - microgram        mcg



- Liquids - measured by volume
  - liter L
  - milliliter ml
  - cubic centimeter cc
    - Although cubic centimeter is still widely used as a unit of measurement, milliliter is the preferred unit of measurement for liquids.
- Length
  - centimeter cm
  - millimeter mm
  - meter m
- Numbers are used before metric system abbreviations to designate amount.

Examples: 250 mg (250 milligrams)

30 ml (30 milliliters)

- Any amount less than a whole number (decimal) must have a zero and a period in front of it.

Examples: 0.5 mg (one half milligram)

0.25 ml (one fourth milliliter)

- Special measures:
  - Unit: standardized amount needed to produce desired effect; a unit of measure is different for each medication.
    - Medications measured by units include vitamins, Heparin and insulin.
  - Milliequivalent – 1/1000 of an equivalent weight of a chemical.
    - Abbreviation – mEq
    - Medications measured by using the mEq are Vitamin B12, potassium chloride, sodium chloride and some intravenous additives.

## Equivalents

- Volume
  - 1 liter (l or L) = 1,000 milliliters (ml)
  - 1 ml (milliliter) = 1 cc (cubic centimeter)
  - 30 ml = 1 ounce
  - 1 teaspoon (tsp) = 5 ml
  - 1 tablespoon (T or Tbs) = 15 ml

## Simple Mathematics

- Review the basic four mathematic functions:
  1. Add
  2. Subtract
  3. Multiply

#### 4. Divide

- Review how to read decimals and fractions.
- Review how to add simple fractions and decimals.

**Notes:**

## SUMMARY OF SYSTEMS OF MEASUREMENT AND EQUIVALENTS

HOUSEHOLD	
<b>Dry (Weight)</b> ounce (oz) pound (lb) = 16 oz. ton (T) = 2000 lbs.	<b>Liquid (volume)</b> drop (gtt) drops (gtts) teaspoon (tsp) tablespoon (Tbsp) = 3 tsp cup (c) = 8 oz. pint (pt) = 2 cups quart (qt) = 2 pints
APOTHECARY	
<b>Dry (weight)</b> grain (gr) dram (dr) = 60 grains ounce (oz) = 8 drams drams pound (lb) = 16 ounces	<b>Liquid (volume)</b> minim (m) fluid dram (f dr) (f) = 60 minims fluid ounce (f oz) (f) = 8 pint (pt) = 16 ounces quart (qt) = 2 pints
METRIC	
<b>Dry (weight)</b> microgram (mcg) milligram(mg) = 1000 mcg gram (g, gm) = 1000 mg kilogram (kg) = 1000 gm	<b>Liquid (volume)</b> milliliter (ml) or cubic centimeter (cc) liter (l) = 1000 cc or 1000 ml
APPROXIMATE EQUIVALENTS	
<p><i>Equivalents are only approximate and should never be used as exact equals</i></p> <p>1 oz =30 cc (for intake and output)</p>	

Student Name: \_\_\_\_\_

Date: \_\_\_\_\_

## EQUIVALENTS/ABBREVIATION WORKSHEET

Metric System:

A. Write the abbreviations for the following:

1. liter \_\_\_\_\_
2. gram \_\_\_\_\_
3. milliliter \_\_\_\_\_
4. milligram \_\_\_\_\_
5. cubic centimeter \_\_\_\_\_

B. Write the following dosages, using the correct abbreviations and numbers:

1. One and one-half grams \_\_\_\_\_
2. Three tenths of a milligram \_\_\_\_\_
3. Two and one-half milligrams \_\_\_\_\_

C. Write the following as they would be read aloud:

1. 1.0 gm. \_\_\_\_\_
2. 0.5 gm. \_\_\_\_\_
3. 0.3 gm. \_\_\_\_\_
4. 625 mg. \_\_\_\_\_
5. 4.0 mg. \_\_\_\_\_
6. 250mg. \_\_\_\_\_

D. Write the following using the correct symbols, numbers and abbreviations:

1. Three ounces of mineral oil \_\_\_\_\_
2. One and one-half drams of Cascara \_\_\_\_\_
3. Five grains of Aspirin \_\_\_\_\_

Apothecary System:

A. Write the correct abbreviations and/or symbols for the following measurements:

1. dram \_\_\_\_\_
2. quart \_\_\_\_\_
3. pint \_\_\_\_\_
4. ounce \_\_\_\_\_
5. gram \_\_\_\_\_

B. Write the following as they would appear in a medication order:

1. 3 grams \_\_\_\_\_
2. 1 ½ grains \_\_\_\_\_
3. 2 ounces \_\_\_\_\_
4. ½ grain \_\_\_\_\_
5. 10 drops \_\_\_\_\_
6. 15 minims \_\_\_\_\_
7. ¼ grain \_\_\_\_\_
8. 4 fluid ounces \_\_\_\_\_

## **Lesson 14: Abbreviations Used to Designate Time and Frequency of Medication Administration**

### **Student Overview**

#### **Lesson Objectives:**

- Identify common medical abbreviations for the number of times per day a medication is to be administered.
- Identify common abbreviations to indicate the specific number of hours between doses of a medication.
- Identify common abbreviations relative to ordered medications.

#### **Key Terms:**

Abbreviation:

## **Lesson 14: Abbreviations Used to Designate Time and Frequency of Medication Administration**

### **Introduction**

The following abbreviations are standardly recognized in the healthcare industry; however, the facility may specify a list of accepted abbreviations. The QMA should always refer to the facility policy. With the increased use of eMAR, abbreviations may be used less often.

### **Abbreviations Used to Specify the Number of Times Per Day**

- bid                      twice a day
- tid                      three times a day
- qid                      four times a day
- qd                      daily
- qod                      every other day
- hs                      at bedtime
- ac                      before meals (approximately one-half hour)
- pc                      after meals (approximately one-half hour)

Medication ordered qd should be given at the same time each day. Be sure to know the time schedules for daily medication in your facility. Facility policy will normally dictate the hours at which routine (such as bid, tid, qid) medications are scheduled to be administered. For example, bid medications may be administered at 9 a.m. and 9 p.m.

### **Abbreviations Used to Specify the Number of Hours Between Doses**

- qh                      every hour
- q2h                      every two hours
- q3h                      every three hours
- q4h                      every four hours
- q6h                      every six hours
- q8h                      every eight hours
- q12h                      every twelve hours
- q24h                      every 24 hours
- q72h                      every 72 hours

### **Abbreviations Used for Medications or Treatments Ordered as Needed**

- ad lib                      as desired
- stat                      immediately, now
- prn (pro re nata)                      as needed—usually ordered with a certain time interval

Example - Tylenol 1000 mg PO prn q4h for pain. The “prn” means that the medication is given when the resident needs it. The “q4h” is a safeguard, meaning that if a resident should need another prn dose, it should be given at least four hours after the previous prn dose.

## Miscellaneous Medical Abbreviations Used

- $\bar{c}$  with
- D/C discontinue
- Fx fracture
- h hour
- HS bedtime, hour of sleep
- hx history
- MKAB may keep at bedside
- N/A, NA not applicable, not available
- NKA No known allergies
- NKDA No known drug allergies
- NPO nothing by mouth
- N/V nausea and vomiting
- OD right eye
- OS left eye
- os mouth
- ou both eyes
- p after
- PA posterior-anterior
- per by, through
- PO, po by mouth
- q every
- qam every morning
- qhs every night
- R/T, r/t related to
- Rx prescription or treatment ordered by an advanced practice provider
- $\bar{s}$  without
- SOB shortness of breath
- s/s signs/symptoms
- TO telephone order
- TPR temperature, pulse, respiration
- vs, v/s vital signs

**Notes:**

## Summary of Common Abbreviations for Medication Orders

Word Element	Refers to or Means	Word Element	Refers to or Means
ac	before meals	OD	right eye
ad lib	as desired	OS	left eye
bid	twice a day	OU	both eyes
B/P	blood pressure	oz	ounce
c	with	pc	after meals
cc	cubic centimeter	per	by means of
cm	centimeter	PM,pm	afternoon, evening
c/o	complained of	po, PO, per os	by mouth, orally
dr	dram	PRN,pm	whenever necessary
GI	gastrointestinal	pt	pint
g, GM, gm	gram	q	every
gr	gram	q3h	every 3 hours
gtt, gtts	drop(s)	qid	four times a day
h, hr	hour	qt	quart
hs,HS	at bedtime	RBC	red blood cell
IM	intramuscular	s	without
I/V	intravenous	SC, subq	subcutaneous
kg,Kg	kilogram	ss, ss	one-half
L	liter	stat	immediately
lb	pound	supp	suppository
med, meds	medication(s)	tbsp, T, Tbs	tablespoon
m,mm	minim	tid	three times a day
mEq,meq	milliequivalent	tsp, t	teaspoon
Mcg,g	microgram	U,u	unit
mg	milligram	WBC	white blood cell
ml	milliliter		
NPO, npo	nothing by mouth		



## Lesson 15: The Gastrointestinal System

### Student Overview

**Lesson Objectives:**

- Become familiar with the basic anatomy and physiology of the G.I. system.
- Identify the effects of aging on the G.I. system.
- Identify the classifications of medications that affect the G.I. system.

**Key Terms:**

Cecum:

Cirrhosis:

Constipation:

Diarrhea:

Duodenum:

Dyspepsia:

Fecal Impaction:

GERD:

Hepatitis:

Ileum:

Jejunum:

Nonalcoholic steatohepatitis (NASH):

Parasite:

Peristalsis:

Pyorrhea:

Ulcer:

## Lesson 15: The Gastrointestinal System

### Introduction

The Gastrointestinal System (also known as the G.I. tract) is divided into two parts:

1. The alimentary canal or tract which is the passageway for food and is a continuous tract from the mouth to the rectum; and
2. The accessory organs that aid in the digestion of food.

### Structure and Function of the Alimentary Canal

- Mouth - (oral cavity) chews food and mixes it with saliva.
  - Contains six pairs of salivary glands.
  - Enzymes in saliva begin breaking down food for digestion.
- Esophagus - connects mouth and stomach.
  - Muscular tube covered with mucous membrane.
  - Propels food toward stomach.
- Stomach - "C" shaped organ that holds and mixes food with digestive juices.
  - Muscular pouch that secretes enzymes, hydrochloric acid, and other juices for digestion.
  - Located in the upper left side of the abdomen, below the diaphragm.
  - Peristaltic action (wave-like muscular contractions) churns and mixes food with gastric juices, breaking it down for absorption.
  - Food remains in stomach 3-5 hours (depending on type and amount).
  - Stomach empties into the **duodenum** where the duodenum and pancreas secrete enzymes to emulsify the bile and raise the PH of the stomach content.
- Small Intestine (**duodenum, jejunum, ileum**) - where nutrients are absorbed into the bloodstream.
  - Muscular tube approximately 1 ½ inches in diameter and 20 feet long.
  - Partially digested food from the duodenum enters into the **jejunum** portion of the small intestine.
  - Products of digestion absorbed into bloodstream through the venous and capillary system of the small intestine.
  - The raw digestive material then flows to the ileum area and the cecum area of the small intestine before the content reaches the large intestine.
  - The **cecum** is a blind pouch which forms the first part of the large intestine and is located below the entrance of the ileum. The cecum is a repository for bacteria and other organisms to digest cellulose.
  - Contents of the small intestine reach the large intestine approximately 3 hours after the stomach is emptied.
  - Unabsorbed food moves into the large intestine by peristaltic action.
- Large Intestine - absorbs water from the contents.
  - Muscular tube approximately 1 ½" in diameter and five feet long, moves the food in peristaltic action further and further down the large intestine toward the anus.
  - Water is absorbed from unused food. Contents are stored until eliminated from the body through the rectum as feces.

- Rectum - end portion of large intestine.
- Anus - opening at the end of the digestive tract for expelling feces.

## **Accessory Organs of the Digestive System**

- Teeth - crush and break up food for digestion. The normal adult has 28-32 teeth.
- Tongue
  - Soft, muscular, flexible organ.
  - Contains taste buds.
  - Directs food for chewing and helps push food from the mouth to the throat for swallowing.
- Salivary Glands
  - Produce saliva to keep the mouth moist and begin to break down the food.
  - Contain ptyalin, which aids in converting starch to sugar, to assist in carbohydrate digestion.
- Pancreas
  - Small gland located behind the stomach.
  - Secretes important enzymes into the small intestine to aid digestion.
  - Secretes insulin – a hormone that is necessary to metabolize (use) sugar.
- Liver
  - Highly vascular organ located in the upper right of the abdomen; secretes digestive substances.
  - Veins from digestive organs carry nutrients to the liver first.
  - Liver changes nutrients to usable chemicals for the body and stores them for use when needed.
  - Bile is secreted by the liver into the gall bladder.
  - Bile aids in the digestion of fats.
  - Many medications are metabolized in the liver.
- Gall bladder
  - Located behind the liver.
  - Stores bile from the liver until it is needed for digestion of fat.
  - Bile is greenish colored fluid that aids in digestion of fatty foods.

## **Overview of the Digestive System**

The digestive system is a system of organs that work to break down the chemical components of food using digestive juices.

- The digestive process begins in the mouth with the teeth that grind the food into small particles.
  - The tongue is a powerful muscle that detects the different flavors in food via tastebuds and manipulates the food between the teeth for chewing.
  - Saliva is a watery fluid which lubricates chewing and swallowing and begins the process of digestion.
- The digestive system begins in the mouth, continues through the pharynx (throat) and esophagus, and into the stomach, small and large intestines, the rectum, and the anus.

- Food is chewed, pulped, and mixed with saliva to become a soft mass which will easily travel down the esophagus.
- The tongue traps the food and forces it into the throat, which is a mass of muscles and tissues which transports food into the stomach for final processing and distribution.
- The throat closes the top of the trachea. If food, liquid, or other material accidentally enters the airway and eventually the lungs, it can lead to serious health issues, such as asphyxiation (to be deprived of oxygen) and/or pneumonia. This is referred to as aspiration.
- The food is mixed with chemicals as it passes through the body. The chemicals break down the food into smaller units that can be absorbed into the blood and lymph systems.
- Some of the food is used for energy, some as building blocks for tissues and cells, and some is stored for future or emergency use.
- The liver and pancreas also secrete digestive juices that break down food as it passes through the digestive ducts.
- Not all that we eat can be digested, so the waste must be disposed of in an efficient way.

## Disorders of the Gastrointestinal System

- **Cirrhosis** - severe disease of the liver usually associated with alcohol abuse, nutritional deficiency, poisoning or previous infection such as viral hepatitis. Scar tissue replaces normal liver tissue.
- **Constipation** – a condition in which you may have fewer than three bowel movements a week; stools that are hard, dry, or lumpy; stools that are difficult or painful to pass; or a feeling that not all stool has passed.
- **Diarrhea** – loose, watery stools three or more times per day. Diarrhea may be acute, persistent, or chronic. Acute diarrhea is more common than persistent or chronic diarrhea.
- **Dyspepsia** - indigestion, often caused by change in the amount of gastric secretions.
- **Fecal impaction** - the formation of a firm mass of feces in the distal colon or rectum.
  - **QMAs are not permitted to check a resident for fecal impaction.**
- **GERD** - gastroesophageal reflux disease; reflux of gastric contents into the esophagus. Reflux may occur in association with obesity, pregnancy, or incompetence of the lower esophageal sphincter.
- **Hepatitis** - inflammation of the liver.
- **Nonalcoholic steatohepatitis (NASH)** – a common cause of cirrhosis, NASH has emerged as the major form of chronic liver disease and is expected to become the leading indication for liver transplantation.
- **Parasite** - an organism that lives within, upon or at the expense of another organism (host). Intestinal parasites are found in the intestinal tract of the host.
- **Pyorrhea** - inflammation of the gum and tooth sockets leading to loosening of the teeth.
- **Ulcer** - repeated irritation causes a sore in the lining of the stomach or duodenum.

## Effects of the Aging Process on the Gastrointestinal (GI) System

As the human body ages, changes occur in the digestive system:

- **Peristalsis** (the involuntary constriction and relaxation of the muscles of the intestine which pushes contents of the canal forward) slows down which sometimes causes constipation.
- Diminished mucosal elasticity.
- Reduced G.I. secretions, affecting digestion and absorption.
- Decreased motility, bowel wall and anal sphincter tone and abdominal wall strength.
- Liver changes: decreases in weight, regenerative capacity and blood flow.
- Decline in hepatic enzymes involved in oxidation and reduction, causing less efficient metabolism of medications and detoxification of substances.

## Medications Affecting the Digestive System

- Antacids:
  - Action: neutralizes stomach acid; treats hyperacidity.
  - Use: peptic ulcer, used to treat heartburn; reflux esophagitis, gastritis, hiatal hernia.
  - Examples of medication groups by ingredient and side effects:
    - calcium salts (TUMS)—potentially constipating.
    - aluminum salts (Rolaids)—usually constipating.
    - magnesium salts (Milk of Magnesia)—usually causes diarrhea.
    - combination of magnesium and aluminum (Maalox, Mylanta, Gelusil, Riopan)—used to balance out the constipating laxative effect.
    - simethicone (Mylicon)—antiflatulence agent that decreases gas formation and is often added to antacids or taken as preventative.
    - other common side effects may include headache, nausea, vomiting, stomach cramps, or pain in the abdomen.
  - Nursing Considerations:
    - antacids may interfere with medication absorption thus should not be given simultaneously with other medications. Wait 1-2 hours.
    - antacid effect is prolonged when medication is taken with food.
    - chart amount and consistency of stools.
    - antiflatulence tablets must be thoroughly chewed.
- Anti-ulcer:
  - Action: prevents the release of gastric acid to treat or prevent stomach and duodenal ulcers.
  - Side effects are minor. High doses can cause confusion.
  - Examples of medications:
    - famotidine (Pepcid)
    - nizatidine (Tazac)
    - cimetidine (Tagamet HB)
    - pantoprazole sodium (Protonix)
  - Other medications to be given before meals include:
    - omeprazole (Prilosec)
    - sucralfate (Carafate)
    - lansoprazole (Prevacid)
    - esomeprazole magnesium (Nexium)
      - Works by adhering to the ulcerated area.
  - Nursing Considerations:

- Carafate may be taken whole with a glass of water, broken in half, or crushed and dissolved in warm water.
  - encourage resident not to smoke, which increases gastric acid secretion.
  - encourage resident to avoid spicy food, caffeine, nicotine, alcohol and carbonated beverages.
- Antiemetics:
  - Action: suppress nausea and vomiting by acting on the brain control center.
  - Use: to treat nausea and to treat and prevent vomiting.
  - Side Effect: drowsiness
  - Examples:
    - dimenhydrinate (Dramamine)
    - meclizine (Antivert)
    - prochlorperazine (Compazine)
    - promethazine hydrochloride (Promacot)
    - ondansetron (Zofran)
  - Nursing Considerations: monitor blood pressure for hypotension.
- Emetics:
  - Action: induce vomiting by acting on brain control center.
  - Use: used when poison has been ingested.
  - Side Effect: do not use when corrosive product ingested, such as, acids or alkalies, or if resident is drowsy or unconscious. The licensed nurse should contact the provider and/or poison control center before administering.
  - Example: Syrup of Ipecac
  - Nursing Consideration: usually induces vomiting 20-30 minutes after administered.
- Antidiarrheals—medications that relieve diarrhea
  - Adsorbents
    - Action: adsorb (soak up) excess fluids and bacteria.
    - Uses: to treat diarrhea.
    - Side Effects: minimal constipation, nausea, dry mouth, and abdominal pain.
    - Examples:
      - Kaolin
      - bismuth (Pepto-Bismol)
      - pectin (from apples)
      - kaolin and pectin (Kaopectate)
    - Monitor residents for constipation.
  - Opioid Derivatives – Opioids are typically used to treat moderate to severe pain, however, they have the side effect of inhibiting intestinal peristalsis, intestinal absorption, and diminishing secretions. Therefore, some opioid derivatives are FDA approved to treat diarrhea.
    - Action: reduce peristalsis by action on enteric nervous system and diminishes secretions.
    - Side Effects: drowsiness, may be addicting
    - Examples: loperamide (Imodium); diphenoxylate and atropine (Lomotil)
- Gastrointestinal medications that alter motility
  - Action: acts on autonomic nervous system to alter peristalsis.
  - Use: spastic colon; diarrhea; **Gastroesophageal Reflux Disease (GERD)**

- Side Effects: varied and many because of the effect on entire autonomic nervous system:
  - blurred vision
  - dry mouth
  - heart palpitations
  - urine retention
  - constipation.
- Examples for decreased motility:
  - atropine sulfate
  - diphenoxylate/atropine (Lomotil)
  - Atropine
  - Scopolamine
  - phenobarbital (Donnatal)
  - kaolin
  - pectin
  - loperamide (Imodium)
  - dicyclomine (Bentyl)
- Examples of medications that enhance intestinal motility
  - metoclopramide (Reglan) – give before meals rather than with food. Note: Reglan can cause the serious side effect of tardive dyskinesia (Involuntary, repetitive body movements, including grimacing, sticking out the tongue, smacking the lips, and/or rapid jerking movements).
- Nursing Considerations: monitor vital signs and urinary output.
- Cathartics (laxatives)
  - Laxatives which stimulate intestinal peristalsis: usually act in 6-8 hours when given in oral form. Suppositories act faster.
  - Examples of laxatives:
    - castor oil
    - senna (Senokot)
    - bisacodyl (Dulcolax)
    - phenolphthalein (Ex-Lax, Doxidan)
  - Side Effects: abdominal cramping, nausea, diarrhea
  - Nursing Considerations: monitor for diarrhea
- Saline laxatives pull fluid into the large intestine
  - Action: acts within 8 hours
  - Side Effects: diarrhea and cramping
  - Example: Milk of Magnesia
  - Nursing Considerations:
    - shake suspension well
    - ensure good fluid intake following administration of the laxative.
- Lubricant Laxatives:
  - Action: increases water retention in stool thereby stimulating evacuation.
  - Side Effects: interferes with absorbing nutrients. Should not be taken at mealtime or long term. Resident may experience abdominal cramping.
  - Examples:
    - Mineral oil – works within 2-6 hours. Administer on an empty stomach. Can give with fruit juice to disguise taste.

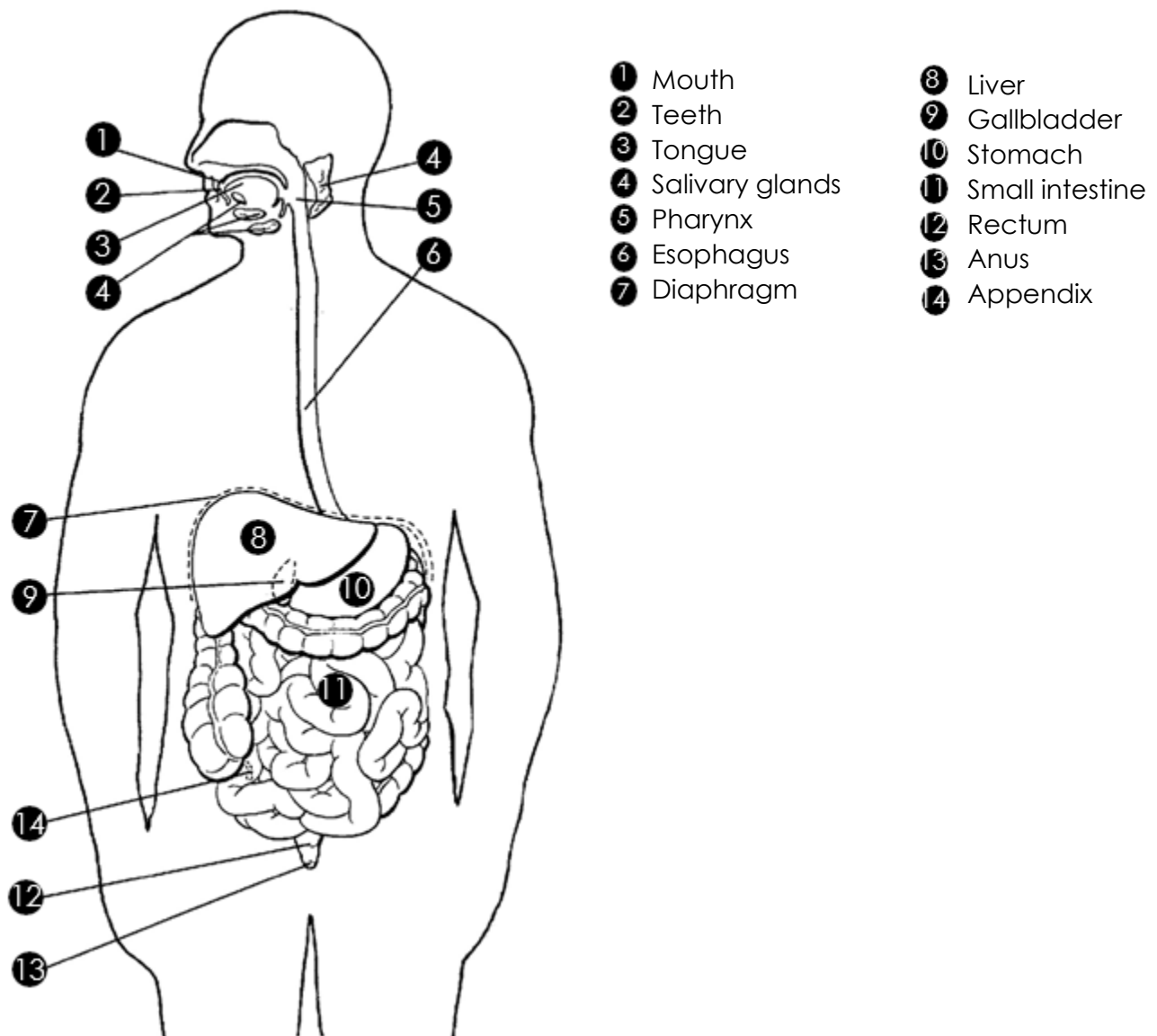


- Haley's MO
  - Glycerin suppository – should be retained for at least 15 minutes for best results.
- Nursing Considerations: may interfere with absorption of vitamins
- Laxatives that moisten fecal matter
  - Action: stool softener, used to promote regular bowel evacuation.
  - Side Effects: mild abdominal cramping can cause diarrhea.
  - Examples:
    - docusate calcium (Surfak)
    - docusate sodium (Colace)
    - calcium polycarbophil (Fiber Con)
    - Nursing Considerations: Instruct resident that it may take 1-3 days to soften stools. If resident has a routine order for a laxative, stool softener or lubricant and is experiencing diarrhea, consult the licensed nurse as to whether the medication should be withheld.
- Laxatives which increase bulk
  - Action: Adsorbs (adhesion of a liquid to the surface of a solid) water and expands to increase bulk and moisture content of stool. Acts within 12 hours to 3 days as the most natural, non-irritating method to relieve constipation.
  - Side Effects:
    - Nausea
    - Vomiting
    - diarrhea with excessive use
    - esophageal, gastric, small intestine and rectal obstruction when medication is taken in dry form.
  - Examples: psyllium (Metamucil); methylcellulose (Citrucel).
  - Nursing Considerations: must be administered with at least 8 oz. of pleasant tasting liquid; encourage an additional glass of fluid. Use sugar free formula for diabetics.
- Lactulose (Chronulac, Enulose)
  - Action: pulls fluid into the intestine, resulting in distention that promotes peristalsis. Used as a laxative. Also used in residents with liver disease to remove excess ammonium from the blood stream due to liver disease.
  - Side Effects: abdominal cramping, diarrhea, and flatulence.
  - Nursing Considerations:
    - may dilute with water or fruit juice or give with food to minimize sweet taste.
    - store at room temperature.
- Enemas:
  - A prepackaged disposable enema is used to clean the bowel in preparation for tests. These solutions are hypertonic—they draw fluid to the bowel. Because this type of enema draws fluid to the bowel, it cannot be used on a resident who is dehydrated.
  - Example: sodium phosphates (Fleets Enema). Administration technique:
    - Place the resident in a left Sim's side lying position.
    - Insert the pre-lubricated tip of the enema into the resident's rectum and instill the solution at a slow steady rate.
    - Instruct the resident to hold the solution as long as possible for the best results.
  - Prepackaged disposable enema is the only enema that the QMA can administer to residents.

- Side Effects: abdominal cramping.
- Nursing Considerations: If resident has large hemorrhoids or anal excoriation, notify the licensed nurse so that he/she may assess resident before enema is administered.

**Notes:**

## The Digestive System



# Worksheet

## Lesson 15: The Gastrointestinal System

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions.

- |                         |   |
|-------------------------|---|
| a. ____ Digestion       | 1. Passage of substances across and into tissues  |
| b. ____ Constipation    | 2. To break into smaller pieces to be able to be absorbed   |
| c. ____ Enzyme          | 3. Inflammation of the lining of the stomach  |
| d. ____ Absorption      | 4. Longest part of the digestive system; connects to the stomach and large intestine; most absorption of nutrients occurs here. |
| e. ____ Small intestine | 5. Chemical that speeds up a chemical reaction in substances  |
| f. ____ Gastritis       | 6. Difficulty passing feces   |

2. How does the digestive system change with age?

3. List the action and possible side effects of the following drug classifications:

Antacids:

Antiulcer drugs:

Histamine receptor

blockers:Proton pump

inhibitors:

Laxatives/Cathartics:

Stimulants:

Saline laxatives:

Bulk-forming laxatives:

Stool softeners:

Antispasmodics:

Antiemetics:

## GASTROINTESTINAL MEDICATION STUDY

Choose at least three medications from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
antacid				
antidiarrheal				
anti-ulcer				
cathartic/laxative				
antiemetic				

## Lesson 16: The Musculoskeletal System

### Student Overview

#### Lesson Objectives:

- Become familiar with the basic anatomy and physiology of the musculoskeletal system.
- Identify the effects of aging on the musculoskeletal system.
- Identify the classifications of medications that affect the musculoskeletal system.

#### Key Terms:

Analgesic:

Anti-Inflammatory:

Arthritis:

Fracture:

Gout:

Muscle Relaxant:

Muscle Spasm:

Muscle Sprain:

Muscle Strain:

Osteoporosis:

Range of Motion (ROM):



# Lesson 16: The Musculoskeletal System

## Student Overview

### Structure and Function of the Musculoskeletal System

- The adult human skeleton has 206 bones joined to ligaments and tendons to form a protective and supportive framework for the attached muscles and underlying soft tissues.
- The skeleton has two main parts: the axial and the appendicular skeleton.
  - The axial skeleton consists of 80 bones and includes the skull, the spine, the ribs and the sternum.
  - The appendicular skeleton includes two limb girdles (the shoulders and the pelvis), and their attached limb bones. The appendicular skeleton includes 126 bones: 64 in the shoulder and upper limbs and 62 in the pelvis and lower limbs.
- There are minor differences between the skeletons of the male and female.
  - Male bones tend to be larger and heavier.
  - The female pelvic cavity is wider to accommodate childbirth.
- The skeleton plays an important part in movement by providing a series of independently movable levers which muscles can pull to move different parts of the body.
- The skeleton produces red blood cells from the bone marrow of certain bones and white blood cells from the marrow of other bones. White blood cells destroy harmful bacteria.
- The bones are a storehouse for minerals – calcium which can be supplied to other parts of the body.
- Babies are born with 270 soft bones – about 64 more than an adult. Many of these will fuse together by the age of twenty or twenty-five into 206 hard, permanent bones.
- Muscles are attached to bone by tendons and other tissues and exert force by converting chemical energy into tension and contraction.
- Muscles move and make us capable of a variety of actions by simply contracting and becoming shorter.
- Muscles are made up of millions of tiny protein filaments which work together to produce motion.
- Each of more than 600 muscles are served by nerves which link the muscle to the brain and spinal cord.

### Three Types of Muscles

1. Cardiac muscles - found only in the heart; power the action that pumps blood throughout the body. (Involuntary muscle)
2. Smooth muscles - surround, or are part of, the internal organs. (Involuntary muscle)
3. Skeletal muscles - the body's most abundant tissues comprising about 23% of a woman's body weight and about 40% of a man's body weight. (Voluntary muscles)

### Bones

- Are living tissue; the calcium in spaces between cells makes bones hard.
- Bones function as framework for muscles, produce blood cells and store calcium and fat.

- Cartilage – soft tissue covering parts of bones.
- Bone marrow – soft, center part of bone; red blood cells are manufactured here.

## **Joints**

- Where bones connect to each other.
- Ligaments are elastic bands of tissue that connect bone to bone.
- **Range of motion:** moving a joint its full range helps prevent muscle contractures and joint deformity. (Active ROM = resident performs; passive ROM = caregiver performs)

## **Muscles**

- Skeletal muscles – work together with bones for body movement and stability.
- Tendons are cords of strong, flexible tissue that attach muscle to bone, assisting with movement.

## **Musculoskeletal Conditions**

- **Fracture** – Broken bone.
  - Cause: accidental injury or disease conditions such as cancer or osteoporosis.
  - Symptoms: pain, swelling, discoloration, abnormal position or movement.
  - Treatment: casting or surgery
- **Osteoporosis** – A condition characterized by loss of bone density causing bones to become more brittle and easily fracture. Osteoporosis is common with advancing age.
  - Cause: inadequate calcium absorption
  - Symptoms: bones are brittle and are easily broken, sometimes with less than normal amount of stress on bones. Common fractures from osteoporosis in the elderly are hip fractures and vertebral fractures.
  - Treatment: medication, treatment of fractures if necessary.
- **Arthritis** – Inflammation of a joint.
  - Causes:
    - Rheumatoid – occurs in younger population; cause unknown.
    - Osteoarthritis – occurs in older population resulting from “wear and tear” of the joint due to prolonged/overuse; also known as degenerative arthritis.
  - Symptoms: pain and swelling in joints, decreased mobility
  - Treatment: medication, exercise, heat to joints, surgery
- **Muscle Spasm** – Sudden and violent tightening of the muscle.
  - Cause: irritation of muscle
  - Symptoms: sudden pain and knotting of muscles
  - Treatment: massage, heat, medication
- **Muscle Strain** – Condition in which the muscle or tendon fibers are stretched or possibly torn.
  - Cause: injury.
  - Symptoms: pain, swelling.
  - Treatment: rest, medication, elevation of injured limb.
  - A **sprain** is a wrenching of a joint with partial or complete tear/rupture of its ligaments. A sprain is more severe than a strain and requires longer recuperation.

- **Gout** – Acute arthritis and inflammation of the joints.
  - Cause: increased uric acid levels, usually caused by diet rich in purines such as red meats, liver, seafood, alcohol, and food and drinks with high fructose corn syrup.
  - Symptoms: pain and swelling in joints, can be acute or chronic
  - Treatment: medication, diet

## Effects of the Aging Process on the Musculoskeletal System

- Increased adipose (fat) tissue.
- Diminished lean body mass and bone mineral contents; bones become more porous and break more easily.
- Decreased height from exaggerated spinal curvature and narrowing intervertebral spaces.
- Decreased collagen formation and muscle mass.

## Medications Used to Treat Musculoskeletal Disorders

- **Anti-inflammatory**
  - Steroid Medications
    - Action and Use: decreases inflammation used to treat arthritis, dermatitis, chronic respiratory conditions
    - Examples:
      - dexamethasone (Decadron)
      - prednisone (Meticorten, Orasone)
      - methylprednisolone (Medrol)
      - hydrocortisone (Cortef)
      - triamcinolone diacetate (Kenalog)
    - Adverse Effects:
      - weight gain from increased appetite and edema
      - mood swings (euphoria, depression, confusion, psychosis)
      - night sweats
      - increased blood sugar and electrolyte imbalance
      - masks symptoms of infection
      - slows healing
      - elevates blood pressure
      - ulcers
      - muscle weakness
      - hair loss
      - Cushing's syndrome (central obesity, moon face, muscular atrophy, etc.)
      - prolonged bleeding and increased bruising
      - insomnia
    - Nursing Considerations:
      - observe resident closely for signs of infection.
      - monitor diabetic residents for change in urine glucose or fasting blood sugar.
      - withdrawal symptoms can occur if stopped abruptly.

- administer with food.
  - report any complaints (especially those that are new) to the nurse.
  - elderly may be more susceptible to osteoporosis.
  - blood sugars may increase even in residents who are not diabetic.
- Nonsteroidal anti-inflammatory drug (NSAID)
  - Action and Use: anti-inflammatory analgesic and antipyretic effects; used to treat arthritis, bursitis, tendonitis, gout
  - Examples:
    - indomethacin (Indocin)
    - ibuprofen (Motrin, Advil)
    - naproxen (Naprosyn, Aleve)
    - diclofenac sodium (Voltaren)
  - Adverse Effects:
    - nausea, vomiting and diarrhea
    - headaches
    - gastrointestinal bleeding
    - dizziness
    - heartburn
    - rashes
    - decreased appetite
    - prolonged bleeding and increased bruising
    - tinnitus
    - abdominal pain/cramps
    - impaired renal function
    - fatigue
    - hypertension
  - Nursing Considerations:
    - may be better tolerated with food.
    - reposition or handle residents requiring these medications gently so as not to cause further pain.
- Anti-Gout Medications
  - Action and use: reduces uric acid synthesis and promotes increased urinary excretion.
  - Side Effects: rash, G.I. disturbance.
  - Example: allopurinol (Zyloprim); colchicine (Colcrys)
  - Nursing Considerations: encourage resident to drink plenty of fluids while taking this medication to prevent stone formation. Take with food or immediately after meals. Avoid alcohol.
- Skeletal **Muscle Relaxants**
  - Action and Use: CNS depressant; relieves pain and stiffness in muscles from orthopedic disorders and injuries. Helps muscle tissue relax and be less tense and painful.
  - Side Effects: drowsiness, light-headedness, dizziness
  - Examples:
    - methocarbamol (Robaxin)
    - cyclobenzaprine
    - carisoprodol (Soma)

- baclofen (Lioresal)
    - Used for muscle spasms in residents with multiple sclerosis or a spinal cord injury
  - tizanidine (Zanaflex)
  - diazepam (Valium)
- Nursing Considerations: residents may develop tolerance to the medication and have more frequent requests for the medication or complaints of increased pain. Encourage residents to rise slowly from lying or sitting to an upright position.
- **Analgesics:**
  - Action and Use: alter both perception of and often emotional response to pain used to treat muscle spasm and strain, arthritis, gout; can also be used as an antipyretic (fever reducer)
  - Examples:
    - acetaminophen (Tylenol) – severe liver damage can happen from excessive or toxic doses
    - morphine (Duramorph, MS Contin)
    - aspercreme
    - aspirin (A.S.A.) (Empirin, Ecotrin) - also can be used as prevention for blood clots
    - codeine
    - ibuprofen (Motrin, Advil)
    - Tylenol with codeine
    - hydromorphone (Dilaudid)
    - tramadol (Ultram)
    - fentanyl (Sublimaze, Duragesic)
    - oxycodone
    - hydrocodone
    - oxycodone-acetaminophen (Percocet)
    - hydrocodone-acetaminophen (Norco)
  - Adverse Effects:
    - gastritis, ulcer
    - dizziness
    - headache
    - sedation
    - constipation
    - rashes
    - respiratory depression
    - tinnitus (with A.S.A)
    - nausea and vomiting
    - increased bleeding tendencies (with A.S.A)
  - Nursing Considerations:
    - NSAID containing medications may cause gastrointestinal bleeding.
    - observe resident for bloody stools.
    - possibly addictive.
    - check respiratory rate before administering potent analgesics and report to nurse if rate is less than 12 per minute.

- enteric coated are more slowly absorbed: not suitable for rapid pain relief, yet less G.I. symptoms.

### **Additional Information about the Musculoskeletal System**

- Observe the resident's body alignment while in bed, in a chair or while standing.
- Observe the resident for any potential skin breakdown due to immobility.
- Promote comfort and prevent contractures by proper turning and ambulation and by ensuring correct posture in wheelchairs.
- Assist the resident to perform range of motion (ROM) exercises as necessary when care planned or ordered.
- Observe the resident's nonverbal signs of musculoskeletal pain:
  - facial gestures
  - tightening of the muscles
  - favoring an area of the body
  - limping
  - tentative movement
- Observe the resident for swollen, reddened or warm joints.
- Good body posture, ROM and proper medication will help keep the resident comfortable and mobile.
- Exercise is necessary to maintain mobility although it may be painful, especially in the morning. The resident's mobility will improve with movement.
- Analgesics and anti-inflammatory medications are sometimes given for months or years.

**Notes:**

# Worksheet

## Lesson 16: The Musculoskeletal System

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions.

- |                      |  |
|----------------------|--|
| a. ____ Opioid       | 1. Where two or more bones meet  |
| b. ____ Pain         | 2. A traumatic injury to a bone in which a break occurs  |
| c. ____ Fracture     | 3. Chemicals that have opium-like effects  |
| d. ____ Osteoporosis | 4. Fibrous bands that attach bone to bone across a joint   |
| e. ____ Ligaments    | 5. A disorder of the bone involving abnormal loss of bone density and deterioration of the bone tissue |
| f. ____ Joints       | 6. Unpleasant sensation that is a subjective feeling in response to a stimulus                         |

2. The function of bones includes:  
(circle all that apply)

- Framework of support
- Movement
- Protection
- Storage
- Blood cell production
- Fight infection
- Sensation

3. Describe three age-related changes of the musculoskeletal system.

4. List at least five pain descriptors or signs of pain.

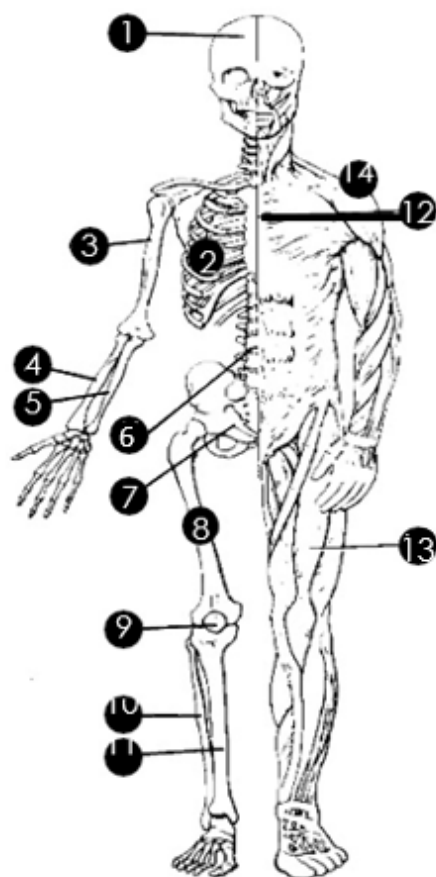
5. Which drug classification is considered a controlled substance?

6. Which drug classification acts by suppressing muscle movement?

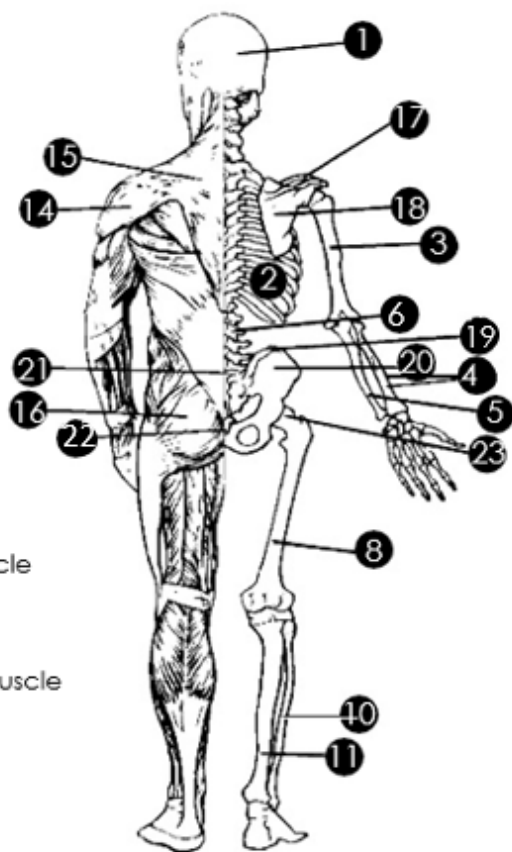
7. What are some non-pharmacological treatments the medication aide may use to alleviate a resident's pain?
8. What are the three primary elements of pain assessment?



## Common Bones and Muscles of the Body



- 1 Cranium
- 2 Ribs
- 3 Humerus
- 4 Radius
- 5 Ulna
- 6 Vertebrae
- 7 Pelvis
- 8 Femur
- 9 Patella
- 10 Fibula
- 11 Tibia
- 12 Sternum
- 13 Rectus femoris muscle
- 14 Deltoid muscle
- 15 Trapezius muscle
- 16 Gluteus maximus muscle
- 17 Clavicle
- 18 Scapula
- 19 Iliac crest
- 20 Ileum
- 21 Sacrum
- 22 Coccyx
- 23 Head of femur



# MUSCULOSKELETAL MEDICATION STUDY

Choose at least three medications from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
anti-inflammatory				
muscle relaxant				
analgesic				
<b>NSAID</b> anti-inflammatory				

## Lesson 17: The Skin and Sensory System/Pressure Ulcers (Pressure Injuries)

### Student Overview

#### Lesson Objectives:

- Become familiar with the basic anatomy and physiology of the skin and sensory system.
- Identify the effects of aging on the skin and sensory system.
- Identify the classifications of medications that affect the skin and sensory system.
- Identify the methods of prevention of pressure ulcers (pressure injuries).

#### Key Terms:

Athlete's Foot (tinea pedis):

Burn:

Cataract:

Conjunctivitis:

Dermatitis:

Dermis:

Eczema:

Epidermis:

Glaucoma:

Pediculosis:

Pressure Ulcer (Pressure Injury):

Psoriasis:

Scabies:

Sensory System:

## Lesson 17: The Skin and Sensory System/Pressure Ulcers (Pressure Injuries)

### Introduction

- The skin is the largest organ of the body. The skin keeps us warm, protects the body from infection, manufactures vitamin D when the body is exposed to sunlight, senses pain and allows us to feel things we touch.
- The skin, like all other organs of the body, can suffer from illness, irritation, injury and disease. With aging, there is loss of fatty tissue which serves as heat insulation. That is why elderly residents often wear sweaters or robes to keep them warm. Residents must be observed carefully for skin disorders, particularly those who are confined to wheelchairs or beds or who are incontinent.
- People are affected by their environment through special areas that receive impulses (sensation) from the outside world. These special areas are called sensory organs and receive sensations in the form of sound, sight, smell, taste, balance, and touch.

### Structure and Function of the Skin

- Structures of the skin
  - The thickness of the skin varies from 1/30 to 1/3 of an inch. It is thinnest on the face, thickest on the palms of the hands and the soles of the feet.
  - The **epidermis**, or outer layer of the skin, protects the inner layer. The epidermis is flat, has horn-shaped cells and is constantly shed.
  - The **dermis**, or inner layer, is sometimes called the "true skin." It contains live cells, nerve endings that are receptors for touch sensations, blood vessels, sweat glands, hair follicles, oil glands, some fat cells and pigment for the skin.
  - Fingernails and toenails are an extension of the skin.
  - Directly beneath the skin lies "subcutaneous" tissue which is a thick area of fat cells.
- Functions of the skin
  - Protects all underlying structures.
  - Receptor of sensations of heat, cold, pain and texture (through nerve endings in the skin).
  - Absorbs substances.
  - Excretes waste products through perspiration.
  - Helps control body temperature.
  - Defends against disease-producing organisms.
  - Manufactures Vitamin D.

### Common Skin Disorders

- **Dermatitis**
  - Cause: allergic reaction to food, medications, insect stings, inhalants, plants, or prolonged exposure to moisture (such as stool or urine).
  - Symptoms: rash that causes itching.
  - Treatment: medication for symptoms.

- **Pediculosis** (lice)
  - Cause: lice which infest different body areas. Usually spread by direct body contact by using contaminated personal articles such as hats, combs, or bedding.
  - Symptoms: itching of scalp or body, presence of oval particles like dandruff clinging to the hair.
  - Treatment: medicated shampoo, ointment or lotion containing a pediculicide.
    - Follow manufacturer's instructions/provider's orders which typically include working the shampoo into a lather for 4-5 minutes, rinsing thoroughly and towel dry.
      - The treatment does not kill the eggs and is usually ordered to be repeated in 7 days to kill newly hatched lice before they hatch eggs.
      - Clothes, sheets, and other personal articles must be laundered to prevent re-infestation.
    - Lice infestations are usually treated with a shampoo-type application such as Sklice, Nix, or Natroba.
    - When treating residents in a facility, all persons in contact with the resident should be checked for lice.
    - If the infestation is in the resident's hair, meticulous combing of the hair should be performed daily to remove the nits from the hair shaft.
      - The hair should be combed from the scalp toward the end of the hair in an upward motion with a nit comb. The most common place for lice to deposit eggs is on the underside of the hair shaft nearest the scalp and behind the ears.
      - The distance of the nits from the hair shafts determines the duration of the infestation.
    - A QMA should wear a gown, gloves and a hair covering when treating a resident with pediculosis infestation.
    - Linens should be bagged separately and sent immediately to the laundry area for laundering.
    - Commercially prepared sprays may be used to spray furniture and other items that cannot be laundered.
- **Scabies**
  - Cause: mites that burrow under the skin. Contamination occurs from infested bedding, clothing, undergarments, or close body contact (i.e., contact with an infected person).
  - Symptoms: itching that can be severe and worsens at night, tiny thread-like blisters which generally appear between fingers, on wrists, inside elbows, on inner thighs, groin, or buttocks. Lesions may also occur under arms or around the waist.
  - Treatment: topical medications – cream or lotion
    - Elimite (permethrin) cream – is applied to resident's entire body except face. Follow manufacturer's instructions/ advanced practice provider's orders which typically include that cream is left on for 8 to 14 hours and should be removed by showering resident. Treatment may need to be repeated in 7 days.
    - Resident's roommate, if applicable, should be assessed for presence of scabies.
    - Family/friends who have had recent contact with resident should be notified.
    - A QMA must wear gown and gloves when applying the Elimite cream.
    - The facility's Infection Control policy for treatment of the resident's laundry should be followed.
- **Athlete's foot (*tinea pedis*)**

- Cause: highly contagious fungus found in warm, damp places such as shower rooms and public baths.
- Symptoms: scaling and blistering between toes, burning and itching.
- Treatment: antifungal powder, ointment, or spray
- **Psoriasis**
  - Cause: can be genetic and/or a possible effect of trauma, influenced by environmental factors such as stress or exposure to chemicals. Psoriasis may be accompanied by arthritic symptoms.
  - Symptoms: skin has red patches covered with silver scales that tend to shed. Common locations for psoriasis are elbows, hands, and feet. Skin surfaces may have pinpoint bleeding.
  - Treatment: topical steroid medications or ointments to soften and remove the scales; oral medications may be ordered if symptoms are severe.
- **Eczema**
  - Cause: allergic reaction influenced by extremes in humidity or temperature, sweating or psychological stress.
  - Symptoms: itching, crusting of broken vesicles on the skin.
  - Treatment: remove cause of irritation; topical medication to control the itching.
- **Burns**
  - Cause: accidental injury
  - Symptoms:
    - First Degree burn: skin area is red
    - Second Degree burn: skin is blistered
    - Third Degree burn: skin may appear charred or pearly white
  - Treatment: Gentle cleansing and topical medication to prevent infection. Treatment of a burn greater than a first-degree burn is not within the QMA's scope of practice. Notify the nurse of any potential burn injuries.
- **Pressure Ulcer (Pressure Injury)**
  - Cause: continuous pressure on body areas which leads to decreased blood circulation to tissues.
  - Ulcers are "staged" according to severity:
    - Stage I – a persistent area of skin redness (without a break in the skin) that is non-blanchable.
    - Stage II – a partial thickness loss of skin layers either dermis or epidermis that presents clinically as an abrasion, blister, or shallow crater.
    - Stage III – a full thickness of skin is lost, exposing the subcutaneous tissues – presents as a deep crater with or without undermining adjacent tissue and may contain slough (yellow devitalized tissue) or eschar (black, dead tissue).
    - Stage IV – a full thickness of skin and subcutaneous tissue is lost, exposing muscle and/or bone and may also slough and/or eschar.
  - Treatment: the best treatment is prevention. The QMA should assist to ensure that residents are turned, clean and dry per advanced practice provider's orders or facility policy. The treatment of a pressure ulcer greater than a Stage I is not within the QMA scope of practice. A Stage I ulcer may be treated with a topical medication.
  - Prevention:

- Turn bedridden residents at least every 2 hours, according to facility policy or according to resident plan of care.
- Ensure incontinent residents have routine perineal care provided to keep them clean and dry.
- Encourage the resident to consume all food and drink all fluids at meals to enhance nutrition.

## Effects of the Aging Process on the Skin

- Loss of fatty tissue causes sagging and wrinkling.
- Decreased oil secretion causing dry skin and increasing the possibility of pressure sores, infections, irritation, and ulcers.
- As skin ages, it reacts to temperature differently. For example, what feels warm to younger people can feel very hot to older people.
- Skin often becomes fragile, tearing easily.

## Common Skin Medications

- Local Antifungals
  - Action: destroys bacteria or fungus; inhibits cell wall synthesis
  - Use: treat Athlete's foot or other fungal infection
  - Examples:
    - tolnaftate (Aftate, Tinactin) – antifungal
    - clotrimazole (Lotrimin) – antifungal
    - miconazole nitrate (MoniStat)- vaginal antifungal
  - Adverse Effects:
    - Itching
    - Rash
  - Nursing Considerations:
    - wear gloves when applying.
    - area should be cleaned and dried thoroughly before application of ointment.
    - ensure resident wears clean socks daily if being treated for tinea pedis.
- Scabicides and Pediculicides
  - Action: destroys parasites
  - Use: kill scabies, mites, lice, and other parasites
  - Examples:
    - ivermectin (Sklice)
    - permethrin (Elimite cream; Nix)
    - spinosad (Natroba)
  - Adverse Effects: skin irritation
  - Nursing Considerations:
    - may apply to skin or hair.
    - may require repeat applications in 7 to 10 days.
    - follow advanced practice provider's orders and refer to manufacturer's instructions/ recommendations.
- Anti-inflammatory steroids



- Action: reduces inflammation
- Use: treat dermatitis, psoriasis, and eczema
- Examples:
  - betamethasone valerate (Valisone)
  - flurandrenolide (Cordran)
  - triamcinolone acetonide (Aristocort, Kenalog)
  - hydrocortisone cream (multiple combinations: Cortaid, Lanacort, Westcort).
- Adverse Effects: burning, itching and dry skin
- Nursing Considerations:
  - use gloves when applying
  - gently wash area and pat dry before applying cream.
  - apply sparingly.
  - withdrawal symptoms occur if stopped abruptly.
  - avoid applying near eyes, mucous membranes or in ear canal.
  - continue application of the ointment for a few days after lesions clear to prevent recurrence.
- Antipruritics and local anesthetics
  - Action: relieve localized itching and pain by inhibiting conduction of nerve impulses from sensory nerves
  - Use: treat hemorrhoids, sunburn and poison ivy
  - Examples:
    - lidocaine (Solarcaine)
    - dibucaine (Nupercainal)
    - calamine (Caladryl lotion)
    - benzocaine (Americaine)
    - hydroxyzine
  - Adverse Effect: sensitization to medication, itching, redness, edema
  - Nursing Considerations: monitor for inflammation and infection.
- Protectants
  - Action: cover and protect the skin
  - Use: reduce irritation from urine and stool; provide sunburn protection
  - Examples:
    - petrolatum (Vaseline)
    - Vitamin A and D ointment
    - Para-aminobenzoic acid (PreSun, RV paba lipstick)
    - Desitin
  - Adverse Effects: possible skin irritation
  - Nursing Considerations:
    - Skin should be clean and dry prior to application of ointment.
    - Monitor for inflammation and infection.
- Debridement medications:
  - Can be applied by licensed personnel only.
  - This task is NOT within a QMA's Scope of Practice.

## Additional Information for the Care of the Skin

- Apply topical medication with care to prevent further tissue damage.
- Do not apply more topical medication than is necessary. Apply sparingly.
- Topical steroids may be as potent as oral steroids and may affect the entire body.
- Store topical medication correctly: Replace the cap after use, store in original container and refrigerate if directions indicate.

## Structure and Function of the Sensory System

Structures include the eyes, ears, nose, tongue and skin. The sensory system receives outside sensations and relates these sensations to the proper nerves.

### Eyes

- Structure
  - Conjunctiva - mucous membrane which lines the eye
  - Sclera - the tough white outer coat of the eyeball
  - Cornea - clear surface of anterior eye
  - Iris - pigmented circular muscle which adapts eye to light and gives color to eye
  - Pupil - opening in center of iris which expands (mydriasis) or constricts (miosis)
  - Lens – clear structure which changes shape to focus.
- Changes with aging
  - Decrease in visual sharpness and the ability to adjust to light which may cause difficulty in reading.
  - Decreased ability to see color differences or night blindness.
  - Eyes become dryer.

### Eye Disorders

- **Conjunctivitis**
  - Cause: irritation, allergies, bacteria and viruses
  - Symptoms: redness, itching, swelling, tearing or presence of pus-like drainage (green or yellow in color)
  - Treatment: systemic or local medication
  - Examples: combinations of antibiotics - Bacitracin Ophthalmic; Sodium Sulamyd; ciprofloxacin (Ciloxan); norfloxacin (Chibroxin); tobramycin (Tobrex)
  - Nursing Considerations
    - May be applied as ointment or drops, general guidelines for use is 10-14 day
    - wash hands before administering eye medication
    - cleanse eye of drainage with a warm washcloth prior to medication administration
    - maintain infection control practices (contact precautions) to prevent the spread of conjunctivitis to other residents or to self.
- **Glaucoma**

- Cause: an obstruction or the overproduction of fluid in the eye which results in increased pressure within the eye
- Symptoms: mild aching in the eye; loss of peripheral vision; perception of halos around lights, inability to see well at night, vision may become cloudy or blurred
- Treatment: use of medications to decrease intraocular pressure
- Examples of medications: pilocarpine (Isopto Carpine); timolol (Timoptic); dorzolamide (Trusopt); betaxolol (Betoptic); levobunolol (Betagan)
- Nursing Considerations:
  - provide adequate lighting, especially at night.
  - pain in eye may be a symptom of increasing pressure. Report symptoms to licensed nurse promptly.
  - medications may affect heart rate and blood pressure; monitor vital signs.
- **Cataracts**
  - Cause: aging, diabetes, secondary infection, congenital disorder, reaction to medications or chemical toxicity.
  - Symptoms: gradual blurring of vision, milky white pupil
  - Treatment: surgery, lens implantation or corrective glasses
  - Examples of eye medications used after surgery:
    - fluorometholone (FML)
    - prednisolone (AK-Pred)
    - diclofenac (Voltaren)
  - Nursing Considerations:
    - may be applied as ointments or drops
    - ophthalmic medications for inflammation are usually used short-term
    - observe and report any concerns promptly to licensed nurse

## Eye Medications by Classification

- Miotics
  - Action: decreases eye pressure
  - Use: to treat glaucoma and to constrict the pupil
  - Example: pilocarpine HCL (Pilocar)
  - Adverse Effects:
    - Headache
    - Perspiration
    - Salivation
    - night blindness
    - blurred vision
    - possibility of increased blood pressure
  - Nursing Considerations:
    - place medication inside the lower lid, not directly on the eye.
    - monitor blood pressure.
    - it is best to apply eye ointment at night if possible.
    - wait at least 5 minutes before administration of two different eye medications.
- Mydriatics
  - Action: dilates pupil

- Use: facilitate eye examination
- Example: atropine sulfate
- Adverse Effects:
  - dry mouth
  - blurred vision
  - Nursing Considerations: place inside the lower lid, not directly on the eye
- Beta Blocker
  - Action: lowers intraocular pressure
  - Use: to treat glaucoma
  - Example: timolol maleate (Timoptic Solution)
  - Adverse Effects:
    - eye irritation
    - blurred vision
    - reduced heart rate and blood pressure
    - confusion
- Lubricants
  - Action: soothes and lubricates dry eyes
  - Use: treat decreased tear production
  - Examples:
    - artificial tears (Tears Naturale, Liquifilm)
    - Lacri-lube
  - Adverse Effects:
    - localized irritation and burning sensation, temporary blurring of vision
  - Nursing Considerations:
    - use with caution for residents with glaucoma
    - do not touch any surface of the eye with the end of the dropper
    - crust may form on eyelids and eyelashes

## Ears

- Structure
  - Canal - leads from the outside to the ear drum
  - Ear drum - vibrates, transmitting sound to middle ear
  - Middle ear - three small bones that vibrate conducting sound to inner ear
    - Malleus
    - Incus
    - Stapes
  - Inner ear - contains specialized hearing cells. Hearing is transmitted from these to the brain via auditory canal.
  - Eustachian tube - connects pharynx and middle ear; equalizes the pressure in the ear
- Changes with aging
  - There is gradual hearing loss.
  - Hearing is most acute at age 10, declines gradually thereafter.

## Ear disorders

- Impacted ear canal
  - Cause: medication, irrigation, or extraction of foreign object
  - Symptoms: pain or hearing loss
  - Treatment: medication, irrigation, or extraction of foreign object
- Ear infection
  - Swimmer's Ear
    - Cause: bacteria, fungus
    - Symptoms: pain, fever, itching, partial hearing loss, possible discharge
    - Treatment: antibiotics and/or antibiotic eardrops
  - Otitis media
    - Cause: respiratory, viral, or throat infection
    - Symptoms: pain, fever, dizziness, nausea, vomiting, drainage
    - Treatment: antibiotics and/or antibiotic eardrops
- Meniere's Syndrome
  - Cause: chronic disturbance of inner ear with specific cause undetermined
  - Symptoms: dizziness, ringing in the ears, nausea and vomiting, loss of hearing as a part of the disease process
  - Treatment: restrictions on salt and caffeine; may be treated with diuretics and antiemetics
- Ear Medication Classifications:
  - Miscellaneous
    - Actions: relieve pressure; reduce inflammation and congestion in the ear
    - Use: Otitis media, Otitis externa
    - Example: neomycin polymyxin/hydrocortisone (Cortisporin Otic)
    - Adverse Effects: irritation or itching
    - Nursing Considerations:
      - insert cotton into the ear canal after instilling the drops
      - do not rinse dropper after use
      - many of these medications are used in combination with oral antibiotics, analgesics, and anti-inflammatories: Monitor for medication interactions.
  - Wax control agents
    - Action: soften and dissolve ear wax
    - Use: prevent wax build up
    - Example: carbamide peroxide (Debrox); polypeptide oleate (Cerumenex)
    - Adverse Effects:
      - pruritus (itching)
      - erythema (redness)
    - Nursing Considerations:
      - do not use without advanced practice provider's permission if the ear is draining
      - use with caution for more than 4 continuous days
      - the ear often requires irrigation to remove the wax. This must be done by a licensed nurse as it is not within the scope of practice of the QMA.

- Antibiotics and steroids may be given to treat ear inflammation and infection.

## Care of the Eyes and Ears

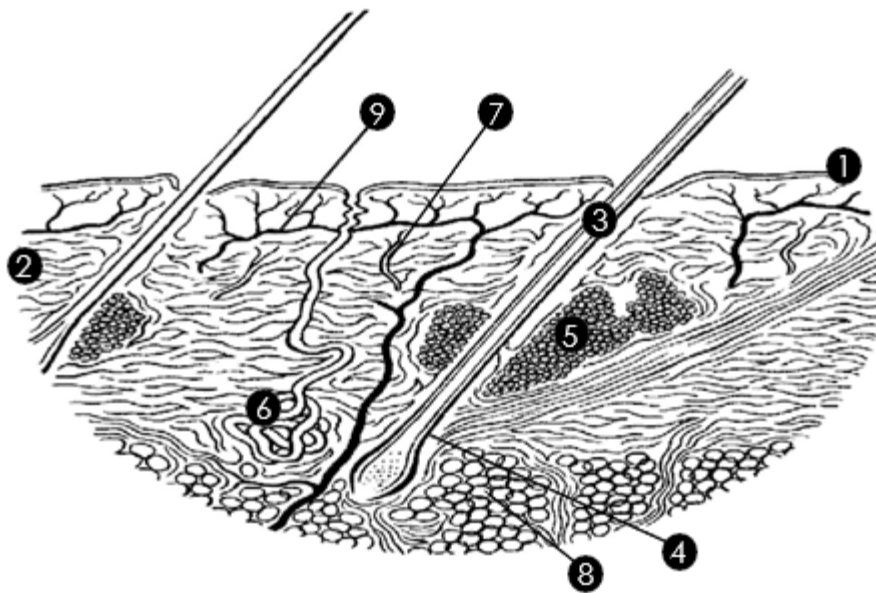
- The instillation of eye and ear medication can be very uncomfortable for the resident. Be careful and gentle.
- Be certain the eye and ear medications are at room temperature before administering and always assess expiration date. Be alert that some medications must be discarded at a specified time period after opening. Refer to the facility/pharmacy policy.
- Take precaution to ensure resident's safety when administering eye medications that may blur vision or ear medications that may cause dizziness.
- Place the resident into the appropriate position before administering medication.
- Provide the resident with a tissue to wipe away excess medication.
- Use only cotton to hold medication in the ear.
- Some residents may not be able to notify you when their ears hurt or when vision is obscured.

Report any unusual symptoms to the licensed nurse such as:

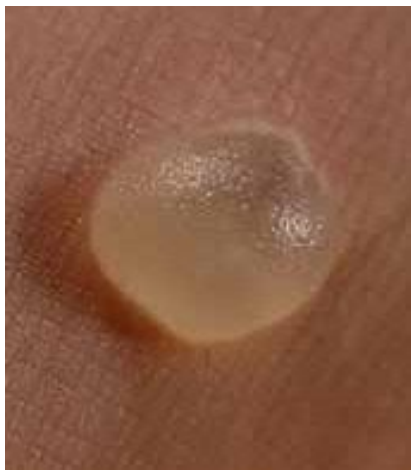
- tugging at ear lobes
- difficulty hearing
- drainage from the ears
- tearing and drainage from the eyes
- discoloring or cloudiness in eyes
- rubbing or scratching eyes
- glazed or fixed look

**Notes:**

## The Skin



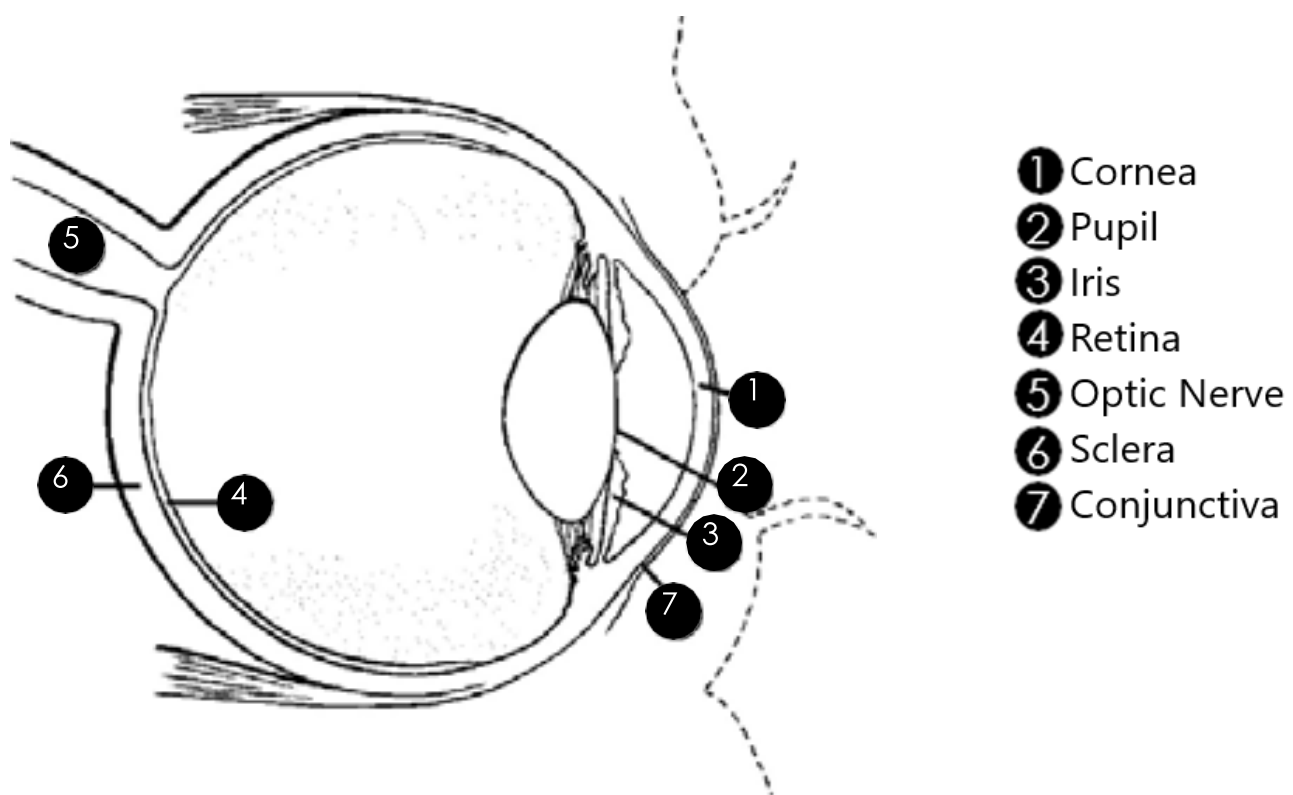
- ① Epidermis
- ② Dermis
- ③ Hair shaft
- ④ Hair follicle
- ⑤ Sebaceous gland and duct
- ⑥ Sweat gland and duct
- ⑦ Nerve ending
- ⑧ Fat/adipose/subcutaneous
- ⑨ Blood vessel



Left: A Stage two pressure ulcer may include broken, open and/or painful skin that may look like a blister or crater.

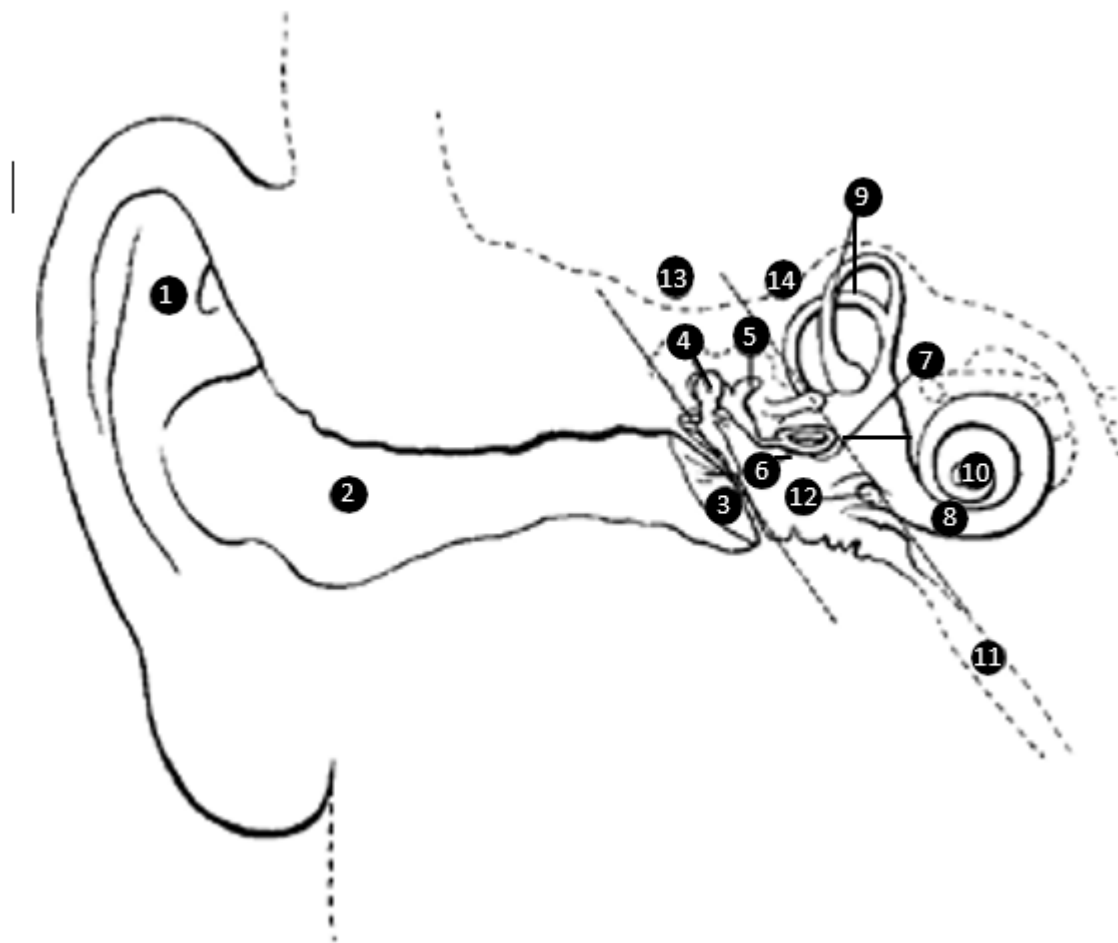
Right: Stage four pressure ulcers are deep-reaching into muscle and bone, causing extensive damage to deeper tissues, tendons, and joints.

## The Eye





## The Ear



- |                               |                        |
|-------------------------------|------------------------|
| 1 External ear                | 7 Oval window          |
| 2 External auditory canal     | 8 Vestibule            |
| 3 Tympanic membrane (eardrum) | 9 Semicircular canals  |
| 4 Malleus                     | 10 Cochlea             |
| 5 Incus                       | 11 Eustachian tube     |
| 6 Stapes                      | 12 <u>Round</u> window |
|                               | 13 Middle ear          |
|                               | 14 Inner ear           |

# Worksheet

## Lesson 17: The Skin and Sensory System/Pressure Ulcers (Pressure Injuries)

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions.

- |          |           |  |
|----------|-----------|--|
| a. _____ | Benign    | 1. Pertaining to the surface of the body       |
| b. _____ | Malignant | 2. Non-cancerous growth                        |
| c. _____ | Topical   | 3. Inner layer of the skin                     |
| d. _____ | Pruritus  | 4. Black or brown pigment in the skin and hair |
| e. _____ | Dermis    | 5. To become worse or cancerous                |
| f. _____ | Melanin   | 6. Itching                                     |

2. Identify three functions of the skin.

3. Where is the mucous membrane located?

4. For the following changes associated with aging, identify the concerns.

- a. Skin becomes more fragile:
- b. Vitamin D production decreases:
- c. Less sweat is produced:
- d. Blood supply to the skin decreases:
- e. Hair follicles stop functioning:
- f. Blood vessels break more easily:
- g. Subcutaneous layer thins:

5. What effect do the following drug classifications have on the skin and mucous membranes?

- Local anesthetics:
- Antihistamines:

- Anti-inflammatory:

- Antibiotics:

- Scabicides:

6. Demonstrate the application of a simple dressing.

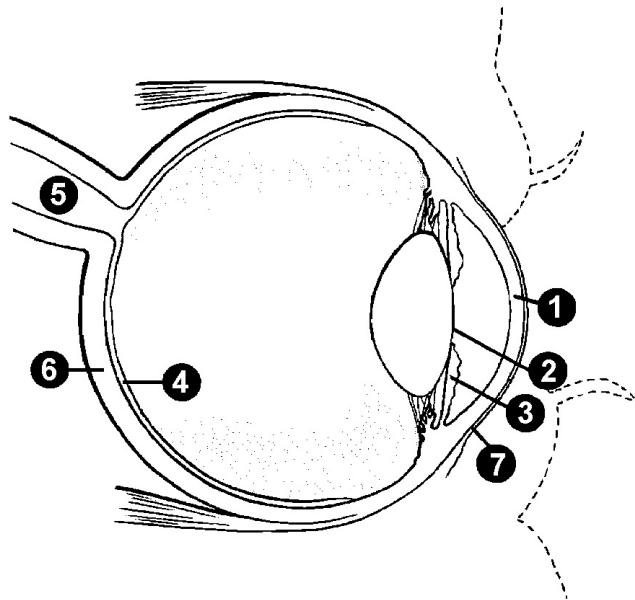
# Worksheet

## Lesson 17: The Skin and Sensory System/Pressure Ulcers (Pressure Injuries)

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions.
- |                              |  |
|------------------------------|--|
| a. ____ Accommodation        | 1. Mucous membrane that lines the inner surfaces of the eyelids and the front part of the sclera |
| b. ____ Macular degeneration | 2. Harmful effects involving the organs of hearing   |
| c. ____ Ototoxic             | 3. Part of the inner ear that contains nerve receptors for balance                               |
| d. ____ Conjunctiva          | 4. Pertaining to the eardrum   |
| e. ____ Semicircular canals  | 5. Process of adjusting the eyes for near and far vision   |
| f. ____ Tympanic             | 6. Progressive deterioration of part of the retina of the eye causing central vision loss        |

2. Label the parts of the eye.



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_

3. Identify four changes related to aging of the eyes and ears.
  
4. Describe the difference between sensorineural hearing loss and conductive hearing loss.
  - Conductive hearing loss:
  
  - Sensorineural hearing loss:

## SKIN AND SENSORY MEDICATION STUDY

Choose at least one medication from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
local anti-infective				
scabicide and pediculicide				
anti-inflammatory steroid				
antipruritic or local anesthetic				
protectant				
debridement				
eye				
ear				
J-1. 0 0\				

## Lesson 18: The Urinary System

### Student Overview

**Lesson Objectives:**

- Become familiar with the basic anatomy and physiology of the urinary system.
- Identify the effects of aging on the urinary system.
- Identify the classifications of medications that affect the urinary system.

**Key Terms:**

Cystitis:

Edema:

Pyelonephritis:

Urinary Incontinence:

Urinary Retention:

Urinary Tract Infection (UTI):

## Lesson 18: The Urinary System

### Introduction

- The structure of the urinary tract includes the kidneys, two ureters (tubes leading from the kidneys to the bladder) and the urethra (a tube leading from the bladder to the exterior of the body).
- The kidneys serve as a filter system for the blood, reabsorbing almost 99% of the fluid into the blood and sending only two to four pints of waste (urine) into the bladder for storage per day.

### Structure of the Urinary System

Composed of two kidneys, two ureters, a urinary bladder, and the urethra.

- Kidneys
  - Bean-shaped organs located on either side of spinal system in the small of the back.
  - Very complex structures – each kidney contains over one million tiny filters.
  - Every drop of blood passes through the kidney approximately 4-6 times per day for filtering.
  - Remove excess liquids and unused substances from the blood and takes it to the outside as waste (urine).
- Ureters
  - Small, thin tubes, about 10-12 inches long that carry urine away from the kidney.
  - One end is attached at the center of the kidney, the other end to the urinary bladder in the pelvis.
- Bladder
  - Hollow, sac-like structure in the pelvis for holding urine.
  - A person usually has the desire to empty the bladder when 250-300 cc are collected.
  - Muscle walls distend to hold 500 cc or more.
- Urethra
  - Tube through which urine passes from the bladder.
  - Where the urethra is connected to the bladder, there is a tight muscle (sphincter) that opens to release urine and closes when it is complete.

### Functions of the Urinary System

- Two main functions:
  - Filter (or clean) the blood through the kidneys.
  - Eliminate excess fluids and unused substances in the fluid.
- Normal urine should be clear, pale yellow.

### Common Disorders of the Urinary Tract

- **Cystitis** (bladder infection) – the inflammation of the urinary bladder.
  - Cause: bacteria



- Symptoms: cloudy urine, frequent urination, burning and painful urination, sometimes fever and chills if severe, voiding small amount and feeling of urgency to void.
- Treatment: antibiotics, urinary antiseptics, cranberry juice, Vitamin C, increased fluid intake.
- **Pyelonephritis** – inflammation of both the kidney and the lining of its pelvis usually due to bacterial infection.
  - Cause: may result from infection elsewhere in the body; frequently responsible for renal failure.
  - Symptoms: chills, fever, nausea, cloudy urine, back pain, decreased urinary output; more pronounced in the acute phase.
  - Treatment: antibiotics, kidney dialysis if infection causes end stage renal disease and kidney failure.
- **Edema** – excessive accumulation of fluid in the tissues.
  - Cause: inability of the body to rid itself of fluid due to kidney or heart failure.
  - Symptoms: swelling of hands, feet, legs; inability to breathe with exertion or when lying down
  - Treatment: diuretic medication, compression stockings.
- **Urinary Incontinence** – inability to control urination.
  - Cause: decrease in muscle tone due to disease processes or medication; decreased bladder capacity.
  - Symptoms: frequent bed wetting, inability to control urine flow.
  - Treatment: bladder training, medication, or surgery.
- **Urinary Retention** – inability to empty bladder.
  - Cause: Benign Prostatic Hypertrophy (BPH), bladder or prostate cancer or a side effect of medication.
  - Symptom: inability to empty bladder.
  - Treatment: medication, catheterization, or surgery.

## Effects of the Aging Process on the Urinary System

- The rate at which kidneys filter substances declines with aging.
- There is a 53% decrease in renal blood flow secondary to reduced cardiac output and atherosclerotic changes.
- Decrease in the size and number of functioning nephrons (functional units of the kidney).
- Reduction of bladder size and capacity.
- Weakening bladder muscles, causing incomplete emptying of the bladder and chronic urinary retention.
- Diminished kidney size.
- Impaired clearance of medications through the renal system.
- Decreased ability to respond to variations in sodium intake.

## Medications Affecting the Urinary System

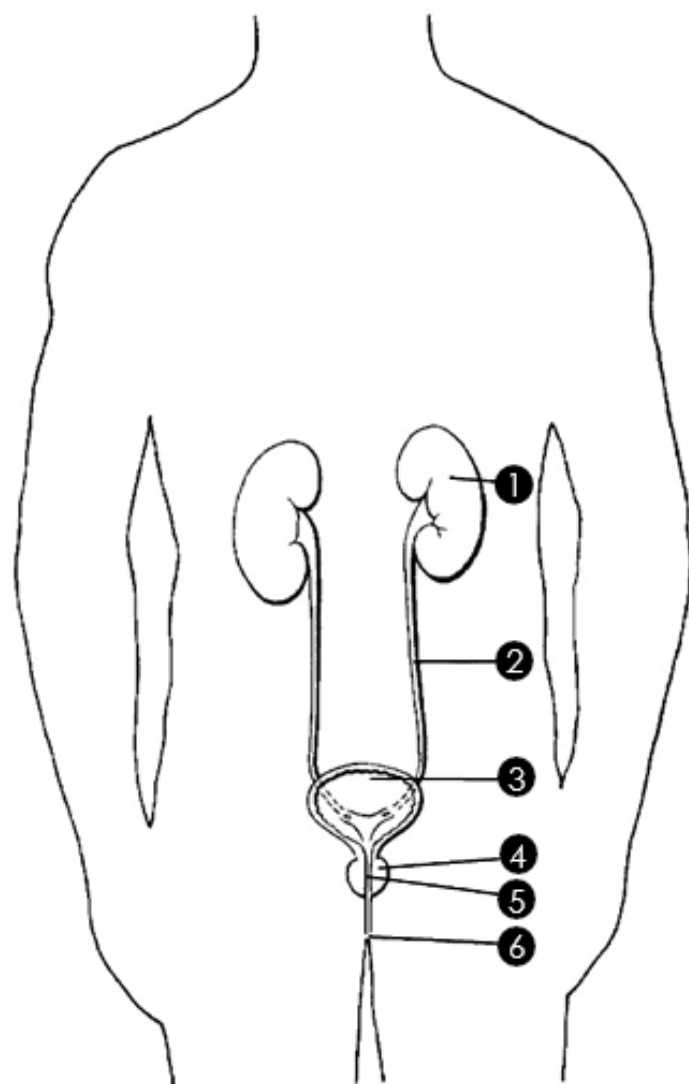
- Diuretics

- Action: increase urine production. Used to treat edema associated with congestive heart failure, liver, or kidney disease. Also used alone or in combination with other medications to treat hypertension.
- Major Side Effects: some diuretics cause excessive potassium loss (hypokalemia) and should be given with potassium replacement or conscientious dietary replacement. Some diuretics are potassium sparing and may not require potassium replacement. Additionally, some diuretics cause retention of excess sodium (hypernatremia). Other common minor side effects include weakness, dry mouth, orthostatic hypotension, and headache.
- Examples:
  - furosemide (Lasix)
  - hydrochlorothiazide (Microzide)
  - triamterene and hydrochlorothiazide (Dyazide, Maxzide) a combination of two diuretics.
  - bumetanide (Bumex)
  - spironolactone (Aldactone)
  - metolazone (Zaroxolyn)
  - torsemide (Demadex)
- Nursing Considerations
  - give early in the day. If diuretic is ordered twice daily, give a morning and a late afternoon dose (i.e., 9 am and 5 pm) in effort to decrease nocturia (frequent night-time urination).
  - give with plenty of fluid unless provider restricts fluid intake.
  - monitor weight, edema, and intake and output for effectiveness of the diuretic.
  - a daily weight change of two pounds or five pounds in one week is significant.
  - potassium depletion may result in confusion, cramping and/or an irregular heartbeat.
  - encourage the resident to eat a variety of foods and maintain good fluid intake. High-potassium foods include citrus fruits, tomatoes, bananas, apricots, and dates.
  - encourage resident to rise slowly from a lying or sitting position to decrease dizziness.
  - blood pressure is often obtained at least weekly for those residents who take a daily diuretic. Refer to facility/pharmacy policy.
- Potassium replacement medications.
  - Action: replace potassium (K+) lost when certain diuretics are used.
  - Major Side Effects: stomach irritation
  - Examples:
    - KCL – abbreviation for potassium chloride. (Examples: K-Dur, Klor-Con, Micro-K)
    - K-Lyte
  - Nursing Considerations:
    - give with food or after meals to help prevent gastric irritation.
    - do not give wax matrix form with hot food or liquid to prevent melting.
    - ordered in milliequivalents (mEq)
    - dissolve effervescent tablets or powder in eight ounces of cold water or juice or per manufacturer's instruction.

- do not crush or break extended-release tablets/capsules or enteric products (Kaon CI, K-Dur).
- Medications that affect bladder tone
  - Action: directly affect the smooth muscle of the urinary tract.
  - Side Effects: dysuria, tachycardia, dry mouth, blurred vision, frequency, incontinence, diarrhea, or abdominal cramps.
  - Examples:
    - oxybutynin (Ditropan) – antispasmodic medication that reduces bladder contractions and delays the initial urge to void in persons with neurogenic bladder.
    - bethanechol (Urecholine) - increases bladder tone; promotes voiding.
  - Nursing Considerations:
    - do not give with food. Give only on an empty stomach. These medications are given only for retention that is NOT due to an obstruction.
    - A medication that exerts analgesic, anesthetic action on the urinary tract mucosa is phenazopyridine (Pyridium). This medication may be ordered to be administered with a urinary anti-infective. It should be administered with food or milk to decrease gastric symptoms. The resident's urine and tears may turn red orange. The medication may stain clothing or contact lenses.
- Urinary anti-infectives
  - Action and Use: to prevent or treat **UTIs**
  - Side Effects of medications and implications for care:
    - cefalexin (Keflex) – diarrhea, nausea, vomiting, stomach pain, fatigue, vaginal yeast infection
    - nitrofurantoin (Macrochantin, Macrobid) - frequently causes G.I. upset. Give with food. May color the urine rust yellow brown.
    - trimethoprim - sulfamethoxazole (Septra and Bactrim) - used for resistant urinary infections. May cause nausea, vomiting or an allergic reaction.
    - ciprofloxacin (Cipro), ofloxacin (Floxin) – May cause dizziness, headache, nausea/vomiting.
  - Nursing Considerations:
    - if provider has ordered a UA/C&S – obtain before starting the antibiotic/ urinary anti-infective. A second UA may be ordered after all doses have been administered.
    - ensure resident consumes a lot of fluids while on a urinary anti-infective medication.

**Notes:**

## The Urinary System



- ① Left kidney
- ② Left ureter
- ③ Bladder

- ④ Prostate (male)
- ⑤ Urethra
- ⑥ Meatus of urethra

# Worksheet

## Lesson 18: The Urinary System

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions.

- |                       |   |
|-----------------------|---|
| a. _____ Dehydration  | 1. Excessive urination at night   |
| b. _____ Edema        | 2. Abnormal depletion of body fluids  |
| c. _____ Incontinence | 3. Tiny units in the kidneys that filter wastes out of the blood                                |
| d. _____ Nocturia     | 4. Movement from a high concentration area to a low concentration area, with a force pushing it |
| e. _____ Filtration   | 5. Inability to control urination or defecation   |
| f. _____ Nephron      | 6. Expansion of fluid between cells   |

2. Identify three of the five functions of the urinary system.

3. Describe the three processes of urine formation filtration, reabsorption, and secretion.

4. Signs and symptoms of a urinary tract infection include:

5. The following drug classifications may be used for what purpose?

- a. antispasmodic:
- b. antibiotics:
- c. diuretics:
- d. holinergic:

6. What are four common side effects of antibiotics?

7. Why is potassium depletion a concern with certain diuretic groups?
  
8. The medication aide should be alert to signs of dehydration and changes in elimination. Identify four critical changes and what the medication aide should do.

## URINARY SYSTEM MEDICATION STUDY

Choose at least three medications from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
Urinary anti-infectives				
Diuretics				

## Lesson 19: The Cardiovascular System

### Student Overview

#### Lesson Objectives:

- Become familiar with the basic anatomy and physiology of the cardiovascular system.
- Identify the effects of aging on the cardiovascular system.
- Identify the classifications of medications that affect the cardiovascular system.

#### Key Terms:

Angina:

Angina Pectoris:

Arrhythmia:

Arteriosclerosis:

Atherosclerosis:

Bradycardia:

Cerebrovascular Accident (CVA):

Congestive Heart Failure (CHF):



Electrolytes:

Hematemesis:

Hemoptysis:

Hypertension:

Hypotension:

Ischemia:

Myocardial Infarction (MI):

Pacemaker/Implantable cardioverter defibrillator (ICD):

Phlebitis:

Syncope:

Tachycardia:

Thrombosis:

Thrombophlebitis:

Trendelenburg Position:

## Lesson 19: The Cardiovascular System

### Structure and Function of the Cardiovascular System

The cardiovascular system includes the heart and blood vessels.

- Heart
  - About the size of a fist.
  - Lies in the center of the chest, slightly to the left.
  - Hollow inside; divided into four chambers or compartments – two upper (atria); two lower (ventricles).
  - Made of muscle that contracts and extends – works like a pump.
  - Right side pumps blood to the lungs, left side pumps blood to the rest of the body.
  - Works continuously, rests between beats.
  - Pulse – number of heart beats; can be felt in any artery.
  - Blood pressure – force of heartbeat, which pushes blood through the arteries.
- Arteries: vessels which carry blood containing oxygen and other nutrients from the heart to body tissues. Arteries can constrict and dilate to change blood pressure.
- Veins: vessels which return blood containing carbon dioxide and other substances from tissues to the heart. The heart then pumps blood to lungs to be re-oxygenated. The kidneys filter wastes as the blood is recycled.
- Capillaries: very small vessels that carry supplies to cells and pick up waste from cells.
- Blood
  - Pumped through the body by the heart.
  - Circulated through blood vessels.
  - 4-6 quarts in an average adult.
  - Plasma: liquid portion of the blood; is 90% water, contains three kinds of cells:
    - red blood cells (RBC): carry iron in the form of hemoglobin, which binds to oxygen.
    - white blood cells (WBC): fight infection; protect other cells from germ invasion
    - Platelets: substance that is essential to clot formation; helps prevent hemorrhage.
- The respiratory system contains those organs which are responsible for carrying oxygen from the air to the blood stream and expelling the waste product of carbon dioxide.
- The cardiovascular system is an automatic function controlled by the brain.

### Major Circulatory Disorders of the Cardiovascular System

- Myocardial **Ischemia**
  - Cause: lack of adequate oxygen supply to the heart.
  - Symptoms: shortness of breath, chest pains
  - Treatment: medications and rest.
- **Angina Pectoris**
  - Cause: myocardial ischemia
  - Symptoms: pain in chest and left arm, flushing and perspiration, sudden attack of vertigo, can be aggravated by smoking.

- Treatment: usually relieved by vasodilator medications
- **Coronary Occlusion (*myocardial infarction*/MI** often referred to as a “heart attack”)
  - Cause: blockage in any artery that supplies blood to the heart muscle. Destroys heart and can cause death (myocardial infarction). Severity depends on size and location of blocked heart vessel.
  - Symptoms: crushing chest pain, shortness of breath, anxiety, indigestion, shock, collapse. Symptoms in women and the elderly may present vaguely.
    - If a resident complains of left sided chest pain, pressure on the chest area, neck pain, or pain radiating down the left arm, do not leave the resident; summon the nurse immediately. The resident may be having a heart attack.
  - Treatment: medication, rest, hospitalization.
- **Congestive Heart Failure:** The heart cannot pump effectively; the fluid “backs up” in the vessels and tissues causing edema in the tissues, abdomen, or lungs.
  - Causes: heart muscle weakness, hypertension, changes in heart valves due to disease, heart contractions are inadequate to pump blood to all parts of the body.
    - Common problem among elderly.
    - Also known as CHF
    - The heart is unable to eject blood out of the left ventricle effectively.
  - Symptoms: edema (swelling) in feet and legs, cough and shortness of breath, fatigue, tachycardia, lungs develop fluid in the bases.
  - Treatment: cardiotonics, beta blockers, diuretics, and oxygen therapy. Diuretics stimulate the renal system to aid in the removal of fluid from the body.
- **Heart *Arrhythmias***
  - Causes: inability of the impulse center to function properly; sometimes follows coronary occlusion; toxic effect of other medications (digitalis).
  - Symptoms: irregularity in rate and rhythm of heart, **syncope**, may exhibit **tachycardia** (rapid heart rate) or **bradycardia** (heart rate below 60).
  - Treatment: medication, **pacemaker/ICD**, rest.
- **Shock** – A state in which the blood flow to the peripheral tissues (arms and legs) is inadequate to sustain life.
  - Causes: collapse of the blood vessels resulting in poor blood supply to the entire body, dilation of blood vessels, blood loss (hemorrhage).
  - Symptoms: rapid heartbeat, pallor, perspiration, light-headedness, chills, fainting, hypotension, confusion, blood pressure changes.
  - Treatment: medications, keep the resident warm, notify the licensed nurse.
  - Shock is an emergency; resident will most likely be transported to the hospital for treatment.
- **Arteriosclerosis/Atherosclerosis**
  - Cause: buildup of plaque deposits in blood vessels which causes narrowing of the vessel.
  - Symptoms: pale or blue skin color, muscle cramping, decreased circulation which may result in pain in the extremities or cause ulcers (sores) to develop on legs and feet.
  - Treatment: medication, exercise, monitor diet.
- **Hypertension** (high blood pressure)
  - Causes: kidney disease, adrenal gland tumors, brain disease, heart disease; aggravated by obesity and smoking; usually cause is unknown.

- Symptoms: dizziness, headache, palpitations, fatigue, tinnitus, systolic pressure above 130, diastolic pressure above 80. If untreated, can cause CVA (stroke).
- Treatment: medication, exercise, weight control.
- **The 4 stages of hypertension are:**
  - Elevated blood pressure levels between 120-129/less than 80 mm Hg.
  - Hypertension stage 1 is 130-139/80-89 mmHg.
  - Hypertension stage 2 is 140/90 mmHg or more.
  - Hypertensive crisis is higher than 180/120 or higher.
- **Cerebral Vascular Accident (CVA) – stroke**
  - Causes: blood clot, ruptured blood vessel in the brain, hypertension.
  - Symptoms: depend on which area of the brain is affected, weakness or paralysis, inability to speak or read, loss of memory, unconsciousness, visual difficulties.
  - Treatment: medications, occupational/physical/speech therapy.
- **Thrombophlebitis**
  - Causes: injury, surgery, abnormal blood clotting.
  - Symptoms: pain, redness, tenderness, swelling of the effected limb.
  - Treatment: medication, rest.

## Effects on the Aging Process on the Cardiovascular System

- Slightly smaller heart size.
- Loss of cardiac contractile strength and efficiency.
- 30% to 35% diminished cardiac output by age 70.
- Heart valve thickening, causing incomplete closure (systolic murmur).
- 25% increase in left ventricular wall thickness between ages 30 and 80.
- Fibrous tissue infiltration of the sinoatrial node and internodal atrial tracts, causing atrial fibrillation and flutters (heart arrhythmias).
- Vein dilation and stretching.
- 35% decrease in coronary artery blood flow between ages 20 and 60.
- Increased aortic rigidity, causing increased systolic blood pressure disproportionate to diastolic, resulting in widened pulse pressure.
- Electrocardiogram changes.
- Heart rate takes longer to return to normal after exercise.
- Decreased strength and elasticity of blood vessels, contributing to arterial and venous insufficiency.
- Decreased ability to respond to physical and emotional stressors.

## Medications Affecting the Cardiovascular System

- Cardiotonics
  - Action: slows and strengthens the heart action.
  - Use: as maintenance therapy in congestive heart failure, atrial fibrillation, atrial flutter. Increases force of contractions thus decreases heart rate.
  - Examples: digoxin (Lanoxin and Lanoxicap)
  - Adverse Effects:
    - fatigue and loss of appetite

- dizziness, agitation
  - excessive slowing of heartbeat or irregular heartbeat.
  - confusion, weakness, visual blurring, or yellow-green halos around visual images
- Nursing Considerations:
  - count apical pulse for one full minute before administering. Should be 60 beats per minute or more or as provider determines. Refer to facility policy.
  - Precaution: Notify licensed nurse before giving medication if pulse is below 60 or other signs of toxicity are present.
  - drug levels are routinely drawn to ensure the dosage is within a therapeutic range.
- Antiarrhythmics
  - Action: slows conduction to regulate heart rate and rhythm
  - Use: angina and arrhythmias
  - Examples:
    - propranolol (Inderal)
    - metoprolol (Toprol XL, Lopressor)
    - carvedilol (Coreg)
    - procainamide HCL (Pronestyl)
    - amiodarone (Pacerone) – may cause dizziness. Resident must stay out of sun. When exposed to sun, be sure resident uses sunscreen. Sun will cause resident's skin to turn blue/gray.
  - Adverse Effects:
    - slow pulse rate – even normal impulses do not cause heart to beat.
    - postural hypotension, dizziness – slowed heart action may lower blood pressure.
  - Nursing Considerations:
    - administer 1 hour before or two hours after meals with a full glass of water, unless contraindicated.
    - administer at prescribed times.
    - check pulse prior to administering the medication and routinely as the orders may have hold parameters indicating not to give the medication if the HR is less than 50 beats per minute (BPM).
    - Report any postural hypotension, slowed pulse rate or low blood pressure to the licensed staff nurse promptly before administering the medication.
- Antihypertensives
  - Adrenergic blockers
    - Action: decrease blood pressure by affecting the nervous system and dilating blood vessels.
    - Use: treat blood pressure that remains elevated (***hypertension***). If untreated, hypertension can damage blood vessels in the brain, kidneys, or the heart.
    - Examples:
      - clonidine HCL (Catapres)
      - prazosin (Minipress)
    - Adverse Effects:
      - Dizziness
      - Weakness
      - nausea and vomiting

- hypotension
  - drowsiness
- Nursing Considerations: Check blood pressure at least weekly. Refer to facility policy.
- Calcium Channel blockers
  - Action: Inhibit calcium channels leading to blood vessel dilation, reduced constriction of heart muscles, and a reduction in heart rate to correct arrhythmias.
  - Use: treat angina and arrhythmias
  - Examples:
    - verapamil (Verelan ER)
    - nifedipine (Procardia)
    - diltiazem (Cardizem)
      - If systolic blood pressure is less than 90 mm Hg or heart rate is less than 60, hold dose and notify the nurse
    - amlodipine (Norvasc)
  - Adverse Effects:
    - Dizziness
    - slow pulse
    - hypotension
    - chest pain
    - constipation
  - Nursing Considerations:
    - give only at prescribed times.
    - monitor the resident's blood pressure prior to administration. Refer to facility policy.
- Angiotensin Converting Enzyme Inhibitors (ACE Inhibitors)
  - Action: a potent vasoconstrictor that stimulates the secretion of aldosterone (a steroid hormone produced in the adrenal cortex), thus reducing sodium and water retention, and lowering blood pressure.
  - Use: treat hypertension
  - Examples:
    - captopril (Capoten)
    - enalapril (Vasotec)
    - lisinopril (Zestril)
  - Adverse Effects:
    - Hypotension
    - persistent, dry, tickling, nonproductive cough
    - nausea and vomiting
  - Nursing Considerations:
    - elderly residents may be more sensitive to the medication's hypotensive effects.
    - monitor resident's blood pressure frequently. Refer to facility policy. Report any abnormalities to a licensed nurse promptly.
- Beta Blockers
  - Action: decreases cardiac output, peripheral resistance and cardiac oxygen consumption.

- Use: arrhythmias, angina, and migraine headaches.
- Examples:
  - propranolol (Inderal)
  - metoprolol (Lopressor, Toprol – XL)
  - atenolol (Tenormin)
- Adverse Effects:
  - Fatigue
  - Lethargy
  - Hypotension
  - Bradycardia
  - Bronchospasm
  - heart failure
- Nursing Considerations:
  - check apical heart rate before administering medication. Refer to the order and the facility policy for hold parameters and reporting instructions.
  - medication can mask common signs of shock or hypoglycemia
  - report any unusual findings to the licensed nurse promptly.
- When hypertension is not relieved using one medication, a combination of two or more medications may be ordered.
  - Examples include:
    - lisinopril & hydrochlorothiazide (Zestoretic)
    - enalapril & hydrochlorothiazide (Vaseretic)
- Vasodilators
  - Action: dilate blood vessels and improve blood supply to the heart.
  - Use: treat angina pectoris and decreased circulation to the brain and extremities.
  - Examples:
    - nitroglycerin
      - Nitro-Bid (ointment)
      - Nitrostat, NitroQuick (sublingual)
      - Nitrolingual Translingual Spray (spray)
      - Nitrodisc, Nitro-Dur, Transderm-Nitro (transdermal)
    - hydralazine (Apresoline)
  - Adverse Effects:
    - Hypotension
    - Tachycardia
    - Flushing
    - Palpitations
  - Nursing Considerations:
    - elderly residents may be more sensitive to medication's effects.
    - sublingual tablets are placed under the tongue when pain begins. The advanced practice provider's orders will usually allow the medication to be repeated every five minutes until relief occurs, taking no more than three tablets in fifteen minutes. This is a PRN medication, thus the QMA must seek the approval and guidance of the licensed nurse throughout administration.
- Anticoagulants



- Action: inhibits clotting of blood
- Use: to prevent formation of clots which may cause damage to the brain, heart, or lungs.
- Examples:
  - apixiban (Eliquis)
  - heparin, enoxaparin (Lovenox) – given per injection by a licensed nurse
  - warfarin (Coumadin, Jantoven)
  - rivaroxaban (Xarelto)
  - dabigatran (Pradaxa)
- Adverse Effects:
  - Hemorrhage
  - gastrointestinal bleeding
  - bleeding gums
  - mouth ulcerations
  - hemoptysis
- Nursing Considerations:
  - observe for signs of bleeding from gums, bruising, blood in urine or stools.
  - protect from injury (e.g., shave resident with an electric razor).
  - sudden extreme headaches should be reported immediately to the licensed nurse.
  - consider compatibility with other ordered medications (example – avoid aspirin or aspirin containing products).
  - lab studies are conducted routinely to ensure the dosage remains in therapeutic range. Should be administered at the same time each day to ensure accuracy of necessary lab studies.
- Miscellaneous medications that help prevent blood from clotting
  - Platelet Aggregation Inhibitors:
    - clopidogrel (Plavix)
      - often used after MI or stroke
      - resident may have increased bleeding tendencies
    - prasugrel (Effient)
    - aspirin
  - Hemorheological agent:
    - pentoxifylline (Pentoxil, Trental)
    - decreases blood viscosity.
    - increases blood flow by increasing flexibility of red blood cells.
- Cholesterol Lowering Medications
  - Action: Lowers cholesterol levels by either decreasing the production of or removing cholesterol from the body.
  - Use: Treats high cholesterol
  - Examples:
    - Statins – the most common cholesterol medication
      - atorvastatin (Lipitor)
      - rosuvastatin (Crestor)
      - simvastatin (Zocor)
  - Adverse Effects:
    - Constipation

- liver damage
- muscle cramps
- weakness
- kidney damage
- bleeding
- Nursing Considerations:
  - monitor for muscle weakness or pain
  - changes in concentration, alertness, and vision

**Note:** Other healthcare professionals (such as dentists) must be notified of anticoagulant use when seeing/treating resident. Anticoagulants may need to be held temporarily prior to a procedure.

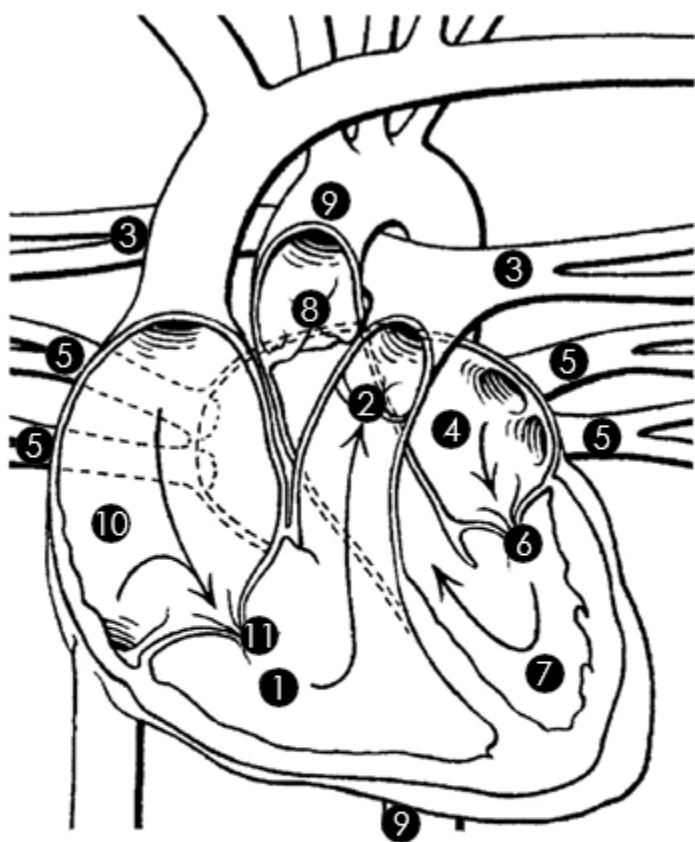
### **Cardiovascular Medication Considerations**

Implications for care for cardiovascular medications:

- Check blood pressure routinely. Refer to facility policy.
- The resident may faint easily. Instruct the resident to rise slowly from a sitting position.
- Hot baths or showers may cause a resident to be more prone to fainting.
- Standing still may also precipitate fainting.
- Encourage the resident to move slowly.
- If the medication is omitted or suddenly discontinued, the resident's blood pressure may rise higher.

**Notes:**

## The Heart



- |                       |                   |
|-----------------------|-------------------|
| ① Right ventricle     | ⑦ Left ventricle  |
| ② Pulmonary valve     | ⑧ Aortic valve    |
| ③ Pulmonary artery    | ⑨ <u>Aorta</u>    |
| ④ Left atrium         | ⑩ Right atrium    |
| ⑤ Pulmonary veins     | ⑪ Tricuspid valve |
| ⑥ Mitral <u>valve</u> |                   |

# Worksheet

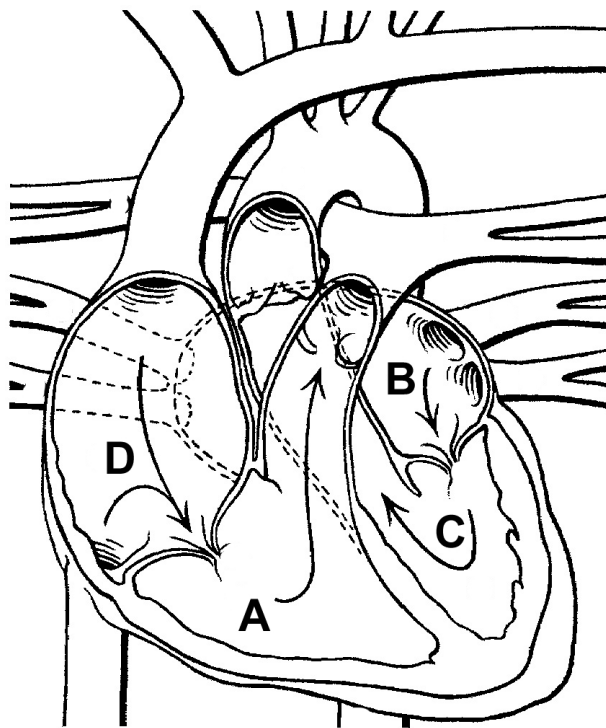
## Lesson 19: The Cardiovascular System

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions:

- |                               |  |
|-------------------------------|--|
| a. ____ Aorta                 | 1. Period when the heart is at rest              |
| b. ____ Necrosis              | 2. Liquid, straw-colored portion of the blood    |
| c. ____ Cardiac               | 3. Death of part of the heart muscle             |
| d. ____ Diastole              | 4. Largest artery in the body                    |
| e. ____ Plasma                | 5. Tissue death                                  |
| f. ____ Pulse                 | 6. Pertaining to the heart contracting           |
| g. ____ Systole               | 7. Pertaining to the heart                       |
| h. ____ Myocardial infarction | 8. Number of times the heart beats in one minute |

2. On this diagram identify the four chambers of the heart.



- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_

3. How does the heart change with age?
4. Identify risk factors for coronary artery disease.
5. Describe myocardial infarction.

## CARDIOVASCULAR MEDICATION STUDY

Choose at least two medications from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
cardiotonic				
antiarrhythmic				
antihypertensive				
calcium channel blocker				
ACE inhibitor				
beta blocker				
vasodilator				
anticoagulant				

## Lesson 20: The Respiratory System

### Student Overview

#### Lesson Objectives:

- Become familiar with the basic anatomy and physiology of the respiratory system.
- Identify the effects of aging on the respiratory system.
- Identify the classifications of medications that affect the respiratory system.

#### Key Terms:

Allergen:

Allergic Reaction:

Anaphylactic Reaction:

Asthma:

Bronchitis:

Chronic Obstructive Pulmonary Disease- COPD:

Common Cold:

Emphysema:

Histamine:

Pneumonia:

Rhinitis:

Tuberculosis:



## **Lesson 20: The Respiratory System**

### **Structure and Function of Respiratory System**

- System basics
  - The respiratory system is composed of the nose and mouth structures, trachea, and lungs.
  - Air enters the lungs where the oxygen is absorbed from the air and carbon dioxide is released.
  - As the body ages, changes occur in the respiratory system that cause a decrease in respiratory functioning.
  - Smoking is a major factor in decreased respiratory functioning. Past exposure to air pollution, smoking or infections damage the cells of the bronchi and lungs.
- Parts of the respiratory system
  - Nose - warms, moistens, and filters inhaled air.
  - Pharynx (throat) - passageway for air.
  - Larynx - "voice box"; contains the vocal cords.
  - Trachea - "windpipe" – tube leading to bronchi; approximately 4 1/2 –5 inches long and one inch in diameter.
  - Bronchus (bronchi) - two passageways branching off the trachea into each lung.
  - Bronchiole – smaller subdivisions of the bronchi. Branches that lead to the alveoli.
  - Alveoli - small sac at end of bronchiole. Oxygen and carbon-dioxide are exchanged from the blood circulating through the walls of the alveoli.
  - Lung - organ which contains the bronchioles and alveoli. Pleura covers the lungs and lines the chest cavity with a protective covering.

### **Accessory Structures of the Respiratory System**

- Diaphragm - Dome-like muscle below the lungs.
  - Acts like bellows to draw fresh air in and push waste products out.
- Muscles between the ribs allow the chest to expand and contract with breathing.

### **Functions of the Respiratory System**

- Bring oxygen into the body which is distributed to every cell via the blood.
  - Oxygen is carried to the body cells by hemoglobin which is contained in red blood cells.
  - The normal range of hemoglobin in adults is 12-15 gm per 100 ml of blood.
- Remove carbon dioxide and other wastes from the body.
- Rate and depth of breathing depends upon the "respiratory center" located in the brain. Changes in the respiratory rate can be triggered by activity, illness, and medications.
  - Average respiratory rate for an adult is 12-20 respirations per minute.
  - Average respiratory rate for children (1-8 years) is approximately 20 respirations per minute.
- Routes of administration for respiratory medications:
  - Oral – by mouth, most commonly used method.
  - Inhalation – by breathing.

- Parenteral – by injection.
- Sublingual – under the tongue.
- Nebulization – mist to lining of the nose and/or throat.

## Disorders of the Respiratory System

- Abnormal respirations and respiratory arrest
  - Causes: obstruction, infections and decrease in amount of respiratory surface available for exchange of oxygen and carbon dioxide.
  - Symptoms: restlessness, confusion, respiratory rate increased or decreased, cyanosis may or may not be present, coughing, increased heart rate, perspiration, coma, and death.
  - Treatment: stimulate breathing, improve gas exchange, medication to treat symptoms as well as causes.
- **Asthma**
  - Causes: allergies, infection, emotional tension, or combination of all three.
  - Symptoms: mild wheezing to severe dyspnea with difficulty exhaling; flaring nostrils, increased pulse; prolonged attack places considerable strain on the heart.
  - Treatment: medication to dilate bronchioles
- **Bronchitis**
  - Causes: germs, irritants such as dust, smoke, pollutants, cold weather.
  - Symptoms: dry cough followed by thick mucus, productive cough.
  - Treatment: antibiotics, medications to relieve bronchospasm (bronchodilators), expectorants, sometimes corticosteroids.
- Pulmonary **Emphysema**
  - Causes: – smoking, recurrent inflammation and infection.
  - Symptoms: chronic cough, loss of appetite, barrel chest, pursed lip breathing, cyanosis of extremities, clubbing of fingers and shortness of breath.
  - Treatment: antibiotics, bronchodilators, breathing treatments.
- **COPD (Chronic Obstructive Pulmonary Disease)**
  - Causes: emphysema, chronic bronchitis, asthma, or a combination of these disorders, also current or previous smoking.
  - Symptoms: dyspnea with minimal exertion, productive cough, frequent respiratory infections, barrel chest, severe respiratory failure.
  - Treatment: incurable, but condition may improve with breathing exercises, bronchodilators, and expectorants.
- **Rhinitis**
  - Causes: allergies, irritants, germs, pollens (hay fever).
  - Symptoms: sneezing, runny nose, congestion.
  - Treatment: medications to relieve symptoms.
- **Common cold**
  - Cause: Viruses
  - Symptoms: muscular aches, stuffy nose, congestion.
  - Treatment: medications to relieve symptoms.
- **Pneumonia**

- Causes: Primary-virus or bacteria; secondary complication of other diseases, aspiration of food, fluid or gastric contents.
- Symptoms: cough, rusty sputum, fever, cyanosis, moist respirations.
- Treatment: bed rest and medication.
- **Tuberculosis (TB)**
  - Causes: inhalation of droplet nuclei from an infected person; spread through the air.
  - Symptoms: none for 6-8 weeks, then, in a small subset of people who develop symptoms after exposure - fatigue, weakness, loss of appetite, weight loss, night sweats, low grade fever and cough.
  - Treatment: medications (long term medication therapy), isolation until non-contagious, TB skin test for close associates to detect infection; possible chest x-rays, sputum cultures to evaluate status.
- Allergic reactions
  - Causes: allergens cause body cells to release a substance called **histamine**. Common allergens are:
    - foods: eggs, strawberries, shellfish
    - contact: wool, poison ivy
    - breathing: ragweed, dust
    - medications: morphine, sulfa medications, penicillin
    - insect bites: bees, spiders (this reaction can be an emergency in that it can cause anaphylactic shock).
  - Symptoms: histamine causes various reactions such as swelling, hives, rhinitis, difficulty breathing, nausea, vomiting and diarrhea. An extreme reaction may cause anaphylactic shock and death.
  - Treatment: antihistamines

## Effects of the Aging Process on the Respiratory System

- Nose enlargement from continued cartilage growth.
- General atrophy of tonsils.
- Tracheal deviation due to changes in the aging spine.
- Increased chest diameter as a result of altered calcium metabolism and calcification of rib cartilage.
- Lung rigidity; decreased number of alveoli.
- Respiratory muscle degeneration or atrophy.
- Decreased inspiratory and expiratory muscle strength; diminished vital capacity.
- Lung tissue degeneration causing decrease in elasticity of lungs. Saturation decreased by 5%.
- 30% reduction in respiratory fluids, increasing risk of pulmonary infection and mucous plugs.
- Lower tolerance for oxygen deficit.

## Oxygen (O<sub>2</sub>)

- Used to treat hypoxia. May be given continuously for a person whose lung tissue has been severely damaged by disease. May be administered on an emergency basis to a resident who suddenly becomes short of breath.
- Toxic effects:

- Results from oxygen being supplied in greater amounts than the body needs.
- Symptoms may include:
  - Drowsiness
  - Confusion
  - respiratory depression (dangerously slowed breathing).
- Implications for care:
  - Maintain oxygen flow rate at low levels as ordered by provider to prevent respiratory depression.
  - Oxygen supports combustion. Take special precautions to limit the potential sources of fire.
- Examples of oxygen:
  - stored in three forms:
    - Gas
    - Liquid
    - Concentrator
  - administered by two primary methods:
    - by nasal cannula
    - by mask
  - Adverse Effects:
    - hyperventilation – increase in rate or depth of respiration or both.
    - hypoventilation – reduced rate and depth of respiration.
  - Nursing Considerations:
    - residents with chronic lung disease should have ordered lower liter flow rates.
    - mask should not be used at less than 5 liters per minute.
    - dries out the mucous membrane – good mouth care must be given.
    - residents, visitors, and staff must not smoke in areas where oxygen is being used.

## **Selected Respiratory Medications**

- Cough Medications
  - Antitussive
    - Action: depresses the cough by depressing the activity of the cough center in the brain or by local action.
    - Use: treat persistent cough.
    - Examples:
      - codeine (controlled substance) – often in combination with an expectorant
      - dextromethorphan (Benylin-DM)
      - benzonatate (Tessalon Perles)
    - Nursing Considerations:
      - after taking cough syrup, the resident should not receive fluids for 15 minutes.
  - Expectorants
    - Action: clear the respiratory tract by liquefying mucous.
    - Use: cause a productive cough
    - Examples: guaifenesin (Robitussin, Mucinex)

- Adverse Effects:
  - gastric irritation
  - nausea and vomiting
- Nursing Considerations:
  - many over the counter cough and cold preparations contain ammonium chloride and should therefore be taken with water.
  - humidified air may promote expectoration.
  - increased activity may promote movement of mucous and productive cough.
- Bronchodilators
  - Action: relax bronchial muscles and open the breathing passages.
  - Use: treat asthma, bronchitis, and chronic lung disease.
  - Examples:
    - terbutaline sulfate
    - albuterol (Proventil, Ventolin)
    - ipratropium (Atrovent)
    - epinephrine (Adrenalin, Epipen)
    - Brezti (budesonide glycopyrrolate fomoterol fumerate)
  - Adverse Effects:
    - withdrawal symptoms may occur if medication is discontinued
    - restlessness
    - dizziness
    - palpitations
    - nausea
    - hypertension
  - Nursing Considerations:
    - resident may become frightened, anxious, or demanding while taking this medication. Residents can become dependent on the use of their inhalers.
    - medications in combinations may cause increased adverse effects.
    - notify the nurse if the medication is withheld because of nausea.
    - the combination of oral and inhaled bronchodilators may result in increased side effects.
- Antihistamines
  - Action: combat the effects of histamine, which is released by the body as an allergic reaction.
  - Use: treat motion sickness and allergic reactions.
  - Examples:
    - diphenhydramine (Benadryl)
    - promethazine (Phenergan)
    - loratadine (Claritin)
    - brompheniramine (Dimetapp)
    - fexofenadine (Allegra)
    - chlorpheniramine (Chlor-Trimeton)
  - Adverse Effects:
    - drowsiness (most common)

- dizziness
  - loss of appetite
  - dry mouth
  - urinary retention
- Nursing Considerations:
  - use with caution with residents who have cardiac conditions.
  - use with caution with men who have prostate conditions.
  - encourage fluids.
  - the resident can develop a tolerance to the medication.
  - may cause increased drowsiness when combined with other depressant medications and/or alcohol.
- Decongestants
  - Action: shrinks mucous membrane and relieves nasal swelling and congestion.
  - Use: treat allergies, hay fever and cold symptoms.
  - Examples:
    - naphazoline HCL (Privine)
    - oxymetazoline HCL (Afrin)
    - phenylephrine HCL (Neo-Synephrine)
    - pseudoephedrine HCL (Sudafed)
  - Adverse Effects – prolonged use can:
    - cause irritation
    - perforate the nasal septum
    - cause rebound nasal congestion
  - Nursing Considerations: resident can develop a tolerance to the medication.
- Combination products
  - Action: preparations containing more than one product to produce more than one effect.
  - Use: treat coughs and allergies, to relieve pain.
  - Examples: Sinutab (acetaminophen, chlorpheniramine, pseudoephedrine)
  - Adverse Effects:
    - Drowsiness
    - dry mouth
  - Nursing Considerations:
    - may cause elevated blood pressure.
    - over the counter medications are potent; use with caution.
    - rebound symptoms can occur if administered more often than indicated.
- Tuberculin Medications:
  - Action: reduce growth or kill the bacteria that cause TB.
  - Use: treat the active disease
  - Examples:
    - rifampin (RIF) (Rifadin)
    - isoniazid (INH)
    - pyrazinamide (PZA)
    - ethambutol HCL (EMB)
  - Adverse Effects:
    - fatigue/drowsiness

- numbness in extremities
  - nausea
  - confusion
  - headache
  - vision problems
  - anorexia
  - rash
- Nursing Considerations:
  - can turn urine, feces, sputum, sweat or tears to a harmless red-orange color.
  - administer with caution to residents who have a history of alcoholism and liver disease.
  - monitor for signs of hepatitis (jaundice)
  - monitor the resident for weight loss.
  - give with food if the resident complains of nausea.
  - store the medication in a light-resistant container.
  - residents are to be carefully monitored and interviewed regularly. It is important that doses are not missed.
  - medication therapy can continue for 3-6 months, up to 2 years for active tuberculosis and for 12 months for preventative therapy.
- Tuberculin Testing
  - Action: produce an allergic reaction to tuberculin bacteria.
  - Use: check for contact with the mycobacterium bacteria:
    - Negative results mean lung tissue has not been in contact with TB bacteria.
    - Positive results mean lung tissue has been exposed to the TB bacteria, but it does not necessarily mean the person has tuberculosis.
  - Examples:
    - Mantoux or PPD
      - Accepted test for health care workers and residents in long term care.
      - Administered by a nurse; injected in the forearm just under the skin.
    - Interferon Gamma Release Assay (IGRA) blood test
      - Accepted test for health care workers and residents in long term care.
    - Chest x-ray
      - Used for persons with a positive PPD to diagnose the disease and after an initial positive reaction to rule out an active disease.
      - After a negative CXR and an advanced practice provider's statement, repeat CXR only if symptoms are present.
    - Sputum Sample
  - It is the responsibility of the licensed nurse to administer testing, read the result and initiate necessary intervention.

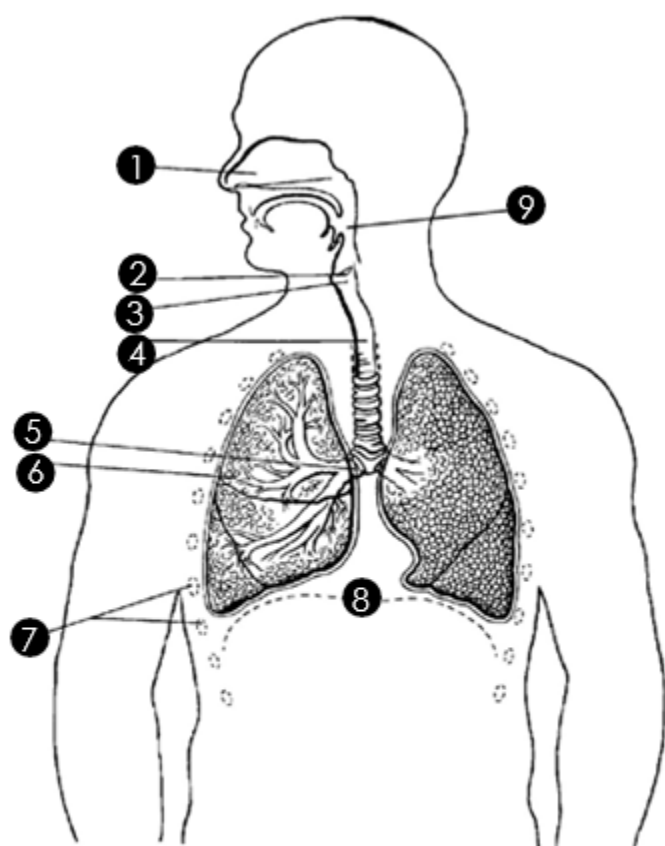
## Respiratory Medication Considerations

- Residents with chronic lung conditions may be on a comprehensive regime of medication management, oxygen therapy, nutrition, progressive exercise, and education.
- Narcotics and barbiturates depress respiration; these medications are used with caution with COPD residents.
- Residents with asthma usually exhibit continuous wheezing, dyspnea, and coughing. Fatigue is often associated with chronic lung conditions. Administer medications slowly and monitor residents closely.
- Residents with chronic lung conditions may sometimes be treated with corticosteroids. These residents are at higher risk for peptic ulcers.
- Avoid giving mucous-producing liquids to residents who are congested.

**Notes:**



## The Respiratory System



- |                       |             |
|-----------------------|-------------|
| ① Nasal cavity (nose) | ⑥ Lung      |
| ② Vocal cords         | ⑦ Ribs      |
| ③ Larynx              | ⑧ Diaphragm |
| ④ Trachea             | ⑨ Pharynx   |
| ⑤ Bronchus            |             |

# Worksheet

## Lesson 20: The Respiratory System

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions:

- |                     |   |
|---------------------|---|
| a. ____ Exhale      | 1. Drawing out/in by suction  |
| b. ____ Inhale      | 2. To breathe in  |
| c. ____ Aspiration  | 3. Exchange of oxygen and carbon dioxide in the body; one inhalation plus one exhalation                  |
| d. ____ Alveoli     | 4. Tiny air sacs in the lungs where oxygen and carbon dioxide are exchanged between the air and the blood |
| e. ____ Trachea     | 5. To breathe out   |
| f. ____ Respiration | 6. Air passage that extends from the larynx to the bronchi, also called the windpipe                      |

2. Number the following structures in order of air being inhaled into the lungs.

Alveoli (air sacs) \_\_\_\_  
Pharynx (throat) \_\_\_\_  
Bronchi (tree) \_\_\_\_  
Trachea (wind pipe) \_\_\_\_  
Larynx (voice box) \_\_\_\_

3. The most common respiratory disorder is:

4. What age-related changes to the respiratory system explain why an elderly person may experience fatigue with exertion?

5. Match the actions with the drug classifications:

- |                      |   |
|----------------------|---|
| a. ____ Antiviral    | 1. Used to reduce fever   |
| b. ____ Expectorant  | 2. Reduces swelling in the nose, slows the formation of mucus and permits the drainage of mucus |
| c. ____ Antitussive  | 3. Used to control coughing   |
| d. ____ Decongestant | 4. Used to treat viral infections   |
| e. ____ Antipyretic  | 5. Thins the secretions in the lungs, making them easier to cough out                           |

6. Explain the role of the medication aide in relation to the use of oxygen by a resident.

## RESPIRATORY MEDICATION STUDY

Choose at least two medications from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
respiratory stimulants				
antitussives expectorants				
bronchodilators				
nasal de-congestants				
combination products				
antihistamine				

## Lesson 21: The Endocrine System

### Student Overview

#### Lesson Objectives:

- Become familiar with the basic anatomy and physiology of the endocrine system.
- Identify the effects of aging on the endocrine system.
- Identify the classifications of medications that affect the endocrine system.

#### Key Terms:

Diabetes:

Hormone:

Hyperglycemia:

Hypoglycemia:

Insulin:

Ketoacidosis:

Urticaria:

## Lesson 21: The Endocrine System

### Structure and Function of Endocrine System

- System basics:
  - The endocrine system is composed of a vast network of ducts and glands that secrete **hormones** and other secretions to regulate the body.
  - The pituitary gland located behind the nose is responsible for secreting hormones that regulate growth.
  - The thyroid gland in the throat secretes thyroid hormones which control metabolism.
  - The gonads secrete sex hormones that regulate puberty and the body's secondary sex characteristics.
  - The pancreas produces insulin which controls the body's glucose levels and contributes toward the body's utilization of nutrients such as carbohydrates.
- Structures of the endocrine system:
  - Pineal gland
  - Pituitary gland (master gland)
  - Thyroid gland
  - Parathyroid glands
  - Thymus gland
  - Adrenal glands
  - Pancreas
  - Testes (male gonads)
  - Ovaries (female gonads)
- Functions of the endocrine system:
  - The endocrine glands secrete hormones that are the chemical regulators of all cell activity.
  - Hormones can either excite or inhibit physiological processes.

### Diabetes

- **Diabetes:**
  - Cause: partial or complete failure of the islets of Langerhans to produce insulin which results in abnormally large amounts of sugar (glucose) collecting in the bloodstream. The glucose (sugar in the blood) does not enter the cells of the body, thus is not used as fuel.
  - Symptoms: increased appetite, weight loss, development of diabetic **ketoacidosis**, frequent urination, increased amounts of urine, thirst.
    - The body is starved for an energy source and breaks down fats and proteins to get energy. Byproducts of the breakdown are ketones which are also excreted in the urine, but can accumulate in the body to such a level to cause a coma. (ketoacidosis)
  - Types of diabetes:
    - Insulin Dependent Diabetes Mellitus (IDDM) Type I – usually occurs in people age 20 and under.

- Causes: cells in pancreas fail to produce and release insulin, diet is low in sugar and high in protein and carbohydrates.
  - Treatment: injectable insulin.
- Non-Insulin Dependent Diabetes Mellitus (NIDDM) Type II – usually occurs after age 35. Easier to regulate. May be controlled with diet or oral hypoglycemic agents. This type is found more frequently among long term care residents.
  - Cause: cells in the pancreas fail to produce enough insulin or the insulin produced is ineffective due to their body cells becoming insulin resistant.
  - Treatment: can often be controlled by a carefully balanced diet; may receive oral hypoglycemic medications and/or insulin.
- Antidiabetic Agents
  - Insulin
    - Action: replace insulin in the body when it is not produced by the islets of Langerhans.
    - Use: treat diabetes

Differences in Types of Insulin					
Type	Name	Appearance	Onset	Peak	Duration
<b>Rapid-acting</b> Insulin lispro Insulin aspart	Humalog Novolog	Clear Clear	<15 min	1-2 hours	3-4 hours
<b>Regular</b> Regular Regular	Humulin R Novolin R	Clear Clear	0.5-1 hour	2-4 hours	5-7 hours
<b>Intermediate-acting</b> NPH NPH	Humulin N Novolin N	Cloudy Cloudy	2-4 hours	4-10 hours	10-16 hours
<b>Long-acting</b> Insulin glargine Insulin detemir	Lantus Levemir	Clear	2-4 hours	Peakless	up to 24 hours
Insulin is measured by the "unit" and requires a special syringe for administration. All insulins come dissolved or suspended in liquids. The standard and most used strength in the United States is U-100, which means it has 100 units of insulin per milliliter (ml) of fluid. More concentrated insulins are also available, although they are rarely used in long-term care facilities: U-200, U-300, and U-500. Concentrated insulins are for individuals who require very high insulin doses.					

- Adverse Effects:
  - Perspiration
  - Irritability
  - Drowsiness
  - skin irritation at site of injection
  - **urticaria**
  - hypoglycemia (insulin shock) caused by too much insulin or too little glucose in the blood
  - diabetic acidosis and coma can result from a lack of insulin
- Nursing Considerations:
  - QMAs **must not** draw up or give insulin except as authorized in IC 16-28-1-11.5.
  - observe for hypoglycemia
  - QMAs may perform glucose testing via fingerstick
- Oral hypoglycemics (antidiabetic agents)
  - Action: There are many oral hypoglycemic medications with different mechanisms of action.
  - Use: treat type II diabetes; sometimes given along with insulin in type I.
  - Examples:
    - tolbutamide (Orinase)
    - glyburide (DiaBeta, Micronase, Glynase)
    - metformin (Glucophage)
    - glipizide (Glucotrol)
    - miglitol (Glyset)
    - dapagliflozine (Farxiga)
    - empagliflozin (Jardiance)
  - Adverse Effects:
    - renal impairment
    - sulfonamide sensitivity
    - liver dysfunction
    - skin rash
    - nausea and vomiting
    - heartburn
    - hypoglycemia
  - Nursing Considerations:
    - these medications interact with many others. Be aware of other medications the resident is taking and observe for signs and symptoms of medication interactions.
    - monitor the resident for hypoglycemia. A change from the prescribed diet will upset the balance of insulin and glucose. Not eating (due to flu, diarrhea, or other reasons) may cause hypoglycemia.
    - report any change in the urine test to the nurse.
    - administer hypoglycemics approximately ½ hour before a meal, or as ordered.



## Diabetic Reactions

- **Hypoglycemia** (low blood sugar)
  - Causes: insulin reaction from too much insulin, increase in exercise and/or a decrease in food intake, low blood sugar.
  - Symptoms:
    - early symptoms – headache, nervousness, pallor, irritability, moody, profuse perspiration, blurred vision, numbness of extremities, giddiness, hunger, drowsiness, confusion. The resident may say, “my sugar is dropping,” or “I am low.”
      - Notify the licensed nurse immediately for any of these concerns.
    - late symptoms – loss of consciousness, coma, convulsions
      - Notify the nurse immediately for intervention.
  - Treatment: the nurse may instruct the QMA to obtain the resident’s blood sugar and to give the resident some food. If possible, the resident should be given a protein substance such as cheese. Proteins will bring the blood sugar up at a slower rate.
    - Quick blood sugar responses can be obtained by giving the resident orange juice. This causes the pancreas to produce more insulin causing another hypoglycemic reaction within a few minutes. Notify the facility nurse immediately for any signs and symptoms of hypoglycemia. Refer to the facility policy or established protocol for response to hypoglycemic reactions.
- **Hyperglycemia** (high blood sugar)
  - Causes: excessive sugar in the blood which results in a fasting blood sugar reading greater than 125 mg/dL and greater than 180 mg/dL two hours after a meal. Factors that can contribute to hyperglycemia are poor diet, emotional stress and refusal or neglect to take medication. A condition that results from hyperglycemia is ketoacidosis.
  - Symptoms:
    - early symptoms – slow onset, dry hot skin, drowsy, breath smells fruity, low blood pressure, vomiting, thirst, large amount of sugar in urine, high blood sugar.
    - late symptoms – Kussmaul breathing (deep and fast), unconsciousness, coma, death.
  - Hyperglycemia is not curable but can be controlled by diet and/or be treated with oral or injectable medications.

## Monitoring Medication Response

- Blood tests
  - Fasting Blood Sugar (FBS) – blood drawn in the morning after eight hours without food.
    - Medications may be ordered to be withheld until blood sugar results are obtained.
  - Postprandial glucose – blood tested for sugar after two hours without food.
  - Fingerstick glucose meter readings are obtained as ordered. If ordered in the morning, reading is to be obtained before the resident eats breakfast. Other readings may be ordered to be obtained in the afternoon or evening hours.
    - Insulin administration is often based on the reading obtained, thus the accuracy of the readings is of utmost importance.

- The provider may order that insulin be administered by the licensed nurse on a sliding scale according to the fingerstick result.
- Observe, chart, and record the resident's dietary intake. Some residents need replacement of carbohydrates. Report uneaten items to the nurse.
- Interactions with prescription medications
  - Examples of medications that can raise blood glucose:
    - Lithium
    - Estrogen
    - Caffeine
    - Morphine
    - Nicotine
    - Corticosteroids
    - epinephrine – like medications
    - phenytoin
  - Examples of medications that can decrease blood glucose:
    - ethyl alcohol
    - insulin
    - anabolic steroids
- Health care
  - Skin care
    - Avoid scratches, punctures, and other injuries
    - Avoid overexposure to the sun
    - Treat all injuries promptly. If injuries do not begin to heal within 24 hours or if they become infected, contact the nurse
  - Foot care
    - Check feet daily for sores, change in color, temperature or signs of infection.
    - The nurse will clip toenails straight across.
    - Contact the nurse concerning removal of corns and calluses as CNAs/QMAs are prohibited from performing this intervention.
    - Discourage ambulating barefoot.
    - Do not use hot water bottles, heating pads, etc., on the resident's feet.
  - Sick days
    - Resident should have a plan for days when he/she is ill and insufficient food is consumed. Check with the nurse.
    - Resident should always take the medication ordered. Sometimes it may be needed to hold diabetic medications or insulin if very poor oral intake, as ordered by the provider.
    - Encourage the resident to drink fluids.
- Additional concerns regarding diabetes
  - Identify which residents have insulin ordered so that you can observe dietary intake and reactions to the medication.
  - Use all of your senses to observe and monitor these high-risk residents. Observe their skin condition closely.
  - Goals of medication treatment:
    - Normalize carbohydrate, protein and fat metabolism
    - Control blood sugar

- Eliminate acidosis
- Prevent hypoglycemia (insulin shock)
- Promote normal growth.

## **Common Disorders of the Endocrine Glands**

- Hypothyroidism
  - Cause: underproduction of the hormone thyroxin by the thyroid gland which results in decreased metabolic rate.
  - Symptoms: fatigue, unexplained weight gain, dry skin, sensitivity to cold.
  - Treatment: medication, thyroid hormone replacement.
- Hyperthyroidism
  - Cause: increased production of the thyroid hormone thyroxin.
  - Symptoms: increased blood pressure, increased pulse rate, tremor, weight loss, anxiousness. "Thyroid storms" may occur when thyroxin levels are too high. Thyroid storms can be an emergent situation. A thyroid storm is characterized by an abrupt onset of fever, sweating, tachycardia, congestive heart failure and restlessness.
  - Treatment: medications such as methimazole (Tapazole) or radiation implants.
- Hyperinsulinism
  - Cause: overproduction of insulin by the pancreas.
  - Symptoms: low blood sugar, fatigue, headache, hunger, confusion.
  - Treatment: diet revision.

## **Effects of the Aging Process on the Endocrine System**

- Decrease in hormone secretions
  - Tendency toward diabetes.
  - Water retention
  - Changes in sex characteristics.
  - Slower metabolism
- Decreased hormone secretion may alter the function of any body system.

## **Adrenal Cortical Steroids**

- Action: replacement therapy, suppress inflammation.
- Use: to treat rheumatoid arthritis, allergies, asthma and many unlabeled uses.
- Examples:
  - prednisone (Meticorten, Orasone)
  - dexamethasone (Decadron)
  - methylprednisolone (Medrol, Solu-Medrol)
- Adverse Effects:
  - moon face
  - fluid retention
  - depression
  - increased blood sugar
  - hair loss

- night sweats
  - thin, shiny skin
- Nursing Considerations:
  - may mask infection.
  - serious reactions (such as decreased blood pressure, fatigue, depression, anorexia and rebound inflammation) may occur if the medication is stopped suddenly. Omitting a dose or abrupt withdrawal may be life threatening.
  - administer with food.

## Thyroid Hormones

- Action: affect how the body cells use food substances, also affect growth and development.
- Use: replacement therapy if the thyroid is not producing sufficient hormones.
- Examples:
  - levothyroxine sodium (Synthroid, Levoxyl)
    - Administration Guidance: Synthroid needs to be taken 30 to 60 minutes prior to breakfast, at the same time every day.
- Adverse Effects:
  - Nervousness
  - Insomnia
  - Palpitations
  - Sweating
  - Tremors
  - chest pains
- Nursing Considerations:
  - Report chest pains immediately to the nurse.
  - Onset is gradual – full effect in about three weeks.
  - Administer as a single dose, preferably before breakfast.

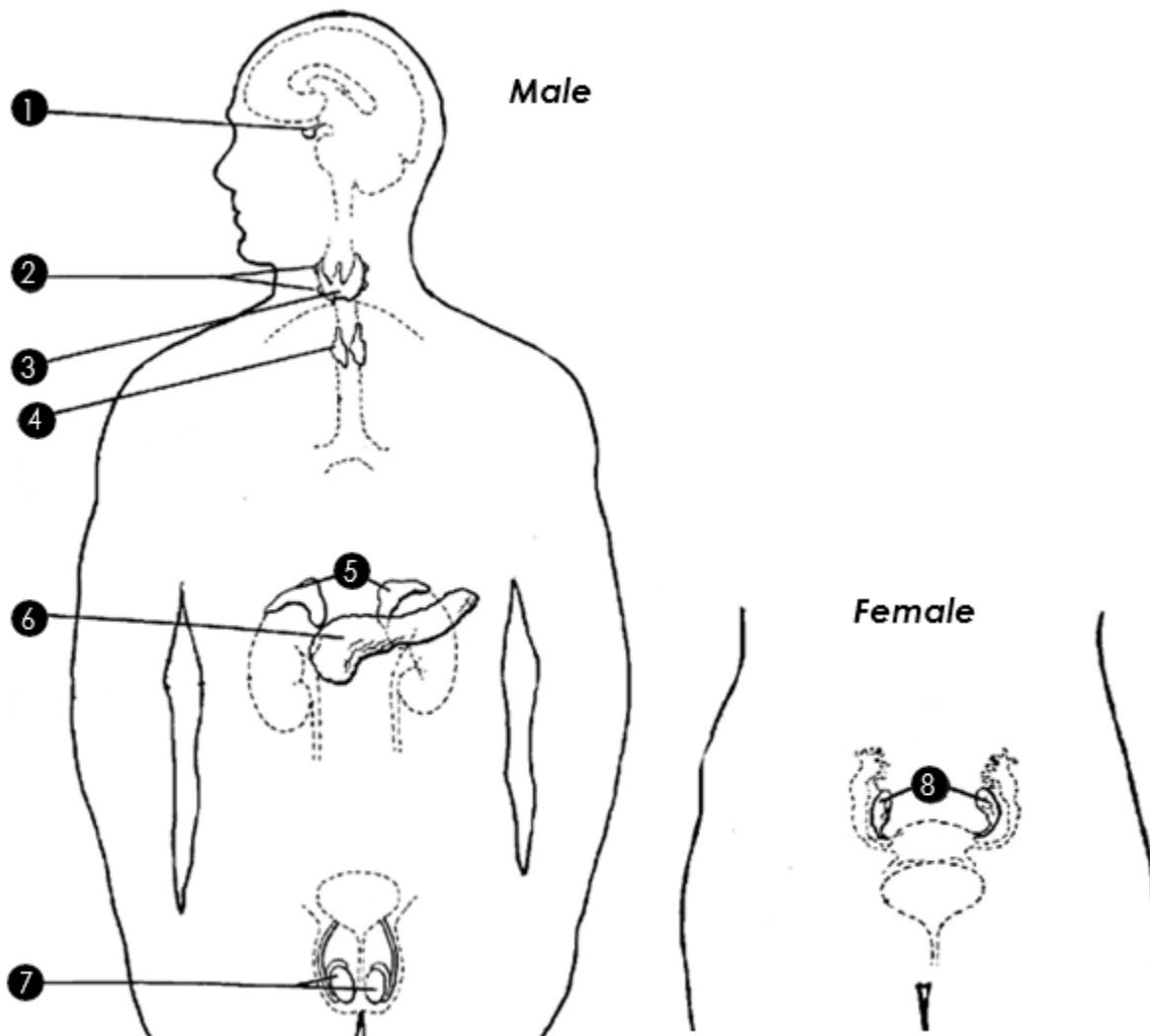
## Gonadal Hormones

- Estrogen
  - Action: maintain normal menstrual cycle and secondary sex characteristics.
  - Use: replacement therapy for symptoms of menopause, treat symptoms of prostate and breast cancer and osteoporosis.
  - Examples:
    - estrogen (Premarin)
    - estradiol (Estrace, Estraderm)
  - Adverse Effects:
    - Depression
    - hair loss
    - thrombophlebitis
    - breast tenderness
    - leg cramps
    - increase in blood pressure
  - Nursing Considerations:

- check the resident's blood pressure regularly. Refer to facility policy.
  - may be given cyclically (e.g., on 25 days, off 5 days)
- Androgens
  - Action: maintain male secondary sex characteristics and stimulate repair of body tissue.
  - Use: treat symptoms of several types of cancers
  - Example: testosterone (Andronate, Depotes)
  - Adverse Effects:
    - Headache
    - Depression
    - growth of facial hair
    - edema
    - weight gain
  - Nursing Considerations
    - monitor a diabetic resident for symptoms of hypoglycemia.
    - bedridden residents should be given range of motion exercises to prevent the loss of calcium from the bone.
    - monitor the resident's weight regularly.

**Notes:**

## The Endocrine System



- |                      |                  |
|----------------------|------------------|
| ① Pituitary gland    | ⑤ Adrenal glands |
| ② Parathyroid glands | ⑥ Pancreas       |
| ③ Thyroid gland      | ⑦ Testes         |
| ④ Thymus gland       | ⑧ Ovaries        |

## COMMON DISORDERS OF THE ENDOCRINE GLANDS

Gland	Hormone	Function	Overproduction	Treatment	Underproduction	Treatment
pituitary	contains 6 hormones	stimulate other hormones responsible for growth	hyperpituitarism skeletal overgrowth (gigantism), formation of new bone	curb production of hormone, surgery, replacement of needed hormones	hypopituitarism dwarfism, pubertal delay, diabetes insipidus	replacement of hormones
thyroid	Thyroid	energy metabolism	hyperthyroidism enlarged thyroid gland (goiter), nervousness, weight loss, sweating, diarrhea	surgery, antithyroid medications	Hypothyroidism, fatigue, forgetfulness, sensitivity to cold, unexplained weight gain, dry skin, puffy face, hands, and feet	thyroid hormone replacement, iodine and potassium
pancreas (islets of Langerhans)	Insulin	transports sugar into cell for use as energy	hyperinsulinism low blood sugar (hypoglycemia), fatigue, nervousness, irritability, trembling, headaches, hunger, confusion	diet high in protein, low in carbohydrates	hypoinsulinism (hyperglycemia), diabetes mellitus, increased urination, thirst, visual disturbances, weight loss, hunger	oral hypoglycemic medications, insulin, diet
adrenal	ACTH, corticosteroids, catecholamines	regulation of sugar, salt, sex; B/P, CNS-activity and energy metabolism	Cushing's Syndrome, moon face, stretch marks on skin, buffalo hump, sugar in urine, protruding abdomen, edema uooer legs	radiation, drug therapy, surgery	Addison's Disease, anemia, weight loss, dehydration, thinning of hair, tremors, bronze coloring of skin	corticosteroid replacement
parathyroids	parathyroid hormone (PTH)	maintain adequate level of calcium in body fluids	kidney failure, kidney stones, bone tenderness, bones easily broken, muscle weakness, skeletal deformities	surgery, medication, peritoneal dialysis	tetany, convulsions, • muscle spasms, paralysis, difficult breathing, death from exhaustion	larges doses of calcium, I.V., large doses of vitamins
testes (male gonads)	testosterone, and rosterone	stimulate development of male sex characteristics at puberty, maintain sperm production, influence other hormonal activities	before puberty, early maturation of secondary sex characteristics before age 10	depends on cause; medication, surgery to remove tumor	hypogonadism, before puberty, no maturation of secondary sex characteristics in adulthood, slow regress of secondary sex characteristics	hormonal replacement
ovaries (female gonads)	estrogens, progesterone	at puberty, development of secondary sex characteristics, stimulates other hormones, menstruation	early development of secondary sex characteristics before age 9	depends on cause	Menopause (cessation of menstruation)	hormonal replacement
Pineal	none known	no known function	no known function	no known function	no known function	no known function

# Worksheet

## Lesson 21: The Endocrine System

## Lesson 22: The Male and Female Reproductive System

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Match the key terms to the definitions.

- a. \_\_\_\_\_ Diabetes mellitus
- b. \_\_\_\_\_ Glucose
- c. \_\_\_\_\_ Metabolism
- d. \_\_\_\_\_ Ovaries
- e. \_\_\_\_\_ Pituitary
- f. \_\_\_\_\_ Testes

- 1. Chemical changes in living cells by which energy is provided for vital processes and activities, and new material is created
- 2. Pair of male gonads that produce sperm and the male hormone testosterone; located in the scrotum
- 3. Simple sugar found in foods
- 4. An endocrine gland located in the brain that produces several hormones
- 5. Pair of female sex glands that contain the ova and produce female hormones
- 6. Metabolism disorder as a result of insulin deficiency

2. Why is the pituitary gland known as the master gland?

3. Identify three changes associated with aging of the endocrine and reproductive systems.

4. List three symptoms of hyperglycemia and three symptoms of hypoglycemia.

■ Hyperglycemia:

■ Hypoglycemia:



## ENDOCRINE SYSTEM MEDICATION STUDY

Choose at least two medications from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
adrenal cortical steroids				
thyroid hormone				
antidiabetic agent (oral hypoglycemics)				

## Lesson 22: The Male and Female Reproductive Systems

### Student Overview

#### Lesson Objectives:

- Become familiar with the basic anatomy and physiology of the reproductive system.
- Identify the effects of aging on the reproductive system.
- Identify the classifications of medications that affect the reproductive system.

#### Key Terms:

Benign Prostatic Hypertrophy (BPH):

Estrogen:

Menopause:

Mucus:

Testosterone:

Vaginitis:

## Lesson 22: The Male and Female Reproductive Systems

### Introduction

- The male body is designed to manufacture, store and transfer male sex cells (or sperm).
- The female body is designed to manufacture, store and release eggs (ova).
- Procreation in humans is achieved by the fusion of one sperm and one ovum (egg). This fusion is called "fertilization" and is achieved by sexual intercourse between a male and female or by artificial insemination.

### The Male Reproductive System

- Structure of the Male Reproductive System
  - Testicles – also called testes
    - Sex glands of the male – located in the pelvic cavity before birth, move down (descend) into the scrotum at birth or shortly thereafter.
    - Full of tiny structures that produce male sex hormones – testosterone.
    - Also have structures that produce sperm cells for reproduction.
  - Scrotum – sac-like structure located behind the penis which holds testicles.
  - Epididymis – coiled structure that stores and matures sperm cells.
  - Vas deferens (ductus deferens) – tube that carries sperm to seminal vesicles.
  - Seminal vesicles – pouch-like structures behind bladder where sperm is stored.
  - Prostate gland - doughnut shaped structure below the bladder (surrounding urethra), adds alkaline substance to the sperm.
  - Bulbourethral glands – small structures about halfway between the bladder and end of penis that secrete sperm protectant.
  - Penis – cylinder-shaped vascular structure on outside of the body; houses external portion of urethra; male organ of copulation (intercourse).
- Functions of the Male Reproductive System
  - Produce hormone (**testosterone**) necessary for formation of male secondary sex characteristics; begins in puberty, slows down with aging process.
  - Produce sperm necessary for reproduction.
  - The urethra of the male is used by both the male reproductive and urinary systems. Sometimes disorders of one system will affect the other system.
  - Injuries, disorders, and aging may interfere with the filtration and elimination (voiding) processes of the urinary system and affect the male reproductive system.
- Effects of the Aging Process on the Male Reproductive System
  - Reduced testosterone production, resulting in decreased libido as well as atrophy and softening of the testicles.
  - 48% to 69% decrease in sperm production between the ages of 60 and 80.
  - Prostate gland enlargement, with decreasing secretions.
  - Decreased volume and viscosity of seminal fluid.
  - Slower and weaker physiologic reaction during intercourse, with lengthened refractory period.
- Common Disorders of the Male Reproductive System
  - **Benign prostatic hypertrophy (BPH)**

- Cause: enlargement of the prostate gland, associated with aging and cancer.
- Symptoms: difficult, painful urination, dribbling, frequent urination of small amounts, inability to urinate.
- Treatment: surgical removal of all or part of the prostate gland, trans-urethral resection (TURP) or medication.
- Medications that Affect the Male Reproductive System
  - Androgens
    - Action: replacement of male hormones.
    - Use: promote weight gain, treat an enlarged prostate gland due to malignancy and treat breast cancer.
    - Example: testosterone (Depotest)
    - Adverse Effects:
      - Edema
      - change in appetite
      - increased serum cholesterol
      - male characteristics appear in females.
    - Nursing Considerations:
      - observe for edema.
      - if being used to treat breast cancer of a female, shave resident as necessary, if acceptable to the resident.

## The Female Reproductive System

- Structure of the Female Reproductive System
  - Ovaries
    - Are in the female pelvis on each side of the uterus.
    - There are two ovaries that are almond shaped and contain available egg cells.
    - The ovaries produce **estrogen** which controls female characteristics:
      - Development of breasts and menstrual cycles.
      - Produce eggs on a monthly cycle for purposes of reproduction.
  - Fallopian Tubes
    - Are attached to the top of the uterus.
    - The fallopian tubes face outward and are attached to the ovaries.
    - The ovaries produce the egg in a sac like structure that ruptures monthly in alternating ovaries.
    - Pregnancy usually occurs in the fallopian tube and the fertilized egg then flows into the uterus.
  - Uterus
    - The uterus is shaped like a pear and is a muscular organ.
    - The fallopian tubes deliver an egg once a month into the uterus.
    - Once a month the uterus becomes saturated with blood, which is referred to as the menstrual cycle.
    - If the egg is not fertilized or does not attach to the uterus, the egg is passed out of the body.
    - The uterus can expand to 120% of its normal size during menstruation.
  - Vagina

- Opens from the uterus to the outside of the body.
- The vagina allows for monthly menstrual flow to exit the body, allows sexual intercourse, and serves as a passageway for birth.
- The vagina is predisposed to infection due to the warm, dark, moist internal environment.
  - Infections of the vagina include:
    - yeast infections
    - sexually transmitted diseases such as syphilis and gonorrhea.
  - Infections left untreated can spread to the uterus and into the pelvic cavity and are then referred to as pelvic inflammatory disease (PID).
- The mons-pubis is a fatty pad over the pubic bone that is covered with hair after puberty.
- The labia are two-lip like structures or folds of skin that cover and protect the urethra and vaginal openings
- The clitoris is located at the top of the labia.
- The vestibule area is the dip in the anatomy in which the urethra and vagina open to the outside of the body.
- The breasts
  - Are modified glandular structures that contain mammary (milk) glands.
  - Female residents should be instructed to perform self-breast exams frequently.
- Effects of the Aging Process on the Female Reproductive System
  - Declining estrogen and progesterone levels (at about age 50) cause:
    - cessation of ovulation
    - atrophy
    - loss of pubic hair and flattening of the labia majora
    - shrinking of the vulval tissue
    - loss of tissue elasticity
    - vaginal atrophy; thin and dry mucus lining; more alkaline pH of vaginal environment
    - shrinking uterus
    - cervical atrophy, failure to produce **mucus** for lubrication
    - pendulous breasts; atrophy of glandular, supporting, and fatty tissue
      - nipple flattening and decreased size
      - more pronounced inframammary ridges.
- Common Disorders of the Female Reproductive System
  - **Vaginitis**
    - Can be caused by poor hygiene or can be related to the change in the lining of the vagina in post-menopause.
    - Symptoms: A foul smelling, whitish colored vaginal discharge. Can be resistive to treatments.
    - Treatment: Keep the area clean and treat with vaginal creams, medicated gels, suppositories, or douches.
  - Breast Cancer
    - Breast cancer is a common condition among females.
    - The resident should be instructed on the importance of frequent self-breast examination.

- Mammograms are often scheduled yearly.
- Common symptoms of breast cancer are:
  - a lump or dimple in the breast tissue
  - drainage of fluid from nipples
  - orange peel appearance of the skin
  - increased vascular muscularity (surface blood vessels)
  - change in the size or the shape of breast.
- Treatment: surgery, radiation, and medications.
- **Menopause**
  - The average age of menopause is 51.
  - Other factors that can influence the early onset of menopause include: surgery, the nutritional status of the female, cultural or genetic factors.
  - Symptoms:
    - drying of mucous membranes
    - pubic hair thins turning gray or white or even disappearing
    - the pelvic muscles atrophy
    - breasts become pendulous (droop) and decrease in size and firmness
    - combinations of hot or cold flashes
  - Treatment:
    - HRT (hormone replacement therapy)
    - vaginal creams to treat the drying of mucous membranes
- Cancers of the female reproductive system are a common disorder.
  - Usually a rather fast-growing form of cancer.
  - Early detection plays a major role in the treatment and cure of this type of cancer.
  - Treatment: radiation, chemotherapy, and surgical removal of the cancer.
- Medications that Affect the Female Reproductive System
  - Hormone Replacement Therapy
    - Action: contributes to adequate functioning of the female reproductive system affects the release of hormones from the pituitary gland and inhibits ovulation and enhances calcium use in bones to prevent osteoporosis in postmenopausal women.
    - Side Effects: thromboembolism (blood clots of the vascular system), pulmonary embolism (blood clot in the lung), seizures, edema, possible increased risk of breast cancer.
    - Examples:
      - estrogen (Premarin)
      - estradiol (Estrace)
      - raloxifene (Evista)
    - Nursing Considerations: monitor resident for any cardiac symptoms (hypertension, complaints of chest pain, complaints of shortness of breath, swelling in the lower extremities or weekly weight gain of >5 lbs). Encourage monthly breast examinations for residents taking hormone replacement therapy.
  - Oral contraceptives
    - Action: inhibit ovulation
    - Use: prevent pregnancy
    - estrogen with progesterone

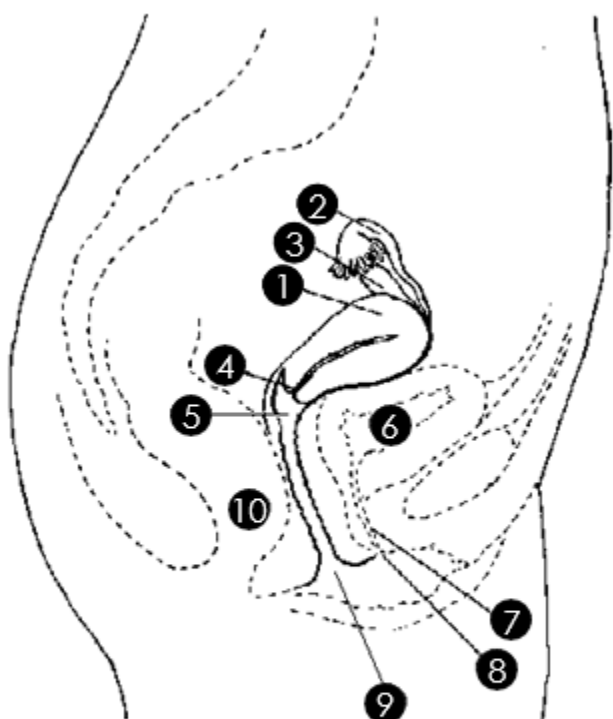
- Adverse Effects:
  - Headache
  - weight gain
  - hypertension
  - thrombophlebitis
  - edema
  - breast tenderness
  - vaginitis
  - nausea
  - Nursing Consideration:
    - adverse effects often decrease after three months.
    - administer with food at bedtime to decrease nausea.

**Notes:**

# The Reproductive System

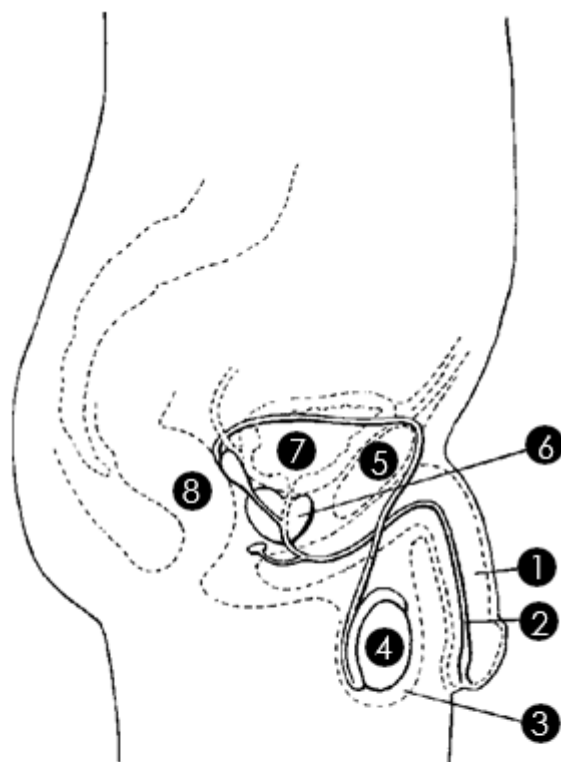
## Female Reproductive System

### Internal Organs

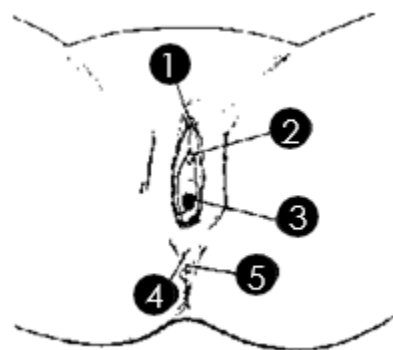


- |                         |                   |
|-------------------------|-------------------|
| 1 Uterus                | 6 Urinary bladder |
| 2 Fallopian tubes (two) | 7 Urethra         |
| 3 Ovaries (two)         | 8 Urethral meatus |
| 4 Cervix                | 9 Vagina          |
| 5 Vagina                | 10 Rectum         |

## Male Reproductive System



- |                |                   |
|----------------|-------------------|
| 1 Penis        | 5 Pubic bone      |
| 2 Urethra      | 6 Prostate gland  |
| 3 Scrotum      | 7 Urinary bladder |
| 4 Testes (two) | 8 Rectum          |



### External Genitals

- |                   |
|-------------------|
| 1 Clitoris        |
| 2 Urethral meatus |
| 3 Vagina          |
| 4 Perineum        |
| 5 Anus            |



## REPRODUCTIVE SYSTEM MEDICATION STUDY

Choose at least four medications from the category listed. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
hormone replaceme nt therapy				

## Lesson 23: The Nervous System

### Student Overview

#### Lesson Objectives:

- Become familiar with the basic anatomy and physiology of the nervous system.
- Identify the effects of aging on the nervous system.
- Identify the classifications of medications that affect the nervous system.

#### Key Terms:

Autonomic Nervous System:

Encephalitis:

Epilepsy:

Guillain-Barre' Syndrome:

Huntington's Disease:

Meningitis:

Myasthenia Gravis:

Neuron:

Parkinson's Disease:

Poliomyelitis:

Sciatica:

Trigeminal Neuralgia:

## Lesson 23: The Nervous System

### Structure and Functions of the Nervous System

- Brain
  - Mass of nervous tissue. The brain is the primary center for regulating and coordinating body activities.
  - Located in the skull. Protected by the skull and fibrous covering called meninges.
  - "Control center" for the body; has areas for reasoning, memory, thought, speech, sensation, movement, coordination, regulation of heartbeat, breathing, coughing, etc.
  - Right side of the brain controls left side of the body; left side of the brain controls right side of the body.
  - Changes due to aging:
    - Some experts state the brain weight decreases in size in conjunction with body size.
    - Both gray and white matter are lost.
    - Cell function in the brain is acutely dependent upon blood supply.
    - Blood flow to the brain is reduced with age.
    - Blood supply and flow is reduced when metabolic needs are reduced.
    - Tangles affect memory.
    - The tangles are present to a certain degree in the normal elderly, to a greater degree in the senile and are found in a large number in those who have Alzheimer's.
- Spinal Cord
  - Connected to lowest end of the brain.
  - Passes downward between bones of spine (vertebrae); approximately as big around as thumb.
  - Around 17" to 18" long in an adult.
  - Carries impulses (internal and external) to and from the brain.
- Nerves
  - Small "cable-like" structures leading off the lower portion of the brain and spinal cord.
  - 43 pairs of nerves:
    - 12 pairs off lower brain
    - 31 pairs off spinal cord
  - Nerves carry impulses to and from all parts of the body.
  - Impulses from the brain coordinate action of all body parts (heart, blood vessels, kidneys, lungs, etc.).
  - Some nerves act "automatically" or involuntarily, others are voluntary, or the person directs their movement.
  - "Automatic" nerves, called the "**Autonomic nervous system (ANS)**," can speed up or slow down body functions as needed.
  - Changes due to aging
    - Neurons atrophy and shrink. Tangles and plaques can be found as a person ages.

- Autonomic nervous system – age-related defects have been documented in the ability of the system to regulate heat production and heat loss.  
Thermoregulatory responses are sluggish and diminished in their intensity.
- Functions of the Nervous System:
  - Carries and coordinate impulses from the outside world (external) and the body (internal) to the brain.
  - Carries the brain's responses (reactions) to the body in reaction to impulses.

## Major Nervous System Disorders

- Slow or non-functioning nerves or brain cells
  - Cause: unknown
  - Symptoms: poor respiration, poor heartbeat.
  - Treatment: medication
- Over-Functioning nerves or brain cells.
  - Cause: a sudden, abnormally excessive, electrical discharge within the brain.
  - Symptoms: twitching, irregular movement, improper thought patterns, convulsions. Can last from a few seconds to several minutes.
  - Example: **epilepsy**
    - grand mal (tonic-clonic seizures)
    - petit mal (mild form of epileptic attack with absence seizures)
    - psychomotor or temporal lobe epilepsy (complex partial seizures)
  - Treatments:
    - phenytoin (Dilantin)
    - phenobarbital (Luminal, Solfoton)
    - carbamazepine (Tegretol)
    - levetiracetam (Keppra)
    - ethosuximide (Zarontin)
    - valproic acid (Depakene)
    - carbamazepine (Tegretol)
    - pregabalin (Lyrica)
    - neurontin (Gabapentin)
- Interference of impulse on nerve pathway
  - Cause: unknown
  - Symptoms: loss of motion, uncontrollable movements
  - Examples: **Huntington's Disease, Myasthenia Gravis, Parkinson's Disease.**
  - Treatment: medications help temporarily but are not a cure.
- Inflamed nerves or brain cells
  - Cause: varied
  - Symptoms: nerves or brain cells irritated and swollen, may be constant or intermittent condition, almost always accompanied by pain; may or may not lose ability to control body parts.
  - Examples:
    - Neuritis
    - Neuralgia

- **trigeminal neuralgia**
  - **sciatica**
  - Treatment: medication to reduce pain and swelling.
- Infections of nerves or brain cells
  - Cause: infections from other parts of body or germs that attack nerve cells and interfere with the nervous system.
  - Symptoms: fever, general aches, weakness in extremities.
  - Examples:
    - **Meningitis**
    - **Encephalitis**
    - **poliomyelitis (polio)**
    - **Guillain-Barre' Syndrome – rare complication of infection leading to autoimmune destruction of nerve cells.**
  - Treatment: medication

## Effects of the Aging Process on the Nervous System

- Normal aging of the nerve cells results in slower responses; reflexes are slowed, everything takes longer.
- There is gradual hearing loss; hearing is most acute at age 10; gradually declines thereafter.
- Decrease in sense of smell and function of taste buds causes loss of appetite.
- Decrease in visual sharpness and ability to adjust to light may cause difficulty in reading; less ability to see color differences; night blindness.
- Decreased sensation of touch and pain may lead to injuries and illness going untreated.
- Sense of balance is lessened.
- Sleep – progressive decrease in deep sleep, marked frequent awakenings and marked increase of total awake time.
- Other ANS changes effect urinary retention, incontinence, decrease in gastrointestinal mobility and blood pressure regulation.

## Medications Affecting the Central Nervous System

- Cerebral Stimulants: (select psychoactive medications)
  - Action: speed up brain activity which in turn speeds up body activity.
  - Use: to improve cognitive awareness and treat attention deficit disorder (ADD).
  - Examples:
    - amphetamine and dextroamphetamine (Adderall)
    - methylphenidate (Ritalin)
    - dextroamphetamine sulfate (Dexedrine)
    - caffeine
  - Adverse Effects:
    - excitement
    - dizziness
    - dry mouth
    - restlessness
    - palpitations

- increased pulse and blood pressure
  - anorexia
  - insomnia
- Nursing Considerations:
  - should be given early in the day to ensure that the medication's stimulating effect doesn't interfere with sleep.
  - resident should avoid drinks with caffeine.
  - monitor vital signs regularly.
- Depressants
  - Analgesics – Narcotic
    - Action: decrease sensitivity of nervous system
    - Use: relieve pain
    - Examples:
      - morphine sulfate (Duramorph, Epimorph, MS Contin, Roxanol)
      - codeine
      - oxycodone HCL (Percodan, Roxicodone)
      - hydrocodone
      - fentanyl
    - Adverse Effects:
      - constipation
      - nausea and vomiting
      - diaphoresis
      - confusion and disorientation
      - respiratory distress
      - decreased blood pressure
    - Nursing Considerations:
      - all may produce addiction.
      - monitor for constipation.
      - a bowel management system should be followed as needed.
      - report any respiratory rate <12 prior to administration.
      - use non-medication measures to provide comfort by providing physical care, positioning, massage or environmental comfort to reduce discomfort.
  - Analgesics/Non-narcotic/Antipyretics
    - Action: decrease sensitivity of the nervous system.
    - Use: relieve pain
    - Examples:
      - acetylsalicylic acid (ASA)
      - aspirin
      - acetaminophen (Tylenol)
      - buffered aspirin (Ascriptin, Bufferin)
      - non-steroidal anti-inflammatory medications (NSAIDs) such as ibuprofen (Advil), naproxen (Aleve).
    - Adverse Effects:
      - dizziness
      - confusion

- nausea
  - interferes with blood clotting
  - skin rash
- Nursing Considerations:
  - administering aspirin with food can reduce gastric upset.
  - use non-medication measures to promote comfort by providing physical care, such as positioning, massage, environmental comfort, emotional support.
- Sedative/Hypnotics
  - Action: decrease sensitivity of the nervous system.
  - Use: reduce physical and mental activity, control convulsion, produce sleep.
  - Examples:
    - phenobarbital (Luminal)
    - zolpidem (Ambien)
    - temazepam (Restoril)
  - Adverse Effects:
    - rash
    - nausea
    - dependence
    - morning after drowsiness
    - short term memory loss
    - some elderly may become excited rather than sedated.
  - Nursing Considerations:
    - resident may become dependent on the medication.
    - try non-medication measures first to promote sleep.
    - ensure the resident swallows the medication.
    - monitor resident – medication may have a cumulative effect.
- Anticonvulsants
  - Action: depress abnormal neuronal discharges in central nervous system.
  - Use: to stop or prevent convulsions or seizures.
  - Examples:
    - phenytoin sodium (Dilantin)
    - carbamazepine (Tegretol)
    - valproic acid (Depakene)
    - divalproex sodium (Depakote)
    - phenobarbital (Luminal)
    - primidone (Mysoline)
    - gabapentin (Neurontin)
  - Adverse Effects:
    - swelling and redness of gums
    - drowsiness
    - dizziness
    - double vision
    - tremors
    - confusion
  - Nursing Considerations:



- observe the resident's mouth for red, swollen, bleeding gums.
- encourage good oral hygiene due to potential for overgrowth of gum tissue.
- Anti-Parkinson's Medications
  - Action: relieve tremors and muscular weakness, treatment of extrapyramidal effects of major psychotropics.
  - Use: treat symptoms of Parkinson's disease
  - Examples:
    - benztropine mesylate (Cogentin)
    - trihexyphenidyl HCL (Artane)
    - levodopa (Larodopa, L-Dopa)
    - levodopa and carbidopa (Sinemet)
    - amantadine (Symmetrel)
    - selegiline (Eldepryl)
  - Adverse Effects:
    - dizziness
    - postural hypotension
    - drowsiness
    - blurred vision
    - difficulty voiding
    - dry mouth
    - G.I. upset
  - Nursing Considerations:
    - adequate hydration
    - measures to promote voiding
    - G.I. side effects can be reduced by giving medication with food.

**Notes:**

## Epilepsy: Recognition and Response

SEIZURE TYPE	WHAT HAPPENS	WHAT TO DO	WHAT NOT TO DO
Convulsive Generalized Tonic-clonic (Grand Mal)	Seizure lasting one to three minutes; beginning suddenly with an involuntary cry, loss of consciousness and falling, violent convulsive movement of the head, trunk and extremities, and excessive salivation. May have loss of bladder and/or bowel control. Person awakens spontaneously, is dazed and confused. Person usually falls into a deep sleep that lasts several hours. Does not remember the episode.	Look for medical identification. Protect from nearby hazards. Loosen ties or shirt collars. Place folded jacket under head. Turn on side to keep airway clear. Reassure when consciousness returns. Notify physician.	Do not put any hard object in the mouth. Do not try to hold the tongue. Do not try to give liquids during or just after a seizure. Do not use oxygen unless there are symptoms of a heart attack. Do not use artificial respiration unless breathing is absent after muscle jerks subside, or unless water has been inhaled. Do not restrain.
Nonconvulsive Absence seizure (Petit mal)	Seizure lasting several seconds; consisting of sudden, momentary lapse of consciousness. During the seizure, person will have a blank stare and is unaware of surroundings but does not actually lose consciousness, fall or convulse. May have a minor twitching of eyelid or facial muscle. Petit mals may recur more than 100 times a day. Person resumes normal functioning after each seizure and does not remember attack.	No first aid necessary.	Do not restrain.
Complex Partial (Psychomotor or Temporal Lobe)	Seizure consisting of sudden alterations in behavior. Person may walk about aimlessly, talk in an irrational manner, laugh, engage in purposeless or inappropriate action. Begins with an "aura". When seizure ends, person is confused and does not remember seizure.	Speak calmly and reassuringly to resident and others. Guide gently away from obvious hazards. Stay with the resident until completely aware of the environment.	Do not hold the resident unless sudden danger threatens. Do not try to restrain. Do not shout. Do not expect verbal instructions to be obeyed.

# Worksheet

## Lesson 23: The Nervous System

Name \_\_\_\_\_ Date \_\_\_\_\_

### 1. Match the key terms to the definitions

- |                                 |   |
|---------------------------------|---|
| a. ____ Alzheimer's             | 1. Restlessness, inability to sit still   |
| b. ____ Photosensitivity        | 2. A progressive mental deterioration that involves plaqueformation in areas of the brain   |
| c. ____ Akathesia               | 3. One of two main divisions in the nervous systemconsisting of the brain and the spinal cord   |
| d. ____ Central nervous system  | 4. Difficulty swallowing  |
| e. ____ Dysphagia               | 5. Abnormally low blood pressure that occurs with suddenchanges from lying to sitting or standing   |
| f. ____ Orthostatic hypotension | 6. Abnormal response to exposure to light   |
| g. ____ Schizophrenia           | 7. Tension or strain  |
| h. ____ Stress                  | 8. Psychotic disorder characterized by major distortions inthinking and reality; often shows signs of hallucinations,delusions, paranoia, withdrawal, and disturbances in communication |

### 2. Describe the differences between the central nervous system and the peripheral nervous system.

### 3. Why are thermoregulation and adjusting to body position changes of concern for the elderly?

4. Identify which symptoms are likely in stage one, two or three of Alzheimer's disease.

Place a 1, 2 or 3 beside each answer.

- a. \_\_\_\_ Repeating
- b. \_\_\_\_ self-Neglect
- c. \_\_\_\_ self-care
- d. \_\_\_\_ Inability to comprehend
- e. \_\_\_\_ Difficulty swallowing
- f. \_\_\_\_ Poor impulse control  
Rummaging

5. Briefly describe each of these

disorders. Alzheimer's disease:

Parkinson's disease:

Multiple sclerosis:

Cerebrovascular accident

(CVA): Seizure disorder:

Schizophrenia:

Depression:

6. Match the actions with the drug classifications.

- |                                |  |
|--------------------------------|--|
| a. ____ Antimanic agents       | 1. Treat mild forms of Parkinson's disease or Parkinson's symptoms related to drugs such as antipsychotics             |
| b. ____ Antidepressants        | 2. Acetylcholinesterase inhibitors; prevent the breakdown of the chemical acetylcholine and improve cognitive function |
| c. ____ Antipsychotics         | 3. Treat long-term bipolar disorder  |
| d. ____ Anticonvulsants        | 4. Relieve symptoms of psychosis including delusions, hallucinations, agitation and combativeness                      |
| e. ____ Alzheimer's drugs      | 5. Treat various types of depression   |
| f. ____ Anticholinergic agents | 6. Reduce the frequency and severity of seizures   |

## NERVOUS SYSTEM MEDICATION STUDY

Choose at least two medications from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
cerebral stimulant				
depressants				
anti-Parkinson's				
analgesics				
sedative/hypnotics				
anti-convulsants				

## Lesson 24: Nutrition and Nutritional Disorders

### Student Overview

**Lesson Objectives:**

- Understand the role of proper nutrition.
- Identify common disorders related to nutritional deficiencies.
- Identify the use of vitamins and minerals as replacement therapy.

**Key Terms:**

Dehydration:

Hypokalemia:

Iron Deficiency Anemia:

Osteoporosis:

Pernicious Anemia:

## **Lesson 24: Nutrition and Nutritional Disorders**

### **Introduction**

Eating the food necessary for good health is called nutrition.

For the human body to grow and maintain health, specific substances must be present such as proteins, carbohydrates, fats, water, cellulose, vitamins, and minerals. All these substances are available in the foods we eat.

People can become ill if they fail to eat any substance needed for nutrition for an extended period. This illness is a “nutritional deficiency.” People with a serious deficiency are said to have “malnutrition.” If the foods needed to replace missing nutrients cannot be eaten, the nutrients can be taken in the form of medication and/or nutritional supplements (Boost, Ensure, Promote). A feeding tube is used to provide nutrition to people who cannot obtain nutrition by mouth, are unable to swallow safely, or need nutritional supplementation (see Lessons 52 and 53).

### **Factors that Lead to Nutritional Deficiencies**

- Changes in the sensory system:
  - Loss of the sense of smell
  - Loss of the sense of taste
- Changes in the gastrointestinal system:
  - Loss of teeth making chewing difficult
  - Reduced salivary function may cause residents to prefer softer foods
  - Changes in gastric acidity may cause impaired iron absorption
- Dietary deficiencies:
  - Inadequate quantities of proteins, fruits, or vegetables
  - High fiber foods maintain gastrointestinal mobility but lead to malabsorption of essential nutrients.
- Physical disabilities and immobility:
  - Crippling diseases (arthritis, blindness) make preparing food difficult
  - Illness and disability are stressful to the body
- Emotional problems:
  - The depressed, lonely, or bereaved resident may reduce food intake and develop deficiencies
  - Communication problems due to hearing loss and/or speech problems make it difficult for some residents to make their needs known

### **Sources and Functions of Body Nutrients**

Nutrients are those chemical substances found in the foods we eat that nourish the body.

- Types and best sources of nutrients:
  - Carbohydrates—sugars and starches
  - Fats—butter, oils, meat, fats, cheeses

- Proteins—milk, meats, eggs
- Vitamins—vegetables, meats, fruits, milk, eggs
- Minerals—milk, cheese, eggs, meats, vegetables
- Water—contained in all food and fluid
- Three major functions of nutrients:
  1. Supply heat and energy to the body (carbohydrates, fats, and proteins)
  2. Build and repair body tissues (proteins)
  3. Regulate body processes (vitamins, minerals, and water)
- If the diet is lacking in nutrients, then either the diet must be changed, or nutrients must be given in the form of medication to prevent the resident from becoming ill.
  - The resident may be placed on commercially prepared high caloric drinks or may be offered instant breakfast drinks between meals.
  - The QMA may be responsible for monitoring consumption of these special nutritional supplements.
  - Some residents may have a powdered protein supplement ordered. These powders must be mixed in water thoroughly or as directed.

### Common Nutritional Disorders Treated by Medication

- Pernicious anemia
  - Cause: inability of the stomach to produce intrinsic factor, causing inability to absorb vitamin B12 (required for the formation of red blood cells) and low hemoglobin level in the blood
  - Symptoms: low red blood cell count, fatigue, inflammation of the mouth.
  - Treatment – requires lifelong use of vitamin B12
- Iron deficiency anemia
  - Cause: low hemoglobin level in the blood due to inadequate dietary intake of iron or blood loss.
  - Symptoms: low hemoglobin level, pallor, fatigue
  - Treatment: oral iron and vitamin supplements
- Osteoporosis
  - Cause: body is deficient in calcium, phosphorus, and vitamin D
  - Symptoms: bowed legs, deformed bones in children and porous, easily broken bones in the elderly.
  - Treatment: increased intake of vitamin D, calcium, and phosphorus. Deficiencies can easily be treated by adequate diet (milk, fish, oils, meats).
    - **Note:** overdoses of Vitamin D can be dangerous.
- Hypokalemia
  - Cause: frequently a side effect of diuretics; potassium is not absorbed by the body.
  - Symptoms: heart irregularity, flu-like symptoms, leg cramps.
  - Treatment: diet (bananas, milk, cereals, meat); often treated with potassium replacement medications.
- Dehydration
  - Causes: inadequate fluid intake, diseases such as diabetes, diuretics, vomiting, diarrhea, fever.
  - Symptoms: poor skin turgor, constipation, decreased urinary output, increased pulse.



- Treatment: encourage resident to drink fluids, intravenous fluids may be necessary. Water is essential for all body functions; clear liquid diets may be ordered for short periods of time.

## **Effects of the Aging Process on Nutrition**

- Food often becomes less attractive to the elderly. They may lose their sense of taste and smell. Loss of teeth or ill-fitting dentures can take away much of the pleasure of eating.
- Within the elderly population, specific groups of persons may be at greater risk than others to develop inadequate nutrient intake. Chronic illness, disabilities such as arthritis, depression and dementia are all factors that can contribute to nutritional deficiencies.
- The resident who loses weight (unless planned) must be assessed by the nurse, provider, and dietitian. After the assessment, the resident may be placed on nutritional supplements such as commercially prepared high caloric drinks.

## **Selected Medications by Classification**

Vitamins are substances required for the body to carry out metabolic reactions. The body does not produce all vitamins, so they must be obtained from food or supplements. If vitamin supplements are used, always be cautious of the expiration date to ensure potency.

- Thiamine HCL (vitamin B1)
  - Action: necessary for carbohydrate metabolism.
  - Use: treat alcoholism, gastrointestinal disease, cirrhosis.
  - Adverse Effects:
    - hypotension
    - nausea
    - sweating
    - anaphylactic reaction
    - diarrhea
    - restlessness
  - Nursing Consideration: store in airtight light resistant, non-metal container.
- Pyridoxine HCL (Vitamin B6)
  - Action: required for amino acid metabolism.
  - Use: may be combined with INH therapy (which is used to treat latent TB) because INH therapy may cause B6 deficiency.
  - Adverse Effect: drowsiness
  - Nursing Consideration: do not give to a resident receiving Levodopa.
- Ascorbic Acid (vitamin C)
  - Action: necessary for collagen formation and tissue repair.
  - Use: treat burns, increased healing of fractures and wounds, may assist in treating viral infections.
  - Adverse Effects:
    - diarrhea
    - renal calculi
  - Nursing Consideration: store medication in light resistant container. Check expiration date.
- Folic Acid (Vitamin B9)

- Action: necessary for normal erythropoiesis (the formation and production of erythrocytes) and nucleoprotein synthesis.
- Use: treat liver disease, alcoholism
- Adverse Effects:
  - rash
  - malaise
  - bronchospasms as an allergic reaction
- Nursing Considerations: protect medication from light and heat.
- Niacinamide (Vitamin B3, Nicotinic Acid)
  - Action: necessary for fat metabolism
  - Use: lowers cholesterol, treat Meniere's Disease, vasodilator
  - Adverse Effects:
    - headache
    - facial flushing
    - itching
    - jaundice
    - postural hypotension
- Multivitamin products contain a combination of vitamins and minerals.
  - Action: source of vitamins
  - Use: supplement diet; often ordered to promote wound healing.
  - Examples:
    - Poly-Visol
    - Therabid
    - Theragran
  - Adverse Effects:
    - itching
    - diarrhea
    - nausea
  - Nursing Considerations: do not crush medication. Administer with food
- Minerals:
  - Iron Products:
    - Action: replaces iron.
    - Use: treat iron deficiency anemia.
    - Example: ferrous sulfate (Feosol, Slow-Fe).
    - Adverse Effects:
      - nausea
      - insomnia
      - constipation
      - diarrhea
    - Nursing Considerations:
      - dilute liquid preparations in juice or water.
      - may cause black, tarry stools. Chart color and amount of stools.
      - do not crush medications.
      - do not administer with antacids.
  - Potassium Products
    - Action: replaces and maintains potassium levels.

- Use: treat potassium deficiency.
- Example: Potassium chloride (Klor-Con, Slow-K, K-tab).
- Adverse Effects:
  - listlessness
  - mental confusion
  - cardiac arrhythmias
  - G.I. irritation
- Nursing Considerations:
  - administer during or after meals with a full glass of juice or water.
  - completely dissolve powders before administering.
  - do not crush solid form of medication.
- Calcium
  - Action: reduces acid load in the gastrointestinal tract, replaces calcium.
  - Use: treat osteoporosis and dyspepsia.
  - Examples: calcium carbonate (Tums, Os-Cal)
  - Adverse Effect: calcium deposits form in joints.
  - Nursing Considerations: do not give with milk or milk products.

**Notes:**

## NUTRITIONAL DEFICIENCY MEDICATION STUDY

Choose at least three medications from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
vitamin				
mineral				

## Lesson 25: The Lymphatic System and Immunity

### Student Overview

#### Lesson Objectives:

- Become familiar with the structure and function of the lymphatic system.
- Identify the types of immunity.
- Identify the effects of aging on the immune system.

#### Key Terms:

Active Immunity (long lasting):

Acquired Immune Deficiency Syndrome (AIDS):

Hepatitis B:

Measles:

Mumps:

Passive Immunity (short term):

Polio:

Rubella (German Measles):

Smallpox:

Tetanus (Lockjaw):

## Lesson 25: The Lymphatic System and Immunity

### Lymphatic System

- The body is equipped to defend itself against injury and disease through the immune system.
- An important part of this defense is the lymphatic (lymph) system.
- The lymphatic system filters out organisms that cause disease, produces certain white blood cells, and generates antibodies.
- The lymphatic system is important for the distribution of fluids and nutrients in the body because it drains excess fluids and protein so that tissues do not swell.
- Lymphatic System Structure and Function
  - "Lymph" is a milky body fluid that contains a type of white blood cell called "lymphocytes," along with proteins and fats.
  - Lymph seeps outside the blood vessels in spaces of body tissues and is stored in the "lymphatic" system to flow back into the bloodstream.
  - The body can eliminate the products of cellular breakdown and bacterial invasion through the flow of the blood in and out of the arteries and into the veins, and through the lymph nodes into the lymph system.
  - Two major ducts:
    - The right lymphatic duct drains lymph fluid from the upper right quarter of the body above the diaphragm and down the midline.
    - The thoracic duct is a structure that is roughly sixteen inches long located in the mediastinum of the pleural cavity which drains the rest of the body.
  - Through the actions of the lymphatic system, spleen, thymus, lymph nodes and lymph ducts, the body can fight infection and to ward off invasion from foreign organisms.
  - Lymph plays an important role in the immune system and in absorbing fats from the intestines.
  - Lymph Nodes
    - There are more than 100 tiny, oval structures called lymph nodes.
    - The lymph nodes are mainly in the neck, groin, and armpits but are scattered all along the lymph vessels.
  - The lymph nodes act as barriers to infection by filtering out and destroying toxins and germs.
  - Function of the lymphatic system:
    - Produces antibodies
    - Produces about 25% of the body's white blood cells.
    - Removes dead blood cells, cancer cells and pathogenic organisms.

### Immunity

- Active Immunity (long lasting)
  - Naturally acquired by contracting a disease, such as measles, mumps, chickenpox, and producing antibodies to ward off the disease.
  - Artificially acquired by injecting the body with attenuated disease-causing microorganisms which stimulate the body to produce antibodies.
- Passive Immunity (short term)

- Naturally acquired by passing antibodies from the mother's blood stream to the baby.
- Artificially acquired by ingesting antibodies from an immunized animal or human to prevent disease in a person who hasn't developed his/her own antibodies.

## Immunizations

- Hepatitis B
  - Cause: virus transmitted via blood or body fluids (sexual, shared needles, pregnancy/delivery)
  - Symptoms: loss of appetite, nausea, fever, jaundice, loss of weight and strength.
  - Prevention: Hepatitis B vaccine, universal precautions.
- Tetanus – "Lockjaw"
  - Cause: specific bacteria growing at the site of injury, especially around a contaminated puncture wound.
  - Symptoms: stiff jaw, difficulty swallowing, stiff neck, irritability, headache, fever, chills, muscle spasms, convulsions and possibly death.
  - Prevention: active acquired immunity with periodic booster shots.
- Rubella – "German Measles"
  - Cause: virus
  - Symptoms:
    - flat pink spots that start behind the ears and spread to the forehead and then over the body, merging (often in a few hours) so that the skin merely looks flushed.
    - swollen glands high up on the back of the neck which may stay swollen for weeks.
    - incubation period is 14-21 days.
  - Prevention: active acquired immunity
    - Complications: can cause birth defects in unborn children if mother contracts virus during the first three months of pregnancy. Warn anyone who is in the early stages of pregnancy who might have contact with the resident.
- Polio
  - Cause: virus
  - Symptoms: fever, sore throat, headache, vomiting, stiff neck, paralysis.
  - Treatment: medication
  - Prevention: active acquired immunity.
- Measles (Rubeola)
  - Cause: virus
  - Symptoms: runny nose, reddened, watery eyes, cough, fever which gradually rises, spots which look like grains of salt appear on the inside of the cheeks about day 3 or 4; rash appears day 4 or 5.
  - Prevention: active acquired immunity
  - Treatment: antibiotics, eye medication
  - Complications: acute conjunctivitis, sore throat, bronchitis, pneumonia, inflammation of the brain leading to encephalitis.
- Mumps
  - Cause: virus



- Symptoms: swollen, painful glands from behind the ear to beneath the jaw, dry mouth, acute stinging pain when swallowing anything acidic, increasing swelling changing the whole shape of the face. Incubation period is 14-28 days.
- Treatment: rest, pain relievers, fluids
- Complications: deafness, meningitis
- Prevention: active acquired immunity
- Herpes Zoster (Chicken Pox, Shingles)
  - Cause: virus
    - Anyone who has had chicken pox may develop shingles. Shingles is basically a reactivation of the chicken pox virus.
  - Symptoms of Shingles: a painful, usually itchy, rash that develops on one side of the body, headache, chills, and upset stomach.
  - Treatment: Anti-viral medications (Acyclovir, Valacyclovir, Famciclovir); wet compresses, warm oatmeal baths, and calamine lotion may help relieve itching.
  - Complications: Long-term nerve pain, infection, and vision loss (if shingles involved the eye)
  - Prevention: recombinant zoster vaccine (Shingrix)

## Effects of the Aging Process on the Immune System

- Begins to diminish at sexual maturity.
- Loss of ability to recognize and destroy mutant cells, increasing incidence of cancer.
- Decreased antibody response, resulting in greater susceptibility to infection.
- Tonsillar atrophy and lymphadenopathy
- Lymph node and spleen size slightly decreased.
- Some active blood-forming marrow replaced by fatty bone tissue, resulting in inability to increase erythrocyte production to stimuli such as hormones, anoxia, hemorrhage, and hemolysis.
- Diminished vitamin B12 absorption, resulting in reduced erythrocyte mass and decreased hemoglobin and hematocrit (oxygen carrying cells).

## Preventative Measures

- Vaccines and toxoids
  - Action: stimulate the body to produce its own immunity (antibodies).
  - Use: prevention of disease.
  - Examples:
    - tetanus toxoid
    - measles, mumps, and rubella vaccine (MMR)
    - pneumococcal (Pneumovax, Prevnar)
    - influenza virus (Fluogen)
    - hepatitis B vaccine (Engerix-B, Recombivax HB)
    - Shingrix (for prevention of Shingles)
  - Adverse Effects:
    - allergic reaction
    - pain and swelling at the site of the injection
    - rash
    - fever

- flu-like symptoms
- convulsions
- Nursing Considerations:
  - reaction may occur to administration of the influenza virus in residents who are allergic to feathers, chicken, or eggs
  - periodic boosters may be required.

## Human Immunodeficiency Virus (HIV)

- Cause: virus – If HIV is not treated, it can lead to acquired immunodeficiency syndrome (AIDS), which is the most severe stage of the HIV infection. HIV breaks down the body's immune system, leaving the person vulnerable to a variety of unusual, life-threatening illnesses. The virus may also affect the brain, causing a variety of neurologic problems.
- Symptoms: the following symptoms are also symptoms of many different diseases. Some people infected with the virus may not show any of these symptoms, but they can still transmit the virus. Only a qualified health professional can diagnose the disease.
  - flu-like symptoms
  - skin change – purplish blotches, bumps, rashes
  - swollen glands
  - diarrhea
  - fatigue
  - fever
  - loss of appetite
  - persistent dry cough
  - night sweats
  - weight loss
- Transmission:
  - sexual intercourse (vaginal, anal, and oral).
  - shared use of needles for IV medication use.
  - infected mothers passing the virus on to the fetus.
  - transfusion of infected blood or blood products.
- Disease progression in the older adult.
  - Tends to progress more quickly in older adults.
  - The period in which the infected individual is symptom free tends to be shorter. This could be related to the changes in the immune system of the older adult.
  - The immune system may be less able to effectively combat HIV, so the viral load is higher.
  - The HIV infection can progress in an older adult yet be missed or may not be properly diagnosed.
    - Many of the symptoms of early infection are similar to symptoms common to simple aging (e.g., fatigue, loss of appetite, weight loss and memory problems).
  - Perhaps the most disturbing way in which HIV affects the elderly is the complication of dementia. Some older adults with HIV might experience some form of dementia that can be misdiagnosed as Alzheimer's disease.
- Treatment: medication
  - older adults with HIV respond as well as the young to combination medication therapies.
  - Examples:

- zidovudine (AZT, Retrovir, Azidothymidine)
- protease medications
- atazanavir sulfate (Reyataz)
- ritonavir (Norvir)
- darunavir ethanolate (Prezista)
- Adverse Effects:
  - diarrhea
  - nausea
  - abdominal discomfort
  - acid regurgitation
- Prevention:
  - abstinence from sexual activity and IV medication use.
  - practice safe sex by using condoms.
  - auto-transfusions
  - pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP)
- Concerns for Residents with AIDS
  - Avoid direct skin contact with mucous membranes, body fluids, secretions, excretions, and wounds.
  - Wear protective gloves and gown when there is a potential for contact with blood, body fluids or objects that could be contaminated with blood, such as razors or toothbrushes.
  - In addition to gloves and gown, wear protective eye covering and surgical mask when there is the risk of spraying or splashing of infectious materials, such as blood or urine.
  - Residents having AIDS frequently carry the cytomegalovirus (CMV) which causes congenital infections. Therefore, pregnant women should avoid contact with residents having AIDS.
  - Residents with AIDS are highly susceptible for infection. If you have a minor infection, such as a cold, avoid contact with the resident.
  - Disinfectants containing a 0.1% concentration of sodium hypochlorite, or a 0.01% concentration of glutaraldehyde destroy the virus quickly.
  - A 1:10 solution of bleach and water can also be used for disinfecting surfaces.
  - Refer to the facility's infection control program for additional instruction in care and disposal of personal items.
  - Review protective isolation guidelines, if applicable.

**Notes:**

## Lesson 26: Inflammation and Infection

### Student Overview

#### Lesson Objectives:

- Identify the causes and treatment for inflammation and disease-related inflammation.
- Identify the causes and treatment for infections.
- Identify the medications associated with treating bacterial infections.
- Identify the medications associated with treating fungal infections.

#### Key Terms:

Antiseptic:

Arthritis:

Athlete's Foot:

Bursitis:

Candida Auris:

Clostridium difficile (C.diff, C. difficile):

COVID-19:

Disinfectants:

Infection:

Inflammation:

Influenza (Flu):

Pneumonia:

Ringworm:

Strep Throat:

## Lesson 26: Inflammation and Infection

### Inflammation

- Localized heat, redness, swelling and pain as a result of irritation, injury or infection.
- Causes: the body attempting to remove physical, chemical, or pathogenic organisms; the healing process.
- Process of Inflammation:
  - Blood vessels dilate causing the area to redden.
  - Increased circulation causes redness, swelling and heat at the affected site.
  - Swelling causes pressure on the nerve endings, resulting in pain.
  - White blood cells move to the site of the injury and ingest bacteria and dead tissue.
- Inflammatory Conditions:
  - Arthritis:
    - Rheumatoid arthritis: a chronic, progressive systemic disease characterized by recurrent inflammation of connective tissue and their related structures.
      - Cause: unknown
  - Osteoarthritis (degenerative joint disease/DJD): a progressive disorder of movable joints associated with aging and accumulated trauma.
    - Cause: unknown
    - predisposing factors: aging, obesity, familial tendencies.
  - Symptoms: pain, stiffness, swelling in joints, limited movement.
  - Treatment: analgesics, steroids, and other anti-inflammatory steroids.
- Bursitis
  - Cause: inflammation of the bursa.
  - Symptoms: bursa become irritated or swollen causing mild to severe pain.
  - Treatment: anti-inflammatory medications.

### Infection

- Activity of disease-producing bacteria, virus or fungus in the body and the reaction of the body to the microorganisms and their products.
- Predisposing causes: organisms or animal parasites that enter the body through the following ways:
  - skin breaks
  - mucous membranes: mouth, nose, vagina, urethra, and rectum
  - infected food and water
  - suppressed immune system
- Process of infection:
  - Bacteria enter the body and multiply spreading from the infected tissue to other parts of the body through the blood, the lymph system and tissue.
  - The body sends specialized white blood cells to fight the bacteria. Sometimes the body fights infection by itself; other times it needs medication.
  - Medication is used either to cure an infection or to treat its symptoms.
- Symptoms of infection:
  - inflammation
  - increased body temperature

- pain
  - discharge
  - decrease in function.
- Example: upper respiratory infection (URI).
- Infectious Conditions:
  - Strep throat
    - Cause: bacteria (streptococcus)
    - Symptoms: fever, pain on swallowing, reddened throat; throat may contain whitish pustules or red streaks.
    - Treatment: antibiotics, soothing gargles.
  - Influenza (flu)
    - Cause: airborne virus
    - Symptoms: fever, muscular aches, G.I. disturbances, inflammation of respiratory tract.
    - Treatment: immunization may help to prevent occurrence, medications given to relieve symptoms
- Antiviral Medications:
  - Rimantadine (Flumadine) is a medication available for the prevention and treatment of influenza A.
    - Side effects of rimantadine include insomnia, headache, dizziness, and nervousness.
  - Oseltamivir phosphate (Tamiflu), zanamivir (Relenza), peramivir (Rapivab), and baloxavir marboxil (Xofluza) are medications available for the prevention and treatment of influenza A and B.
    - Side effects of oseltamivir include nausea and vomiting.
    - Zanamivir can cause bronchospasm.
    - Peramivir can cause diarrhea.
  - To be most beneficial, these medications need to be taken within 48 hours after the signs/symptoms of flu begin.
- Athlete's foot
  - Cause: tinea pedis (fungus)
  - Symptoms: itching and watery blisters between toes, scaling, and cracking of the skin.
  - Treatment:
    - antifungal powders, ointments, or oral medications
    - prevention
    - change resident's shoes and socks frequently
    - do not have resident wear shoes and socks at rest times or when in bed to allow air access to the feet
    - wear gloves when applying medication to the feet
- Pneumonia
  - Cause: virus, bacteria, aspiration, stasis, or secondary infection
  - Symptoms: difficult, painful breathing, sometimes cough or fever, sometimes rust colored sputum
  - Treatment: bedrest, medication
- Ringworm
  - Cause: fungus

- Symptoms: ringworm of the scalp: small bald areas usually round or oval in shape covered with dry grayish scales. Ringworm of the body: circular or oval areas with tiny bumps around the edges
- Treatment: powders, ointments or oral medications
- COVID -19
  - Cause: SARS-CoV-2, a coronavirus discovered in 2019
  - Symptoms: fever, chills, shortness of breath, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea, vomiting, diarrhea (or none at all)
  - Treatment: Antiviral medications – Nirmatrelvir with Ritonavir (Paxlovid), Remdesivir (Veklury), Molnupiravir (Lagevrio)
  - Can spread from person to person when infected person breathes out droplets containing the virus and someone else breathes it in or touches a surface it lands on
- *Candida auris*
  - Cause: Fungus
  - Symptoms: fever, chills (that do not improve after antibiotic treatment)
  - Treatment: Antifungal medications called echinocandin – Anidulafungin, Caspofungin, Micafungin
  - Can be colonized and not present as clinical disease
    - should not be treated while colonized
    - invasive infection can develop at any time
  - Can spread from person to person
    - through contact with affected person
    - through contaminated surfaces or equipment
- *Clostridium difficile* (*C. diff*, *C. difficile*)
  - Cause: a germ (bacterium)
  - Symptoms: diarrhea, fever, stomach tenderness or pain, loss of appetite, nausea
  - Treatment: oral vancomycin, fidaxomicin
  - Can spread from person to person
    - through contact with affected person
    - through contaminated surfaces or equipment

## Medications by Classification

- Antiseptics/Disinfectants:
  - Antiseptics:
    - Action: prevent the growth and reproduction of microorganisms (germs)
    - Use: prevent infection
    - Examples: Betadine, Betagen, Dakin's
  - Disinfectants:
    - Action: destroy microorganisms.
    - Use: wash skin and clean objects.
    - Example: alcohol
- Sulfonamides (Sulfa medications)
  - Action: synthetically made antibiotics that act on specific bacteria
  - Use: treat urinary tract and digestive tract infections



- Examples:
  - trimethoprim sulfamethoxazole (Bactrim, Septra DS)
  - sulfisoxazole (Gantrisin)
- Adverse Effects:
  - headache
  - nausea
  - abdominal pain
- Nursing Considerations: always give with plenty of fluids
- Other Antibiotics:
  - Action: kill or prevent growth of specific germs.
  - Use: treatment of various infections.
  - Examples:
    - penicillin V
    - ampicillin (Omnipen, Principen)
    - amoxicillin trihydrate (Amoxil)
    - cephalexin (Keflex, Duricef, Ancef, Kefzol, Keftab)
    - cefaclor (Ceclor)
    - doxycycline (Vibramycin)
    - tetracycline HCL (Achromycin)
    - erythromycin base (E-Mycin, Eryc)
    - erythromycin estolate (Ilosone)
    - erythromycin ethylsuccinate (E.E.S.)
  - Adverse Effects:
    - nausea and vomiting
    - hives
    - rash
    - anaphylactic reaction
    - sensitivity to the sun
    - vaginitis
    - diarrhea
    - urinary tract infection (UTI)
  - Nursing Considerations:
    - must be administered at the same time ordered to always maintain an adequate amount in the blood stream.
    - some antibiotics are more effective when given with food; some are more effective when given on an empty stomach. Follow the instructions of the dispensing pharmacy.
    - sensitivity to the sun can occur.

**Notes:**

## INFLAMMATION AND INFECTION MEDICATION STUDY

Choose at least one medication from the upper categories and six medications from the lower category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
antiseptic				
disinfectant				
sulfonamide				
antibiotic				
antiviral				

## Lesson 27: Malignant Disease

### Student Overview

**Lesson Objectives:**

- Identify the warning signs of malignant disease.
- Identify the treatment of malignant disease.

**Key Terms:**

Benign:

Chemotherapy:

Malignant:

Metastasis:

Radiation:

## Lesson 27: Malignant Disease

### Structure and Function

- Ordinarily cells and tissues live and reproduce in an orderly fashion.
- Tissues that grow in an abnormal way but don't invade other tissues are called benign tumors.
- Cells that grow in a wild, disorganized way invading and destroying other tissues are called malignant tumors or cancer.
- Malignant diseases (cancer) sometimes metastasize, meaning it spreads to a distant location through the bloodstream or lymph system.

### Causes and Risks

- Actual cause of cancer is unknown.
- Some circumstances increase the risk of cancer:
  - Smoking
  - Exposure to carcinogenic substances, such as asbestos.
  - Prolonged exposure to ultraviolet light and sunlight.
- Seven warning signals – early symptoms of cancer:
  - Change in bowel or bladder habits
  - A sore that doesn't heal
  - Unusual bleeding or discharge
  - Thickening or lump in the breast or elsewhere
  - Indigestion or difficulty swallowing
  - Obvious change in a wart or mole
  - Nagging cough or hoarseness
- Presence of a "warning signal" does not necessarily mean cancer, but a provider should assess.

### Treatment for Cancer

- Surgical removal.
- Radiation – including x-ray, radium, and cobalt.
- Chemotherapy
- Selected Medications
  - Antineoplastics
    - Action: medications which kill or slow the growth of cancer cells.
    - Use: treat cancer.
    - Examples:
      - procarbazine HCL (Matulane)
      - hydroxyurea (Hydrea, Droxia,)
      - paclitaxel (Taxol)
      - carboplatin (Paraplatin)
      - vincristine (Marqibo, Vincasar PFS)
  - Adverse Effects:
    - nausea and vomiting
    - hair loss

- decrease in white blood cell count
- Nursing Considerations:
  - caution resident to avoid alcohol.
  - monitor resident for signs of bleeding.
- Hormones:
  - Action: medications are given in groups to complement each other and attack the cancer cells at different stages of development.
  - Use: treat cancer, replacement therapy.
  - Examples:
    - megestrol acetate (Megace)
  - Adverse Effects:
    - nausea and vomiting
    - weakness
    - hair loss
    - decrease in white blood cells about three weeks after administration.
  - Nursing Considerations:
    - resident's resistance will be low.
    - monitor for infections.
    - given in combination with antiemetics, steroids, psychotropics and diuretics to help the body tolerate these medications.

**Notes:**

## Lesson 28: Overview of Psychotic Conditions, Neurocognitive Disorder, and Psychoactive Medications

### Student Overview

#### Lesson Objectives:

- Become familiar with the structure and function of the brain.
- Identify the psychiatric and psychological conditions requiring medications.
- Identify the effects of mental and emotional stress.
- Identify the medications utilized for psychological conditions.

#### Key Terms:

Akathisia:

Akinesia:

Aphasia:

Neurocognitive Disorder:

Neurosis:

Parkinsonism:

Psychosis:

Tardive Dyskinesia:

## **Lesson 28: Overview of Psychotic Conditions, Neurocognitive Disorder, and Psychoactive Medications**

### **Functions of the brain**

- Mass of nerve tissue that is responsible for:
  - Maintaining vital functions such as breathing, blood pressure, temperature, and the ability to remain erect
  - Interpreting the world around us (example: presence or absence of pain, presence of heat, etc.)
  - Responding to the stimuli that has been interpreted. (Example: reaction to heat)
  - Creating ideas and solving problems
  - Storing memories
  - Emotions
- Psychotherapeutic medication therapy is used to influence the chemicals in the brain that are called neurotransmitters.

### **Conditions**

- Cognitive impairment and psychological conditions are often congenital, but also may be acquired from aging, trauma, or disease processes.
  - Cognitive impairments include Alzheimer's disease, dementia, psychosis from head injuries, stroke, and other trauma.
  - Cognitive impairment due to intellectual disability is sometimes seen in long term care facilities. Intellectual disability is often not treated with medications, but with structured environments and active treatment with task learning.
  - Residents with psychiatric conditions (such as depression, psychosis, schizophrenia, bi-polar affective disorders, and obsessive-compulsive disorders) are usually treated and controlled by medications and therapeutic interventions.
- The resident receiving medications for psychiatric conditions must be monitored closely for toxic effects of the medications.
  - With many psychiatric medications, there is a small threshold between therapeutic doses and toxic doses.
  - Persons receiving medication for certain psychiatric conditions must have frequent blood tests to determine the actual level of the medication in their system.
  - Residents receiving psychiatric medications must have their medications given exactly as ordered by the provider in order to maintain adequate blood levels of the medications.

### **Mental and/or Emotional Stress**

- Stress is any physical or mental circumstance that causes strain or tension.
  - A certain amount of stress is stimulating and healthy.
  - The average person can cope with stress.
  - Continued stress may push an individual beyond limits, ending in physical and/or mental reaction.
- There are many causes of stress:

- Change can often cause stress.
  - Change can include happy occurrences as well as fears from feelings of inadequacy.
  - Examples of change include starting a new job, outstanding personal achievement, graduation, changes in personal habits, vacation, minor law violations, changing jobs, adjusting to in-laws, a new family member, holidays, problems on the job, change in residence, death of a friend or loved one, illness, etc.
- Change in routine, environment or caregivers affect the developmentally disabled and mentally ill population significantly. It is also important to prepare residents of long-term care facilities for changes that might occur.
- Feelings of inadequacy.
- Patterns of Emotional Development
  - Adjusting to changing conditions and life situations:
    - The term “well adjusted” applies to a person that can deal effectively with personal problems.
    - A poorly adjusted person feels restless, unhappy, and unable to control life.
    - Threats to physical or mental well-being produce stress. Examples of threats include illness, job change, death of a friend or family member, school circumstances and divorce.
- Reactions to stress
  - May be physical – elevated pulse rate and blood pressure, change in appetite and increased susceptibility to illness.
  - May be emotional
    - Some stress is stimulating and healthy.
    - Prolonged stress produces anxiety, fear, hostility, and frustration.
- Coping Mechanisms – ways of handling stress
  - Constructive coping mechanisms
    - Openly facing and analyzing problems.
    - Seeking legitimate solutions to deal with problems.
    - Taking responsibility for own actions and avoiding projection.
  - Non-constructive coping mechanisms
    - Defense mechanisms
      - rationalization
      - projection
      - daydreaming
      - regression
      - withdrawal

## **Specific Disorders and Corresponding Symptoms**

- Neurosis – an emotional reaction that interferes with leading a normal life; probably due to unresolved internal conflicts which make for an uneasy adjustment to life.
  - Anxiety
    - Phobias
    - Depression
    - Obsessive-compulsive disorder (OCD)
    - Posttraumatic stress disorder



- Panic disorder
- Psychosis – a major mental condition in which a person’s personality is deranged causing a loss of contact with reality.
  - Schizophrenia
  - Paranoia
  - Affective psychosis
- Bipolar Disorder – sometimes referred to as manic-depressive disorder, it is characterized by dramatic shifts in mood, energy, and activity levels that affect a person’s ability to carry out day-to-day tasks.
- Personality Disorders – a mental health condition that involves long-lasting, all-encompassing, disruptive patterns of thinking, behavior, mood and relating to others. These patterns cause a person significant distress and/or impair their ability to function.
  - Paranoid personality disorder
  - Schizoid personality disorder
  - Obsessive-compulsive personality disorder
  - Borderline personality disorder
- Neurocognitive Disorder - Decreased mental function caused by some physical agent or condition, such as arteriosclerosis, Alzheimer’s Disease, brain tumors, alcohol and other medications, infections, or nutritional deficiencies.
  - May be short term or long lasting; symptoms include irritability, confusion, delirium, disorientation, and changes in behavior.
- Alzheimer’s Disease
  - Amnesia: loss of memory
  - Aphasia: inability to express oneself through speech or loss of verbal comprehension
  - Apraxia: inability to understand the meaning of things
  - Agnosia: loss of sensory perceptions
- Parkinsonism – rigidity of limbs, tremors, gait, and posture disturbances
- Other types of neurocognitive disorders
  - Mania
  - Dementia
  - Paranoia

## **Psychoactive Medications**

- General
  - Action: May act selectively on the central nervous system and affect the mind.
  - The terms psychoactive, psychotherapeutic, and psychotropic all refer to medications which affect the mind. Use of psychoactive medications must result in either maintenance or improvement in the resident’s functional status.
  - Uses: Anxiolytics (often referred to as antianxiety medication)– primarily treat nervousness and anxiety; anti-psychotics (neuroleptics) – primarily treat mental illness; delusions and hallucinations
  - Examples:
    - Anxiolytics (antianxiety):
      - diazepam (Valium)
      - chlordiazepoxide (Librium)

- hydroxyzine (Atarax, Vistaril)
  - lorazepam (Ativan)
  - alprazolam (Xanax)
  - buspirone hydrochloride (Buspar)
  - clonazepam (Klonopin)
- Adverse Effects of Anxiolytics:
  - drowsiness
  - dizziness
  - blurred vision
  - dry mouth
  - constipation
  - impaired coordination
  - decreased respirations
- Antipsychotic (neuroleptics)
  - risperidone (Risperdal)
  - olanzapine (Zyprexa)
  - loxapine (Loxitane)
  - quetiapine (Seroquel)
  - ziprasidone (Geodon)
  - aripiprazole (Abilify)
- Adverse Effects of Antipsychotics:
  - may cause tardive dyskinesia
  - abnormal movements of the extremities
  - in and out movements of the tongue
  - sucking and smacking of lips
  - lateral jaw movements
  - may affect thirst awareness
- Nursing Considerations:
  - abrupt withdrawal of antipsychotics may cause seizures
  - prolonged use may cause tardive dyskinesia; the resident must be monitored for worsening symptoms in that tardive dyskinesia is reversible
- Medications used for treating bipolar disorder
  - Action: alters chemical transmitters in central nervous system
  - Use: control and prevent manic episodes
  - Examples:
    - lithium (Lithonate, Lithotabs)
    - divalproex sodium (Depakote) – although an anti-convulsant, is often ordered by a psychiatrist for treatment of bipolar disorder.
  - Adverse Effects:
    - lethargy
    - toxicity symptoms
      - nausea
      - tremor
      - muscle weakness
  - Nursing Considerations:
    - provide adequate salt and juice intake

- unusual loss of salt or fluid from the body (through vomiting, diarrhea, excessive sweating) may result in toxicity.
- Antidepressants (tricyclic)
  - Action: increases the amount of norepinephrine or serotonin or both in the central nervous system.
  - Use: treat depression
  - Examples:
    - amitriptyline HCL (Elavil)
    - nortriptyline hydrochloride (Pamelor, Aventyl)
  - Adverse Effects:
    - seizures
    - heart irregularities
    - constipation
    - urinary retention
    - diarrhea
  - Nursing Considerations:
    - medications must be given for 2 to 8 weeks before an effect is observed.
    - residents should avoid exposure to the sun.
- Antidepressants (selective serotonin reuptake inhibitors – SSRI)
  - Action: inhibits reuptake of serotonin, thereby increasing serotonin activity.
  - Use: treat depression
  - Examples:
    - paroxetine hydrochloride (Paxil)
    - sertraline hydrochloride (Zoloft)
    - fluoxetine hydrochloride (Prozac)
    - escitalopram (Lexapro)
  - Adverse Effects:
    - nausea
    - vomiting
    - insomnia
    - headache
    - dry mouth
  - Nursing Considerations
    - monitor for suicidal thoughts and behavior
    - medications must be given for 2 to 8 weeks before an effect is observed.
- Antidepressants (serotonin and norepinephrine reuptake inhibitors – SNRI)
  - Action – inhibit the reuptake of both serotonin and norepinephrine
  - Use: treat depression
  - Examples:
    - duloxetine (Cymbalta)
    - venlafaxine (Effexor XR)
    - desvenlafaxine (Pristiq)
  - Adverse Effects:
    - nausea
    - vomiting
    - fatigue

- drowsiness
  - dry mouth
  - constipation
- Nursing Considerations
  - monitor for suicidal thoughts and behavior
  - medications must be given for 2 to 8 weeks before an effect is observed.
- Antidepressants (monamine oxidase inhibitors-MAO)
  - Action: decreases the amount of norepinephrine destroyed by metabolism and permits level to increase in the brain.
  - Use: treat depression
  - Examples:
    - phenelzine sulfate (Nardil)
    - tranylcypromine sulfate (Parnate)
    - isocarboxazid (Marplan)
  - Adverse Effects:
    - muscle tremors
    - heart irregularities
    - diarrhea
    - sweating
    - constipation
  - Nursing Considerations:
    - to prevent hypertensive crisis when taking MAO inhibitors, avoid foods that contain high amounts of tyramine, such as cheese, fish, liver, baked potatoes, yogurt, beer, and wine.

## **Behavior Monitoring/Management**

Residents with an antipsychotic, antianxiety or sedative/hypnotic medication ordered should have exhibited target behaviors for which the medication was ordered. There must be a plan for staff to monitor, quantitatively document and assess the identified target behaviors. Refer to the facility's policy and procedure regarding behavior monitoring and location of behavior management plans.

Various interventions are often implemented as a behavior management plan, apart from the use of psychoactive medications. These interventions should include proactive interventions (to prevent the occurrence of the problematic behavior) as well as reactive interventions (employed in response to the problematic behavior exhibited).

## **PRN Medications**

"As needed" psychoactive medications should only be used when the resident has an enabling condition for which such a medication is indicated, and the PRN dose is being used to manage unexpected harmful behaviors which cannot be managed with other interventions first attempted. The resident's plan of care or behavior management plan should address interventions to attempt prior to the administration of a PRN psychoactive medication. Interventions attempted should be discussed with the licensed nurse when requesting permission to administer a PRN psychoactive medication.

## Dose Reductions

Federal regulation requires psychoactive medication use be carefully monitored and reductions in dose occur as possible. The provider, pharmacist and licensed nursing staff monitor continued medication use, assess the potential of needed reduction and medication orders are altered accordingly.

**Notes:**

## PSYCHOTROPIC MEDICATION STUDY

Choose at least three medications from each category. Complete the chart below using a medication resource.

Classification	Medication	Action	Nursing Consideration(s)	Potential Adverse Effects
antidepressant				
antianxiety (anxiolytic)				
antipsychotic				

## Lesson 29: Alzheimer's Disease

### Student Overview

**Lesson Objectives:**

- Identify the common symptoms of Alzheimer's Disease.

**Key Terms:**

Dementia:

Sundowning:

Validation Therapy:

## Lesson 29: Alzheimer's Disease

### Introduction

- Alzheimer's Disease is one of several disorders that cause the gradual loss of brain cells. The disease was first described in 1906 by German physician Dr. Alois Alzheimer. Although the disease was once considered rare, research has shown that it is the leading cause of dementia.
- Dementia is a term for several symptoms related to a decline in thinking skills. Common symptoms include:
  - gradual loss of memory
  - problems with reasoning or judgment
  - disorientation
  - difficulty in learning
  - loss of language skills
  - decline in the ability to perform routine tasks
- Residents with dementia also experience changes in their personalities and behavioral problems, such as agitation, anxiety, delusions, and hallucinations.
- Alzheimer's disease advances at widely different rates. The duration of the illness may vary from 3 to 20 years. The areas of the brain that control memory and thinking skills are affected first, but as the disease progresses, cells die in other regions of the brain. Eventually, the resident with Alzheimer's will need complete care. If the individual has no other serious illness, the loss of brain function itself will cause death.

### Causes

- No one knows yet exactly what causes Alzheimer's disease. Researchers are learning about what happens to the brain as we grow older, what happens to brain cells in Alzheimer's disease, genes associated with Alzheimer's, and many other factors that may be important. Most researchers agree that the cause may be a complex set of factors.
- There are two abnormal structures in the brain associated with Alzheimer's disease.
  - Amyloid plaques are clumps of protein fragments that accumulate outside of cells.
  - Neurofibrillary tangles are clumps of altered proteins inside cells.
  - Research about these structures have provided clues about why cells die, but scientists have not determined exactly what role plaques and tangles play in the disease process and whether these are the key factors.
- Studies have shown that the greatest known risk for developing Alzheimer's is increasing age. A family history of the disease is another known risk. Having a parent or sibling with the disease increases an individual's chances of developing Alzheimer's.
- Scientists have identified three genes that cause rare, inherited forms of the disease that tend to occur before age 65. Researchers have identified one gene that raises the risk of the more common form of Alzheimer's that affects older people.
- Much dementia research has focused on vascular risk factors, which are factors related to the blood circulation system. A great deal of evidence shows that disorders such as high cholesterol and high blood pressure (factors that cause strokes and heart disease) may also increase the risk for developing Alzheimer's.



## Ten Signs of Alzheimer's Disease

- Some change in memory is normal as we grow older, but the symptoms of Alzheimer's disease are more than simple lapse in memory. Residents with Alzheimer's experience difficulties communicating, learning, thinking, and reasoning.
- Common Symptoms:
  - Memory loss – One of the most common early signs of dementia is forgetting recently learned information. While it's normal to forget appointments, names, or telephone numbers, those with dementia will forget such things more often and not remember them later.
  - Difficulty performing familiar tasks – Residents with dementia often find it hard to complete everyday tasks that are so familiar we usually do not think about how to perform them.
  - Problems with language – A person with Alzheimer's disease often forgets simple words or substitutes unusual words, making his/her speech or writing hard to understand.
  - Disorientation to time and place – People with Alzheimer's disease can become lost on their own street, forget where they are and how they got there and not know how to get back home.
  - Poor or decreased judgment – Those with Alzheimer's may dress without regard to the weather, wearing several shirts or blouses on a warm day or very little clothing in cold weather. Individuals with dementia often show poor judgment about money, giving away large amounts of money.
  - Problems with abstract thinking.
  - Misplacing things – A person with Alzheimer's disease may put things in unusual places: an iron in the freezer or a wristwatch in the sugar bowl.
  - Changes in mood or behavior – Someone with Alzheimer's disease can show rapid mood swings, from calm to tears to anger, for no apparent reason.
  - Changes in personality – A person with Alzheimer's disease can change a lot, becoming extremely confused, suspicious, fearful, or dependent on a family member.
  - Loss of initiative – The person with Alzheimer's disease may become very passive, sitting in front of the television for hours, sleeping more than usual or not wanting to perform usual activities.

## Stages of Alzheimer's Disease

- Stages of Alzheimer's Disease – developed by physicians at the New York University Medical Center's Aging and Dementia Research Center, the Functional Assessment Staging (FAST) Scale provides a method of staging for initial and ongoing assessment of change.

STAGE	CHARACTERISTICS	CLINICAL DIAGNOSIS
1	No functional decrement	Normal Adult
2	Personal awareness of some functional decline. (example: subjective deficit in recalling names or location of objects)	Normal - Older Adult
3	Noticeable deficits in demanding occupational and social settings (example: may get lost traveling by auto)	Early Alzheimer's Disease
4	Requires assistance in complicated daily life tasks such as handling finances, grocery shopping and planning meals.	Mild Alzheimer's Disease
5	Requires assistance in choosing proper attire and for independent community functioning (example: the individual will wear incongruous clothing); some patients may forget to bathe regularly (unless reminded) and driving is severely compromised.	Moderate Alzheimer's Disease
6	Requires physical assistance in dressing, bathing, and toileting. Urinary and fecal incontinence in the absence of infection or other etiologies.	Moderately Severe Alzheimer's Disease
7	Speech limited to about six words in the course of the average day. Progressive loss of abilities to walk, sit up, smile, and hold head up.	Severe Alzheimer's Disease

## FDA Approved Medications for Treatment of Mild to Moderate Dementia of the Alzheimer's Type

- Medication:
  - donepezil (Aricept)
    - gastrointestinal effects (i.e., anorexia, nausea, diarrhea, vomiting), insomnia, dizziness, fatigue, muscle cramps, headache)
  - rivastigmine (Exelon)
    - gastrointestinal toxicity (i.e., nausea, vomiting, diarrhea, abdominal pain, anorexia)

- attempt slow titration to minimize effects of withdrawal
- galantamine (Razadyne)
  - gastrointestinal effects (i.e., nausea, vomiting, abdominal pain, dyspepsia, anorexia), psychiatric disorders (i.e., depression, insomnia), somnolence, urinary tract infection, dizziness, headache, fatigue, bradycardia
- Action: slows breakdown of acetylcholine.
  - does not alter underlying dementia.
  - while the medication is not a cure, it relieves symptoms.
- Nursing Considerations:
  - administer medication exactly as prescribed at regular intervals, preferably between meals; may be taken with meals for G.I. upset.
  - the provider may adjust the dosage no more than every six weeks.

## **Special Needs of the Resident with Alzheimer's Disease**

- Safety – due to the resident's disorientation to place and lack of good judgment, ensuring the resident's safety is of utmost importance.
  - secured units – some facilities will operate a "secured unit", which requires a specific code or key to enter and exit.
  - environment – the environment is scrutinized to ensure risk of potential hazard is considered in all areas. For example, type of flooring, lighting, noise level/stimulus, secured chemicals, equipment, etc.
  - visual prompts – pictures, colors and familiar objects are sometimes hung outside doors or in specified areas to prompt the resident of location.
  - modified evacuation procedures – forethought is given to the concern of how to manage the Alzheimer's population should evacuation become necessary. In an emergency (e.g., fire), caution must be taken to secure the whereabouts of residents at high risk of wandering. Facility policies often address the special needs of the Alzheimer's population and procedures are altered accordingly.
- Staff Education – facilities caring for the resident with Alzheimer's Disease should be providing training for caregivers addressing the needs of this specialized population. Such training will likely include a technique known as validation therapy.
  - validation therapy is a manner of staff response to a resident's comment by which the staff allow the resident to remain in his/her belief (i.e., time and place) without attempting to re-orient the resident to the present. Attempting to re-orient the resident (rather than validate or possibly divert his/her attention) can often bring frustration and anger to the resident.
- Increased Activity
  - sundowning is a common phenomenon in the Alzheimer's population. There is increase confusion and restlessness in late afternoon, evening, and night. In response, facilities will often organize an active evening activities program.
- Nutrition/Hydration – as the resident's memory deteriorates, he/she may not feel the need, or may forget to eat. As a result, weight loss is incurred. Facilities will implement interventions to promote sufficient nutrition/hydration.
  - Finger foods – the residents are often active and will not remain seated at mealtimes. An option may be small, more frequent meals or finger foods that allow the resident to eat on the go.

- Hydration programming – water pitchers may be removed due to infection control concerns. As a result, the facility must respond with routine offering of fluids to ensure the resident does not become dehydrated.
- Support for families and other caregivers
  - The changes in the resident's personality and mental and physical abilities are difficult for the family to accept. The changes are both difficult and sad. Caregivers of residents with dementia spend significant time meeting the needs of the residents, but also lend support to the family as well as fellow caregivers.

**Notes:**

## Lesson 30: Principles of Administering Medications

### Student Overview

**Lesson Objectives:**

- Identify the six rights of medication administration.
- Identify the safeguards to correct medication administration.
- Identify the necessary accountability of the QMA.

**Key Terms:**

EDK (Emergency Drug Kit):

Medication Error:

Meniscus:

## Lesson 30: Principles of Administering Medications

### Medication Equipment

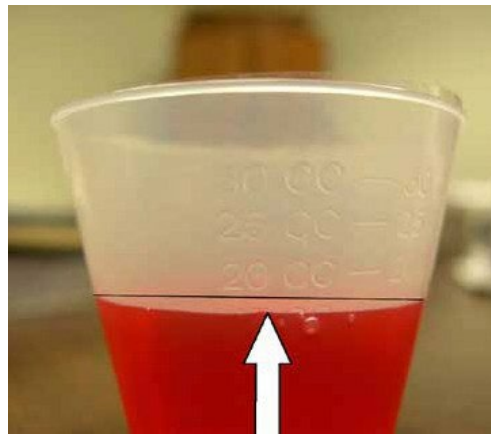
- Medication carts must be locked at all times when not within visual range of the QMA.
- The top of a medication cart should be kept free of any hazardous materials, including medications.
- All medications not to be used are to be stored in the resident's individual medication bin on the cart.
- Sharps containers kept on the medication carts are not to overflow to prevent injury.
- The QMA may carry the keys or utilize a code which will open the cart he/she is working from, as well as unlock the medication room.
  - The QMA may never provide the keys to unauthorized personnel.
  - Authorized personnel include a licensed nurse, another QMA or a pharmacist. Refer to facility policy.



### Preparing Medications for Administration

- Location of the resident when administering medication is an important factor to consider.
  - If the medication is to be administered with meals, the dining room would be considered the appropriate location to administer the medication. However, the dining room (or any other public location) is inappropriate for the administration of a treatment such as blood glucose reading or application of a transdermal patch, etc.
  - Placing medications in portions of the resident's meal is not appropriate.
- It is never acceptable practice for a licensed nurse or QMA to hand medication to a resident and walk away.
  - Resident may pocket or hide medications in the mouth or spit the medications out.
  - Resident may choke on pills or tablets.
- Medications should be given with a full glass of water if accepted unless contraindicated by the advanced practice provider's order. (i.e., fluid restriction)
- Handle medications as little as possible.
- Wash hands or utilize alcohol (antiseptic) foam/gel after direct contact with each resident.

- The medication preparation area must be:
  - Well lit
  - Free of distractions and interruptions
  - neat, clean, and orderly
  - ventilated and comfortable
- QMAs must concentrate on accuracy while preparing medications
  - If any medication has fallen from its container or is found in the storage bin or shelf, it must be discarded per facility policy.
  - QMA must never administer a medication that was prepared by someone else. Likewise, a QMA must not ask someone else to administer medications which he/she prepared.
- Crushing medications:
  - Make certain that the medication may be safely crushed, (i.e., not enteric coated, sustained release or similar forms). The facility should have available a list of medications that should not be crushed.
  - Use leverage-type medication crusher. Make certain that equipment is free of residue from previously crushed medications.
  - Mix with food appropriate for resident's diet just before administering.
- Liquid Medications:
  - Pour on side away from label.
  - View medication cup at eye level.
  - Read level of medication from bottom of meniscus (or curve) of liquid surface. The meniscus is where the liquid and air meet.



Bottom of meniscus

### **Assessing Resident Before and After Medication Administration**

- Some medications ordered by the provider will require measurement of a resident's vital signs before a medication can be administered. If so, this is normally denoted on the medication administration record. Refer to facility policy.
- Facility policies and procedures may require that a resident's temperature be taken before an antibiotic is administered. Refer to facility policy.
- Other medications that require vital signs be monitored include:
  - Digitalis products require that a pulse be obtained before administering the medication.

- Nitroglycerin administered sublingual, orally, or topically requires that a blood pressure be obtained.
- Antihypertensive (blood pressure) medications may or may not require obtaining a blood pressure reading.
  - This is determined by the strength of the medication and how long the resident has been taking the medication.
  - The resident's blood pressure may be monitored with weekly blood pressure readings to determine the effectiveness of the medication. If necessary, this is normally denoted on the medication administration record.
- Some residents will need their blood sugar measured prior to receiving anti-diabetic oral medications.
- The QMA must be alert to orders to measure vital signs.
  - The QMA must not administer medications that require the measurement of vital signs if the QMA observes the resident's vital signs are outside the parameters for administration.
  - The QMA must always seek guidance from the licensed nurse before omitting a scheduled dose of medication due to abnormal vital signs.

## **Preparing the Resident and Equipment**

- Assemble all necessary equipment before entering the resident's room to administer medication.
- Inform the resident of your presence and explain what you are about to do.

## **Administering Medications**

- Special techniques may be needed when administering medications to the following populations:
  - elderly residents
  - hostile residents
  - mute or withdrawn residents
  - residents with physical limitations
  - residents refusing to take medications
  - non-communicative residents
  - non-ambulatory residents
- Simply calling a resident by name may not be appropriate identification prior to administering medications. Verify identity of a resident with another staff to validate the medication is administered to the correct resident or verify per picture identification of resident if uncertain.
- Many facilities do not require residents to wear identification bands.
- Some facilities have pictures of the residents with the medication administration record.
- Order additional medications on a reasonable and timely basis, in advance of the last available dose. Present a list of any additional medications ordered to the facility licensed nurse to assure medications are obtained.

## **General Principles**

- The QMA is responsible for counting the controlled medications on the medication cart whenever control of the medication cart exchanges hands.



- The QMA is responsible for documenting medication administration according to the facility's policy.
- The QMA should maintain a constant steady pace when administering medications to assure that medications are administered within acceptable time frames of administration.
- Medications may be administered 60 minutes earlier or later than the scheduled time of administration. Refer to the facility policy as it pertains to medication administration times, as some facilities may utilize "AM" and "PM" administration versus exact times, adhering to person centered care.
- If a medication is ordered before meals (ac) and administered after meals (pc) (or vice versa), this is a medication error.

### **Responsibilities for PRN Medication Administration**

- The QMA cannot administer a PRN medication to a resident until authorized to do so by a licensed nurse or advanced practice provider/physician.
- The QMA cannot take a verbal order from an advanced practice provider/physician but can take an authorization to administer medication if it is for a medication which has already been ordered.
  - Example: The provider tells the QMA to give a resident Tylenol for pain. The order has already been written as a PRN. The QMA may give the Tylenol.
  - Example: If there is not an order already written for Tylenol PRN, the QMA must inform the licensed nurse, who will in turn be responsible to contact the provider and obtain an order for the medication.
- The licensed nurse is never to write an order based on what the QMA informs him/her, rather the nurse must contact the provider directly.
- If a resident requests a PRN medication, the QMA must report the request to the licensed nurse.
  - The QMA must receive appropriate authorization (from a licensed nurse or provider) before each administration of a PRN medication.
  - The QMA must document in a pertinent note on the resident's clinical record the request or need of the resident, the action taken to address the resident's need and the result or effectiveness of the action.
  - All contacts with a nurse or provider not on the premises of authorization to administer PRNs shall be documented in the nursing notes indicating time and date of the contact.
  - The licensed nurse should then co-sign to acknowledge authorization of administration of a PRN medication on that nurse's next shift.

### **Do Not Leave Medications Unattended**

- Keep the medication room locked.
- Do not store or leave unlocked medications unattended.
- Do not leave medications on an overbed table or at the resident's bedside.

### **Maintaining Universal Precautions**

- The QMA must practice appropriate infection control practices when administering medications.
- The use of gloves when necessary and proper hand washing, or use of alcohol-based hand rub (ABHR) is of utmost importance.

- The QMA must wash his/her hands or utilize alcohol-based hand rub (ABHR) before and after administering medication to a resident, as well as whenever necessary when caring for a resident and direct contact is made.
- Handwashing is the single most effective method of reducing the spread of infection in a facility.
- The QMA should be cautious in performing other tasks when administering medications, in the event gloves would need to be changed, or hands washed before the QMA would proceed with the medication administration.
- Special consideration should be given when toileting residents during the medication pass to maintain infection control practices.

## **Review of Six Rights of Medication Administration**

- Give the RIGHT MEDICATION – compare the label on the medication with the medication order on the resident's medication administration record. Check the medication a minimum of 3 times before administering it to the resident.
  - When taking medicine from a resident's storage bin.
  - When removing or pouring medication from containers or unit dose medications from the package.
  - When returning the medication container to the storage bin.
- Give the RIGHT DOSE
  - Compare the order with the name of the medication on the label of the medication. If different, ask the nurse for further instructions.
  - Check the order to assure accuracy in the amount of the dosage.
- Give the medication to the RIGHT RESIDENT
  - Compare the name on the medication administration record with the resident's I.D. band (or other means of identification). If the resident cannot be identified, DO NOT GIVE THE MEDICATION. Notify the nurse of the problem.
- Give medication by the RIGHT ROUTE
  - Compare the medication order, the medication administration record and the label and assure that they match.
  - The route of administration must be as ordered by the provider. If the advanced practice provider's order does not indicate route, follow medication manufacturer's recommendations.
- Give the medication at the RIGHT TIME
  - Review the medication order, the medication administration record, and the label to note the time for administration of the medication.
- Enter the RIGHT DOCUMENTATION in the chart
  - Document in the MAR or the resident's chart all medications provided to the resident.
  - Document only those medications that were personally administered by you. Do not document medications that were either not given or that were administered by someone else. Follow facility policy and procedure for omitted medications.
  - Document in the resident's chart any pertinent observations that were made during the administration of the medication.

## The Importance of Observing the Six Rights of Medication Administration

Observing the six rights of administration each time a medication is administered is necessary to ensure that all precautions are taken to minimize medication errors in a facility. Common reasons for medication errors include:

- Interruptions or loss of concentration when administering medications.
- Lack of knowledge in administration of medications.
- Inadequate communication.
- Improper transcription of medication orders.
- Omission of medications.
- Making assumptions.
- Becoming careless.

All of these errors, except the improper transcription of medication orders, which is not the QMA's responsibility, can be avoided if the QMA follows the Six Rights of Medication Administration each time for each resident.

### Medication Errors

- A medication error is the administration of a medication or treatment which is not in accordance with:
  - advanced practice provider's orders
  - manufacturer's specifications
  - accepted professional standards and principles
- Examples of medication errors include, but are not limited to:
  - administering wrong dose or wrong medication
  - failure to "shake-well" if the product is labeled to do so.
  - crushing medications that should not be crushed.
  - administering medications without adequate fluid
  - administering medications without food or an antacid when the manufacturer specifies that food or an antacid be taken with or before the medication.
  - failure to flush the enteral feeding tube with at least 30 ml of preferably warm water before and after medications are administered, unless contraindicated.
  - failure to allow sufficient time for absorption (i.e., approximately 3 to 5 minutes) after each eye drop is instilled.
  - failure to wait the manufacturer's instructed time between puffs when an inhaler is used.
  - administering a medication after meals (pc) when it is ordered to be administered before meals (ac) (or vice versa)

Medication errors and medication reactions are to be reported to the licensed nurse immediately. The licensed nurse will then contact the provider and resident representative. A medication error report is to be completed by the individual noting the error or per facility policy. Should the error be significant, having the potential and/or causing resident harm or requiring extensive monitoring for 24-48 hours, the error is reported by administrative staff to IDOH as an unusual occurrence. The resident is to be kept under observation. Documentation of observed condition must be thorough and changes in

condition reported to the licensed nurse. Staff administering medications should be familiar with medication interactions, reactions, effects, and contraindications.

## Discontinuing Medications

- Facilities set policies for certain medications that dictate how long that medication may be given without a new order. For example:
  - In nursing facilities, all medication orders must be reviewed by the physician every 30 to 60 days.
  - A facility may have an automatic stop order policy for some medications such as antibiotics, controlled substances, and anticoagulants. Refer to facility policy.
- The licensed nurse is responsible for notifying the advanced practice provider/physician when a new order is needed, or an order needs to be discontinued.

## Individual Stop Orders

- A medication may be ordered for a specific time or number of doses such as:
  - Cipro 250 mg po q12h X 10 days
  - Septra 80 mg po q12h X 14 days
- The licensed nurse denotes on the medication administration record when the first and last doses are to be administered.
- Giving an extra dose or giving a dose at the wrong time is considered a medication error.

## Emergency Medications

- Emergency medications:
  - Medications that are ordered one time during an acute episode may be obtained from the EDK (emergency drug kit).
  - Two or three doses of a medication (administered until the advanced practice provider's order written for the same medication is filled by the pharmacy) may be obtained from the EDK.
- A list of the medications available in the emergency drug kit is kept in the medication room and is often attached to the kit itself.
- Emergency medications are inventoried routinely to assure that all items on the emergency medication list are present.
- Many emergency medications are injectable and can only be administered by licensed personnel.
- The licensed nurse must be notified whenever a medication is needed from the EDK due to:
  - the medication must be reordered and replaced.
  - the resident must be charged for the medication.
  - the administration of the medication must be charted.
- **Note:** Refer to facility policy to determine if QMAs may open the EDK.

**Notes:**

## Lesson 31: Documentation

### Student Overview

**Lesson Objectives:**

- Understand the need to document medication administration accurately.
- Understand the need to document objective observations.

**Key Terms:**

Abdominal Distention:

Anorexia:

Anuria:

Aphasia:

Blood Pressure:

Bradycardia:

Bruise:

Chills:

Comatose:

Constipation:

Contracture:

Convulsion:

Cyanosis:

Diarrhea:

Dyskinesia:

Dysphagia:

Dyspnea:

Dysuria:

Edema:

Emaciated:

Emesis:

Excoriation:

Feces:

Fever:

Flushed:

Hemiplegia:

Hives:

Inflammation:

Insomnia:

Jaundice:

Laceration:

Lethargic:

Nausea:

Obese:

Oliguria:

Orthopnea:

Pallor:

Paraplegia:

Petechiae:

Polyuria:

Pressure Ulcer:



Pulse:

Quadriplegia:

Range of Motion:

Rash:

Respiration

Sclera:

Sediment:

Somnolence:

Syncope:

Tachycardia:

Tinnitus:

Tremor:

Turgor:

Vertigo:

Voiding:

## **Lesson 31: Documentation**

### **Introduction**

The chart provides a medical profile of each resident and is admissible as evidence in court. It is very important that documentation be entered accurately and immediately after the administration of any medication.

It is also important that when charting, all staff chart in the same manner (e.g., abbreviations used, frequency, etc). This allows for accurate tracking of the resident's health in that all staff will be consistent in what and how they chart. Refer to facility policy as to facility-specific guidance which may dictate charting frequency and content.

### **Purpose of the Resident's Record (Chart)**

- Provides a total picture of the resident that health care personnel can use to plan and provide care and record the results of care they have given.
- A legal record that is admissible evidence in legal action.
- Used for billing.
- Used to collect statistical data.

### **Content of the Chart**

- Information or data base:
  - History and information collected during physical exams.
  - Laboratory reports.
  - Assessments and evaluations.
- Identification of problems – this information may be found on a problem list or throughout the chart within the advanced practice provider's notes, nurses' notes, care plan, social service notes and therapist notes.
  - Signs and symptoms related to aging and disease.
  - Physical limitations such as paralysis, hearing problems, weakness, incontinence, and aphasia.
  - Behavior problems such as aggression, eating foods not allowed on a restricted diet and refusal to bathe.
  - Social problems such as family disagreements and inability to form relationships.
  - Anticipated problems, such as maladjustment to living in health facility, progressive disease, and potential for skin breakdown.
- Plans for care of the resident:
  - Advanced practice provider's orders – outline the plan of treatment.
  - Resident care plan – outlines the problems/concerns and strengths and assigns care by nursing staff, therapists, dietary department, activities, or social service representatives.
- Progress Notes:
  - Advanced practice provider's progress notes.
  - Regular progress notes by the therapist, social service representative, activity person or dietary supervisor.

- Nurse's notes – may be charted in several different formats; records resident concerns and the results of care given.

## **Legal and Ethical Considerations**

- Charts contain confidential information that is available only to those individuals authorized by the health facility and the resident representative.
- Entries should present an accurate picture of the resident's care.
- Legally, the chart is considered accurate. Every medication given must be charted.
- Your signature on an entry means that you assume responsibility for the entry. You administered the medication and verify that the care was given as charted.
- State law or regulation determines the length of time records must be kept. Refer to facility policy.

## **General Rules the QMA Must Follow When Charting**

- Legibility is very important – write or print to ensure the information you chart can be read easily by others.  
Use ink – the color will be determined by facility policy.
- If using a paper chart, never erase or obliterate an entry – when you make a mistake, draw a single line through the incorrect words, write "error" above them, and initial the entry. If you make a mistake in an electronic medical record (EMR), follow your facility's policy/EMR procedure for correcting that error.
- Chart in time sequence – do not leave blank space or lines between entries.
- Be accurate and concise – be sure the date and time of your entry is correct; list the time on every entry.
- If you use medical terminology, be sure it accurately describes what you observe and use only approved abbreviations. Refer to facility policy, in that most facilities have a list of approved abbreviations.
- Chart what you see, hear, smell or touch (objective information), not what you think or feel (subjective information).
- Chart the resident's response or lack of response to a medication.
- Sign your entry with your complete name and title or your first initial, last name and title (Mary Jones, QMA or M. Jones, QMA). Use the method designated by your facility. QMA students who are completing practicum should sign as above with SMA (Student Medication Aide). Entries made by the SMA must be co-signed by the practicum supervisor or program instructor.

## **Rules of Charting Medications**

- Chart as soon as possible after a medication is administered.
- Every medication given must be charted for the correct resident and include the following information:
  - name and strength of medication.
  - time of administration.
  - dosage administered.
  - route of administration.

- Routine medications are usually charted by entering your initials in the appropriate box on the medication record, and by signing your complete name and title in the appropriate space on the medication administration record. Some facilities may maintain a master signature list in lieu of requiring a full signature on each medication administration record. Refer to facility policy.
- While an SMA, your signature (whether on individual medication administration records or on a master signature list) must be co-signed by the practicum supervisor.
- STAT medications are charted on the medication administration record, the nurse's notes, or both dependent upon facility policy.
- The effects of PRN medication must be charted after an appropriate period of time has elapsed. For example, approximately one hour after a pain medication is administered, observe, and chart the resident's level of pain.
- Chart medication omission and document the reason for omission according to facility policy.
- Medications are charted after they are given, NOT BEFORE.

## **Related Charting**

- Incident report:
  - Always notify the nurse immediately of any incidents, accidents, or unusual occurrences.
  - The QMA or licensed nurse will complete an incident report (or similar document utilized by the facility) if necessary. Refer to facility policy.
  - This form is not a part of the resident's chart, rather is typically forwarded to the Director of Nursing or facility Administrator.
- Controlled substance records:
  - Health facility personnel who are authorized to administer medications are accountable for controlled substances received from the pharmacy.
  - Controlled substance records tracking each dose administered are maintained in the medication room or cart for Schedule II substances.
  - The following information is listed on controlled substance records:
    - name and strength of medication.
    - resident for whom it is prescribed.
    - advanced practice provider's name.
    - prescription number.
    - date and time medication is removed.
    - amount administered.
    - amount remaining.
    - signature of medication personnel.
- Controlled substance count verification:
  - Health facilities require controlled substances (scheduled medications) to be counted every time control of the cart change hands.
  - The individuals who count controlled substances must sign the record and are legally responsible for its accuracy.

## **Administering Medications Appropriately Requires:**

- knowledge of expected medication actions.

- knowledge of possible adverse effects.
- knowledge of facility policies for charting.
- charting accurately and legibly.
- **Note:** If it is not charted and legible, it is not considered done.

## Observations to Chart

Differentiating between observation and interpretation, the QMA must document observations of the resident accurately. For example, to state that a resident "is crying" is an observation, but to document that the resident is "depressed because of his illness" is an interpretation of the crying. If, on the other hand, the resident states that he/she is worried about his diagnosis, this should be quoted directly on the medical record, "I am worried about my cancer." Always record what is seen and heard. Do not draw conclusions or interpret your observations.

Always report deviations from the normal to the staff nurse.

- Vital signs
  - Temperature—chart the following:
    - actual thermometer reading
    - what area of the body was used for measuring the temperature
    - Example: 98.6° degrees Fahrenheit (F) axillary (A), 98.6° F rectal (R), 98.6° F oral (O) and 98.6° tympanic F (T)
  - Pulse—chart the following:
    - Rate per minute
    - regularity
  - Respirations—chart the following:
    - rate of respiration per minute
    - difficulty breathing (dyspnea)
    - difficulty breathing unless sitting (orthopnea)
    - periods of not breathing (apnea)
  - Blood pressure—chart the following:
    - systolic/diastolic reading
    - position of resident when blood pressure is taken (sitting, standing, lying)
    - limb from which blood pressure was taken (left arm, right arm)
    - Example: BP 120/90 right arm – sitting
- General Appearance and Condition
  - Skin color—chart the following:
    - pallor (pale)
    - flushing
    - cyanosis (blue)
    - jaundice (yellow/gold)
  - Skin condition—chart the following:
    - turgor (elasticity)
    - bedsores (decubiti)
    - edema (swelling)
    - rashes/itching

- lacerations
  - bruises
  - burns
  - inflammation/redness
  - dryness/wetness
- Weakness—chart the following:
  - loss of strength
  - general or localized
  - Example: Unequal hand grips. Right hand stronger than left
- Eating habits—chart the following:
  - amount of food eaten
  - any difficulty in swallowing
  - difficulty in feeding self
  - food preferences
  - Example: Resident prefers soft food. Lunch: ate ½ meat, all vegetables, ½ dessert, drank all fluids offered.
- Sleep—chart the following:
  - ability to sleep at night
  - severe drowsiness during the day
  - statements made by the resident about sleep habits
- Weight—chart the following:
  - accurate weight (labeled in lbs. or kilos)
  - denote any device present during obtaining of weight (e.g., wheelchair, prosthesis)
  - report a significant variance to the nurse and re-weigh resident for accuracy per facility policy
- Gastrointestinal Tract:
  - Nausea, vomiting (emesis)—chart the following:
    - color
    - frequency
    - amount of vomitus
    - consistency
    - times of nausea
    - Example: Emesis of 100 mL green, thick liquid, 3:00 a.m.
  - Abdominal distention—chart the following:
    - variation in size of abdomen
    - whether the abdomen is soft, hard, or painful
  - Bowel movement (feces)—chart the following:
    - amount
    - frequency
    - consistency
    - color
    - Example: Resident expelled 100 mL tarry, liquid stool.
  - Mouth and gums—chart the following:
    - bleeding
    - soreness
    - lesions and sores

- ill-fitting dentures
  - Example: Resident c/o soreness on right upper gum. States dentures “need to be adjusted.”
- Respiratory Tract:
  - Respirations (see vital signs)
  - Cough—chart the following:
    - productive or non-productive
    - any difficulty in breathing
    - breath odor—foul, sweet, fruity, alcohol
  - (Example: Resident has productive cough that produces thick, yellow sputum.)
- Genitourinary Tract
  - Urine (voiding)—chart the following:
    - amount
    - color (red, deep brown, pale yellow, dark yellow, amber)
    - concentration (clear, cloudy, concentrated)
    - sediment (blood tinged, mucous strands)
    - pain
    - difficulty in voiding
    - frequency
    - Example: Resident voiding 50 mL concentrated urine every 30 minutes. Slight pain upon urination.
  - Discharge—chart the following:
    - color of any discharge from vagina, urethra, penis, or rectum
    - consistency of any discharge from vagina, urethra, penis, or rectum
    - Example: Thin, clear discharge from vagina.
- Musculoskeletal System—chart the following:
  - Physical activity
    - movements of limbs
    - ability to walk
    - involuntary movements
    - tremors
    - contractures
    - pain, swelling
- Mental and Emotional State
  - State of consciousness—chart the following:
    - alert (awake)
    - oriented (to person, place, or time)
    - lethargic (sluggish)
    - comatose
    - responsive to stimuli
  - Emotional status—chart the following by describing what the resident is doing which might indicate the resident is:
    - apprehensive
    - fearful
    - nervous
    - distressed



- withdrawn
  - happy
  - friendly
  - sad
  - depressed
  - apathetic
- Example: Resident is pacing up and down the hall, wringing his hands and talking to self
  - This is an objective entry describing what is seen rather than the writer drawing his/her own conclusion stating that the resident is "nervous" (which is subjective).
- Nervous System—chart the following:
  - Change in sensation or movement
  - Change in speech-slurring, drooling, tremors or thrusting of the tongue
    - periods of vertigo (dizziness), aphasia, syncope (fainting)
    - convulsions
      - time convulsion occurred
      - part of the body affected
      - type
      - duration
      - injury (if any occurred)
  - Example: 15 second syncopal episode after being outdoors for 30 minutes. Vital signs: BP 80/60, P 120, R 30, T 99° F.
- Pain—chart the following:
  - Time
    - sudden onset
    - gradual onset
  - Area or Location
  - Type
    - steady
    - intermittent
    - sharp
    - dull
    - throbbing
  - severity
    - refer to facility policy for preference for use of pain scale
- Eyes
  - Change in vision—chart resident's statements about vision:
    - blurred
    - double
    - decreased
    - sensitivity to light
    - visual halo
    - inability to see
    - recurrent headaches
  - Example: Resident c/o double vision in right eye. Nurse notified.
- Physical symptoms:
  - drainage

- itching
  - change in pupil size
  - color of sclera
- Ears
  - Changes in hearing—chart statements or descriptions verbalized by the resident:
    - decreased hearing
    - presence of ringing in ear(s)
    - pain/pressure
    - Example: Resident c/o ringing in right ear.
  - Physical signs:
    - drainage
    - itching

**Notes:**

## Scenarios for Practice Documentation

Directions: After reading each scenario, on a separate sheet of paper, draft an entry that you believe should be entered in the medical record.

- I. Mr. Brown has an order for Lanoxin 0.25 mg qd. When you check Mr. Brown's pulse, you find it is 52 beats per minute. What should you do? Document your observation and action taken.
- II. Mr. Haffner has a diagnosis of hypertension and currently has Aldactone 25 mg qd ordered to treat his hypertension. Physician orders state monitor B/P weekly and report systolic over 180 and diastolic over 100. Mr. Haffner's B/P is 200/100 when you obtain his weekly B/P as ordered. What should you do? Document your observations and action taken.
- III. While administering 8 p.m. medications, you discover that Mrs. Woods is not in the facility. The charge nurse informs you that Mrs. Woods is visiting her family and will return at 9 p.m. What should you do? Document your observation and action taken.
- IV. You are working 3-11 shift and are assigned to pass medications. One of your residents, Mrs. Smith, tells you she is tired and has not been sleeping well. She asks you to bring her sleeping medication with her 8 p.m. routine medications. What should you do? Document your observation and action taken.
- V. As you prepare to administer the afternoon dose of Keflex as ordered by the physician to Mr. Jones, he says his stomach has hurt since he took the last dose at 8 a.m. He refuses to take the dose until you find out whether or not his discomfort is caused by the Keflex. What should you do? Document your observation and action taken.
- VI. You are working 3-11 shift and are assigned to pass medications. When you make first rounds, Mr. Young tells you his bowels have not moved for several days. You promise to check his PRN orders and bring him whatever medication the physician has ordered. Records verify that he has not had a bowel movement for three days, so you plan to administer the laxative with Mr. Young's regular bedtime medications. At 7:30 p.m., when you return from supper, the charge nurse tells you Mr. Brown is very agitated. He threw his dinner tray at the dietary worker and refuses to allow anyone into his room until he receives his laxative. The charge nurse advises you to give Mr. Young's PRN Medication for anxiety. You prepare and administer Buspar 20 mg po tid and the laxative Milk of Magnesia 30 cc q3d for constipation. At 8:30 p.m. you return, and Mr. Young is quiet, but his

bowels have not moved. What should you do? Document your observation and action taken. How could Mr. Young's anxiety have been prevented?

- VII. You are working the 3-11 shift and when you count the controlled medication with the off going nurse, you find an error in the count. The container of Codeine 30 mg for Ms. Clark contains 29 tablets, but the controlled substance record states there should be 30 tablets. What should you do?
- VIII. Ms. Jonesburg has a routine order for Colace 100 mg qd. When you are administering the morning medication, Ms. Jonesburg complains of diarrhea. What should you do? Document your observation and action taken.
- IX. Dr. Sunshine arrived at the facility at 5:00 p.m. to examine Mr. Happy. Dr. Sunshine diagnosed the resident with Psoriasis and wrote an order for ointment to be applied to affected areas bid. The charge nurse covering the unit you are assigned has gone to her supper break. What should you do? Document your actions.

## Lesson 32: Positioning Resident for Medication/Treatment Administration

### Student Overview

**Lesson Objectives:**

- Identify the common positions for medication/treatment administration.
- Identify the proper body mechanics for assisting residents to various positions.

**Key Terms:**

Dorsal Recumbent Position:

Fowler's Position:

Lateral Position:

Prone Position:

Semi-Fowler's Position:

Sim's Position:

Supine Position:

## Lesson 32: Positioning Resident for Medication/Treatment Administration

### Introduction

Positioning is the placement and alignment of the resident's body when assisting the resident to sit, lie down, turn or when administering medications. If a resident has difficulty moving, the QMA must change the resident's position before administering certain medications or providing certain treatments.

- Always observe the resident's body alignment. Shoulders should be directly above hips, head, and neck straight, arms and legs in a natural position. Proper positioning and good body alignment:
  - improves physical comfort and general well-being.
  - relieves strain on the resident's body.
  - promotes good blood flow.
  - helps the body function more efficiently.
  - prevents deformities, complications, and pressure sores.
- Frequent position changes prevent:
  - musculoskeletal deformities.
  - development of pressure sores.
  - respiratory complications.
  - decreased circulation.

### Commonly Used Positions

- **Dorsal Recumbent position:** resident is on back with head and shoulders elevated at an angle of 30° or more. Lower extremities are moderately flexed with legs apart and the soles of the feet resting upon the bed.
- Fowler's position: head of bed elevated 45-60 degrees; eases breathing and is comfortable for grooming, oral care and eating, but puts more pressure on the coccyx.
- Lateral position: lying on either right or left side reducing pressure on one side of body.
- Prone position: lying with face down, on stomach; seldom used with the elderly. Likely only used if extensive treatment of decubitus of the coccyx area is necessary.
- Semi-Fowler's position: head elevated 30-45 degrees; eases breathing, puts less pressure on coccyx than sitting up and facilitates swallowing:
  - Decreases the potential for aspiration of gastric secretions when medications are provided orally or enterally.
- Sim's position: a semi-prone position. Resident on left side, right knee and thigh drawn up, left arm along back of resident, chest leaned forward so resident can rest upon it.
- Supine position: flat on back; may be necessary during some procedures including bed making, bed bath and perineal care.

### QMA's Role

- Use good body mechanics. Stand and move in ways that will help you avoid back strain and other types of injury. Good body mechanics will assist you to make the most of your strength and prevent you from tiring easily.

- Stand with your feet as far apart as your shoulders and with one foot a little behind the other. This will create a firm base of support for your body and will make it more balanced and stable.
- Use good posture.
- Keep your back straight and your knees bent.
- Instead of lifting heavy objects, roll, pull or push them whenever possible.
- Avoid twisting your back; turn your whole body in the direction in which you are working.
- If you are not strong enough to accomplish a task yourself, ask for help.
- When you are working with another person to lift and position a resident, remember to move with your partner(s) in order to distribute the resident's weight evenly.
- Keep resident's body in good alignment. Support affected limbs during repositioning. Recheck alignment after the position change.
- Pay special attention to equipment such as oxygen tubing, urinary catheters, and IVs during repositioning.
- Encourage resident to assist with positioning.
- Be patient and never rush the resident with position changes. Speak calmly and reassuringly so that the resident does not feel anxious.
- Be gentle with the resident to prevent pain and injury.
- Position urinary catheter over (not under) the leg to prevent pressure sores.
- Prevent skin tears by never sliding or dragging a resident on the bed.
- Know which positions are best for the resident when administering medications and know how to assist the resident to that position.

### **Common Positions for Medication/Treatment Administration**

- Semi-Fowler's – administration of medications orally or per enteral tube
- Fowler's – administration of medications orally or per enteral tube
- Supine – may be appropriate for some skin treatments
- Prone – may be appropriate for some skin treatments
- Lateral – treatments to areas on buttocks, coccyx, or ankle
- Sim's – insertion of a rectal suppository or instillation of a commercially prepared disposable enema
- Dorsal Recumbent – insertion of a vaginal suppository or vaginal cream

**Notes:**

## Lesson 33: Temperatures Obtained by Oral, Axillary, Aural, Temporal, or Rectal Route Using a Thermometer

### Student Overview

#### Lesson Objectives:

- Demonstrate the proper technique to measure a resident's temperature.

#### Key Terms:

Aural:

Axillary:

Fever:

Oral:

Rectal:



## Lesson 33: Temperatures Obtained by Oral, Axillary, Aural, Temporal, or Rectal Route Using a Thermometer

### Temperature is a Measurement of Heat in the Body

- Temperature is affected by time of day, age, exercise, emotional state, environmental temperature, medication, pregnancy, illness, and menstruation. Normal body temperature is recognized as 98.6° Fahrenheit, oral.
  - Methods used to measure temperature include:
    - Oral (by mouth, placed under tongue) – normal range is 97.6° to 99.6° Fahrenheit.
    - Axillary (placed in the axilla/armpit) – normal range is 96.6° to 98.6° Fahrenheit.
    - Aural/Tympanic (placed in the ear) – normal range is 98.6° to 100.6° Fahrenheit.
    - Rectal (placed in the anus) – normal range is 98.6° to 100.6° Fahrenheit.
    - Temporal (placed on or near the forehead) – normal range is 96.6° to 98.6° Fahrenheit.
- Electronic thermometers are used by many health care facilities. The probe of the electric thermometer is covered with a disposable cover, which is discarded after each use. The temperature is displayed on the screen of the device.
- A tympanic thermometer has a probe that is inserted into the person's ear canal, where the instrument reads the temperature at the eardrum. Earwax may cause inaccurate tympanic temperature readings. Be aware that the probe can cause injury.
- A rectal probe is usually marked with a red dot on the end and an oral probe with a blue dot. Rectal thermometers are never used for oral temperatures.
- Proper technique is important in order to obtain an accurate temperature by any method.
- Watch and report readings out of the normal range, as well as other signs of illness. When obtaining a temperature, remember to protect yourself from body fluids.
- Using a mercury thermometer is not recommended as a safe method of measuring body temperature due to safety and health risks associated with mercury exposure.



An electronic thermometer with a disposable probe cover applied.

- Measuring Body Temperature
  - Body heat is produced when food is used for energy.
  - Heat is lost from the body through breath, urine, feces, and skin.
  - Body temperature normally remains constant, although it is usually slightly lower in the morning and slightly higher in the evening.
  - Normal body temperature is determined by the site of measurement.

- rectum, mouth, axilla, and the ear.
- Fahrenheit (°F) and Celsius (°C) are the two types of temperature measurement systems.
- Temperatures outside the normal ranges should be reported to the nurse promptly.
- A fever is a body temperature 2.4° F higher than the resident's normal baseline temperature.  
A rectal temperature above 100° Fahrenheit is considered a fever.

### **Guidelines for Measuring an Electronic Oral Temperature**

1. Gather the needed supplies and equipment.
2. Turn on the thermometer unit. Ask if the resident has eaten or drank anything within the last 15 minutes. If he or she has, wait 15 minutes, and try again. Food or fluids may cause inaccurate temperature.
3. Apply a disposable probe cover to the thermometer probe.
4. Place the probe under the resident's tongue.
5. Instruct the resident to close his or her mouth around the probe.
6. Hold the probe in place until the machine signals.
7. Correctly read the temperature from the display window of the thermometer unit.
8. Discard the probe cover in a waste container without touching it and return probe to its holder.
9. Turn off the thermometer unit, if applicable.
10. Record the temperature and report any abnormal temperature to the licensed nurse immediately.
11. Return the thermometer unit to storage and to the charger if applicable.

### **Guidelines for Measuring an Electronic Axillary Temperature**

1. Gather the needed supplies and equipment.
2. Turn on the thermometer unit.
3. Remove the resident's arm from his or her gown or clothing and wipe away any moisture from under the arm with a tissue.
4. Apply a disposable probe cover to the thermometer probe.
5. Place the probe of the thermometer in the center of the resident's armpit and fold the resident's arm across the chest to hold the thermometer in place.
6. Hold the probe in place until the machine signals.
7. Correctly read the temperature from the display window of the thermometer unit.
8. Discard the probe cover in a waste container without touching it and return probe to its holder.
9. Assist the resident to rearrange his or her gown or clothing.
10. Turn off the thermometer unit, if applicable.
11. Record the temperature and report any abnormal temperature to the licensed nurse immediately.
12. Return the thermometer unit to storage and to the charger if applicable.

### **Guidelines for Measuring an Electronic Tympanic (Aural) Temperature**

1. Gather the needed supplies and equipment.
2. Turn on the thermometer unit.
3. Apply a disposable probe cover to the thermometer probe.
4. Gently lift the external ear and insert the thermometer probe snugly into the ear canal, directed toward the tympanic membrane (eardrum).

5. Hold the probe in place until the machine signals.
6. Correctly read the temperature from the display window of the thermometer unit.
7. Discard the probe cover in a waste container without touching it.
8. Turn off the thermometer unit, if applicable.
9. Record the temperature and report any abnormal temperature to the licensed nurse immediately.
10. Return the thermometer unit to storage and to the charger if applicable.



### **Guidelines for Measuring a Temporal Temperature**

1. Gather the needed supplies and equipment.
2. Turn on the thermometer unit.
3. Apply a disposable probe cover to the thermometer probe.
4. Place the probe flat on the middle of the forehead.
5. Move the thermometer across the forehead to the hairline.
6. Remove the thermometer.
7. Correctly read the temperature from the display window of the thermometer unit.
8. Discard the probe cover in a waste container without touching it.
9. Turn off the thermometer unit, if applicable.
10. Record the temperature and report any abnormal temperature to the licensed nurse immediately.
11. Return the thermometer unit to storage and to the charger if applicable.

### **Guidelines for Measuring an Electronic Rectal Temperature**

1. Gather the needed supplies and equipment.
2. Turn on the thermometer unit. Check the plan of care to ensure that a rectal temperature is safe for the resident.
3. Apply gloves.
4. Apply a disposable probe cover to the thermometer probe.
5. Place a small amount of lubricating jelly on a tissue and apply lubricant to the end of the probe.
6. Assist the resident onto his or her side with the upper knees bent as far as possible.
7. Expose the resident's buttocks.
8. Lift the upper buttock to visualize the anus, and gently insert the thermometer probe 1 to 1½ inches into the rectum. Cover the buttocks with the bed linen by using the other hand.

9. Hold the probe in place until the machine signals.
10. Correctly read the temperature from the display window of the thermometer unit.
11. Discard the probe cover in a waste container without touching it and return probe to its holder.
12. Wipe the anal area with tissue to remove any excess lubricant or feces. Discard tissue.
13. Remove gloves and discard in a waste container. Wash hands.
14. Turn off the thermometer unit, if applicable.
15. Record the temperature and report any abnormal temperature to the licensed nurse immediately.
16. Return the thermometer unit to storage and to the charger if applicable.

**Notes:**

## Lesson 34: Obtaining the Pulse and Respiratory Rate

### Student Overview

**Lesson Objectives:**

- Identify the commonly used points in the body.
- Accurately demonstrate the obtaining of the pulse and respiratory rate.

**Key Terms:**

Apical Rate:

Brachial Artery:

Carotid:

Radial Pulse:

## Lesson 34: Obtaining the Pulse and Respiratory Rate

### Vital Signs

- Vital signs provide important information about:
  - how the body is functioning.
  - how the resident is responding to treatment.
  - how the resident's condition is changing.
- Pulse rate is the measurement of the number of heart beats per minute.
  - The pulse points most often used are:
    - Carotid – located on either side of the neck and used during CPR.
    - Apical – located on the left side of the chest under the breast and taken with a stethoscope.
    - Radial – located on the thumb side of the wrist and used for standard pulse rate.
    - Brachial – located at the bend of the elbow and used for blood pressure measurement.
- When taking a pulse, note three things:
  - Rate - number of beats per minute (normal rate is 60 to 100 beats per minute).
  - Rhythm – the regularity or skipping of beats.
  - Force - strength or weakness of beats.

### Guidelines for Measuring an Apical Pulse

Counting the pulse by the apical method is more accurate than the radial method, especially if the pulse is irregular. The pulse is usually taken apically for a person less than three years of age or when specific medications are prescribed.

1. Gather the needed supplies and equipment: a watch with a second hand, antiseptic wipes, and a stethoscope.
2. Assist the resident to position with access to his or her chest. Provide a quiet environment (turn down the radio or TV if applicable).
3. Clean the earpieces and diaphragm of the stethoscope with antiseptic wipes.
4. Uncover the left side of the resident's chest but maintain the resident's privacy.
5. Place the earpieces into your ears and the diaphragm on the resident's chest just below the left nipple.
6. Count the heartbeats for one full minute. One complete "lub-dub" sound equals one heartbeat.
7. Clean the earpieces and diaphragm of the stethoscope with antiseptic wipes and return it to storage.
8. Wash your hands.
9. Record the procedure.
10. Report unusual findings to the nurse.

### Measuring a Radial Pulse

1. Gather the needed equipment: a watch with a second hand.
2. Position the resident's hand and arm so the resident is comfortable, and the arm is supported.

3. Place the middle three fingers of your hand on the thumb side of the resident's wrist.
4. Press gently until you feel the pulse. It is often felt directly over the bone.
5. Count the pulse for one minute by watching the second hand on the watch. Some facilities allow the pulse to be counted for 30 seconds and multiplied by two. Always count the pulse for a full minute if it is irregular. A normal pulse is 60-100 beats per minute.
6. Wash your hands.
7. Record the procedure.
8. Report unusual findings to the nurse.



The most common artery used to feel the pulse is the radial artery on the thumb side of the wrist.

- Respiratory rate is the measurement of the number of times a person inhales per minute. Respirations are affected by age, sex, emotional stress, medication, lung disease, heat and cold, heart disease and physical activity. When taking respirations, note three things:
  - Rate – number of respirations per minute (normal rate is 12 to 20 per minute).
  - Rhythm – the regularity or irregularity of breathing.
  - Character – the type of breathing (shallow, deep, labored).
- Special considerations when taking respirations:
  - Count respirations after finishing the pulse, without taking your fingers off the wrist or the stethoscope from the chest so that the resident is unaware you are checking respirations.
  - If resident is agitated; place hand on resident's chest, if possible and feel chest rise and fall during breathing.

### **Guidelines for Measuring Respirations with Other Vital Signs**

1. After the procedure for counting the resident's pulse, do not remove your hand or the stethoscope from the resident. Move from one activity to the next so the resident does not consciously alter his or her respirations due to being watched. If the resident's breathing is shallow, place the resident's arm across his or her chest, which may help you feel the respirations as well as observe them.
2. Count the number of respirations (inspiration plus expiration) for one full minute. Some facilities allow counting the respirations for 30 seconds and multiplying by two. The normal respiratory rate for adults is 12-20 respirations per minute.
3. Wash your hands.
4. Record the procedure.
5. Report unusual findings to the nurse.

### **Guidelines for Measuring Respirations**

1. Gather the needed supplies and equipment: watch with a second hand and a stethoscope.
2. Position the resident so you can visualize his or her chest/respirations.
3. Count the number of respirations (inspiration plus expiration) for one full minute. Some facilities allow counting the respirations for 30 seconds and multiplying by two. The normal respiratory rate for adults is 12-20 respirations per minute.
4. Wash your hands.
5. Record the procedure.
6. Report unusual findings to the nurse.

**Notes:**



# Worksheet

## Lesson 34: Obtaining the Pulse and Respiratory Rate

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Demonstrate each procedure accurately.
2. What is a cold compress used to treat?
3. Could you apply medication during the clean, dry dressing procedure? When?
4. Temperature, pulse, respirations, and blood pressure are also called:
5. Why should you not tell the resident when you are counting his or her respirations?
6. Why would you need to count the apical pulse instead of the radial pulse?
7. What are the normal ranges for each of the vital signs for an adult?
  - a. Temperature
    - Oral:
    - Rectal:
    - Axillary:
    - Tympanic:
  - b. Pulse:
  - c. Respirations:
  - d. Blood pressure:

## Lesson 35: Obtaining the Blood Pressure

### Student Overview

#### Lesson Objectives:

- Identify the normal blood pressure range.
- Accurately demonstrate the obtaining of the blood pressure.

#### Key Terms:

Diaphragm:

Diastolic Pressure:

Hypertension:

Hypotension:

Sphygmomanometer:

Systolic Pressure:

## Lesson 35: Obtaining the Blood Pressure

### Introduction

- Blood pressure is a measurement of the force the blood exerts against the walls of arteries.
  - In addition to the factors affecting vital signs, heredity, diet, condition of vessels and volume of blood in the system affect blood pressure.
    - Abnormally high blood pressure is called hypertension.
    - Abnormally low blood pressure is called hypotension.
- Two measurements are taken for blood pressure readings:
  - Systolic – first beat heard; upper number.
  - Diastolic – last beat heard, lower number.
- To ensure accurate blood pressure readings:
  - Take blood pressure only if the resident is lying or sitting unless otherwise indicated.
  - Correctly apply the proper sized cuff and keep resident's arm at or below the level of the heart.
  - Place diaphragm of the stethoscope over brachial artery and read the sphygmomanometer gauge accurately.

### Obtaining the Reading

1. Clean earpieces and diaphragm of stethoscope with antiseptic wipes.
2. Uncover resident's arm to shoulder.
3. Rest resident's arm, level with heart, palm upward on comfortable surface.
4. Wrap sphygmomanometer cuff around upper unaffected arm approximately 1-2 inches above elbow.



5. Put earpieces of stethoscope in ears.
6. Place diaphragm of stethoscope over brachial artery at elbow.



7. Close valve on bulb. If blood pressure is known, inflate cuff to 20 mm/Hg above the usual reading. If blood pressure is unknown, inflate cuff to 160 mm/Hg.
8. Slowly open the valve on bulb.

9. Monitor gauge and listen for sound of pulse.
10. Note gauge reading at first pulse sound.
11. Note gauge reading when pulse sound disappears.
12. Completely deflate and remove cuff.
13. Accurately record systolic and diastolic readings. Repeat blood pressure measurement if it is highly abnormal to verify accuracy.
14. Wash your hands. Record and report the procedure as required.
15. Report unusual readings to the nurse.

## **Electronic Blood Pressure Devices**

Electronic devices will measure the systolic and diastolic blood pressures and heartrate. Be familiar with your facility's device and how to use it, according to facility policy.

## **Facts to Remember**

- Blood pressure is not to be taken in the arm on the same side of the body of which a mastectomy has been performed or in the same arm in which resident has a dialysis shunt.
- Always be familiar with the resident's normal baseline blood pressure to accurately identify hyper/hypotensive episodes.
- The 4 stages of hypertension
  - Elevated blood pressure levels between 120-129/less than 80 mm Hg.
  - Hypertension stage 1 is 130-139/80-89 mmHg.
  - Hypertension stage 2 is 140/90 mmHg or more.
  - Hypertensive crisis is higher than 180/120 or higher.

**Notes:**

## Lesson 36: Preparing Oral Tablets or Capsules

### Student Overview

#### Lesson Objectives:

- Demonstrate the ability to prepare oral tablets or capsules for administration.

### Introduction

The most common route of medication administration is by mouth (orally). It is the least expensive and most convenient. Many oral medications are absorbed in the small intestine. Oral medications are contraindicated when a resident is vomiting, has an order to be NPO (nothing per oral), is unconscious and/or unable to swallow. For residents who have difficulty swallowing, scored tablets can be broken or tablets can be crushed and placed in ice cream or applesauce (unless contraindicated).

Enteric coated tablets or capsules should not be broken in that the coating is protecting the medicine from being activated by gastric juices. The time of administration of oral medication is significant in relation to the time it takes a medication to react. When the stomach of a resident is empty, medications are more quickly absorbed into the circulation. If a resident consumes an oral medication before a meal, it will act more quickly than if taken after a meal. However, some medications are irritating to the G.I. tract and should be taken after a meal.

### Procedure

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Unlock medication cart.
4. Wash hands or use antiseptic foam/gel.
5. Obtain medicine cup.
6. Read order to determine medication and dosage.
7. Check resident's medication supply.
8. Select ordered medication.
9. Read label (first check).
10. Verify medication label with MAR (second check).
11. Place medication in medication cup. If tablets or capsules are in a bingo card, punch out into the cup. If in a pill bottle, first pour into the cap of the bottle to obtain the correct amount, then proceed to pour from the lid into the medication cup.
12. Read label again (third check).
13. Verify with order again.
14. Return container/card to proper area in cart.
15. Lock medication cart.
16. Perform INITIAL STEPS.
17. Provide water or fluid with oral medication, unless contraindicated.

18. Stay with the resident until all medications are swallowed.
19. Perform FINAL STEPS.

**Notes:**

## Lesson 37: Preparing Liquid Medications

### Student Overview

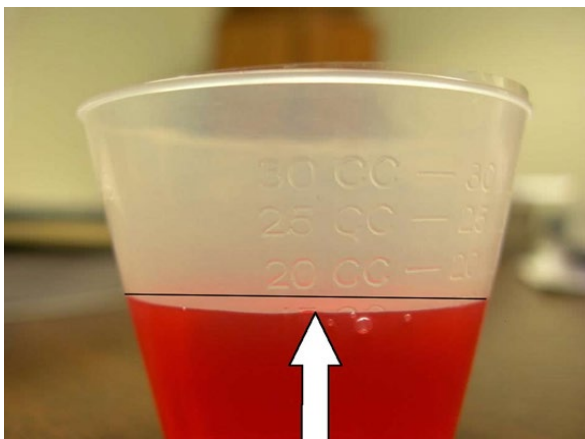
#### Lesson Objectives:

- Demonstrate the ability to accurately pour liquid medications for administration.

### Introduction

Liquid medications are more readily absorbed in the stomach than are tablets or capsules. Some liquids are mixed with a juice to cover a bitter taste. Others may need to be given through a straw to prevent staining the teeth. The unpleasant taste of a liquid medication can be prevented by diluting the medication. Liquid medications are most often utilized to administer via G-tube or J-tube.

Liquid medications are measured into a specially marked cup or spoon held at eye level. Measure liquids to the lowest level of the meniscus. The meniscus is where liquid and air meet. To measure a liquid, your eye should be level with the meniscus for accuracy. When pouring a liquid, keep the palm of the hand over the label to protect the label. Some liquids are measured in a syringe, especially if the dose is five ml or less.



### Procedure

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Unlock medication cart.
4. Wash hands or use antiseptic foam/gel.
5. Read order to determine medication and dosage.
6. Check resident's medication supply.
7. Select ordered liquid medication.
8. Read label (first check).
9. Verify medication label with MAR (second check).

10. Obtain calibrated cup.
11. Place bottle with label against palm.
12. Shake bottle, if needed.
13. Remove cap, placing cap upside down on a clean surface.
14. Hold or place cup at eye level.
15. Place thumb nail at desired dosage.
16. Pour medication into cup.
17. Replace cap.
18. Read label again (third check).
19. Verify with order again.
20. Return container to proper location, wiping away any excess medication with a tissue or cloth so as not to obstruct label.
21. Place cup on cart and view at eye level to ensure accurate dose.
22. Lock medication cart.
23. Perform INITIAL STEPS.
24. Provide water or fluid with oral medication, unless contraindicated.
25. Stay with the resident until all medications are swallowed.
26. Perform FINAL STEPS.

**Notes:**



## Lesson 38: Preparing Powdered Medications

### Lesson Objectives:

- Demonstrate the ability to accurately prepare powdered medications for administration.

### Introduction

Powdered medications are normally mixed with an amount of fluid (water or juice) specified by the provider or manufacturer. Such medications should be administered immediately after mixing.

### Procedure

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Unlock medication cart.
4. Wash hands or use antiseptic foam/gel.
5. Obtain medicine cup or calibrated cup if needed to measure dose.
6. Read order to determine medication and dosage.
7. Check resident's medication supply.
8. Select ordered medication.
9. Read label (first check).
10. Verify medication label with MAR (second check).
11. Remove appropriate amount of medication from container.
12. Read label again (third check).
13. Verify with order again.
14. Return container to proper area in cart.
15. Thoroughly mix powder with appropriate amount of fluid as per provider's order or manufacturer's instruction.
16. Lock medication cart
17. Perform INITIAL STEPS.
18. Provide water or fluid with oral medication, unless contraindicated.
19. Stay with the resident until all medications are swallowed.
20. Perform FINAL STEPS.

### Notes:

## Lesson 39: Crushing Tablets

### Lesson Objectives:

- Demonstrate the ability to crush and prepare medication for administration.

### Introduction

The individual responsible for administration of medications must be knowledgeable of the location of the list of medications which are not to be crushed. There is more than one mechanism for crushing tablets. The following procedure uses a leverage-type crusher.

### Procedure

1. Check for appropriateness before altering form of tablet.
2. Check medication administration record (MAR) to verify order.
3. Check date the order began.
4. Unlock medication cart.
5. Wash hands or use antiseptic foam/gel.
6. Obtain medicine cups.
7. Read order to determine medication and dosage.
8. Check resident's medication supply.
9. Select ordered medication.
10. Read label (first check).
11. Verify medication label with MAR (second check).
12. Obtain a leverage-type crusher.
13. Place medication in medication cup.
14. Cover with another medication cup.
15. Crush tablets.
16. Read label again (third check).
17. Verify with order again.
18. Return container/card to proper area in cart.
19. Lock medication cart.
20. Mix tablets with a small amount of applesauce or ice cream (unless contraindicated) to administer to the resident orally or mix with water if medication is to be administered per G-tube or J-tube.
21. Perform INITIAL STEPS.
22. Provide water or fluid with oral medication, unless contraindicated.
23. Stay with the resident until all medications are swallowed.
24. Perform FINAL STEPS.

### Notes:

## Lesson 40: Altering Capsules

### Lesson Objectives:

- Demonstrate the ability to alter a capsule in preparation for administration.

### Introduction

A capsule is a gelatinous container for powder, liquid, or oil medication. The capsule may be hard or soft and dissolves quickly in the stomach. One must refer to guidance from pharmacy or a medication reference/source to confirm appropriateness prior to altering a capsule.

### Procedure

1. Check for appropriateness before altering a capsule.
2. Check medication administration record (MAR) to verify order.
3. Check date the order began.
4. Unlock medication cart.
5. Wash hands or use antiseptic foam/gel.
6. Obtain medicine cup.
7. Read order to determine medication and dosage.
8. Check resident's medication supply.
9. Select ordered medication.
10. Read label (first check).
11. Verify medication label with MAR (second check).
12. Hold capsule over medication cup.
13. Twist capsule apart, emptying capsule contents into medication cup.
14. Mix contents with a small amount of applesauce or ice cream (unless contraindicated) to administer to the resident orally or mix with water if medication to be administered per G-tube or J-tube.
15. Read label again (third check).
16. Verify with order again.
17. Return container/card to proper area in cart.
18. Lock medication cart.
19. Perform INITIAL STEPS.
20. Provide water or fluid with oral medication, unless contraindicated.
21. Stay with the resident until all medications are swallowed.
22. PERFORM FINAL STEPS.

### Notes:

## Lesson 41: Preparing Controlled Substances for Administration

### Lesson Objectives:

- Demonstrate ability to prepare a controlled substance for administration.

### Introduction

Schedule I, II, III and IV medications must be counted at the beginning and end of each shift or per facility policy. The count is normally conducted with one “off-going” staff member and one “on-coming” staff member. This can be two licensed nurses or one licensed nurse and one QMA. Refer to facility policy regarding facility-specific practices in counting medications.

- These medications must be signed out for each administration with the amount remaining accurately documented.
- A QMA may administer controlled substances if the task has been addressed in the facility’s policy and procedure.
- Should a QMA discover the medication count is wrong or that pills are missing, the QMA must immediately notify the nurse for further investigation.

Administering controlled substances to an individual other than the person for whom they were prescribed is a crime under Indiana law. This offense is referred to as drug diversion. Healthcare workers associated with drug diversion undergo investigation and risk the revocation of licensure/certification as well as being incarcerated if found guilty.

### Procedure

- Check medication administration record (MAR) to verify order.
- Check date the order began.
- Unlock medication cart.
- Wash hands or use antiseptic foam/gel.
- Obtain medicine cup.
- Read order to determine medication and dosage.
- Check resident’s medication supply.
- Select ordered medication.
- Read label (first check).
- Verify medication label with MAR (second check).
- Obtain controlled substance sign out log.
- Compare amount in container with amount listed on sign-out log. If incorrect, notify licensed nurse. If correct, proceed.
- Place medication in medication cup.
- Read label again (third check).

- Verify with order again.
- Record amount of medication removed on sign-out log.
- Return container to locked cabinet.
- Lock medication cart.
- Perform INITIAL STEPS.
- Provide water or fluid with oral medication, unless contraindicated.
- Stay with the resident until all medications are swallowed.
- Perform FINAL STEPS.

**Notes:**

<b>CONTROLLED SUBSTANCE CHART</b>	
<b>Medications</b>	<b>Schedule</b>
Heroin, LSD, peyote, marijuana, mescaline, 3,4-methylenedioxymethamphetamine (ecstasy), methaqualone	<b>Schedule I</b> <ul style="list-style-type: none"> <li>• High abuse potential</li> <li>• No currently accepted medical use</li> </ul>
Opium (morphine), amphetamines, cocaine, short-acting barbiturates (secobarbital), combination products with less than 15 milligrams of hydrocodone per dosage unit (Vicodin), methadone, hydromorphone (Dilaudid), meperidine (Demerol), oxycodone (OxyContin), fentanyl, Dexedrine, Adderall, Glutethimide and Ritalin	<b>Schedule II</b> <ul style="list-style-type: none"> <li>• High abuse potential; potentially severe psychologic or physical dependence</li> <li>• Currently accepted medical use but may be severely restricted</li> <li>• Telephone orders only in emergencies if written Rx follows promptly</li> <li>• No refills</li> </ul>
Products containing less than 90 milligrams of codeine per dosage unit (Tylenol with codeine), ketamine, anabolic steroids, phendimetrazine	<b>Schedule III</b> <ul style="list-style-type: none"> <li>• Abuse potential less than the drugs/ substances in Schedules I and II; potentially moderate or low physical dependence or high psychologic dependence</li> <li>• Currently accepted medical use</li> <li>• Telephone orders permitted</li> <li>• Prescriber may authorize limited refills</li> </ul>

<p>chlordiazepoxide, diazepam (Valium), meprobamate, phenobarbital, Xanax, Ativan, Ambien</p>	<p><b>Schedule IV</b></p> <ul style="list-style-type: none"> <li>• Low abuse potential relative to drugs/ substances in Schedule III; potentially limited physical or psychologic dependence</li> <li>• Currently accepted medical use</li> <li>• Telephone orders permitted</li> <li>• Prescriber may authorize limited refills.</li> </ul>
<p>Antidiarrheals with opium, antitussives, some examples are cough preparations with less than 200 milligrams of codeine or per 100 milliliters (Robitussin AC), Lomotil, Motofen, Lyrica, Parepectolin</p>	<p><b>Schedule V</b></p> <ul style="list-style-type: none"> <li>• Lowest abuse potential; potentially very limited physical or psychologic dependence</li> <li>• Currently accepted medical use</li> <li>• Prescriber determines refills</li> <li>• Some products containing limited amounts of Schedule V substances (e.g., cough suppressants) available OTC to individuals &gt; 18 yr.</li> </ul>

# NARCOTIC ADMINISTRATION RECORD

RESIDENT'S NAME		PHYSICIAN	
NARCOTIC	DOSAGE	RX NUMBER	QUANTITY DISPENSED
DATE RECEIVED	AMOUNT RECEIVED		RECEIVED BY
			#1
			#2

[illegible]

## RECORD OF WASTE OR DESTRUCTION

[illegible]

## Lesson 42: Counting Controlled Substances and Responding to Errors in a Controlled substance Count

### Student Overview

#### Lesson Objectives:

- Demonstrate the ability to count controlled substances with a partner to verify accuracy of the logs/sheets.
- Demonstrate knowledge of correct response should an error be discovered in the controlled substance count.

### Introduction

- Always participate in the counting of the controlled substances at the beginning and ending of your shift. Never say, "go ahead without me and I'll sign." Never leave it to someone else's discretion when you are the QMA on duty. If you do not observe the medications that you sign as being present, you may be implicated if the medications observed are later missing.
- Always note the integrity of any liquid form of controlled substance to ensure that the bottle has NOT been tampered with nor that the solution appears diluted in any manner.
- When observing the cards of medication, make certain and visually scan the entire card for any medications that may be popped out, out of order. If you look only at the last number and compare to the count sheet, you may overlook a pill in another column that has been popped out and is now missing, yet the count appears accurate. Also, look at the back of each card to ensure the card has not been tampered with. Be observant for use of tape to cover an area where a pill has been popped out, replaced with another type of pill, and then re-taped for closure.

Never sign as a witness to the destruction of medications if you did not visibly witness the destruction. Never take someone's "word" for it or "trust" that another individual carried out the destruction in your absence. If you do so and medications are later missing, it is "your word against theirs".

### Procedure for Counting Controlled Substance

1. Obtain sign-out records/logs and keys to controlled substance storage compartment.
2. Request partner to assist to count.
3. Wash hands or use antiseptic foam/gel.
4. Unlock medication cart.
5. Select container and read label.
6. State medication name and strength.
7. Count the number of doses remaining.
8. Observe number of spaces for medication to ensure no medications have been punched out of sequence thus altering the count.
9. If medications are on a card, observe the integrity of the card to make certain it has not been tampered with.



10. Observe the appearance of the pills to identify if they are correct and ensure there has been no tampering or substitution of medications.
11. Determine amount of liquid medication, if appropriate.
12. Verbally state medication count to person with sign-out record.
13. Listen while partner verifies count.
14. Return container to proper location.
15. Repeat steps 5-14 for each controlled substance.
16. Sign name, time, and date of completed count.
17. Lock medication area.
18. Return sign-out record/log to proper location.
19. Return keys to appropriate person.

### **Procedure for Responding to Errors in a Controlled Substance Count**

1. Obtain sign-out records/logs and keys to controlled substance storage compartment.
2. Request partner to assist to count.
3. Wash hands or use antiseptic foam/gel.
4. Unlock medication cart.
5. Select container and read label.
6. State medication name and strength.
7. Count the number of doses remaining.
8. Observe number of spaces for medication to ensure no medications have been punched out of sequence thus altering the count.
9. If medications are on a card, observe the integrity of the card to make certain it has not been tampered with.
10. Observe the appearance of the pills to identify if they are correct and ensure there has been no tampering or substitution of medications.
11. Determine amount of liquid medication, if appropriate.
12. Verbally state medication count to person with sign-out record.
13. Listen while partner verifies count.
14. Repeat count if count and sign-out sheets disagree.
15. Recount medication.
16. Verbally state second count to person with sign-out sheet.
17. Recount medication, reversing roles, if necessary.
18. Give the third count to person with sign-out sheet.
19. If count and sign-out sheet still disagree, check sign-out sheet entries to detect a prior error in recording or count.
20. Check residents' medication records and nurse's notes for doses that might have been given and not recorded.
21. Question personnel responsible for administration.
22. Enter correct count as of this time.
23. Lock medication area.
24. Return sign-out record to proper location.
25. Return keys to appropriate person.
26. Report incorrect count to nurse or administrative staff present.

**Notes:**

## Lesson 43: Applying Lotion, Liniment, Ointment, or Cream

### Student Overview

#### Lesson Objectives:

- Demonstrate ability to correctly apply lotion, liniment, ointment, or cream as ordered by the provider.

### Introduction

Although the oral route of administering medications is the most common, in some instances, it is not the most effective. In the case of skin irritations, diseases of the skin, or the need for medication to tissues just below the skin, the best method of administration may be that of applying the medications directly to the surface of the skin, topically.

### Procedure

1. Check treatment administration record (TAR) to verify order.
2. Check date the order began.
3. Unlock medication/treatment cart.
4. Wash hands or use alcohol-based hand rub (ABHR).
5. Obtain correct medication.
6. Read label (first check).
7. Check medication label with TAR, noting dosage and location to be treated (second check).
8. Lock medication/treatment cart.
9. Obtain necessary supplies, including sterile gauze, cotton balls, Q-tips or tongue blade (based upon area to be treated and consistency of medication to be applied) and disposable gloves.
10. Read medication label again (third check) prior to proceeding to resident room.
11. Perform INITIAL STEPS.
12. Position resident.
13. Drape resident, exposing only the area to be treated.
14. Remove old bandage or dressing, if present.
15. Open container of medication.
16. Place cap upside down on clean surface.
17. Open sterile gauze, cotton balls, Q-tips, or tongue blade.
18. Put on disposable glove(s).
19. Pour, squeeze or scoop medication on gauze square, cotton balls, Q-tips, or tongue blade. Apply lotions with a gloved hand. Apply ointments with a cotton swab or tongue depressor.
20. Swab or pat medication on affected area, observing for any signs/symptoms which should be reported to the nurse.
21. Continue until affected area has been treated, only exposing limited areas at a time if a large area of the body is being treated.
22. Reposition drape as necessary.

23. Discard soiled items.
24. Remove glove turning glove inside out as you remove it, and discard.
25. Replace lid on medication.
26. Redress wound, if necessary.
27. Perform FINAL STEPS.
28. Return medication to locked cart.

**Notes:**

## Lesson 44: Applying a Transdermal Patch

### Student Overview

#### Lesson Objectives:

- Demonstrate ability to correctly remove and apply a transdermal patch.

### Introduction

- A transdermal patch provides continuous controlled release of medication through the skin into the systemic circulation.
- Use a different application site every time. Possible sites include the upper right or left arm, upper right or left chest or upper right or left back. It is recommended to document the "site" or location of patch application to ensure knowledge of location and removal prior to application of a new patch.
- If a patch is in place, gently lift and slowly peel away from skin. Skin may appear warm and red. Remove traces of adhesive with mineral oil or lotion if needed. The resident is allowed to shower with a patch in place.
- Refer to the facility policy addressing disposal of patches. Some facilities require the patches to be cut up and flushed as a means of disposal, while others may direct to dispose of the patch by folding and inserting in the biohazardous sharps container.
- The presence of the patch and integrity of the patch should be monitored frequently to ensure there have been no attempts of drug diversion by removal of patch in its entirety, poking holes in the patch to squeeze out the narcotic medication, etc. If it is suspected that the patch has been tampered with, the same must be reported to the nurse immediately.

### Procedure

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Unlock medication/treatment cart.
4. Wash hands or use alcohol-based hand rub (ABHR).
5. Obtain correct medication.
6. Read label (first check).
7. Check medication label with MAR, noting dosage (second check).
8. Obtain transdermal patch, signing out on appropriate log if the patch contains a controlled substance.
9. Lock medication/treatment cart.
10. Obtain an alcohol wipe.
11. Read medication label again (third check) prior to proceeding to resident room.
12. Perform INITIAL STEPS.
13. Locate and remove existing patch, paying particular attention to patches containing a controlled substance, and discarding per facility policy.

14. Choose an area for the patch; select a reasonably hair-free area avoiding skin folds, scar tissue or irritated areas. Rotate the patch administration site so it does not irritate the skin unless the order indicates a specific site.
15. Position resident to expose area.
16. Drape resident, if necessary.
17. Use an alcohol sponge to clean area.
18. Open package containing patch. Label patch with date, time, and your initials.
19. Remove protective backing from patch.
20. Place exposed adhesive side on skin site.
21. Press firmly with palm of hand.
22. Maintain pressure for 10 to 15 seconds.
23. Press outer edges to ensure adhesion. Once the patch is in place, do not lift or reposition.
24. Replace resident's clothing.
25. Perform FINAL STEPS.

**Notes:**

## Lesson 45: Instilling Eyedrops and Instilling Ophthalmic Ointment

### Student Overview

#### Lesson Objectives:

- Demonstrate the ability to correctly instill eyedrops as ordered by the provider.
- Demonstrate the ability to correctly instill ophthalmic ointment as ordered by the provider.

### Introduction

Medications are sometimes used on or near the surface of the eye for residents who have eye disorders. This process is referred to as “instilling” eye medications. Different types and forms of medications may require different methods of instillation. Accuracy in preparation and administration is essential if the resident is to receive the desired effect.

The eye is one of the most sensitive areas of the body and instillation of eye medication can be difficult. Medical asepsis must be maintained.

### Procedure for Instilling Eyedrops

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Unlock medication/treatment cart.
4. Wash hands or use alcohol-based hand rub (ABHR).
5. Obtain correct medication.
6. Read label (first check).
7. Check medication label with MAR (second check).
8. Lock medication/treatment cart.
9. Obtain necessary supplies.
10. Read medication label again (third check) prior to proceeding to resident room.
11. Perform INITIAL STEPS.
12. Position the resident with head tilted back.
13. If bottle has separate dropper, draw required amount of solution into dropper holding dropper upright. If self-contained unit, invert bottle.
14. Pull down lower lid to form pouch using a gauze square or tissue.
15. Ask resident to look up.
16. Hold dropper in other hand.
17. Rest hand with dropper on resident's forehead.
18. Instill correct amount of medication inside lower eyelid close to outer corner of eye, not allowing dropper to touch any part of the eye.
19. Instruct the resident to close the eye and to move it to help distribute the solution. The resident should not rub or squeeze the eye shut.

20. Press on the inner corner of the eye for about 30 seconds to slow drainage of the medication, which prevents the medication from going into the tear duct and being absorbed by the body, minimizing adverse systemic effects.
21. Wipe away excess.
22. Recap bottle.
23. Perform FINAL STEPS.
24. Return medication to locked cart.

**Note:** When two or more different eyedrops must be administered at the same time, allow a 5-minute period between each.



### **Procedure for Instilling Ophthalmic Ointment**

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Unlock medication/treatment cart.
4. Wash hands or use alcohol-based hand rub (ABHR).
5. Obtain correct medication.
6. Read label (first check).
7. Check medication label with MAR (second check).
8. Lock medication/treatment cart.
9. Obtain necessary supplies.
10. Read medication label again (third check) prior to proceeding to resident room.
11. Perform INITIAL STEPS.
12. Position the resident with head tilted back.
13. Moisten gauze with saline solution.
14. Cleanse eyelid and lashes with gauze from inner canthus to outer eye.
15. Remove cap from ointment tube and place it on a clean, dry surface.
16. Pull down lower eyelid to form a pouch.
17. Ask resident to look up.
18. Apply a thin line of ointment into the pouch without allowing the container to touch the eye.
19. Ask the resident to close eye, to roll eyeball, and to refrain from blinking.
20. Wipe off excess ointment with gauze or tissue.
21. Inform resident that vision will be blurred.
22. Replace cap on tube.
23. Perform FINAL STEPS.
24. Return medication to locked cart.



**Notes:**

## Lesson 46: Instilling Eardrops

### Student Overview

#### Lesson Objectives:

- Demonstrate the ability to correctly instill eardrops as ordered by the provider.

### Introduction

If a resident is treated with medication for an ear disorder, the medication might be given by injection, orally or placed directly into the external ear canal (ear instillation). Instilling ear medications is not difficult, but the basic steps and correct placement of the medication are essential to attain the best possible benefits. Eardrops must be warmed to room temperature, as cold drops may cause pain and dizziness.

### Procedure

- Check medication administration record (MAR) to verify order.
- Check date the order began.
- Unlock medication/treatment cart.
- Wash hands or use alcohol-based hand rub (ABHR).
- Obtain correct medication.
- Read label (first check).
- Check medication label with MAR (second check).
- Lock medication/treatment cart.
- Obtain necessary supplies.
- Read medication label again (third check) prior to proceeding to resident room.
- Perform INITIAL STEPS.
- Position the resident lying on side with head turned so affected ear is facing up.
- Draw up prescribed amount of medication into medicine dropper.
- Straighten the ear canal by gently pulling the ear lobe up and backward.
- Position tip of ear dropper without touching the tip with any ear surface.
- Instill prescribed amount of medication.
- Return dropper to medicine bottle, replacing lid promptly. Do not rinse the dropper after use.
- Place cotton ball in front of opening to ear canal, if needed, to prevent excessive leakage of medication.
- Wipe away excess medication.
- Instruct resident to remain in position approximately 5 minutes with affected ear upward.
- Perform FINAL STEPS.
- Return medication to locked cart.



**Notes:**

# Lesson 47: Instilling Nasal Drops and Instilling Nasal Medication Utilizing an Atomizer

## Student Overview

### Lesson Objectives:

- Demonstrate the ability to correctly instill nasal drops utilizing a medicine dropper.
- Demonstrate the ability to correctly instill nasal medication as ordered by the provider utilizing an atomizer.

## Introduction

Disorders of the nose or sinus cavities are frequently treated with medication. Some medications to treat nasal and sinus conditions may be given orally, some by injection, yet others are placed directly on the surface of the nasal passageway (nasal instillation) and allowed to penetrate to the area where it is needed. The basic methods used to instill the medication are not difficult to learn but are necessary to know to ensure the resident can obtain the proper benefits from the medication. Nasal medication may be instilled utilizing a medicine dropper or utilizing an atomizer. An atomizer is a device used to shoot a fine spray of medicine into the nasal passageways. While the following are general procedures, always refer to the manufacturer's instructions for specific guidance.

## Procedure for Instilling Nasal Drops (Dropper)

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Unlock medication/treatment cart.
4. Wash hands or use alcohol-based hand rub (ABHR).
5. Obtain correct medication.
6. Read label (first check).
7. Check medication label with MAR (second check).
8. Lock medication/treatment cart.
9. Read medication label again (third check) prior to proceeding to resident room.
10. Perform INITIAL STEPS.
11. Ask resident to gently blow nose.
12. Position resident properly. If in sitting position, tilt head back slightly or if supine, tilt head back in a slightly hyper extended position (it may be necessary to place a pillow or rolled towel under the resident's neck).
13. If using a separate dropper, draw required amount of solution into dropper holding dropper upright. If self-contained unit, invert bottle.
14. Stabilize resident's forehead with palm of nondominant hand and gently lift nose open.
15. Without touching resident's nose or skin with dropper hold dropper about ¼ to ½ inch above nares and tilt tip of dropper toward nasal septum (center of nose).
16. Squeeze top of dropper and deliver the appropriate number of drops.

17. Instruct resident to take one short, deep breath and to remain in position for 3 to 5 minutes.
18. Replace dropper in bottle.
19. Wipe any excess or drainage immediately.
20. Repeat procedure with the other nostril, if ordered.
21. Give tissue for wiping excess leakage of medication.
22. Perform FINAL STEPS.
23. Return medication to locked cart.

### **Procedures for Instilling Nasal Medication Utilizing an Atomizer**

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Unlock medication/treatment cart.
4. Wash hands or use alcohol-based hand rub (ABHR).
5. Obtain correct medication.
6. Read label (first check).
7. Check medication label with MAR (second check).
8. Lock medication/treatment cart.
9. Read medication label again (third check) prior to proceeding to resident room.
10. Perform INITIAL STEPS.
11. Prepare nasal spray pump. The very first time the spray is used, prime the pump by pressing down repeatedly until a fine spray appears.
12. Ask resident to gently blow nose.
13. Ask resident to hold head in an upright position, slightly forward.
14. Insert atomizer into designated nostril.
15. Point tip toward back and outer side of nose.
16. Gently close the other nostril.
17. Hold medication container in position.
18. Compress container quickly and forcefully to administer the prescribed amount of medication.
19. Ask resident to breathe gently inward through the nostril, then breathe out through the mouth.
20. Repeat procedure with the other nostril, if ordered.
21. Remove unit from nose and ask resident to bend head backward.
22. Position resident and give tissue for wiping excess leakage of medication.
23. Wipe the nasal applicator with a clean tissue and replace bottle cap.
24. Perform FINAL STEPS.
25. Return medication to locked cart.

**Notes:**

## Lesson 48: Inserting a Vaginal Suppository and Administering a Vaginal Cream

### Student Overview

#### Lesson Objectives:

- Demonstrate the ability to correctly insert a vaginal suppository as ordered by the provider.
- Demonstrate the ability to correctly administer a vaginal cream as ordered by the provider.

### Introduction

There are times when a semi-solid material that melts readily at body temperature is placed (inserted) into a body cavity. The melting releases the medication, and the medication can be used for the local area or absorbed and taken where needed by the bloodstream.

Medications that are inserted into body cavities and melt at body temperature are called suppositories. The vaginal cavity and the rectal cavity are the two main areas where suppositories are inserted. The method of insertion for each is quite similar but there are some differences.

A vaginal cream may be ordered to deliver medication for absorption through vaginal membranes for conditions such as infection or inflammation.

### Procedure for Inserting a Vaginal Suppository

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Wash hands or use alcohol-based hand rub (ABHR).
4. Obtain correct medication from the medication room refrigerator.
5. Read label (first check).
6. Check medication label with MAR (second check).
7. Obtain necessary supplies.
8. Read medication label again (third check) prior to proceeding to resident room.
9. Perform INITIAL STEPS.
10. Adjust bed to a working height.
11. Cover resident with bath blanket.
12. Assist the resident to the dorsal recumbent position.
13. Drape the resident.
14. Place bed protector under buttocks.
15. Prepare medication.
16. Remove cap from lubricant, placing cap upside down on a clean surface.
17. Put on disposable examination glove.
18. Place suppository in gloved hand.
19. Hold base of suppository with tip exposed one-half inch.

20. Pass exposed tip through lubricant.
21. Lift drape with ungloved hand.
22. Spread labia if vagina is not easily visible and gently insert suppository into vaginal opening with finger of gloved hand.
23. Push the suppository upward into the vagina approximately 2 ½-3 inches.
24. Gently withdraw the insertion finger.
25. Hold or ask resident to hold legs together.
26. Continue until resident indicates urge to expel is gone.
27. Instruct resident to remain in flat position for 15-20 minutes.
28. Remove examination glove and discard.
29. Remove bed protector.
30. Perform FINAL STEPS.

### **Procedure for Administering a Vaginal Cream**

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Unlock medication/treatment cart.
4. Wash hands or use alcohol-based hand rub (ABHR).
5. Obtain correct medication from the medication/treatment cart.
6. Read label (first check).
7. Check medication label with MAR (second check).
8. Lock medication/treatment cart.
9. Obtain necessary supplies.
10. Read medication label again (third check) prior to proceeding to resident room.
11. Perform INITIAL STEPS.
12. Adjust bed to a working height.
13. Cover resident with bath blanket.
14. Assist the resident to the dorsal recumbent position.
15. Drape the resident.
16. Place bed protector under buttocks.
17. Put on disposable examination glove.
18. Place small amount of lubricant on paper towel.
19. Remove cap of medication, placing cap upside down on a clean surface.
20. Screw nozzle end of medication applicator on tube of medication.
21. Squeeze tube to force medication into the applicator.
22. Unscrew applicator from the tube of medication and attach plunger to applicator.
23. Lightly coat tip of applicator with lubricant.
24. Spread labia if vagina is not easily visible and locate the vaginal opening with one hand.
25. Insert the applicator barrel 2 ½-3 inches into the vagina.
26. Press plunger in completely.
27. Remove applicator.
28. Clean excess lubricant from resident.
29. Remove examination glove and discard.
30. Remove bed protector from under resident.
31. Ask resident to remain in bed for 15-20 minutes.

32. A sanitary pad can be placed to contain discharge.
33. Wash applicator.
34. Store applicator.
35. Perform FINAL STEPS.
36. Return medication to locked cart.

**Notes:**



## Lesson 49: Inserting a Rectal Suppository

### Student Overview

#### Lesson Objectives:

- Demonstrate the ability to correctly insert a rectal suppository as ordered by the provider.

### Introduction

Medications in the form of suppositories, creams or ointments can be given through the rectal route if the resident is unconscious or unable to swallow. Absorption of medication from rectal suppositories is unpredictable and may produce higher levels of the medication in the bloodstream.

### Procedure

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Wash hands or use alcohol-based hand rub (ABHR).
4. Obtain correct medication from the medication room refrigerator.
5. Read label (first check).
6. Check medication label with MAR (second check).
7. Obtain necessary supplies.
8. Read medication label again (third check) prior to proceeding to resident room.
9. Perform INITIAL STEPS.
10. Adjust bed to a working height.
11. Cover resident with bath blanket.
12. Assist the resident to the Sim's position.
13. Drape the resident.
14. Place bed protector under buttocks.
15. Prepare medication.
16. Remove cap from lubricant, placing cap upside down on a clean surface.
17. Squeeze small amount on paper towel.
18. Put on disposable examination glove.
19. Place suppository in gloved hand.
20. Hold base of suppository with tip exposed one-half inch.
21. Pass exposed tip through lubricant.
22. Lift drape with ungloved hand.
23. Raise upper buttock and instruct resident to take slow deep breaths.
24. Hold the suppository between the thumb, index, and middle fingers, then gently insert suppository into anal sphincter with index finger of gloved hand.
25. Push the suppository upward into the rectum until closure of anal sphincter is felt.
26. Gently withdraw the insertion finger.
27. Hold buttocks together or instruct the resident to squeeze buttocks together.

28. Ask resident to breathe deeply until the urge to expel is gone.
29. Instruct resident to remain in position for 15-20 minutes.
30. Remove examination glove and discard.
31. Ensure bedpan is available.
32. Chart, color, amount, and consistency of bowel movement when it occurs.
33. Perform FINAL STEPS.

**Notes:**

## **ROUTES FOR ADMINISTERING MEDICATIONS**

<b>Route</b>	<b>How Medication is Administered</b>	<b>Term Used to Describe Route</b>
<b>Mouth</b>	Resident swallows the medication	Oral Administration (P.O) per os
<b>Respiratory tract</b>	Resident inhales the medication	Inhalation (puffs)
<b>Injection (to be administered by a licensed nurse)</b>	Injection of medication into: <ol style="list-style-type: none"> <li>1. Subcutaneous tissue</li> <li>2. Muscle tissue</li> <li>3. Under epidermis</li> <li>4. Vein</li> </ol>	Hypodermic or subcutaneous injection (S.C. or S.Q.)  Intramuscular injection (I.M.)  Intradermal Injection (I.D.)  Intravenous Injection (I.V.)
<b>Placing on skin or mucous membrane</b>	Inserting medication into: <ol style="list-style-type: none"> <li>1. Vagina</li> <li>2. Rectum</li> <li>3. Eye</li> <li>4. Ear</li> <li>5. Nose</li> </ol> Medication is placed under tongue  Medication is placed between teeth and mucous membrane of the cheek  Medication is placed on the skin  Medication is rubbed into the skin  Medication is placed in direct contact with the mucous membrane.  Area is flushed with medication  Medication patch is applied to the skin	Vaginal administration Rectal administration (suppository, supp) Eye instillation (ophth, os, ou, od) Ear instillation (aural, otic) Nasal instillation  Sublingual administration (S.L.)  Buccal  Topical application  Inunction  Instillation  Irrigation  Transdermal patch

## Lesson 50: Observing and Reporting to the Licensed Nurse

### Student Overview

**Lesson Objectives:**

- Exhibit understanding of the process of gathering information using all senses.
- Exhibit necessity of reporting information gathered to the nurse.

**Key Terms:**

Objective Observation:

Subjective Observation:

## Lesson 50: Observing and Reporting to the Licensed Nurse

### Introduction

Observing and reporting is the most important way the QMA assists the nurse and other members of the health care team:

- Observing is the gathering of information about a resident using senses and feelings:
  - Objective observation includes data available through the senses.
    - Sight – rash, swelling, diarrhea, skin color change.
    - Sound – cough, irregular heartbeat, moans of pain.
    - Smell – foul odor from a wound, bad breath, unusual odors from urination or defecation.
    - Touch – fever, change in pulse, swelling or lump under the skin.
  - Subjective observation includes information based on personal feelings or opinions (example: “Resident has a cold” rather than “Resident is coughing, sneezing, and his nose is running.”) and reported by a resident about how he/she feels or what he/she is experiencing. (Statements such as “I’m tired,” “I’m dizzy,” “My ears are ringing.”)
- Accurate observations include detailed information.
- Observations that indicate an acute condition requiring immediate attention from the nurse include but are not limited to:
  - severe pain
  - increased anxiety
  - increased mood swings
  - fall or accident
  - increased confusion
  - worsening depression
  - foul odor
  - seizures
  - swelling
  - skin tears
  - difficulty breathing
  - signs/symptoms of shock
  - any sudden change in condition
  - newly observed open area
  - loss of consciousness
- Reporting means verbally informing the person in authority (the nurse) about resident care and what was observed.
  - Telling another QMA or a CNA about an observation is not reporting.
- Report should include the resident’s name, room and bed number and a detailed description of the observation. Reporting may be:
  - objective: stating what is seen, smelled, heard, or felt.
  - subjective: stating what cannot be observed but is reported by the resident.
- Reporting is conducted at the end of each shift. Routine information is not of immediate importance. Include information about the resident and the care given. Before reporting, ask yourself:

- "Did I meet each resident's needs and administer all ordered medications and treatments?"
- "Was there anything new or changed?"
- "Is there any condition or concern that warrants continued monitoring?"
- Immediate reporting to the licensed nurse must occur at the time an observation of resident or facility concern is made and includes but is not limited to:
  - dangerous situations (e.g., loose handrails, broken equipment, medication errors)
  - unusual observations (e.g., elevated temperature, skin changes-especially any red or open areas).
  - unusual incidents (e.g., falls, signs of or suspicions of abuse).
  - resident complaints of ill health (e.g., dizziness, pain, nausea, vomiting, diarrhea, etc.).

## **Documentation is the Written Account of a Resident's Condition**

- Documentation can include charts, worksheets, and facility records. Documentation is considered a permanent legal record of the resident's condition and the care given.
- The QMA is legally responsible for recording complete and accurate details of the care given.
- If it isn't documented, legally it wasn't done.
- Guidelines for documentation:
  - Resident's name must be on each page before anything else is documented.
  - Medical records may be electronic or paper. Documentation may be typed (electronic medical record) or written (paper medical record). All written entries must be in ink – not pencil or felt tip and must be neat and legible.
  - Make certain all entries are accurate. Use quotation marks when reporting what the resident said. Document only what you observe and perform.
  - Documentation must be in chronological order.
  - Never document before a procedure is completed. If a medication was not given, document the reason why.
  - Do not leave spaces or skip lines between entries to prevent altering of the document.
  - Use standard medical terminology and standard (or facility approved) abbreviations.
  - Time and date all entries, and sign with your name and title.
  - Document vital signs prior to the administration of medication that could affect or change the resident's vital signs.
  - Document in the resident record any symptoms indicating the need for a PRN medication and the time the symptoms occurred.
  - Document in the resident record that the facility's licensed nurse was contacted, symptoms were described, and permission was granted to administer PRN medication, including the time of the contact.
- Guidelines for correcting documentation:
  - Draw a single line through error. What was written should remain readable. Never use correction fluid.
  - Print word "error". Initial and date the correction.

## The QMA's Role

- Use your senses to observe physical changes.
- Use your active listening skills to observe any changes that the resident may voice that they are experiencing.
- Report any unusual findings to the nurse immediately.
- Always document according to facility policy.

**Notes:**

## Initial Steps

STEP	RATIONALE
1. Obtain information from the licensed facility nurse about the resident's needs, abilities, limitations and known allergies. 2. Gather supplies and equipment. 3. Knock on resident's door.  4. Identify resident. 5. Identify self. 6. Explain procedure to the resident. 7. Wash your hands or use alcohol-based hand rub (ABHR). 8. Wear gloves to maintain Standard Precautions as necessary. Don appropriate PPE as required if the resident is in isolation.	1. Provides information that is crucial to the administration of medication and performance of procedures.  3. Provides for resident right to privacy and dignity. 4. Assures the correct identity of the resident.  6. Encourages resident to participate in care. 7. Prevents the spread of infection.  8. Prevents the spread of infection.

## Final Steps

STEP	RATIONALE
<ol style="list-style-type: none"> <li>1. Observe resident for any immediate reaction to medication or procedure.</li> <li>2. Assure the resident is in a comfortable position.</li> <li>3. Make certain call light is within resident's reach.</li> <li>4. Inquire of resident's immediate needs.</li> <li>5. Remove supplies and discard medication cups/disposable supplies.</li> <li>6. Perform a visual safety check of resident and environment.</li> <li>7. Thank resident for cooperating.</li> <li>8. Remove gloves/PPE if applicable.</li> <li>9. Wash your hands or use alcohol-based hand rub (ABHR).</li> <li>10. Document medication administration/ procedure.</li> <li>11. Report any abnormalities to the licensed nurse.</li> </ol>	<ol style="list-style-type: none"> <li>2. Reduces stress and improves resident's sense of well-being.</li> <li>3. Allows resident to communicate with staff as necessary.</li> <li>4. Encourages resident to express needs.</li> <li>5. Facilities have different methods of disposal and sanitation. Follow the policies of the facility for disposal of soiled supplies and sanitation of reusable items.</li> <li>6. Prevents injury to you and resident.</li> <li>7. Demonstrates respect toward the resident.</li> <li>8. Provides for infection control.</li> <li>9. Maintains Standard Precautions.</li> <li>10. What the QMA documents is a legal record of the care provided, medication administered, or treatment performed. If the QMA doesn't document, it didn't happen.</li> <li>11. Provides the nurse with the necessary information to properly assess the resident's condition and needs.</li> </ol>



## Lesson 51: Administering Medications via the Gastrostomy Tube (G-Tube) or Jejunum Tube (J-Tube)

### Student Overview

**Lesson Objectives:**

- Demonstrate the ability to correctly assess placement, instill a flush and instill medications via G-Tube or J-Tube per the provider's orders.

**Key Terms:**

G-Tube (Gastrostomy Tube):

J-Tube (Jejunum Tube):

## Lesson 51: Administering Medications via the Gastrostomy Tube (G-Tube) or Jejunal Tube (J-Tube)

### Introduction to G-Tubes and J-Tubes

Tube Feedings – The resident who is unable to take food or fluids by mouth, or is unable to swallow, may be fed through a tube. Feeding tubes are used when food cannot pass normally from the mouth into the esophagus and then into the stomach. Cancer of the head, neck or esophagus is a common cause. Trauma or surgery to the face, mouth, head, neck or being in a comatose state are also reasons for tube feedings. The types of tubes most used in a long-term care facility are nasogastric tubes, gastrostomy tubes and jejunal tubes.

A nasogastric (NG) tube is a tube that is placed through the nose into the stomach. (“Naso” is the medical term for nose and “gastric” means stomach.) It may also be called a Levine tube or abbreviated as NG tube. The QMA may not flush, check placement, or instill medications in an NG tube.

An NG tube may also be used to suction and remove fluids from the body. Do not give the resident, who has an NG tube, anything to eat or drink without checking with the nurse. Residents with feeding tubes are often NPO. NPO is the abbreviation meaning nothing by mouth.

A gastrostomy tube is a tube that is placed directly into the stomach for feeding. A small surgical opening is made through the abdominal wall into the stomach, and the tube is sutured to hold it in place. This type of tube is often used for a resident who may require tube feedings for an extended period of time. The abbreviation for a gastrostomy tube is **G-tube**.

A jejunal tube (J-tube) is an artificial opening into the jejunum through the abdominal wall. It may be a permanent or temporary opening and is used for feeding or medication administration.

Usually, the NG tube or the G-tube/J-tube will be attached to an electronic feeding pump that controls the flow of fluid. Most pumps have an alarm that sounds when the flow is interrupted. The QMA must notify the nurse immediately if the alarm sounds.

The resident who has a feeding tube should be observed frequently. If the pump is not working properly, the resident may receive the wrong amount of nourishment, or the fluid may enter too quickly. This can cause nausea, vomiting and aspiration.

The G-tube may become dislodged from the stomach, or the skin may become irritated at the site of insertion. Infection can occur if aseptic practices are not carefully followed.

The resident with a feeding infusing should not lie flat. The head of the bed should be elevated. Refer to facility policy. Some procedures will need to be changed slightly for the resident with a feeding infusing. For example, an occupied bed cannot be flattened to change the linen. The QMA's major responsibility concerning the resident with a feeding tube is to make regular observations and promptly report to the nurse any potential complication.

Formulas – The provider orders the type of formula and the amount to be infused. Most formulas contain protein, carbohydrates, fat, vitamins, and minerals. Commercial formulas are common. The nurse is responsible for carrying out the order and administering the feeding formula.

## **Observations**

- Caregivers must be alert to signs and symptoms of aspiration. Other complications include diarrhea, constipation, and delayed stomach emptying.
- When a resident is receiving a tube feeding, you must report the following to the nurse immediately if observed:
  - nausea
  - complaint of discomfort or fullness
  - vomiting
  - diarrhea
  - distended (enlarged or swollen) abdomen
  - coughing
  - complaints of indigestion or heart burn
  - redness, swelling, drainage, odor, or pain at the tube insertion site
  - elevated temperature
  - signs and symptoms of respiratory distress
  - increased pulse rate
  - complaints of flatulence

## **Comfort Measures**

Comfort Measures – The resident with a feeding tube is usually NPO. Dry mouth, dry lips and sore throat are sources of discomfort. Some residents are allowed hard candy or gum. The resident's care plan will often include frequent oral hygiene, lubricant for the lips and mouth rinses. The nose and nostrils are cleaned every 4 to 8 hours as directed by the nurse and the care plan.

## **Implementation of Medication Administration through a Gastrostomy Tube**

The standard of practice is that crushed medications should not be combined and given all at once via feeding tube. Crushing and combining medications may result in physical and chemical incompatibilities leading to an altered therapeutic response, or cause feeding tube occlusions when the crushed medications are combined and administered via feeding tube. Flushing the feeding tube between each medication is also standard of practice. A facility is not required to flush the tubing between each medication if there is a provider's order that specifies a different flush schedule because of a fluid restriction. For a resident who requires fluid regulation, the provider's order should include the amount of water to be used for the flushing between crushed medications and administration of medications.

- For maximum control of suction, use a piston syringe rather than an asepto syringe.
- The liquid for diluting the medication should be water unless otherwise specified. Liquids should be warm or at room temperature.

- Gather the necessary equipment for use at the resident's bedside. (i.e. – pill crusher, syringe, graduated container, clamp/cap for feeding tube, towel, stethoscope, disposable gloves, etc.)
- Perform hand hygiene.
- Administering cold liquid through the enteral tube can cause abdominal cramping.
- Use aseptic technique. Make sure the medicine cup, syringe, spoon, and gauze are clean.
- Select and measure, if necessary, each medication to be administered. Tablets and capsules are to be crushed and diluted. Refer to the list provided by the pharmacy regarding medications which should not be crushed. Liquid preparation should be used whenever possible to avoid obstructing the enteral tube. If the medication is in capsule form, (not a time released or sustained release medication), empty the content of the capsule into a separate medication cup and mix it with diluent. Pour liquid medications directly into the diluting liquid. Stir well with a spoon. If the medication is in tablet form, make certain the particles are small enough to pass through the eye at the distal end of the gastrostomy or jejunal tube.
  - Keep in mind that you need enough diluent to dissolve the medication, but not too much, which could result in fluid overload in an older resident.
  - Ensure medication particles do not adhere to spoon and alter dosage administered.
- Dilute those liquids such as potassium which may be locally irritating.
- Refer to the pharmacy or a medication reference as to medications which may be incompatible for enteral administration. If giving more than one medication, it will be necessary that medications be administered separately with flushing of a minimum of 10 cc of warm water or according to facility policy or provider's order, before and after each medication.
- Perform INITIAL STEPS.
- Ensure patient privacy by closing door or drawing privacy curtain. Fold back the bed linens to the resident's waist and drape the resident's chest with a towel or linen saver.
  - Gently lift the dressing around the tube to assess the skin for irritation caused by gastric secretions.
  - Report any redness or irritation to the licensed staff nurse promptly.
- Raise the head of the bed so the resident is in the Semi-Fowler's position (a minimum of 30 degrees), as tolerated.
- If the resident has a continuous feeding, shut off the pump and clamp the tube. When separating the tube from a pump, avoid contamination of the open end.
- Verify tube placement before administering medications. This can be done in different ways including:
  - Observing changes in external length tubing (if the exit site was marked upon placement.)
  - Checking the pH of the Gastric Residual Volume (GRV) may indicate correct placement because a pH less than 5 generally indicates gastric contents versus intestinal contents but medications and feeding formulas can alter pH levels.
  - Aspirating stomach contents by unclamping the feeding tube and attaching the syringe with a plunger in place. Gently pull back on the plunger until you see stomach contents. Replace (flush) the contents back into the stomach. Remove the syringe and plunger.
- **Note:** Auscultation is no longer recommended for checking placement of the feeding tube. Movement of air would likely be heard whether the tube was in the correct or incorrect location.
- Facility policies and procedures and provider orders must be followed regarding monitoring of feeding tube placement.
- If you meet resistance as you aspirate for stomach content, stop the procedure. Notify the nurse promptly.

- After you establish that the tube is patent and in the correct position, clamp or kink the tube.
- Reattach the syringe, without the piston, to the end of the tube and open the clamp or unkink the tubing. Hold the syringe about 6 inches above the level of where the tube enters the body.
- Flush the tube with approximately 30 mL water.
- When the water is near or in the hub of the syringe, add a diluted medication. Pour the medication into the syringe. When the medication is near or in the hub of the syringe, flush the tube with a minimum of 10 cc warm water or according to facility policy. Continue to alternate a diluted/liquid medication with a water flush.
- Rinse the medication cup with water and pour into the syringe to ensure delivery of the complete dose. Verify that medication cups are clear of any remnants of crushed pills or liquid medication.
- Do not force any medication or fluid into the tube. Allow gravity to work as possible. If necessary, gentle pressure may be applied. Should the tube become obstructed and cannot be successfully unplugged via milking of the tubing and/or gentle pressure, the licensed nurse should be notified for further instruction relative to potential omitted doses of medication.
- Deliver the medication slowly and steadily. Don't allow the fluid to flow in too quickly.
  - Due to age-related changes in the G.I. tract of older adults, cramping could occur.
- If the medication flows smoothly, slowly add more until the entire dose has been administered.
  - If the medication doesn't flow properly, don't force it. It may be too thick to flow through the tube.
  - If so, dilute it with water, being careful not to overload the resident with too much fluid.
  - If you suspect the tube placement is inhibiting the flow, stop the procedure and re-evaluate placement of the tube.
- Flush with 30 mL of water after the final medication is administered. When the water has instilled, quickly clamp, or kink the tube. Following medication/flush administration, reconnect tubing and turn on pump, if applicable.
- Monitor the resident's reactions throughout the procedure. If the resident exhibits signs of discomfort, stop the procedure immediately.
- Remove the towel or linen saver and replace the bed linens.
- Assess the patient for any discomfort and then place the resident in the Semi-Fowler's position (a minimum of 30 degrees) or have the resident lie on the right side with the head of the bed slightly elevated. Have the resident maintain this position for at least 30 minutes, if tolerated, following the administration of medication.
  - This facilitates the downward flow of the medication into the resident's stomach and assists to prevent esophageal reflux.
- Rinse the syringe utilized for medication instillation and store in a clean manner. Refer to facility policy. Discard the used disposable supplies and remove gloves and place in a waste container. Perform hand hygiene.
- Perform FINAL STEPS.
- Be certain to document the amount of water used in the flushing process and the medications administered. Water administered during the medication pass can also be included on the patient's I&O record.

## Other Key Points

- Check for G-Tube placement prior to administering medications if required per facility policy.

- Flush the G-Tube after checking for placement, and before any medications are administered. Check order for amount of fluid to be used for the flush.
- Placement does not have to be verified for a J-Tube.
- Once daily, clean the peristomal skin with mild soap and water (or solution listed per specific provider order) and allow the skin to air-dry for 20 minutes to avoid skin irritation.
- Clean the insertion site whenever spillage occurs.
- To prevent instillation of too much fluid (more than 400 ml of liquid at one time for an adult), plan the medication instillation so that it does not coincide with the resident's bolus feeding.
- Withhold the medications if there is 100 ml of residual obtained and notify the nurse. Re-instill any gastric content obtained back into the tube.
- An excessive amount of residual may indicate intestinal obstruction.
- Oily medications, enteric coated medications, or sustained release tablets are contraindicated for instillation through an enteral tube.
- Oily medications cling to the sides of the tube and resist mixing with the irrigating solution.
- The therapeutic response of enteric coated or sustained release medications would be altered or decreased if the medications were crushed or removed from gelatin capsules before instillation through an enteral tube.

## Complications

- Aspiration of stomach contents and adverse medication reactions are potential concerns with enteral tube medication administration.
- If medication is given in conjunction with a continuous enteral feeding, be alert for delayed or impaired medication absorption.
- Report any adverse effects promptly to the nurse.
- Should a resident be receiving a continuous tube feeding and you observe the resident to be coughing, complaining of fullness or discomfort, diaphoretic, short of breath or cyanotic, notify the nurse immediately as the feeding must be stopped and evaluation conducted by the licensed nurse.

## Documentation

- Note the medication administered, the dose, the date and time, and the resident's reaction.
- If the resident refuses the medication, document the refusal, and notify the nurse.
- Note if the medication was omitted or withheld for any other reason.

### Notes:

## Lesson 52: Applying a Dressing to a Healed Gastrostomy Tube (G-Tube) or Jejunal Tube (J-Tube) Site

### Student Overview

<b>Lesson Objectives:</b>
<ul style="list-style-type: none"><li>• Demonstrate the ability to apply a dressing to a healed G-Tube or J-Tube per provider order.</li></ul>
<b>Key Terms:</b>
PEG Tube:

## Lesson 52: Applying a Dressing to a Healed Gastrostomy Tube (G-Tube) or Jejunum Tube (J-Tube) Site

### Introduction

- Terms used to describe feeding tubes are sometimes interchanged incorrectly. In review, the most common tubes are named after the positions of their feeding tips.
  - PEG Tube: Percutaneous Endoscopic Gastrostomy tube.
  - G-Tube: A feeding tube placed in the stomach.
  - J-Tube: A tube placed in the small intestine which bypasses the stomach. Usually used when there is an upper G.I. obstruction.
- Common Complications of Feeding Tubes:
  - Tube displacement: When the feeding tube slides in or is pulled out of the G.I. tract.
  - An unsecured tube can pivot at the tube exit site and cause a buildup of granulation tissue and widening of the tract.
  - The bumper of the G-Tube can cause an ulceration of the tissue at the feeding tube site or into the mucosal layer of the gastric wall. This is called "buried bumper syndrome."
    - Some of the causes of this syndrome occur when:
      - excessive tension exists between the internal and external retention bumpers of the tube.
      - there was a failure to pull back the external bumper after weight gain.
      - excessive dressings have been placed under the external bumper.
  - Tube injury can occur when the tube ruptures, deteriorates, or the balloon leaks.
    - Prevention of these types of injuries can be minimized by:
      - routinely replacing tubes.
      - following regular flushing schedules.
      - not using a syringe smaller than 30 ml. size.
      - frequent inspection of the tube for cracking or deterioration.
  - Occlusion or clogging of feeding tubes are the most common concerns.
    - Occlusions can be caused by inappropriate administration of medications, poor flushing techniques, thick formulas, or reflux of gastric or intestinal contents up the tube.

### Common Maintenance Problems

- G-tube was pulled out.
  - Cause:
    - G-Tube was pulled out by the resident
    - stomach acid will cause the balloon to deteriorate and deflate and the tube will fall out.
  - Solution: because the stoma may close within an hour or two, notify the licensed nurse immediately to ensure the G-Tube is reinserted. Reinsertion may be performed by the nurse or may require hospitalization if the tube is to be sutured in place.
- G-Tube has redness, irritation, soreness, or foul odor present at the insertion site.
  - Cause: may be caused by:
    - leakage



- infection.
  - Solution: continue routine care and notify the nurse promptly.
- G-Tube has large amount of leakage of fluid or mucus-like liquid present (large amounts = soaks 4X4 gauze 3 or more times a day).
  - Cause: stretching of tract.
  - Solution: change dressing frequently. Notify the nurse immediately.
- G-Tube skin or scar appears to be growing where the tube enters the skin. May be rosebud like in appearance. This condition is called hyperplastic granuloma or “proud flesh.”
  - Cause: overgrowth of tissue because of movement of tube in the tract.
  - Solution: notify the nurse. The resident may require a follow up visit with the provider.
  - Secure the tube with tape to prevent excess movement.

## Procedure for Dressing Application

1. Perform INITIAL STEPS.
2. Remove the old dressing. Inspect the area where the tube enters the skin. Observe for redness, swelling, green or yellow liquid drainage or excess skin growing around the tube site.
3. Report any abnormal conditions to the nurse promptly before proceeding with the procedure.
4. A small amount of clear or tan drainage is normal.
5. Clean the skin around the tube using a cotton swab or Q-tip dipped in the solution ordered by the provider. This is often a mixture of half hydrogen peroxide and half saline or water. Roll the cotton swab or Q-tip around the G-Tube/J-Tube site to remove any drainage and/or crusting at the insertion site.
6. Rinse the area and pat dry.
7. Redress with a slit 2X2 gauze and tape. Anchor the end of the tube by placing a piece of tape around the tube and pinning it to a folded piece of tape on the resident’s stomach or clothing. Refer to facility policy.

## Miscellaneous Information

1. Cleaning may be completed with mild soap and water if irritation occurs. The site should be kept clean and dry. Do not use ointments around the tube site unless directed to do so by the provider.
2. Be certain to keep the end of the tube closed or plugged to prevent leakage and contamination.

### Notes:

## Lesson 53: Administration of Medication via Metered Dose Inhaler

### Student Overview

**Lesson Objectives:**

- Demonstrate the ability to correctly administer medication via metered dose inhaler (MDI) as ordered by the provider.

**Key Terms:**

Metered Dose Inhaler (MDI):

## Lesson 53: Administration of Medication via Metered Dose Inhaler

### Introduction

- Metered Dose Inhalers usually come in 3 pieces
  - A mouthpiece
  - A cap that covers the mouthpiece
  - A canister of medication
- Technique for Proper Use
  - Press the canister into the mouthpiece.
  - Take the cap off the mouthpiece, hold inhaler upright and shake the inhale well for at least 5 seconds.
  - Turn the canister to the side allowing you to see what comes out of the mouthpiece.
  - Press down on the canister. A fine mist should come out of the mouthpiece. One way to determine if there is still medication in an inhaler is to place the canister in a cup of water. If it sinks, it still has medication. If it floats, it is empty. Another way to make certain the resident's supply of metered dose medication doesn't run out is to count the doses.
    - If the can holds 200 doses and you use 8 puffs a day, you will use the contents of the canister in 25 days. Review the resident's medication administration record to calculate when the 25 days expire and reorder the metered dose inhaler according to your facility's policy.

### Procedure for administering medication via Metered Dosed Inhale

1. Check medication administration record (MAR) to verify order.
2. Check date the order began.
3. Wash hands or use antiseptic foam/gel.
4. Obtain correct medication from the medication cart.
5. Read label (first check).
6. Check medication label with MAR (second check).
7. Perform INITIAL STEPS. Supplies may include spacer (if ordered), tissues, mouthwash, drinking water in a glass, emesis basin and disposable gloves if applicable.
8. Read medication label again (third check) prior to proceeding to resident room.
9. Instruct the resident to tilt his/her head back slightly and breathe out through his/her mouth.
10. Position the inhaler for administration. There are three methods to use:
  - Put the inhaler an inch or two away from the resident's open mouth.
  - Have the resident put his/her lips all the way around the mouthpiece.
  - Attach an inhaler spacer to the mouthpiece and have the resident put his/her lips all the way around the spacer.
11. Just as you press down on the canister, instruct the resident to breathe in slowly over 3-5 seconds. If the resident has trouble breathing at the right time, use a spacer. The spacer will hold the medication until the resident is ready to breathe.
12. Instruct the resident to try and hold his/her breath for 10 seconds to allow the medication to reach deeply into the lungs. Remove the inhaler or spacer from the resident's mouth. Instruct the resident to let his/her breath out easily.

13. If the resident is taking more than 1 puff of medication, wait before dispensing the second puff of medication. Refer to manufacturer's instruction for time between puffs.
14. Perform FINAL STEPS.

### Spacing and Proper Sequence of Inhaled Medications

- Bronchodilators/Beta Agonists (albuterol-Ventolin, Proventil; metaproterenol-Alupent; pirbuterol-Maxair; bitolterol-Tornalate)
  - These agents work by promoting bronchodilation by relaxing bronchial smooth muscle.
    - Wait one minute between "puffs" for multiple inhalations of the same medication.
    - Wait 1-2 minutes before administering next medication.
- Anticholinergic Agents (ipratropium-Atrovent)
  - Antagonizes the action of acetylcholine with resulting bronchodilation.
  - Minimal systemic activity.
  - Is used for maintenance therapy only, not acute episodes.
  - May be more useful than traditional bronchodilators in chronic bronchitis.
- Miscellaneous Agents (cromolyn-Intal; nedocromil-Tilade)
  - Stabilizes mast cells and inhibits the release of histamine from these cells.
  - Must be used on a regular basis, not useful on a PRN basis.
  - May be used prophylactically prior to exercise.
    - Wait between "puffs" for multiple inhalations of the same medication. Refer to manufacturer's instruction for time between puffs.
    - Wait 1-2 minutes before administering next medication.
- Corticosteroids (beclomethasone-Beclovent, Vanceril; triamcinolone-Azmacort; flunisolide-AeroBid; dexamethasone-Decadron)
  - Anti-inflammatory agents that may have a variety of actions useful in management of COPD.
  - Must be used on a regular basis, not PRN agents.
  - Minimal systemic activity.
    - Wait between "puffs" for multiple inhalations of the same medication. Refer to manufacturer's instruction for time between puffs.
    - Always report any abnormal respiratory symptoms to the nurse.
- Rinse the mouth out following use (do not swallow the water) to help prevent oropharyngeal fungal infections. The use of a spacer device may also reduce these side effects.

#### Notes:

## Lesson 54: Applying a Dressing to a Minor Skin Tear

### Lesson Objectives:

- Demonstrate the ability to correctly apply a dressing to a minor skin tear.

### Skin Tears

- Skin tears can be prevented through decreasing or eliminating external injury hazards and taking caution when transferring and repositioning a resident.
- Skin tears can be eliminated through reduction of shearing or friction:
  - Keep the head of the bed raised less than 30 degrees unless contraindicated.
  - Support the feet and legs whenever the head of the bed is elevated.
  - Always flatten the bed before repositioning.
  - When moving a resident, use lifting devices such as draw sheets, transport boards, gait belts and mechanical lifts. Do not drag the resident when repositioning.
  - To decrease the potential for a resident to obtain a skin tear, ensure the resident is receiving adequate hydration and nutrition.
- If a layer of skin is torn but still attached, replace the skin over the wound. Cover as much of the original surface as possible.
- A viable flap may not cover the entire wound but should be positioned to increase the chance for it to “take” in the wound bed.
- When removing any existing dressing to evaluate the wound, be careful not to disrupt healing or damage the intact skin surrounding the wound. Take special precautions not to disturb any skin flap.
- Specific wound conditions may require other types of dressings dependent upon whether the wound has moderate to heavy drainage.

### Ensuring the Right Dressing is being Used for the Wound

- For a skin tear that has no drainage, and the skin has relatively good integrity, a transparent film dressing is often applied.
  - Transparent films promote healing and ensure that the skin has a moist environment.
  - Another benefit of a transparent film dressing is that it allows the wound to be visualized and monitored for healing without removing the dressing.
  - Transparent films do not absorb and are NOT APPROPRIATE for draining wounds.
- A skin tear that has moderate drainage may require a non-occlusive dressing.
  - When a clean dressing is applied, secure the dressing with a gauze bandage roll for protection.
- Skin tears with heavy drainage require an absorbent dressing to wick the drainage and cushion the wound.
  - A gauze bandage roll will hold the dressing in place if the wound is on an extremity.
  - Gentle adhesive tape can be used for larger body areas.

## Advanced Practice Provider's Orders

The affected area is described to the provider by the licensed nurse and an order is received for the type of dressing to be utilized. The QMA must report to the licensed nurse any change in appearance or drainage of the skin tear that might indicate a different type of dressing is warranted. The order may include cleansing of the wound prior to re-application of a dressing. Commonly, this may include cleansing the area with normal saline and gently wiping with a gauze square. The QMA must carefully read the order and inquire of the licensed nurse if uncertain of procedure.

There are many types of dressing and even more methods of applying dressings. Each wound should be carefully evaluated by a health care professional to determine if an unlicensed person should be changing the dressings.

## Application and Removal of Transparent Films

Transparent films vary in thickness and size. They are waterproof and impermeable to bacteria and contaminants. These dressings maintain a moist environment, promoting granulation of tissue and are the common treatment ordered for skin tears.

- Application
  - Label the dressing with the date, time, and your initials.
  - Remove the dressing's backing paper and expose the adhesive surface.
  - Place the dressing gently over the wound, allowing the film to also cover approximately one inch of undamaged skin around the wound.
- Removal
  - Lift a corner of the dressing and begin stretching it horizontally along the skin's surface, breaking the adhesive bond.
  - Continue stretching from the edges toward the center. When two sides of the dressing are partially removed, grasp both sides and pull gently until the entire dressing can be removed.
  - Discard dressing as per facility policy.

## Application of a Clean, Dry Dressing

1. Gather the equipment needed: sanitizer for environmental surfaces, dressings, two to three sets of disposable gloves, tape, scissors, trash bags and the supplies needed for cleaning the skin around the wound.
2. Assist the resident to a position to expose the old dressing while maintaining the resident's privacy.
3. Apply gloves.
4. Remove the old dressing and place in a trash bag. Try to remove the dressing away from the resident's face for courtesy and pull the tape toward the wound to prevent pulling on the wound while removing the adhesive tape.
5. Inspect the wound. Clean and dry the skin around the wound according to instructions or facility policy.
6. Place the used cleaning items in the trash bag after use.
7. Remove the dirty gloves and discard in a trash bag.

8. Apply clean gloves.
9. Place the clean dressing on the skin, being careful not to touch the surface of the dressing that will come in contact with the resident's skin.
10. Tape the dressing in place.
11. Remove gloves and discard in a trash bag.
12. Close the trash bag(s) containing the soiled dressings to be discarded in a waste container outside the resident's room.
13. Discard the trash bag(s) containing the soiled dressings into a waste container outside the resident's room. As determined by facility policy, a biohazard bag/container may be used for soiled dressing containment. A biohazard bag/container should be utilized if any type of bodily fluid is present.

**Notes:**

## Lesson 55: Treatment for Minor Skin Conditions (Dermatitis, Scabies, Pediculosis, Fungal Infection, Psoriasis, Eczema, First Degree Burn, Stage I Pressure Ulcer)

### Lesson Objectives:

- Demonstrate the ability to administer treatment as ordered by the provider to minor skin conditions.

**Note:** See Lesson 17 for detailed information on common skin conditions including dermatitis, scabies, pediculosis, fungal infection, psoriasis, eczema, first degree burns, and pressure ulcers.

### Treatment for Common Skin Conditions

- Pressure ulcer (Pressure injury)
  - Cause: continuous pressure on body areas which leads to decreased blood circulation to tissues.
  - Ulcers are “staged” according to severity:
    - Stage I: a persistent area of skin redness (without a break in the skin) that is non-blanchable.
  - Treatment: the best treatment is prevention. The QMA should help ensure that residents are turned, clean and dry per provider’s orders or facility policy. The treatment of a pressure ulcer greater than a Stage I is not within the QMA scope of practice.
  - Prevention:
    - Turn bedridden residents at least every 2 hours, according to facility policy or resident plan of care.
    - Ensure incontinent residents have routine perineal care provided to keep them clean and dry.
    - Encourage the resident to eat all food and drink all fluids at meals to enhance nutrition.
  - Stage I – In observing and treating a stage I pressure ulcer, the QMA must document and describe the length and width of the affected area only. No measurable depth exists in that the epidermis is intact, although underlying tissue may be damaged. The length and width of any wound is measured as the distance from wound edge to wound edge and is usually measured in centimeters. To ensure consistent measurements, establish landmarks for wound measurements. For example, the caregiver can observe the wound as if it were the face of a clock. The top of the wound is considered 12 o’clock and is toward the resident’s head. Six o’clock is toward the resident’s feet. By consistently observing and documenting the area in this manner, documentation accurately reflects the healing process.
  - The observation of a stage I pressure ulcer may be difficult in residents with darker skin.
- Hydrocolloid films may be ordered as a treatment to a stage I ulcer to prevent further skin breakdown associated with urine and fecal contamination. Application and removal of a transparent film is as follows:



- Transparent films vary in thickness and size. They are waterproof and impermeable to bacteria and contaminants. These dressings maintain a moist environment, promoting granulation of tissue.
- Application
  - Label the dressing with the date, time, and your initials.
  - Remove the dressing's backing paper and expose the adhesive surface.
  - Place the dressing gently over the wound, allowing the film to also cover approximately one inch of undamaged skin around the wound.
- Removal
  - Lift a corner of the dressing and begin stretching it horizontally along the skin's surface, breaking the adhesive bond.
  - Continue stretching from the edges toward the center. When two sides of the dressing are partially removed, grasp both sides and pull gently until the entire dressing can be removed.
- The provider may choose to order a cream or ointment as treatment for the stage I area. If so, this should be applied as with any topical treatment (refer to Lesson 43 addressing application of lotion, ointment, liniment, or cream).
- Should an area of the skin appear to be opening or have an appearance that would indicate a complication (such as skin darkening or the area becoming mushy in the center), notify the licensed nurse and request the nurse to immediately assess the area for appropriateness of the current treatment and potential provider notification.

## Common Skin Medications

- Local Anti-infective/antifungal
  - Action: destroys bacteria or fungus
  - Use: treat Athlete's foot, or other fungal infection
  - Examples:
    - tolinaftate (Aftate, Tinactin) - antifungal
    - clotrimazole (Lotrimin) - antifungal
    - miconazole nitrate (Monistat) – vaginal antifungal
    - bacitracin (Bacitracin) – antiinfective
    - mupirocin (Bactroban) - anti-infective
  - Adverse Effects:
    - itching
    - rash
  - Nursing Considerations:
    - wear gloves when applying.
    - area should be cleansed and dried thoroughly before application of ointment.
    - ensure resident wears clean socks daily if being treated for tinea pedis.
- Scabicides and Pediculicides
  - Action: destroys parasites
  - Use: kill scabies, mites, lice, and other parasites
  - Examples:
    - ivermectin (Sklice)
    - permethrin (Elimite cream; Nix)

- spinosad (Natroba)
  - Adverse Effects: skin irritation
  - Nursing Considerations:
    - may apply to skin or hair.
    - may require repeat applications in 7 to 10 days.
    - follow provider's orders and refer to manufacturer's instructions/ recommendations.
- Anti-inflammatory steroids
  - Action: reduces inflammation
  - Use: treat dermatitis, psoriasis, and eczema
  - Examples:
    - betamethasone valerate (Valisone)
    - triamcinolone acetonide (Aristocort, Kenalog)
    - hydrocortisone cream (multiple combinations: Cortaid, Lanacort, Westcort).
  - Adverse Effects: burning, itching and dry skin
  - Nursing Considerations:
    - use gloves when applying.
    - gently wash area and pat dry before applying cream.
    - apply sparingly.
    - withdrawal symptoms occur if stopped abruptly.
    - avoid applying near eyes, mucous membranes or in ear canal.
    - continue application of the ointment for a few days after lesions clear to prevent recurrence.
- Antipruritics and local anesthetics:
  - Action: relieve localized itching and pain by inhibiting conduction of nerve impulses from sensory nerves.
  - Use: treat hemorrhoids, sunburn, and poison ivy
  - Examples:
    - lidocaine (Solarcaine)
    - dibucaine (Nupercainal)
    - calamine (Caladryl lotion)
  - Adverse Effect: sensitization to medication, itching, redness, edema
  - Nursing Considerations:
    - monitor for inflammation and infection.
- Protectants
  - Action: cover and protect the skin
  - Use: reduce irritation from urine and stool; provide sunburn protection
  - Examples:
    - petrolatum (Vaseline)
    - Vitamin A and D ointment (Desitin)
    - Para-aminobenzoic acid (PreSun, RV paba lipstick)
  - Adverse Effects: possible skin irritation
  - Nursing Considerations:
    - skin should be clean and dry prior to application of ointment.
    - monitor for inflammation and infection.

## **Additional Information for the Care of the Skin**

- Apply topical medication with care to prevent further tissue damage.
- Do not apply more topical medication than is necessary. Apply sparingly.
- Topical steroids may be as potent as oral steroids and may affect the entire body.
- Store topical medication correctly: Replace the cap after use, store in original container and refrigerate if directions indicate.

**Notes:**

## Lesson 56: Emptying and Changing a Colostomy Bag

### Student Overview

<b>Lesson Objectives:</b>
<ul style="list-style-type: none"><li>• Demonstrate the ability to empty and change the colostomy bag.</li></ul>
<b>Key Terms:</b>
Colostomy:
Stoma:

## Lesson 56: Emptying and Changing a Colostomy Bag

### Introduction to Caring for an Ostomy Appliance

- A colostomy consists of an opening of some portion of the colon, or large intestine, to the abdominal surface. A surgical colostomy is performed when it is impossible for the feces to pass through the colon and exit the anus. A colostomy may be temporary or permanent.
- Temporary colostomies are performed to divert the fecal flow from an inflamed area or from an operative area.
- Anatomic location influences the character and management of fecal drainage.
- An ascending colostomy empties from the ascending colon (right side). The drainage is liquid and contains digestive enzymes. Odor is a major concern.
- The transverse colon extends from the end of the ascending colon (right side), across the upper mid-abdomen and joins the descending colon on the upper left side of the abdomen.
- The descending colon extends from the end of the transverse colon (on the left side of the abdomen), down to the beginning of the sigmoid colon.
- The sigmoid colon is the portion of the colon that extends from the end of the descending colon in the pelvis to the juncture of the rectum.
- A double barrel colostomy is a temporary colostomy that has two openings into the colon: one into the distal end and another into the proximal end of the colon. This is a less common type of colostomy.
  - Elimination occurs through the proximal stoma.
  - This allows the distal end of the colon to rest and heal.
  - When the healing is complete, the two ends are rejoined and normal function resumes.
- A terminal colostomy has the proximal end of the colon cut and formed into a stoma. The distal end of the colon is either surgically resected or closed.
- An ileostomy (in the ileum/small bowel) empties from the distal end of the small intestine. The drainage is constant and has digestive enzymes. Residents must wear an appliance. Odor is minimal.
- A wet colostomy is on the right side of the colon or in the ileum (small bowel). The drainage from this type of colostomy is liquid.
- **Note:** The resident will have specific orders following placement of a colostomy regarding products to be used. Review the instructions provided by the enterostomal therapist of the hospital carefully. If irrigation or instillation of medications is to be conducted, this must be performed by the licensed nurse as these procedures are NOT in the scope of practice of the QMA.

### When to Change Appliance

- When the stool leaks on the resident's skin.
- When the stool cannot be rinsed effectively from the appliance.
- At least 2 times per week or per provider's order.
- Every 48-72 hours if the skin is reddened.
- Every 24-48 hours if skin is eroded or ulcerated.

## Changing the Appliance

Recommended Technique:

1. Arrange all needed equipment within reach.
2. Perform INITIAL STEPS.
3. Open clamp, cuff the tail of the pouch and empty contents of bag into receptacle (basin) or toilet. Note character and amount of drainage. Do not discard plastic clamp.
4. Locate the stoma size pattern. With a pen, trace this size hole on the paper backing of the pouch adhesive. Cut out the opening.
  - If stoma is round, use stoma guide to measure stoma. Use a size that is 1/8 inch larger than the stoma.
  - If the stoma is not round – make a pattern. Use a piece of plastic transparent material and place over stoma or wound. Trace stoma or wound on transparency. Cut it out and label pattern head, feet, pouch side, skin side.
  - Trace the pattern on the back of the faceplate. Be sure to line it up so that the tail of pouch will be in the appropriate direction.
5. Remove the paper backing from the pouch adhesive wafer. Apply a thin layer of skin protectant (such as powder or paste) as ordered.
6. Remove the old appliance gently, and wipe around the stoma with tissue.
7. Dispose of the old appliance in a biohazardous plastic bag. Save the plastic clamp.
8. Inspect the skin. Wash the area with warm water; do not use soap.
9. Dry the skin carefully. A skin prep may be ordered to protect skin and enhance adherence of the product. If so, follow instructions on can or package.
10. Apply the new appliance or paste at the base of the stoma on the skin. Hold in place for approximately 2 minutes.
  - Line opening of pouch up with stoma and press down – being sure to clear the stoma.
  - Use fingertips to seal down face plate immediately around stoma first, then around the paper border.
11. Add a few drops of deodorant to the pouch, if available, and clamp it to close.
12. Dispose of waste material and gloves.
13. Perform FINAL STEPS.

## Maintenance of the Pouch

- Assess the pouch for leakage.
- Empty the pouch when 1/3 full. If changing of appliance is not indicated, the pouch can be flushed with water using a bulb-syringe, then re-clamped. It may be necessary to empty the contents of the ostomy pouch frequently without changing the entire appliance if the resident has excessive excrement.
- Change the pouch as needed, with leakage, 2 x per week or per provider's order.

## Reporting and Documentation

- Information to report to the nurse includes:
  - change in the skin at the stoma site.
  - discoloration of the stoma.
  - amount and type of drainage from the stoma.
  - resident reaction.
- Document information in the resident's clinical record regarding observation of change in the skin at the stoma site, discoloration of the stoma, amount and type of drainage from the stoma and any adverse resident reaction observed during the procedure.

**Notes:**

## Lesson 57: Applying a Cold, Dry Compress

### Lesson Objectives:

- Demonstrate the ability to apply a cold, dry compress.

### Introduction

- Cold, dry compresses will relieve inflammation and swelling, control bleeding and relieve pain.
- Cold therapy treatments are administered for approximately 15 to 20 minutes, usually 2 to 3 times per day per order of the provider or at the discretion of a licensed nurse in an emergency requiring first-aid treatment.
- The goal of cold therapy is:
  - reduction of acute swelling.
  - relief of pain.
  - promotion of soft tissue healing.
- Indications for the use of cold therapy include:
  - the affected area is hot, swollen, and painful.
    - Examples: sprained ankle, acute arthritis, gouty arthritis.
  - to reduce the swelling of a new injury as a means of first aid.
- Precautions for the use of cold therapy include:
  - If the resident has heart disease or hypertension, it is advisable to consult the nurse before application.
  - If there is any discomfort (for example, numbness or burning) during the application, STOP immediately. Seek assistance from the nurse.
  - If in doubt – seek further instruction from the nurse.
- Contraindications for the application of cold therapy may include the following conditions:
  - deep vein thrombosis
  - peripheral vascular disease
  - skin sensation impairment (diabetic residents)
  - severe cognitive impairment (dementia)
  - sensitivity to the cold
  - after cold application, it is normal to have temporary numbness of the applied area. If there is persistent numbness, pain, or severe discomfort, seek the assistance of the nurse promptly.
- Equipment utilized may include a commercially prepared cold pack that does not require ice. If utilized, refer to manufacturer's instructions regarding activation. If ice is to be used, an ice bag or collar covered with a fitted cover or towel shall be utilized.



## Procedure

1. Fill ice bag halfway with crushed ice. Squeeze the device to expel air, fasten the cap and wipe away any moisture on the outside of the bag.
2. Bring equipment to the bedside and screen the resident's bed.
3. Perform INITIAL STEPS.
4. Assist the resident to an appropriate position and expose the area to be treated. **IMPORTANT:** Do not unnecessarily expose the resident. Expose only the area to be treated to avoid chilling the resident.
5. Place a cover on the ice bag. You may wrap the ice bag in towel or cloth and secure with tape.
6. Apply device to the treatment site and leave in place for prescribed time. Refill bags as needed. **IMPORTANT:** If resident complains of numbness or a burning sensation, discontinue treatment immediately and notify the nurse. If you must leave the resident with the cold compress in place, leave call light within easy reach.
7. Observe the resident's skin frequently beneath the device. If skin appears blanched or cyanotic, discontinue treatment immediately and notify the nurse.
8. When treatment is complete, remove ice bag and check to be certain the resident's skin is dry.
9. Make certain the bed is dry and in order.
10. Perform FINAL STEPS.

**Notes:**

## Lesson 58: Diabetic Testing (Finger Stick)

### Student Overview

**Lesson Objectives:**

- Demonstrate the ability to correctly perform diabetic testing using the fingerstick method.

**Key Terms:**

Hyperglycemia:

Hypoglycemia:

## Lesson 58: Diabetic Testing (Finger Stick)

### Introduction

- Blood Glucose Monitoring
  - In a person with diabetes, the body is unable to produce any or enough insulin to regulate glucose levels appropriately. Insulin is used to help move the energy from carbohydrates into the cells of the body for use. Diabetes can be managed by diet, exercise, and sometimes by taking medication. Treatment for diabetes can either be through oral medication that helps the body make insulin, or through injections of insulin that take the place of the insulin that the body no longer produces.
  - Measurement of blood sugar helps determine if the medical treatments are effective. Blood sugars are often checked before a resident eats or takes prescribed medications. A normal fasting blood sugar reading ranges between 70-99 mg/dL.
  - Follow the provider's orders concerning frequency of obtaining blood sugar readings and report abnormal readings to the nurse immediately.
- Hypoglycemia occurs when a person's blood sugar is too low. Hypoglycemia can occur very quickly when a resident has had too much medication or not enough to eat.
  - Symptoms of hypoglycemia may include:
    - shaking, sweating heavily
    - weakness or fatigue
    - pale, cold, clammy, skin
    - anxiety or confusion
    - grouchiness
    - fast heartbeat
    - headache
    - dizziness
    - hunger
    - blurred vision
  - If a diabetic resident has symptoms of hypoglycemia, give the resident a glass of juice immediately, take a blood sugar reading, and notify the nurse immediately. The facility may have a protocol to follow for hypoglycemic episodes. Refer to facility policy.
  - Symptoms of hyperglycemia or high blood sugar include:
    - excessive thirst
    - frequent urination
    - dry skin
    - hunger
    - blurred vision
    - drowsiness
    - nausea

### Procedure—Finger Stick Blood Glucose Testing

1. Ask the resident's permission to measure the blood sugar.
2. Make certain the resident is comfortable when you perform the test.
3. Perform INITIAL STEPS.

4. Collect your equipment:
  - a. the testing meter
  - b. test strip
  - c. lancet
  - d. gloves
  - e. sharps container
5. Perform hand hygiene and put on gloves.
6. Turn on the testing meter.
7. Ensure the test strips are the appropriate type for the testing meter and check expiration date.
8. Ask the resident to relax his/her hand and dangle it downward to promote blood flow to the tips of the fingers.
  - a. Massage the finger starting at the base of the finger and moving to the tip of the finger.
  - b. Exert some pressure on the fingertip by holding it between your thumb and index finger.
9. Cleanse the chosen site with an alcohol wipe and let the site dry.
  - a. By allowing the site to dry, the procedure is less likely to sting when the skin is punctured with the lancet.
  - b. The presence of alcohol can alter the test results on the test strip if mixed with the blood.
10. Perform the finger stick. Use the side of the fingertip, as it will hurt less and prevent the tip of the finger from becoming too sensitive.
  - a. A regular lancet is used for the puncture if there is no spring-loaded instrument or if the person has very tough skin.
  - b. Hold the lancet between your thumb and index finger.
  - c. Holding the person's finger firmly with your other thumb and forefinger, make a quick, firm, puncture; as you withdraw the lancet, twist it slightly.
  - d. A spring-loaded instrument can make the fingerstick quicker and easier. Following the manufacturer's instructions, insert the lancet into the device and set the spring. Press the button at the top of the pen.
11. Squeeze the finger gently to obtain a large drop of blood.
12. Apply the blood carefully to the pad on the end of the test strip. Many strips can only be touched once; the blood should not be smeared on the pad of the test strip.
13. Place the strip in the slot of the machine for reading.
14. Wait for the digital reading to appear.
15. Apply pressure to the resident's finger with a tissue.
16. Discard the lancet into the sharps container. Avoid sticking yourself with the used lancet.
17. Discard the test strip according to facility policy.
18. Perform FINAL STEPS.
19. Disinfect blood glucose meter according to manufacturer guidelines and facility policy.
20. Report abnormal readings that are above or below the parameters indicated on the resident's clinical record to the nurse.

#### Miscellaneous

- Many blood glucose meters simply read "high" or "low" if the reading is above or below the highest or lowest number that can be read by the meter. If this occurs, the QMA must alert the licensed nurse immediately.

- There are several different brands/types of glucose meters available. The QMA must receive training for the specific device utilized by the facility of employment.

#### Control Testing

- Each blood glucose meter will have a test strip, solution, or device to routinely confirm that the meter's readings are accurate. The QMA must review the manufacturer's instructions and receive quality control training for the specific device utilized by the facility of employment.
- Facility policy or manufacturer's instructions will dictate the frequency of control testing.

#### **Notes:**

## Lesson 59: Collecting Fecal or Urine Specimens/Hemoccult Testing

### Student Overview

**Lesson Objectives:**

- Demonstrate the ability to correctly collect fecal or urine specimens.
- Demonstrate the ability to correctly perform hemoccult testing.

**Key Terms:**

CCMS:

Hemoccult Testing:

## Lesson 59: Collecting Fecal or Urine Specimens/Hemoccult Testing

### Specimen Collection

- A function of the QMA is to collect urine and/or fecal specimens per a provider's order.
- Fecal specimens may be collected to test for the presence of bacteria, ova and parasites or for hemoccult testing.
- Urine specimens may be collected for diabetic urine testing or to send the specimen for analysis and culture and sensitivity testing if the resident has a suspected urinary tract infection.
- Acceptance of improperly collected specimens, or one that has been delayed, may affect the outcome of the test results, and delay treatment to the resident.

### Procedure for Fecal Collection

- Materials needed to collect fecal specimens:
  - Disposable clean gloves.
  - Bedpan and cover or toilet hat.
  - Specimen container and lid (note\* assess container for potential expiration date).
  - Label.
  - Wooden tongue blades.
  - Biohazard bags for used tongue blades and the specimen.

### Collection

1. Explain the procedure to the resident. Ask the resident to notify you when he/she feels the urge to have a bowel movement.
2. Label the container.
3. Perform INITIAL STEPS.
4. Give the bedpan when the resident is ready. If the resident will be using the toilet, place a receptacle, such as the toilet hat, toward the back of the toilet. Instruct the resident not to urinate into the specimen or place toilet paper in the specimen.
5. Once the resident has defecated (remove the pan if used), use the tongue blade to transfer a portion of the feces to the container. Do not touch the specimen.
6. Take a portion of feces from three different areas of the stool specimen with the wooden tongue blade. Scoop small amounts of stool into the container until it is half full.
7. Replace the lid to cover the container. Note any special examination of the specimen requested. Prepare the specimen for transport to a laboratory by placing the container in a sealed plastic bag labeled as biohazardous with resident name, date, and time.
  - Place in the designated refrigerator until lab picks up the specimen.
  - Discard gloves and wash hands.
  - Notify the nurse that the specimen was obtained.
  - Report any abnormal findings to the nurse.
  - Document the procedure.
  - If the test is to be conducted by the QMA (i.e., hemoccult testing), proceed to the ordered test.
8. If an entire stool would need to be tested, obtain a larger container.

9. Depending on the type of test ordered by the provider, the collection container may contain a poisonous fluid.
  - DO NOT discard this fluid.
  - Always keep the collection container inaccessible to confused residents.
  - Only fill the container to the fill line with the sample so as not to overfill or underfill the container.
    - a. For stool cultures, there should be equal parts of fluid and stool in the container.
    - b. For parasite testing, there should be four parts fluid to one part stool specimen.

### **Procedure for Urine Collection**

- Materials needed to collect urine specimens:
  - covered specimen bottle or container (wide mouthed)
  - label
  - bedpan, toilet hat, or urinal
  - gloves

#### **Collection**

1. Explain the procedure to the resident. Ask the resident to notify you when he/she feels the urge to void.
2. Prepare label.
3. Perform INITIAL STEPS.
4. If collecting a clean catch midstream (CCMS) specimen, the recommended technique includes obtaining two packets of cleansing wipes and a urine cup. (Take care not to touch inside the cup or lid with your fingers).
  - Remove the wipes from both packages and take them with the urine cup to the toilet.
  - Remove as much of the resident's clothing as necessary to spread the knees wide apart. Have the resident sit as far back on the toilet as possible.
  - For the female, use one hand to separate the labia to expose the urethra. With the first wipe, clean the meatus from front to back. Discard the wipe. Repeat with the second wipe. For the male, cleanse the meatus beginning at urethral opening and moving toward shaft of penis; make a complete circle around penis with each wipe, discarding after each wipe.
  - Instruct the resident to void a small amount of urine, and then stop the stream of urine. Hold the cup a few inches from the meatus and instruct the resident to continue to void into the cup until it is no more than half full.
5. If collecting a single voided routine urine sample, cleanse the resident's genital area with soap and water and then instruct the resident to void into the specimen container or a clean receptacle or bedpan.
6. Remove the specimen as soon as possible after the resident has voided.
7. If the urine was collected in a receptacle or bedpan, pour approximately 120 ml. of urine into the labeled specimen cup.
8. Cover the container/cup. Place the specimen cup with the sample into a biohazardous bag. Date, time and initial the specimen.
  - Place in the designated refrigerator until lab picks up the specimen.
  - Discard gloves and wash hands.



- Notify the nurse that the specimen was obtained.
- Report any abnormal findings to the nurse.
- Document the procedure in the resident's clinical record.

## **Hemoccult Testing**

- The QMA may perform hemoccult testing on stool specimens as ordered by a provider.
- Hemoccult testing is a screen for fecal occult blood.
- To ensure validity of the results, resident samples should be tested for a period of three consecutive days, if possible, or as specifically ordered by a provider.

### **Procedure**

Always refer to the manufacturer's instructions for the brand of testing product utilized. General procedure is as follows:

1. Gather Equipment/Supplies
  - Hemoccult test slide (guaiac paper) – assess for expiration date
  - Hemoccult developer (stabilized aqueous solution, <5% hydrogen peroxide, 75% denatured alcohol) – assess for expiration date
  - Applicator sticks
  - Personal protective equipment (PPE)
  - Watch or timer
2. Perform INITIAL STEPS.
3. Assist the resident to the bathroom where a hat has been placed in the commode for specimen collection. If the resident is unable to ambulate to the bathroom, assist the resident on a bedside commode or onto a bedpan.
4. Instruct the resident not to void into specimen.

### **Sample Collection**

- Maintaining Standard Precautions:
  - Collect a small amount of fecal sample in a clean dry container, or a smear may be directly applied to test slide.
  - The sample should not contain visible blood and should not be collected during periods of active bleeding.

### **Testing Procedure: Resident Sample Testing**

1. Properly label test slide with resident's name.
2. Open the front flap of the slide.
3. Using specimen applicator stick, apply thin smear of fecal sample inside one window.
4. Wipe applicator clean.
5. Obtain second sample from different area of feces.
6. Apply thin smear inside second window. Wipe applicator clean or discard.
7. Close flap of slide.

8. Open cover on back of slide and apply two drops of developer directly over each smear.
9. Read test results within 30-60 seconds (or as indicated by the manufacturer's instructions).
10. Any trace of blue color present after developer is applied indicates presence of occult blood in stool. The color will begin to fade after 2-4 minutes.

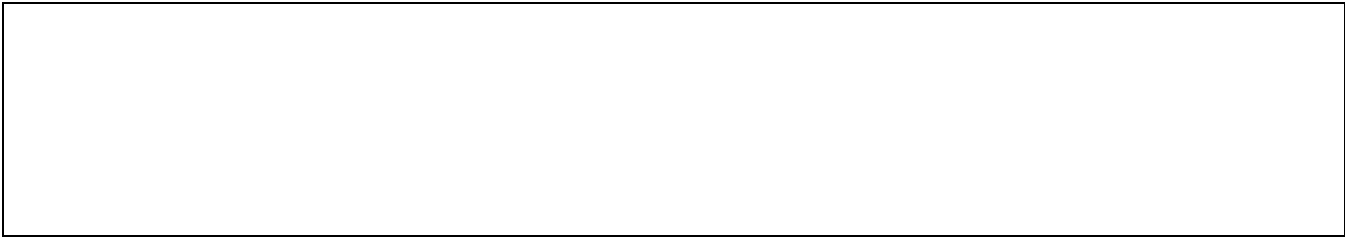
Performance Monitoring – performed after resident specimen tests have been completed and interpreted.

1. Apply one drop of developer in the performance control area of the slide.
2. Interpret results within 30 seconds (or as indicated by the manufacturer's instructions).
3. If slide and developer are functional, blue color will appear.
4. If performance monitor does not react as expected:
  - Using a different in-date test slide and same developer solution, retest resident sample and performance monitor. If performance monitor reacts as expected report resident and performance monitor results to the nurse.
  - If performance monitor still does not react as expected retest resident sample with test slide and developer from a different in-date test kit.
  - If performance monitor yields expected results with test slide from different box and/or bottle of developer, discontinue use of original test kit and/or developer.
  - If still unable to obtain expected results of performance monitor, notify the nurse.

#### Recording of Test Results

- Resident
  - Any trace of blue color appearing on resident smear after application of developer is recorded as a POSITIVE result.
  - No blue color formation in the resident test area is recorded as a NEGATIVE result.
- Performance Monitoring
  - If the performance monitor turns blue within 30 seconds of developer application, record as POSITIVE.
  - If the performance monitor shows no blue color within 30 seconds of developer application, record result as NEGATIVE.
- Documentation
  - The following information must be recorded on the resident's clinical record:
    - date and time of the test.
    - performance monitor results
    - test slide and developer lot number and expiration date.
    - name and title of the staff member performing testing.
    - resident test results
- Always review the manufacturer's instructions on the hemoccult test slide as the number of drops of developer or amount of time to elapse prior to reading result may vary.

<b>Notes:</b>
---------------



## Lesson 60: Pulse Oximetry and Oxygen Saturation/Application of Oxygen per Nasal Cannula/Non-Sealing Mask

### Student Overview

#### Lesson Objectives:

- Demonstrate the ability to obtain an oxygen saturation level utilizing an oximeter.
- Demonstrate the ability to apply oxygen per nasal cannula or non-sealing mask.

#### Key Terms:

Intercostal:

Nasal Cannula:

Non-sealing Mask:

Oximeter:

Substernal:

## **Lesson 60: Pulse Oximetry and Oxygen Saturation/Application of Oxygen per Nasal Cannula/Non-Sealing Mask**

### **Theory and Mechanics of Pulse Oximetry**

- A pulse oximeter uses two sensors and a light source to determine what percentage of oxygen saturation is in the blood. The device uses the color of the blood to determine the oxygen content of the blood.
  - Each sensor detects for a different color of light.
  - Oxygenated blood is a brighter shade of red than un-oxygenated blood.
  - The device measures the difference between the two to determine the percentage of oxygen saturation.
- The probe for the oximeter must be placed on a pulsing vascular bed.
  - Identifies arterial blood.
  - The device also identifies pulse rate and displays pulse beats.
  - Most devices will not provide a reading unless a pulse is detected.
  - The most appropriate location for the probe is either the nail bed or earlobe.
- Pulse oximeters are generally considered to be accurate within 2 - 3%.
  - Findings identify whether the resident is improving or deteriorating, based on serial readings rather than a single reading.
- The resulting numbers are indicated as percentage of oxygen saturation (SaO<sub>2</sub>)
  - When reporting the reading, the ratio may be expressed as "O<sub>2</sub> Sat is 98%."
- Interpreting the results:
  - Normal oxygen saturation is considered to range between 97% to 99%.
  - Readings between 93% and 97% may be normal for some residents; on the other hand, some residents may be very sick with a reading of >97%.
  - Readings of 90% or less may indicate that the resident needs ventilatory assistance. Promptly notify the nurse for further assessment should a reading of 90% or less be obtained.
  - Comparing pre- and post-oxygen application readings can determine if the oxygen delivery is resulting in improvement. Consult the nurse for any lack of improvement in the oxygen saturation percentages after oxygen has been administered.
- Conditions Adversely Affecting Pulse Oximetry Readings
  - Carbon monoxide poisoning will result in an artificially high SaO<sub>2</sub> reading.
    - Remember, the device is detecting the color of the blood. Carbon Monoxide turns arterial blood bright red.
  - Cigarette smokers will often have altered readings.
    - Cigarette smoke contains CO<sub>2</sub>, which may lead to an artificially high reading.
    - If the resident has been smoking for a long time, it is not unusual to have an SaO<sub>2</sub> reading of 93—95% as his/her normal reading.
  - Cold extremities may lead to low readings.
    - Due to poor circulation to the extremities
    - The hands can be warmed by rubbing prior to application of the probe on the resident's finger, however, this is not always effective.
  - High-intensity lighting may lead to abnormally high readings.

- This can be corrected by either turning off the bright light or moving the resident to another location.
- Hypovolemia may lead to artificially high readings.
  - The hemoglobin may be well saturated with oxygen, but there is less of it (lower volume), so the tissues may not be getting as much as they need to survive.
  - If the resident is in, or is headed for, shock, the device does not have the ability to detect a saturation level from a weak pulse.
- Anemic residents may produce normal or near normal readings, but may not be getting enough oxygen at the cellular level (similar to the hypovolemic resident).
- Pulse oximeters may have difficulty sensing color in dark-skinned residents.
  - Often, repositioning the probe will correct this.
- Fingernail polish or acrylic nails may prevent the device from working.
  - If the device will not produce a reading, use nail polish remover or switch the probe to an earlobe.
  - You could also try turning the probe side-ways on the finger or moving it to the great toe.
- Some medications cause peripheral vasoconstriction.
  - Be certain to review the history and medication section of the MAR (medication administration record). Consult the nurse should this be of potential concern.
- Excessive resident movement can alter readings
  - Make certain the resident remains still when obtaining readings.
- Failure to clean and maintain the oximeter can result in false readings.

## Procedure

The manufacturer's instructions for the type/brand of oximeter utilized must be reviewed to ensure knowledge of the following:

- Techniques for Using the Pulse Oximeter:
  - proper application of the finger probe
  - activation of the unit
  - how to ensure the device is detecting a pulse
  - what to do if a pulse is not detected
  - proper application of other types of probes available to the provider
  - how to obtain serial readings
  - use of other ancillary features (pulse rate, automatic b/p, printers, etc.)
  - deactivation of the unit
- Maintenance of the Oximeter:
  - location of the battery compartment
  - identification of type of battery power used
  - if rechargeable batteries are used, characteristics and type of battery and recharging recommendations
  - cleaning and maintenance of the probes
  - inspection of the device for loose or broken wires, damaged contacts, etc.
  - troubleshooting techniques for common problems:
    - machine will not activate

- machine activated, but no reading provided
- replacing a faulty sensor probe
- ancillary functions of the machine fail to work
- cleaning, maintenance, and proper storage of the device
- documentation of quality control testing

## **Emergency Situations Requiring Oxygen Administration**

A QMA may not apply oxygen to a resident in an emergency without a provider's order, however, there is often a PRN order for oxygen to be administered if the resident is short of breath or if the oxygen saturation level falls below a specified percentage.

### **Oxygen is a Treatment and is to be Applied as Part of a Resident's Emergency Treatment Plan Only**

- The QMA must obtain a pulse oximetry reading of a resident's oxygen saturation level when the resident has displayed signs and symptoms of respiratory distress.
- The QMA must correctly interpret the pulse oximetry reading before applying oxygen in an emergency.
- The QMA must identify an emergency that requires the administration of oxygen.
  - Before initiating oxygen therapy, the QMA must check the resident's written provider's order noting the indication for oxygen application and the type of therapy ordered.
  - The QMA must become familiar with the types of oxygen available in the facility and the location of equipment to initiate oxygen administration.
  - Immediately after the emergency, the QMA shall verbally notify the nurse on duty or on call and appropriately document the action and notification of the event.

## **QMAs May Administer Oxygen Using One of Two Methods in an Emergency Situation**

- Nasal cannula - a long slender tube that runs from the oxygen tank to the small plastic prongs that fit into the resident's nostrils.
  - The two prongs that project from the end of the nasal cannula tubing are placed about ½-inch into the resident's nostrils after the oxygen has been turned on.
  - Do not use petroleum jelly (Vaseline) as a lubricant to prevent irritation of nares. It can act as a fuel and produce fire. Use of a water-soluble lubricant is appropriate if necessary (i.e., KY lubricant).
  - This method supplies oxygen at low concentrations (22% to 30%) at flow rates of 1 to 5 liters per minute.
  - The flow rate of oxygen administration must be ordered by a provider.
  - Major concerns associated with the use of the nasal cannula when the oxygen administration flow rate is above 8 liters per minute are:
    - the resident tends to swallow air, and
    - the nasal or pharyngeal passage becomes irritated.
  - Instruct the resident to breathe through the nose. Mouth breathing dilutes the oxygen concentration received.

- Inspect the nares for irritation as well as behind the ears where skin breakdown can occur from continuous contact with the tubes delivering the oxygen.
- Monitor the liter flow to ensure the provider's order is followed and the flow has not been changed/increased by the resident or a visitor (i.e., unqualified individuals).
- Refer to facility policies and procedures addressing the frequency of nasal cannula tubing change.
- When not in use, the nasal cannula should be coiled and placed in a plastic bag for storage to prevent contamination.
- Non-sealing mask - a long slender plastic tube that extends from the oxygen tank to a plastic mask shaped like a cup. A mask is advantageous for residents who are unable to breathe solely through their nose.
  - The non-sealing mask covers the resident's nose and mouth and has holes on the sides of the mask.
  - A piece of elastic holds the mask securely on the resident's face.
  - Some masks have a metal clip that can be bent over the bridge of the resident's nose to secure the mask snugly.
  - The straps are adjusted around the resident's head and over the ears.
  - The holes on the sides of the mask allow air from the room to enter during the inhalation process.
  - The use of a non-sealing mask must be ordered by a provider.
  - When a non-sealing mask is used, the resident will not be able to speak.
  - The QMA must be certain that the resident can signal for assistance.
  - A major concern with the use of a face mask is pressure and moisture accumulation on the resident's face.
    - Report any redness or discoloration to the resident's facial skin.
  - Monitor the liter flow to ensure the provider's order is followed and the flow has not been changed/increased by the resident or a visitor (i.e., unqualified individuals).
  - Refer to facility policies and procedures addressing the frequency of mask/tubing change.
  - When not in use, the mask should be placed in a plastic bag for storage to prevent contamination.



**Oxygen dries out the mucous membranes of the mouth and respiratory system**



The provider may order humidity to be placed on the oxygen source before administration of oxygen. With humidification, the gas passes through the water and water vapor is picked up before being delivered to the resident.

- Humidity is added to oxygen in the form of sterile/distilled water.
  - When the bottle of sterile/distilled water is opened, the QMA must write the date and time the bottle was opened on the label of the bottle.
  - Store the sterile/distilled water in the refrigerator after opening or per facility policy.
  - Sterile/distilled water should be discarded after two weeks from the date opened or per facility policy.
- Add sterile/distilled water to the humidifier bottle to the fill level line.
- Many facilities utilize pre-filled humidifier bottles. In this case, the old bottle is discarded when empty and a new pre-filled bottle is screwed into place on the tank.

## **Types of Oxygen**

- Compressed or Liquid Oxygen
  - Can be administered from large stationary tanks or small portable tanks as compressed gas or liquid oxygen.
  - The facility may utilize large storage tanks from which portable tanks are trans-filled. If so, the QMA must receive necessary training relative to the trans-filling of oxygen from the storage tank to the portable.
- Portable Oxygen Units
  - Contain electronic oxygen-conserving devices.
  - These units only contain a few pounds of liquid oxygen.
  - Portable units can provide oxygen for up to eight hours. Refer to manufacturer's instructions.
- Stationary Systems
  - The most common oxygen system.
  - This system is called a concentrator.
  - An electrical device extracts oxygen from the room air and circulates the oxygen back to the resident through the oxygen tubing.
  - An oxygen concentrator weighs approximately 35 pounds.
  - A concentrator is an electric piece of equipment and must be plugged into a wall outlet to operate.
- In the event of facility power failure, an oxygen concentrator should be plugged into emergency outlets to ensure the continued delivery of oxygen.

## **Oxygen is a Flammable Substance**

- Maintain safety precautions.
  - Keep the oxygen away from open flames or heat sources. There should be "No Smoking" near an oxygen tank.
  - Oxygen does not burn by itself but does facilitate combustion.
  - Supply tanks should be stored safely, secured to a wall and away from heaters and furnaces.

- DO NOT USE petroleum lubricants (Vaseline) to the resident's nares during the administration of oxygen.
- To prevent leakage, always keep the oxygen system upright. Make certain the system is turned off if it is not in use.
- Do not place carpets, bedclothes, or furniture over the tubing as it may cause a tubing leak.
- Should a fire occur in the building, turn off all sources of oxygen.

## Procedure

1. Identify what constitutes the resident's respiratory distress before applying emergency oxygen.
2. Obtain a pulse oximetry reading to determine the resident's oxygenation saturation level.
3. Signs/symptoms of respiratory distress include:
  - increased rapid pulse
  - rapid, shallow respirations
  - increased restlessness or light headedness
  - flaring of the nares
  - substernal or intercostal retractions
  - cyanosis
4. Review the provider's orders:
  - What source of oxygen supply is to be used?
  - What oxygen delivery system is to be used?
  - What is the rate of administration for the oxygen per the provider's order?
  - What are the provider-ordered parameters for the application of emergency oxygen?
5. Assemble your equipment:
  - oxygen supply
  - regulator or flow meter
  - oxygen tubing
  - nasal cannula or non-sealing mask
  - humidification device if ordered by the provider.
  - sterile water to use in the ordered humidification device or a pre-filled bottle.
6. Perform INITIAL STEPS.
7. Prepare the resident, ask non-essential personnel or visitors to leave the resident's room
8. Test the equipment for proper operation before applying oxygen
  - Make certain that there is no kinking in the plastic tubing that obstructs the flow of oxygen
9. Position the resident in a Semi-Fowler's or Fowler's position to maintain an open airway.
10. Apply the ordered oxygen administration device (i.e., nasal cannula or non-sealing mask) to the resident.
11. Application of a nasal cannula requires the ½ inch prongs at the end of the plastic tubing to be inserted into the nasal cavity pointing in a downward direction.
  - The tubing extends across the facial area and is placed above and behind each ear and is rejoined below the chin and held by a sliding plastic device.
  - The sliding plastic device holding the two pieces of plastic tubing together can be moved up slightly to increase the tension on the tubing around the resident's ears and hold the tubing in place.
12. Application of non-sealing face mask
  - The mask fits snugly over the resident's nose and mouth.

- Straps are adjusted around the head and over the ears.
  - The small holes on the sides of the mask allow carbon dioxide to escape during exhalation, and air to enter the mask during inhalation.
13. The QMA must immediately verbally notify the nurse on duty or on call when emergency oxygen has been administered to a resident.
14. The QMA must document the following information when oxygen has been initiated:
- Date and time that the oxygen was administered.
  - Type of oxygen therapy and the liter flow.
  - Resident tolerance of the procedure.
15. Continue to monitor the resident until further assistance arrives or until distress subsides. DO NOT LEAVE THE RESIDENT ALONE until distress subsides.
- Some residents respond with fear, panic, restlessness, and continued feelings of suffocation.
  - Remain calm and reassure the resident until further assistance arrives.

**Notes:**

## Lesson 61: Instilling a Commercially Prepared Disposable Enema

### Lesson Objectives:

- Demonstrate the ability to correctly instill a commercially prepared disposable enema per provider's order.

### Introduction

- An enema is the introduction of a solution into the rectum and sigmoid colon.
- The enema serves to remove feces and/or flatus.

### Common Purposes Include

- To remove feces in episodes of constipation and/or impaction.
- To remove feces and cleanse the rectum and colon in preparation for an examination.
- To remove feces prior to a surgical procedure.

### Types of Enemas

There are various types of enemas with some requiring the instillation of 1000 to 1500 ml of fluid. However, the QMA may only instill a commercially prepared enema which contains approximately 120 ml (4 oz.) of fluid. The action of the commercially prepared disposable enema is to increase water absorption in the small intestine by osmotic action; a laxative effect that occurs due to increased peristalsis and water retention.

Sodium biphosphate (Fleet's Enema) is a saline laxative commonly ordered to be administered.

### Procedure

1. The QMA should always refer to the instructions accompanying the commercially prepared enema; however, the general procedure is as follows:
2. Review the provider's order to verify the prescribed solution to be administered.
3. Perform INITIAL STEPS.
4. Assist the resident to put on a facility gown to minimize the effects of soiling personal clothing if necessary.
5. Place the resident in a left lateral position and provide for the resident's privacy during the procedure.
6. Ask the resident if he/she has had problems retaining an enema in the past.
7. Put on gloves.
8. Place linen saver pads under the resident's buttocks.
9. Have the bedpan or commode nearby.

10. Remove the cap from the commercially prepared enema, insert the pre-lubricated tip of the enema into the resident's rectum pointed toward the navel and squeeze the bottle to instill the solution at a slow steady rate until all is instilled.
11. Instruct the resident to hold the solution for as long as possible for the best results.
12. Remove the enema tip; replace the used enema unit in its original container and discard.
13. Warn the resident about potential adverse reaction of abdominal cramping.
14. Instruct resident to notify QMA when he/she must defecate to allow the QMA to assess the results.
15. Perform FINAL STEPS.
16. If the resident has not had any effect from the enema within an hour, the QMA must notify the nurse.
17. When documenting the administration of the enema and effect of the procedure in the resident's clinical record, include color, consistency and amount of results.

**Notes:**

## A

**Abbreviation** - A shortened form of a word or phrase.

**Abdominal Distention** - Enlarged abdomen.

**Abdominal Thrusts** – An emergency intervention implemented on a person observed to be choking in an effort to cause the person to expel the object. Bend the resident forward at the waist, and place a fist with the thumb side against the middle of the resident's abdomen, just above the navel. Grasp the fist with the other hand. Press fist into abdomen with five, quick, inward, and upward thrusts.

**Abscess** - A localized collection of pus in any part of the body that is the result of disintegration or displacement of tissue.

**Absorption** - The taking up of fluids or other substances by the skin, mucous surfaces, or absorbent vessels.

**Abuse** – The willful infliction of injury, unreasonable confinement, intimidation or punishment with resulting physical harm, pain, or mental anguish.

**Acetylcholine** - Chemical present in many organs and tissues of the body that has important physiological functions (i.e., transmission of a nerve impulse across a synapse); neurotransmitter.

**Act** - A written law; exact words drafted and approved by a national, state or local legislature.

**Active Immunity** – Naturally acquired immunity obtained by contracting a disease or by the injection of an infectious organism.

**Acute** – Having a rapid onset and a short course.

**Adhesion** – A holding together or uniting of two surfaces or parts, as in wound healing.

**Adverse Effect** – An undesired side effect of a medication or toxicity.

**Affective Psychosis** - Psychotic reaction in which a person exhibits wide swings in emotions.

**AIDS** - *Acquired Immune Deficiency Syndrome* is a disease that affects the body's ability to fight infection. A progressive impairment of the immune system. AIDS is spread through the body fluids of an infected person by sexual intercourse (vaginal, anal, oral), sharing IV needles, infected mothers passing the disease to the fetus or transfusion of blood or blood products. Can be spread through blood-tinged stools or urine.

**Akathisia** - Motor restlessness - inability to sit or lie down quietly. Continuous movement of the hands and mouth, picking at self, rocking in a chair, drumming fingers, pacing the floor, rocking when standing, etc.

**Akinesia** – Complete or partial loss of muscle movement.

**Allergen** - A substance that causes a hypersensitive reaction (an allergy).

**Allergic Effect** - Sensitivity to any substance contacted by touch, inhalation, ingestion or injections (such as poison ivy, pollen, insect bites, foods or medications); causes sneezing, itching, swelling, and/or difficulty in breathing.

**Analgesics** - Medications that relieve muscle, joint and bone pain.

**Anaphylactic Reaction** - Life-threatening allergic reaction caused by an allergen. Characterized by respiratory difficulty, fainting, itching and welts on the skin.

**Androgens** – Substance producing or stimulating the development of male characteristics (masculinization) such as the hormones testosterone and androsterone.

**Anemia** - A reduction in the number of circulating red blood cells.

**Anesthetics** - Medications that cause a loss of sensation.

**Angina** - Any disease in which spasmodic and painful suffocation or spasms occur.

**Angina Pectoris** – Pain about the heart.

**Anorexia** - Lack of or loss of appetite for food.

**Antagonistic Effect** - An agent, such as a remedy or a medication, which tends to nullify the action of another agent.

**Antianxiety Drugs** – Psychoactive medications used to treat anxiety; also, may be used for the prevention and treatment of convulsions.

**Antibiotics** - Substances produced by certain fungi, bacteria and other organisms that are effective in inhibiting the growth of or destroying microorganisms.

**Anticonvulsants** - Medications used to stop or prevent convulsions or seizures.

**Antidepressants** – Medications that alleviate the symptoms of depression.

**Antiemetics** - Medications used to treat and prevent nausea and vomiting.

**Antihistamines** - Medications that are used to reduce the effects associated with histamine production in allergies and colds.

**Anti-Inflammatory** - Medication used to reduce swelling, pain and tenderness caused by inflammation.

**Antipsychotic** – Psychoactive medication used to control symptoms of psychoses and neurocognitive disorders; change behavior but does not cure disease. Normally used in response to delusions and hallucinations.

**Antiseptic** - A substance that inhibits the growth of germs. Anti-septic solutions are used as cleaning agents to prevent the spread of infection.

**Antitussives** - Medications that relieve coughing.

**Anuria** - No urinary output.

**Anxiety Neurosis** - Frequent feeling of uneasiness or fear with no apparent cause; associated with somatic symptoms and without organic disease.

**Apathetic** - Lack of concern or caring.

**Aphasia** - Defect or loss of the power of expression (speech, writing or signs), or of comprehending spoken or written language due to injury or disease of the brain centers.

**Apical Rate** – The heartbeat heard at the apex of the heart.

**Apnea** - Temporary cessation of breathing.

**Apothecary System** - A system of measures historically used by the person who prepares and sells medications and medicines.

**Arabic Numerals** - Numerical symbols 1, 2, 3, 4, 5, 6, 7, 8, 9 and 0.

**Arrhythmia** – Irregular or loss of the rhythm of the heartbeat.

**Arteriosclerosis** - Thickening and hardening of arterial walls caused by calcium build-up that interferes with blood circulation.

**Arthritis** - Inflammation of a joint.

**Aseptic** - Free of infection. Often refers to proper handwashing and other measures taken to prevent the spread of infection.

**Aspiration** - The taking of foreign matter (such as food) into the lungs during inspiration.



**Assault and Battery** - The threat to use force upon another person and the carrying out of the threat.

**Assay/Bio-assay** - Technique by which strength and purity of medications are measured.

**Assess** – Observe and evaluate a resident's condition. Assessment is conducted by the licensed nurse.

**Asthma** - A chronic respiratory disease, often from allergies, and accompanied by labored breathing, chest constriction and coughing.

**Atherosclerosis** - A deposit of degenerative accumulation of cholesterol and lipid material in the arteries.

**Athlete's Foot** - A contagious fungal infection of the feet.

**Atomizer** - A device used to deliver a fine spray of medicine.

**Atrophy** - The emaciation or wasting of tissues.

**Auditory Canal** - Tubular passages or ducts that assist in hearing or in the sense of hearing.

**Aural** – Pertaining to the ear.

**Autonomic Nervous System** (ANS) - The division of the vertebrate nervous system that regulates involuntary action (intestines, heart and glands) and makes up the sympathetic and parasympathetic nervous systems.

**Axillary** – Pertaining to the axilla (i.e., the armpit).

## **B**

**Back Blows** - An emergency intervention implemented on a person observed to be choking in an effort to cause the person to expel the object. Place the heel of one hand between the shoulder blades and hit them firmly on their back 5 times.

**Benign** – Mild; non-cancerous.

**Benign Prostatic Hypertrophy (BPH)** – Enlargement of the prostate gland.

**Bioavailable** - When a medication is circulating free in the bloodstream and is ready for action or use.

**Blood Pressure** - The force exerted by the heart against the arterial walls when the heart contracts (systolic) or relaxes (diastolic).

**Brachial Artery** – Main artery of the arm running down the inside of the arm.

**Brachial Pulse** - The pulse taken on the inside of the forearm at the elbow.

**Bradycardia** - Slow heartbeat; less than 60 beats per minute.

**Bronchitis** - Inflammation or swelling of the bronchial tubes.

**Bruise** – Discolored area caused by an injury to the surface of the skin.

**Buccal** - Medication is placed between the teeth and the mucous membrane of the cheek.

**Bulbourethral Glands** – Two small glands, one on each side of the prostate gland, each with a duct about 1 inch long, terminating in the wall of the urethra. They secrete a fluid forming part of seminal fluid.

**Burns** - Injury to the skin by strong chemicals, electricity, high temperatures or radiation.

**Bursitis** - Inflammation of a bursa (sac or cavity around the joint) usually at the shoulder, elbow or knee joints.

## C

**Caffeine** - A white, bitter, crystalline substance that has stimulant effects and constricts blood vessels in the brain.

**Capsules** - Medication in small cylinder-like containers.

**Carbohydrates** - Sugars, starches and cellulose.

**Carcinogen** - A cancer-causing substance.

**Cardiotonic** - Medication used to strengthen the activities of the heart.

**Carotid** – The arteries that arise from the aorta and supply blood to the head and neck; normally palpated in the neck.

**Cataract** - The lens or capsule of the eye loses its transparency or translucency causing partial or total blindness.

**Catastrophic Reaction** - The resident is abnormally overwhelmed by stimuli or easily startled.

**CCMS** – Abbreviation for clean catch mid-stream urine specimen.

**Cecum** – A pouch that forms the first portion of the large intestine.

**Cerebrovascular Accident (CVA)** – A sudden impairment of circulation in one or more of the blood vessels supplying the brain.

**Chemotherapy** - The treatment of a disease with chemicals.

**Cheyne-Stokes** - Respiratory cycles that vary in intensity; waxing and waning of respirations from very deep respirations to very shallow with temporary apnea.

**Chills** - Shivering or shaking.

**Chronic** – Long; drawn out.

**Chronic Kidney Failure** - Reduction in kidney function.

**Chronic Obstructive Pulmonary Disease (COPD)** - A disease process that causes decreased ability of the lungs to perform their function of ventilation.

**Cirrhosis** – A chronic disease of the liver characterized by the formation of dense perilobular connective tissue.

**Clean** - Fresh, unused and free from disease-causing organisms.

**Code of Ethics** - A voluntary set of rules that influence relationships between people.

**Colostomy** – An opening of some portion of the colon to the abdominal surface.

**Comatose** - Cannot be aroused; unconsciousness.

**Common Cold** - Communicable viral disease.

**Communication** – The exchange of information and interpersonal skills.

**Competent** - Well-qualified or capable

**Congestive Heart Failure (CHF)** – Heart muscle weakness that causes fluid to back up and cause edema in the tissues.

**Conjunctival Sac** - Mucous membrane that lines the inner surface of the lower eyelid.

**Conjunctivitis** - Inflammation of the mucus membrane that lines the inner surface of the eyelid and the exposed surface of the eyeball.

**Constipation** - Difficult, incomplete or infrequent bowel movements.

**Contaminated** - Exposed to disease-causing organisms. Soiled.

**Contracture** - Permanent shortening of a muscle that produces a deformity.

**Controlled Substance** - A medication that can be addictive or habit-forming and must be counted and secured.

**Convulsion** - Abnormal, uncontrolled movement of all or part of the body.

**Cream** - Medication applied to the skin or mucous membrane that is more easily absorbed by the skin than ointments.

**Cumulative Effect** - Build-up of medication in the body due to slow excretion that could lead to a toxic effect.

**Cyanosis** - A bluish discoloration of the skin caused by the lack of oxygen in the blood.

**Cystitis** - Inflammation of the urinary bladder.

## **D**

**Dehydration** – Condition in which output exceeds intake.

**Delusions** - False beliefs that the resident holds even when there is obvious proof or evidence to the contrary (e.g., believes food is being poisoned by facility, believes he/she is the facility physician, etc.).

**Dementia** – A term for several symptoms related to a decline in thinking skills.

**Depressants** - Medications used to decrease mental and physical activity.

**Depression** - A lowering or decrease of activity functioning with the following symptoms: lack of interest in life, insomnia and loss of appetite.

**Dermatitis** – Inflammation of the skin.

**Dermis** - A layer of skin.

**Diabetes** - A disorder of carbohydrate, protein and fat metabolism that prevents the body from properly converting foods into energy for carrying out vital functions.

**Diaphragm** – 1.) The musculomembranous wall separating the abdomen from the thoracic cavity. Acts like bellows to draw fresh air in and push waste products out. 2.) The diaphragm of the stethoscope is the flat surface of the bell, which is placed on the brachial artery when obtaining blood pressure.

**Diarrhea** - Frequent, loose bowel movements.

**Diastolic Pressure** - The force of the blood in the arteries when the heart is relaxed and filling with blood. Diastolic readings (the bottom number) are within the normal range between 60-90 mm Hg, with the average being 90 mm Hg.

**Dirty** - Exposed to disease-causing organisms. Contaminated. No longer clean.

**Disinfectant** - Substance used to destroy microorganisms.

**Distribution** - To divide and dispense into portions.

**Dopamine** - Chemical present in many parts of the body that has important physiological functions, (i.e., transmission of a nerve impulse across a synapse) neurotransmitter. Dopamine is a product of norepinephrine.

**Dorsal Recumbent Position** – Resident is on back with head and shoulders elevated at an angle of 30° or more. The lower extremities are moderately flexed with legs apart and the soles of the feet resting upon the bed.

**Drug Diversion** – Diverting the resident's medication for one's own or another person's use.

**Drug Interaction** - The action of one medication interferes with the action of another medication; the effects of two or more medications.

**Duodenum** - The first portion of the small intestine.

**Duty of Care** - Performance of services that meet common standards.

**Dyskinesia** - Abnormal movements of the body such as a dramatic onset of spasms, oculogyric crisis (begins with a stare, rolling of eyes, tilting of the head, facial expressions), protrusion of the tongue, stiff neck, inability to swallow, stammering speech (dysarthria), labored breathing and involuntary muscle movements.

**Dyspepsia** – Imperfect or painful digestion.

**Dysphagia** - Difficulty or inability to swallow.

**Dyspnea** - Difficulty in breathing.

**Dysuria** - Painful or difficult urination.

## **E**

**EDK (Emergency Drug Kit)** – A supply of medications maintained "in-house" by the facility.

**Eczema** - A noncontagious inflammation of the skin, marked mainly by redness, itching and the outbreak of lesions that discharge fluid and become encrusted and scaly.

**Edema** - Swelling caused by large amounts of fluid in the tissues.

**Electrolytes** - Chemical elements in the blood and body that are important for muscle function.

**Elixir** - A water-alcohol solution that may contain sugar and flavoring.

**Emaciated** – Excessively thin or lacking in a normal amount of tissue.

**Emesis** – Vomit.

**Emphysema** - A condition of the lungs resulting in labored breathing and increased susceptibility to infection.

**Emulsion** – Suspension of oil, water and other substances.

**Encephalitis** – Inflammation of the brain.

**Enteric Coated** – Protective coating on medication that allows for protection of the stomach lining.

**Epidermis** – The outer protective layer of the skin.

**Epididymis** – Coiled structure that stores and matures sperm cells.

**Epilepsy** – Chronic disorder characterized by recurring seizures that last from a few seconds to several minutes and require specific medication for prevention and control.

**Estrogen** – Female sex hormone.

**Euthanasia** – Inducing the painless death of a person for reasons believed to be merciful.

**Excoriation** – A scratch on the skin usually covered with a scab.

**Excretion** – Eliminating waste, such as sweat, urine or feces from the body.

**Expectorant** – Medication that assists in liquefying the mucus to make it easier to cough up.

## **F**

**Fat** – A white or yellowish tissue that forms soft pads between various organs of the body, serves to smooth and round out bodily contours and furnishes a reserve supply of energy.

**Fecal Impaction** – The formation of a firm mass of feces in the distal colon or rectum.

**Feces** – Waste excreted from the bowels.

**Fever** – Body temperature 2.4 degrees greater than the resident's normal baseline temperature. A rectal temperature above 100° Fahrenheit.

**Fibrillation** – Very rapid irregular contractions of the muscle fibers of the heart resulting in the heartbeat and the pulse not beating simultaneously.

**First-Degree Burn** – A burn that causes the skin area to turn red.

**Fluid** – A liquid or a solid (such as gelatin) that is measured as a liquid.

**Fluid Balance** – Taking in approximately the same amount of fluid as one eliminates.

**Fluid Extract** – A concentrated alcohol solution of a vegetable medication.

**Flushed** – Redness of the skin.

**Flutter** – Very rapid rhythmic contractions of the heart muscles.

**Fowler's Position** – Head of bed elevated 45-60°, helps breathing, and is comfortable for grooming, oral care, and eating, but puts more pressure on the coccyx.

**Fracture** – Broken bone.

**Friction** – The rubbing of one thing against another. For example, when you wash your hands aseptically you create friction by rubbing them together in a brisk, back-and-forth motion.

**Fungal Infection** – Infection caused by a fungus.

## **G**

**Gallbladder** – Sac in which the bile from the liver is stored.

**Generic** – Commonly available medications that are not protected by trademark.

**GERD** – Gastroesophageal reflux disease; reflux of gastric contents into the esophagus. Reflux may occur in association with obesity, pregnancy, or incompetence of the lower esophageal sphincter.

**Glaucoma** – A disease of the eye characterized by high intraocular pressure, damaged optic disk, hardening of the eyeball, and partial or complete loss of vision.

**Gout** – Acute arthritis and inflammation of the joints.

**Graduated Container** – A container divided into equal parts that is used to measure liquids.

**G-Tube (Gastrostomy Tube)** – An artificial surgical opening into the stomach through the abdominal wall that is used for feeding or medication administration.

**Guillain-Barre Syndrome** – An acute rapidly progressive form of polyneuritis that is caused by demyelination of peripheral nerves.

## **H**

**Half-Life** – The time required by living tissue, an organ or an organism to eliminate by biological processes half the quantity of a substance taken in.

**Hallucinations** - Hearing, smelling or seeing something that is not there. False sensory perceptions.

**Hematemesis** – Vomiting blood.

**Hemiplegia** – Paralysis on only one side of the body.

**Hemoccult Testing** – A screen for fecal occult blood.

**Hemoptysis** – Coughing blood.

**Hemorrhoid** – A mass of dilated veins in the rectum; may be internal or external.

**Hepatitis** – Inflammation of the liver which may be caused by a variety of agents including viral infections, bacterial invasion, and physical or chemical agents.

**Hepatitis B** – Inflammation of the liver; transmitted by blood, secretions or feces.

**Hg** – The chemical symbol for mercury.

**Hip Bath** – A term sometimes used to refer to a sitz bath.

**Histamine** – A white crystalline compound found in plant and animal tissue which is a stimulator of gastric secretion and is used medicinally as a vasodilator to increase the blood supply to the brain.

**Hives** – Red, swollen, itching areas.

**Hormone** – A chemical substance secreted into the body fluids by an endocrine gland that has a specific effect on the activities of other organs.

**Huntington's Disease** – Hereditary progressive disease-causing dance-like movements mental deterioration and ending in dementia.

**Hyperglycemia** – An abnormally high level of sugar in the blood.

**Hyperkalemia** – An abnormally high level of potassium in the blood.

**Hypertension** – High blood pressure.

**Hypnotic** – Psychoactive medication used to produce sleep.

**Hypoglycemia** – An abnormally low level of sugar in the blood.

**Hypokalemia** – An abnormally low level of potassium in the blood.

**Hypotension** – Low blood pressure.



**Idiosyncrasy** – Unusual or unexpected effects from a medication.

**Immunity** – Resistance of the body to a particular disease.

**Incontinence** – Loss of bladder and/or bowel control.

**Infection** – Activity of disease-producing bacteria, viruses, or fungi in the body and the reaction of the body to the microorganisms and their products.

**Infection Control** – Preventing the spread of microorganisms by following certain practices and procedures.

**Infectious Hepatitis** – Contagious infection of the liver.

**Inflammation** – Localized heat, redness, swelling and pain as a result of irritation, injury or infection.

**Influenza** – An acute highly contagious infection. Commonly known as the “flu”.

**Inhalation** – Act of drawing breath, vapor or gas into the lungs.

**Inhaler** – A device used to administer medications by the act of breathing in (i.e., inhaling).

**Inner Canthus** – The corner of the eyelid closest to the nose.

**Insertion** – Medication is placed into a specific area of the body usually with the fingers.

**Insomnia** – Inability to sleep.

**Instillation** – The process of administering a liquid.

**Insulin** – A preparation derived from the pancreas of a pig, an ox or developed from semi-synthetic human insulin; used in the medical treatment of diabetes.

**Intercostal** – Space between the ribs.

**Inunction** – Ointment or medicated substance rubbed into the skin to secure a local effect.

**Iron Deficiency Anemia** – Low iron levels in the blood due to inadequate diet or blood loss.

**Irrigation** – The cleansing of a canal by flushing with water or other fluid; the washing of a wound.

**Ischemia** – Temporary decrease in the amount of blood being delivered to a part of the body, mainly due to the contraction of the supplying blood vessel.

**Involuntary Seclusion** – Separation of a resident from other residents or his/her room, or confinement to his/her room against the resident's will.

## **J**

**Jaundice** – Yellowish discoloration of tissues and body fluids with bile pigment caused by any of several pathological conditions in which normal processing of bile is interrupted.

**Jejunum** – The second portion of the small intestine.

**J-Tube (Jejunal Tube)** – An artificial surgical opening into the jejunum through the abdominal wall. It may be a permanent or temporary opening that is used for feeding or medication administration.

## **K**

**Ketoacidosis** – Result of fat being used for energy resulting in an acidotic state. Form of acidosis in which sodium, potassium and ketone bodies are lost in the urine; found in residents who have diabetes mellitus.

**Kilogram** – A unit of mass which equals 1,000 grams in the metric system.

**Korotkoff Sounds** – Sounds heard during a blood pressure reading, produced by sudden distention of the artery.

## **L**

**Labia** – Folds of skin or mucous membrane that surround the vagina.

**Laceration** – A wound made by tearing.

**Lateral Position** – Lying on either the right or left side, reducing pressure on one side of the body.

**Law** – Man-made rule which regulates human conduct in an ordered and binding manner.

**Lethargic** – Not alert, drifts off into sleep, drowsy, sluggish.

**Libel** – Any written statement that damages a person's character.

**Liniment** – A solution used as a vehicle to distribute medication.

**Liver** – Organ of the body that secretes bile and causes changes in many of the substances in the blood.

**Living Will** – A document that states to the physician and caregivers that life-prolonging medical treatments should not be used, and the resident must be allowed to die naturally from his/her terminal

condition. The document also addresses whether the resident chooses for food or water to be artificially provided as part of medical treatment during the end-stage of life when the resident cannot consume these independently.

**Local Action** – Medication acting at the site of administration, on the skin or mucous membrane.

**Lotions** – Watery preparations that contain medication.

**Lozenges** – Flat, rounded discs consisting of medication and sugar.

## **M**

**Malignant** – Cancerous.

**Malpractice** – Improper, injurious or negligent professional treatment or care of a resident.

**Measles** – A childhood disease caused by the rubeola virus.

**Medical Asepsis** – The state of being free from disease causing microorganisms.

**Medication** – Any substance used in the diagnosis or treatment of disease, relief of pain or other symptoms.

**Medication Error** – The administration of a medication or treatment which is not in accordance with physician's orders, manufacturer's specifications or accepted professional standards and principles.

**Meningitis** – Inflammation of the layers covering the brain and spinal cord.

**Meniscus** – The curved upper surface of a liquid in a container.

**Menopause** – The permanent ending of menstrual activity.

**Mental Abuse** – Humiliation, harassment, threats of punishment or deprivation.

**Metabolism** – The physical and chemical processes involved in the maintenance of life.

**Metastasis** – Transmission of a disease from an original site to one or more sites elsewhere in the body.

**Metered Dose Inhaler (MDI)** – Hand-held nebulizer.

**Metric System** – A system of measurement based upon the meter as the unit of measurement, the gram as the unit of weight, and the liter as the unit of volume.

**Microorganisms** – Living organisms that can be seen only through a microscope. Germs; not all are harmful.

**Milk** – Bulky suspension in water that is insoluble and must be shaken.

**Milliliter (ml)** – A measurement of volume in the metric system that equals one-thousandth of a liter.  
1 milliliter (ml) = 1 cubic centimeter.

**Millimeter (mm)** – A metric measurement of length that equals one-thousandth of a meter.

**Miotic** – An agent that causes contraction of the pupil of the eye.

**Misappropriation of Resident Property** – The deliberate misplacement or exploitation of a resident's belongings.

**Mons Pubis** – Soft fatty tissue covering the joint of the pubic bones.

**MRSA** – Methicillin Resistant Staphylococcus Aureus

**Mucous Membrane** – Membrane lining passages and cavities communicating with the air.

**Mucous** – Having the nature of or resembling mucus.

**Mucus** – Viscous fluid secreted by mucous membranes and glands.

**Mumps** – An inflammation of one or both parotid glands.

**Muscle Relaxant** – Medication that helps muscle tissue relax and be less tense and painful.

**Muscle Spasm** – Condition of the muscles in which there is a sudden and violent tightening of the muscle.

**Muscle Sprain** – Trauma to a joint that causes pain and disability, depending on the degree of injury to the ligaments. More severe than a strain and requires longer recuperation.

**Muscle Strain** – Condition in which the muscle is stretched.

**Myasthenia Gravis** – A disease characterized by muscular weakness.

**Mydriatic** – A medication that produces dilation of the pupils.

## **N**

**Nasal Cannula** – Plastic tubing utilized to deliver oxygen from the supply source (tank) to the resident's nares.

**Nasogastric Tube** – A tube that is placed through the nose into the stomach. The QMA may not flush, check placement of, or instill medications via nasogastric tube.

**Nausea** – Unpleasant sensation usually preceding vomiting.

**Neglect** – Failure to provide goods and services necessary to avoid physical harm, mental anguish or mental illness.

**Negligence** – Omission or neglect of any reasonable precaution, care or action.

**Neuron** – A nerve cell.

**Neurocognitive Disorder** - Emotional disorders that are caused by some physical agent or condition such as arteriosclerosis, Alzheimer's Disease, brain tumors, alcohol and other medications, infections or nutritional deficiencies.

**Neurosis** – Functional disorders of the mind or emotions due to unresolved conflict, without obvious organic lesion or change. The chief characteristic is anxiety, but may also involve phobias or other abnormal behavior symptoms.

**Neurotransmitters** – Chemical substances that assist an electrical nerve impulse to travel across the synapse.

**Non-Sealing Mask** – Plastic mask shaped like a cup, with a long slender tube that extends from the mask to the oxygen source.

**Nonsteroidal Anti-Inflammatory Agents (NSAIA)** – Medications used to reduce symptoms of inflammation; also called NSAID (nonsteroidal anti-inflammatory drug)

**Nonverbal Communication** – Facial expressions, tone of voice, eye movement, posture, gestures.

**Norepinephrine** – Chemical present in the adrenal glands.

**Nosocomial** – Refers to an infection acquired while in the health care facility.

**Nutrient** – Any substance that provides nourishment.

**Nystagmus** – A spasmodic, involuntary motion of the eyeball.

## O

**Obese** – Extremely overweight.

**Objective Observation** – What is seen and heard.

**Observation** – What is seen, heard, smelled or overheard as spoken by the resident. An observation is made by watching attentively.

**Ointment** – Mixture of medications with a fatty base, soft enough to spread at room temperature or

**Oliguria** – Voiding of a diminished amount of urine in relation to fluid intake.

**Ophthalmic Medication** – Medication that is used exclusively in the eyes.

**Oral** – By mouth.

**Oral Hypoglycemic** – Medication that stimulates specialized cells in the pancreas to produce insulin.

**Orthopnea** – Inability to breathe except in an upright position.

**Osteoporosis** – Abnormal porousness of the bone caused by the enlargement of its canals or the formation of abnormal spaces. Causes brittleness.

**Ounce** – Unit of weight equal to 1/16 of a pound (16 oz. = 1 lb.).

**Outer Canthus** – The outer corner of the eyelid.

**Oximeter** – Photoelectric device utilized to determine the amount of oxygen in the blood.

## **P**

**Pain Tolerance** – Amount of pain a person is able to withstand.

**Palliative** – Serving to relieve or alleviate but not cure.

**Pallor** – Paleness of the skin.

**Pancreas** – A large gland that secretes digestive enzymes and the hormone insulin.

**Paranoia** – Slower, progressive psychosis characterized by suspicions or delusions of persecution or grandeur.

**Paraplegia** – Paralysis of the legs and lower part of the body; caused by disease or injury to the spine.

**Parasite** – An organism that lives within, upon, or at the expense of another organism known as a host.

**Parenteral** – Introducing medication or food into the body by injection or per intravenous route.

**Parkinson's Disease** – A chronic nervous disease characterized by a slowly spreading tremor.

**Parkinsonism** – Varying degrees of loss of associated movements – rigidity of limbs, tremors, gait and posture disturbances, drooling, and skin changes.

**Passive Immunity** – Artificially acquired immunity obtained by injecting antibodies.

**Pathogen** – Disease-causing organism.

**PDR – Physician's Desk Reference** - includes trade and generic names, uses, side effects and interactions of medications.

**Pediculosis** – A contagious infestation of the hair, body and pubic area caused by lice.

**PEG Tube** – Percutaneous endoscopic gastrostomy tube.

**Penis** – Cylinder-shaped vascular structure on the outside of the male body. Houses the external portion of the urethra and is the male organ of copulation.

**Perfusion** – The injection of fluid into an artery to reach tissues.

**Perineal** – The area between the thighs that includes the anus and vulva in the female and the anus and penis in the male.

**Peristaltic Action** – Wave-like muscular contractions that move the contents of the alimentary canal along.

**Pernicious Anemia** – Vitamin B-12 deficiency.

**Perineum** – The area between the anus and the posterior part of the external genitalia.

**Petechiae** – Small purplish spots on the body surface caused by a minute hemorrhage.

**Pharmacology** – The study of medications and their effect on the body.

**Phlebitis** – Inflammation of a vein.

**Phobia** – A persistent, illogical or intense fear of something.

**Physical Abuse** – Hitting, slapping, pinching, kicking or corporal punishment.

**Physical Dependency** – State in which withdrawal of medication produces specific symptoms such as muscle cramps, vomiting or tremors.

**Pneumonia** – An acute or chronic disease marked by inflammation and infection in the lungs.

**Poliomyelitis (Polio)** – Inflammation of the gray matter of the spinal cord.

**Polyuria** – Large amounts of urinary output.

**Pound** – Unit of weight equal to 16 ounces.

**Powder** – Solid medication that has been ground into fine particles and used in that form.

**Primary Effect** – Reason a medication was ordered.

**Pressure Ulcer (Pressure Injury)** – A persistent reddened area or an open wound that is caused by the pressure of lying or sitting in one position for a long period of time.

**Procedure** – A set of established forms and methods for conducting the affairs of the facility.

**Prone Position** – Lying with face downward; on stomach; seldom used with the elderly.

**Pro Re Nata (PRN)** – Whenever necessary.

**Prostate** – Doughnut-shaped gland in the male, composed of muscular and glandular tissue that surrounds the urethra at the bladder and adds alkaline substance to sperm.

**Protein** – A group of compounds containing amino acids that are essential for the growth and repair of tissue.

**Protein Bound** – A medication that is not available for use but is stored for future release in a free, usable form.

**Proteinuria** – The presence of protein in the urine.

**Protocol** – Statement of responsibility for the carrying out of facility policies.

**Pruritis** – Intense itching.

**Psoriasis** – A chronic, noncontagious disease characterized by inflammation, reddened lesions and white scaly patches.

**Psychoactive Drugs** – Medications that alter the resident's psychological functions and behavior.

**Psychological Dependency** – An emotional need or craving for medication.

**Psychosis** – Any severe mental disorder, with or without organic damage, characterized by deterioration of normal intellectual and social functioning and by partial or complete withdrawal from reality.

**Pulse** – Rhythmical throbbing of the arteries caused by the heartbeat.

**Pyelonephritis** – Inflammation of both the kidney and the lining of the pelvis.

**Pyorrhea** – Inflammation of the gum and tooth sockets leading to loosening of the teeth.



## Q

**Quadriplegia** – Paralysis of both arms and both legs.

## R

**Radial** – Having to do with the radius (the outer bone of the arm).

**Radial Pulse** – The pulse taken at the inner part (thumb side) of the wrist.

**Radiation** – Treatment with a radioactive substance.

**Range of Motion** – Moving a joint to its full range in an attempt to prevent muscle contractures and joint deformity.

**Rash** – A skin eruption, usually reddened and raised.

**Reasonable Care** – Doing only those things that you have been trained to do; acting as others would act in the same or similar situations.

**Reception** – Method of introducing medicine into the body; by mouth, injection, rectal, inhalation, etc.

**Rectal** – Pertaining to the rectum.

**Rectum** – The lowest or last segment of the large intestine that ends at the anus.

**Regression** – Returning to an earlier less mature behavior pattern.

**Respiration** – Process of breathing.

**Respiratory Cycle** – The process of taking in oxygen and expelling carbon dioxide from the lungs and respiratory tract. One breath.

**Reusable Equipment** – Equipment that can be used more than once, such as wheelchairs, bedpans, and bath basins. Reusable equipment must be properly cleaned after each use.

**Rhinitis** – Inflammation and swelling of the lining of the nose.

**Ringworm** – A contagious fungal infection of the scalp or body.

**Rotary Motion** – Rubbing your hands together in a circular motion.

**Rubella** – Known as German Measles; an acute infectious disease spread by droplet infection; produces a 3-day rash.

## S

**Scabies** – A contagious skin condition caused by mites that burrow under the skin; characterized by tiny, thread-like blisters that itch. Spread by direct contact.

**Schizophrenia** – Severe emotional disorder, characterized by misinterpretation, retreat from reality, experiences of delirium, and hallucination; resident loses the ability to discern fact from imagination.

**Sciatica** – Severe pain in the leg along the course of the sciatic nerve.

**Sclera** – White tissue covering all of the eyeball except the cornea.

**Scrotum** – Sac-like structure located behind the penis, which holds the testicles.

**Secondary Effect** – Additional effect of the medication other than the one for which it was intended.

**Sedative** – An agent that exerts a soothing or tranquil effect. Sedatives may be local, nervous or vascular.

**Sediment** – Solid particles in the urine.

**Semi-Fowler's Position** – Head elevated 30-45°; helps breathing; puts less pressure on coccyx than sitting up and facilitates swallowing.

**Seminal Vesicles** – Pouch-like structures behind the bladder which store sperm.

**Sensory System** – Receives outside sensations and relates these sensations to the proper nerves.

**Serotonin** – A chemical present in many parts of the body that has important physiological functions, (i.e., transmission of a nerve impulse across a synapse) neurotransmitter.

**Sexual Abuse** – Sexual harassment, sexual coercion or sexual assault.

**Side Effect** – Outcomes that are not intended; the action or effect of a medication other than that desired. Commonly undesirable such as nausea, headache, insomnia, etc.

**Sim's Position** – A semi-prone position. Resident is on left side with right knee and thigh drawn up, left arm along back of resident, chest leaned forward so resident can rest upon it.

**Sinus** – Air cavities in the skull that open into the nasal cavities.

**Sitz Bath** – Immersion of a resident's hips and buttocks into water or a saline solution for a specified period of time.

**Slander** – A malicious statement or report.

**Smallpox** – Acutely infectious disease for which vaccination is administered.

**Solution** – Substance dissolved in water.

**Somnolence** – Drowsiness; sleepiness.

**Spasm** – A sudden, violent, involuntary contraction of a muscle or group of muscles.

**Sphygmomanometer** – Instrument for measuring blood pressure in millimeters of mercury.

**Spirit** – An alcohol solution or a volatile substance.

**Sprain** – Wrenching of a joint with partial rupture of its ligaments. More severe than a strain and requires longer recuperation.

**Spray** – Medications administered by an atomizer.

**Standard of Care** – A description of conduct that illustrates what a reasonably prudent person would have done, or would not have done, under similar circumstances.

**Standard Precautions** – Guidelines to reduce the risk of transmission of pathogens from both known and unknown sources of infection. Every resident is treated as though potentially infectious.

**Stasis** – A stoppage of the flow of blood or other body fluids in part of the body.

**STAT Order** – Physician's order to be carried out immediately.

**Sterile** – Completely free from all living organisms.

**Sterile Tongue Blade** – Flat, wooden instrument that is free of germs.

**Stethoscope** – An instrument used to listen to internal body sounds.

**Stimulant** – An agent that promotes the activity of a body system or function (example: amphetamines and caffeine).

**Stoma** – An artificially created mouth or opening to the surface.

**Stomatitis** – Inflammation of the mucous tissue of the mouth.

**Strain** – An overstretching or overexertion of some part of the musculature.

**Strep Throat** – A severely inflamed and infected throat caused by streptococcus.

**Stress** – Any circumstance, physical or mental, that causes strain or tension.

**Subjective** – Something that is experienced by the individual, not perceptible to an observer.

**Sublingual** – Medication placed under the tongue.

**Substernal** – Beneath the sternum.

**Sundowning** - Increased confusion and restlessness in late afternoon, evening and night.

**Supine Position** – Flat on back; may be necessary during some procedures including bedmaking, bed bath and perineal care.

**Suppository** – A semi-solid substance for introduction into the rectum or vagina where it dissolves.

**Suspension** – Fluid mixtures that need to be shaken which only stay together for a short period of time.

**Syncope** – A brief loss of consciousness.

**Syrup** – Medication made with water, flavoring and sugar.

**Systemic Action/Infection** – Affecting the entire body.

**Systolic Pressure** – The force of the blood in the arteries when the heart is pumping blood out. Systolic readings (top number) are within the normal range when between 100-140 mm Hg.

## **T**

**Tablet** – Dried, powdered medication pressed into shape.

**Tachycardia** – Excessively rapid heartbeat; usually applied to a pulse rate above 100 beats per minute.

**Tardive Dyskinesia** – Involuntary, repetitive useless movements such as spasms, protrusion of the tongue, stiff neck and inability to swallow that occur almost continuously during waking hours but cease during sleep. Often the result of long-term antipsychotic use.

**Temperature** – A measurement of body heat. The normal temperature range is between 97° and 99.6° Fahrenheit or between 36° and 38° Celsius.

**Testicles** – Also called testes; produce testosterone and sperm cells for reproduction.

**Testosterone** – Male sex hormone.

**Tetanus** – Known as Lockjaw; an acute infectious disease often caused by a contaminated puncture wound. Often fatal.

**Thermometer** – An instrument that measures body temperature.

**Thrombophlebitis** – Inflammation of a vein that results in the formation of a clot.

**Thrombosis** – The formation of blood clots.

**Tic Douloureux** – Degeneration of the trigeminal nerve causing pain and spasm of the face.

**Timed-Release** – Medication that is designed to be slowly absorbed by the system so that it has a longer-lasting effect.

**Tincture** – An alcohol solution of an animal or vegetable medication or chemical substance.

**Tinnitus** – A sound in the ears, such as buzzing, ringing or whistling.

**Tolerance** – The ability to withstand the effects of a medication, after single or multiple administrations, without showing adverse effects.

**Topical** – Pertaining to a particular spot; local.

**Toxic Effect** – Effects of medications that become poisonous to the body.

**Trade Name** – The name given by a manufacturer by which a medication is known.

**Tranquilizer** – A medication that produces a calming effect, relieving anxiety and tension.

**Transdermal Patch** – Adhesive bandage containing medication.

**Tremor** – Involuntary trembling or shaking.

**Trendelenburg Position** – Lying on the back with the pelvis higher than the head, inclined at a 45° angle.

**Tuberculosis** – Communicable, acute or chronic infection caused by mycobacterium tuberculosis.

**Tumor** – A circumscribed, noninflammatory growth arising from existing tissue but growing independently above the normal rate or structural development of such tissue and serving no physiological function.

**Turgor** – Normal fullness and elasticity of the skin.

## U

**Ulcer** – An open sore or lesion of the skin or mucous membrane of the body.

**Universal Precautions** – Treatment of all blood and bodily fluids as if they were contaminated; including proper disposal of needles.

**Urinary Incontinence** – Inability to control urination.

**Urinary Retention** – Inability to empty bladder.

**Urinary Tract Infection (UTI)** – Infection in the organs and ducts participating in secretion and elimination of urine.

**Urticaria** – A skin condition characterized by intensely itching welts and caused by an allergic reaction - hives.

## **V**

**Vagina** – The canal leading from the vulva to the uterus in the female.

**Vaginitis** – Inflammation of the vagina.

**Validation Therapy** – A manner of response to a resident by which the resident is allowed to remain in his/her belief without attempting to re-orient the resident.

**Vas Deferens (ductus deferens)** – Tube that carries sperm to the seminal vesicles.

**Vasodilator** – Medication that increases the blood supply to the brain and other parts of the body.

**Verbal Abuse** – Oral, written or gestured language that willfully includes disparaging or derogatory terms.

**Verbal Communication** – Written or spoken words.

**Vertigo** – Dizziness.

**Vital Signs** – Temperature, pulse, respiratory rate and blood pressure. (TPR, B/P)

**Voiding** – Eliminating urine.

**Volatile** – Substances that evaporate easily at normal temperatures and pressures.

**VRE** – Vancomycin Resistant Enterococcus

## **W**

**Withdrawal** – The physiological readjustment that takes place upon the discontinuation of a medication.

## GLOSSARY OF WORD ELEMENTS

Word Element	Refers to or Means	Example
A-,AN-	without, lack of, absent	asepsis, anorexia
AB-, ABS-	from, away	abnormal, abscess
ANO	anus	anoscope
ANTE-	before	antenatal
ANTI-	against	antiseptic
AUTO-	self	autonomic
BRADY-	slow	bradycardia
BRONCHO	bronchus	bronchitis
CARDIO	heart	myocardium
-CIDE	kill	germicide
-CISE	cut	excise
CONTRA-	against	contraception
CYANO	blue	cyanotic
CYTO	cell	monocyte
DE-	down, from	decubitus
DIA-	through, between, across	diameter
DIS-	apart	dissect
DYS-	painful, difficult, disordered	dysfunction
-EMESIS	vomiting	hematemesis
EN-	in, inside	encapsulated
EX-	out	excretion
GASTRO	stomach	gastrointestinal

<b>Word Element</b>	<b>Refers to or Means</b>	<b><u>Example</u></b>
GLUCO, GLYCO	sugar, sweet	glycogen
HEMA, HEMATO, HEMO	blood	hematology
HEMI-	half	hemiplegia
HEPA, HEPATO	liver	hepatitis
HISTO	tissue	histology
HYDRO-	water	hydronephrosis
HYPER-	over, above, increased	hypertension
HYPO-	under, beneath, decreased	hypotension
-IASIS	condition of	personas
INTER-	between	intercellular
INTRA-	within	intramuscular
-ITIS	inflammation of	appendicitis
-LEPSY	seizure, convulse	epilepsy
MAL-	bad, poor, disordered	maladjusted
-METER	measure	thermometer
MUCO	mucous membrane	mucocutaneous
MYO	muscle	myopathy
NECRO	death	necropsy
NEO-	new	neoplasm
NEURO	nerve	neuralgia
-OLOGY	study of	bacteriology
OPHTHALMO	eye	ophthalmoscope



<b>Word Element</b>	<b>Refers to or Means</b>	<b><u>Example</u></b>
OSIS	condition of	neurosis
PATH	disease	pathology
PERI-	around, covering	perineal
-PLEGIA	paralysis	quadriplegia
-PNEA	breathing	orthopnea
PNEUMO	air, lungs	pneumonia
POLY-	much, many	polyuria
POST	after	postpartum
PRE-	before	preoperative
RENAL	kidney	suprarenal
-RHAGE	hemorrhage, flow	hemorrhage
-RHEA	flow	diarrhea
SEMI-	half	semicircular
SUB-	under	subacute
-THERAPY	treatment	hydrotherapy
-THERMY	heat	diathermy
TRANS-	across	transfusion
-URIA, -URIC	condition of, presence in urine	glycosuria
URO	urine	uremia
UNI	one	unicellular
VASO	blood vessel	vasodilator

Alzheimer's Association. "Stages of Alzheimer's." <https://www.alz.org/alzheimers-dementia/stages>

American Heart Association <https://www.heart.org/>

American Red Cross <https://www.redcross.org/>

CDC. "Hand Hygiene in Healthcare Settings." <https://www.cdc.gov/handhygiene/index.html>

CDC. "Nursing Homes and Assisted Living (Long-term Care Facilities [LTCFs]) Clinical Staff Information." <https://www.cdc.gov/longtermcare/staff/index.html>

CDC. "Long-term Care and COVID-19." <https://www.cdc.gov/nchs/covid19/npals.htm>

Centers for Medicare and Medicaid Services (CMS) Federal Regulations. State Operations Manual, Appendix PP – Guidance to Surveyors for Long Term Care Facilities (Rev. 211, 02-03-23).

Hess, C.T. (2012). *Clinical Guide to Skin and Wound Care* (7<sup>th</sup> ed.). Springhouse, PA: Lippincott, Williams & Wilkins.

Indiana Article 16.2 Health Facilities; Licensing and Operation Standards 410 IAC 16.2.

Indiana Department of Health (2015) Nurse Aide Curriculum. Indianapolis, IN; Indiana Department of Health.

Nettina, S. M. (Ed.). (2019). *Lippincott Manual of Nursing Practice* (11th ed.). Springhouse, PA: Lippincott, Williams & Wilkins.

Skidmore-Roth, Linda. (2022). *Mosby's 2023 Nursing Drug Reference* (36<sup>th</sup> ed.). St. Louis: Mosby.

Venes, D. (Ed.). (2021). *Taber's Cyclopedic Medical Dictionary* (24<sup>th</sup> ed.). Philadelphia: F.A. Davis Company.

# INDIANA DEPARTMENT OF HEALTH

## Documentation of QMA Classroom/Laboratory Hours and Topics Covered

Student Name: \_\_\_\_\_

Instructions: Multiple lessons will be addressed in each class session. At the end of each session, the lessons completed should be denoted either by an entry in each box or an arrow indicating the cumulative lessons covered and total hours of the cumulative lessons with student and instructor initials. This document must be monitored ongoing and will be included in the student's individual class file.

Date	Curriculum	Hours	Student Initials	Instructor Initials
	1. Role and Responsibilities of the Qualified Medication Aide			
	2. Legal and Ethical Issues			
	3. Resident Rights/Prohibition of Abuse, Neglect, and Misappropriation of Resident Property			
	4. Communication and Interpersonal Skills			
	5. Caring for the Cognitively Impaired and/or Combative Resident			
	6. Infection Control and Hand Hygiene			
	7. Safety and Emergency Procedures/Intervention for Airway Obstruction			
	8. The Dying Process			
	9. Introduction to Pharmacology/Medication Classification			
	10. Factors that Influence Medication Effectiveness (Care of the Long-Term Resident/Monitoring for Effects of Medication Usage)			
	11. Medication Supply and Storage			
	12. Medication Orders			
	13. Weights, Measures and Simple Mathematics			
	14. Abbreviations Used to Designate Time and Frequency of Medication Administration			
	15. The Gastrointestinal System			
	16. The Musculoskeletal System			
	17. The Skin and Sensory System/Pressure Ulcers (Pressure Injuries)			
	18. The Urinary System			
	19. The Cardiovascular System			
	20. The Respiratory System			
	21. The Endocrine System			
	22. The Male and Female Reproductive Systems			
	23. The Nervous System			
	24. Nutrition/Nutritional Disorders			

Date	Curriculum	Hours	Student Initials	Instructor Initials
	25. Immunity			
	26. Inflammation and Infection			
	27. Malignant Disease			
	28. Overview of Psychotic Conditions, Neurocognitive Disorder, and Psychoactive Medications			
	29. Alzheimer's Disease			
	30. Principles of Administering Medications			
	31. Documentation			
	32. Positioning Resident for Medication/Treatment Administration			
	33. Temperatures Obtained by Oral, Axillary, Aural, Temporal or Rectal Route			
	34. Obtaining the Pulse and Respiratory Rate			
	35. Obtaining the Blood Pressure			
	36. Preparing Oral Tablets or Capsules			
	37. Preparing Liquid Medications			
	38. Preparing Powdered Medications			
	39. Crushing Tablets			
	40. Altering Capsules			
	41. Preparing Controlled Substances for Administration			
	42. Counting Controlled Substances and Responding to Errors in Controlled Substance Count			
	43. Applying Lotion, Liniment, Ointment or Cream			
	44. Applying a Transdermal Patch			
	45. Instilling Eyedrops and Instilling Ophthalmic Ointments			
	46. Instilling Eardrops			
	47. Instilling Nasal Drops and Instilling Nasal Medications by Atomizer			
	48. Inserting a Vaginal Suppository and Administering a Vaginal Cream			
	49. Inserting a Rectal Suppository			
	50. Observing and Reporting to the Licensed Nurse			
	51. Administering Medications via the Gastrostomy Tube (G-Tube) or Jejunal Tube (J-Tube)			
	52. Applying a Dressing to a Healed Gastrostomy Tube (G-Tube) or Jejunal Tube (J-Tube) Site			
	53. Administration of Medication via Metered Dose Inhaler			
	54. Applying a Dressing to a Minor Skin Tear			
	55. Treatment for Minor Skin Conditions (Dermatitis, Scabies, Pediculosis, Fungal Infection, Psoriasis, Eczema, First Degree Burn, Stage I Pressure Ulcer)			
	56. Emptying and Changing a Colostomy Bag			
	57. Applying a Cold, Dry Compress			
	58. Diabetic Testing (Finger Stick)			
	59. Collecting of Fecal or Urine Specimens/Hemoccult Testing			

	60. Pulse Oximetry and Oxygen Saturation/Application of Oxygen per Nasal Cannula/Non-Sealing Mask			
	61. Instilling a Commercially Prepared Enema			

The required sixty (60) hours of classroom training were completed on \_\_\_\_\_.  
(date)

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Instructor Signature



# DOCUMENTATION OF QUALIFIED MEDICATION AIDE PRACTICUM

State Form 51650 (R2 / 7-23)

Indiana Department of Health – Consumer Services & Health Care Regulation

This original form must accompany your application for testing.

Student Name: \_\_\_\_\_

IDOH Approved QMA Training Program: \_\_\_\_\_

Practicum Site: \_\_\_\_\_ TOTAL PRACTICUM HOURS: \_\_\_\_\_

**Read Directions Carefully:** List **complete** dates (including year) and complete times (including am or pm). Document **only** time spent performing duties & tasks as mandated in the IDOH QMA program. Use the “Task #s” on the “QMA Procedure Performance Checklist” to document completed tasks in the “Description of Tasks Completed” column. Do **Not** include time spent on other duties, breaks or meals. Use multiple forms as necessary.

A maximum of two **4-hour increments**, which **must be divided by at least a 30-minute break**, may be completed in a 24-hour period of time.

Date	Start Time	Ending Time	Total Time	Description of Tasks Completed	Practicum Supervisor Printed Name	Practicum Supervisor Nursing License #	Practicum Supervisor Signature	Student Initials

Total Practicum Hours: \_\_\_\_\_

I verify that the above stated hours are correct and are the actual times of medication and treatment administration.

RN QMA Training Program

Instructor Signature \_\_\_\_\_

405

Student Signature \_\_\_\_\_

Date \_\_\_\_\_

### QMA Procedure Performance Checklist

Initials:

Student	Instructor	Date	Task #	Procedure Title (Corresponding Lesson #)
			1	Initial Steps (Introduced in Lesson #3 and repeated prior to Lesson #51)
			2	Final Steps (Introduced in Lesson #3 and repeated prior to Lesson #51)
			3	Supine Position (Lesson #32)
			4	Sim's Position (Lesson #32)
			5	Fowler's Position (Lesson #32)
			6	Semi-Fowler's Position (Lesson #32)
			7	Prone Position (Lesson #32)
			8	Dorsal Recumbent Position (Lesson #32)
			9	Obtaining an Oral Temperature Using an Electronic Thermometer (Lesson #33)
			10	Obtaining a Rectal Temperature Using an Electronic Thermometer (Lesson #33)
			11	Obtaining an Axillary Temperature Using an Electronic Thermometer (Lesson #33)
			12	Obtaining a Tympanic (Aural) Temperature (Lesson #33)
			13	Obtaining the Pulse (Apical & Radial) and Respiratory Rate (Lesson #34)
			14	Obtaining the Blood Pressure (Lesson #35)
			15	Preparing Oral Tablets or Capsules (Lesson #36)
			16	Preparing Liquid Medications (Lesson #37)
			17	Preparing Powdered Medications (Lesson #38)
			18	Crushing Tablets (Lesson #39)
			19	Altering Capsules (Lesson #40)
			20	Preparing Controlled Substances for Administration (Lesson #41)
			21	Counting Controlled Substances/Responding to Errors in a Controlled Substance Count (Lesson #42)
			22	Applying Lotion, Liniment, Ointment or Cream (Lesson #43)
			23	Applying a Transdermal Patch (Lesson #44)
			24	Instilling Eyedrops (Lesson #45)
			25	Instilling Ophthalmic Ointment (Lesson #45)
			26	Instilling Eardrops (Lesson #46)
			27	Instilling Nasal Drops (Dropper) (Lesson #47)
			28	Instilling Nasal Medication Using an Atomizer (Lesson #47)
			29	Inserting a Vaginal Suppository (Lesson #48)
			30	Administering a Vaginal Cream (Lesson #48)
			31	Inserting a Rectal Suppository (Lesson #49)
			32	Administering Medications via the Gastrostomy Tube (G-Tube) or Jejunal Tube (J-Tube) (Lesson #51)
			33	Applying a Dressing to a Healed Gastrostomy Tube (G-tube) or Jejunal Tube (J-tube) Site (Lesson #52)
			34	Administration of Medication via Metered Dose Inhaler (MDI) (Lesson #53)
			35	Applying a Transparent Dressing to a Minor Skin Tear (Lesson #54)
			36	Scabies Treatment (Lesson #55)
			37	Pediculosis Treatment (Lesson #55)
			38	Emptying and Changing a Colostomy Bag (Lesson #56)
			39	Applying a Cold, Dry Compress (Lesson #57)
			40	Blood Glucose Testing via Finger Stick (Lesson #58)
			41	Collecting Urine Specimens (Lesson #59)
			42	Collecting Fecal Specimens (Lesson #59)
			43	Hemoccult Testing (Lesson #59)
			44	Oxygen Administration (Lesson #60)
			45	Instilling a Commercially Prepared Disposable Enema (Lesson #61)

The Qualified Medication Aide student may have more than one practicum supervisor or instructor. Please make sure each practicum supervisor or instructor initials and signs this form.

I verify that these procedures were taught and demonstrated with 100% accuracy according to IDOH standards.

Student's signature: \_\_\_\_\_ Date: \_\_\_\_\_

QMA practicum supervisor's signature, initials, and title: \_\_\_\_\_

Date(s): \_\_\_\_\_

QMA practicum supervisor's signature, initials, and title: \_\_\_\_\_

Date(s): \_\_\_\_\_

QMA practicum supervisor's signature, initials, and title: \_\_\_\_\_

Date(s): \_\_\_\_\_

QMA practicum supervisor's signature, initials, and title: \_\_\_\_\_

Date(s): \_\_\_\_\_

QMA practicum supervisor's signature, initials, and title: \_\_\_\_\_

Date(s): \_\_\_\_\_

**PLEASE NOTE: The "Task #s" on this "QMA Procedure Performance Checklist" should be used to document the "Description of Tasks Completed" on the "Documentation of Qualified Medication Aide Practicum" form.**





# QUALIFIED MEDICATION AIDE (QMA) RECORD OF ANNUAL INSERVICE TRAINING

State Form 51654 (R6 / 7-23)

INDIANA DEPARTMENT OF HEALTH – Consumer Services & Health Care Regulation

## INSTRUCTIONS:

1. Please type or print clearly in black ink.
2. Six (6) hours of inservice training must be completed each year (January – December).
3. For insulin administration certified QMAs, one (1) additional hour of inservice training directly related to insulin administration must also be completed each year.
4. Only inservices related to medications, medication administration, QMA Scope of Practice, and insulin administration should be included on this form.
5. QMA **MUST** keep the original form.
6. Electronic signatures are acceptable.

Name (Last, First, Middle Initial)		QMA Certification Number		
Address (number and street)		City	State	ZIP code
Telephone (including area code)		E-mail address		
Date (mm/dd/yy)	Topic (Medication, Medication Administration, Insulin Administration, and QMA Scope of Practice ONLY)	Instructor Signature / Credentials (typed name is acceptable)	Length (1/4 Hour Increments)	IDOH Use Only
<b>TOTAL HOURS</b>				

QMA Signature: \_\_\_\_\_ Date (mm/dd/yy): \_\_\_\_\_  
(typed name is acceptable)