Project Information

Title: Living in the Community: Medication Administration Manual (Revised)

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The safety of the individuals being served is of utmost importance. You have the responsibility to teach staff (most of whom will have had no formal medical training) to safely discharge the responsibility of administering medication or observing individuals self-administer medication. Staff must be taught to observe each individual’s health related signs prior to reporting their observations to you or other medical personnel. They must also be able to recognize when to independently and immediately seek necessary medical treatment for the individual. Living in the Community is designed to teach staff how to administer medication and observe individuals self-administering medication in Supervised Group Living Homes (Group Homes) and in Supported Living settings (supporting individuals whose services are provided through Indiana’s Medicaid Waivers).

Originated with the primary focus on medication administration within residential facilities (group homes) per Article 1.1 Community Residential Facilities for Persons with Developmental Disabilities, Rule 3 Conditions of Licensure 431 IAC 1.1-3-6, this curriculum has been in use for 10 years in the same form. It is being revised for the purpose of bringing the material up-to-date, correcting errors, strengthening weak areas, and providing an improved format and teaching tool. It is what is considered essential for all Staff. Education and Training Resource (ETR) has received suggestions from licensed nurse instructors across the state. Based on this information, portions of the curriculum have been revised. Staff persons must be thoroughly trained to meet the unique needs of each individual in their care. In some cases, that will mean that you will have to teach certain staff more than this minimum core of material.

When individuals living in a group home setting are present, there must be a staff member present who is at least trained in Core A of this curriculum and has demonstrated competence as outlined below. This also includes times when the individuals living in the group home are not scheduled to take prescribed medications.

The Living in the Community curriculum must be taught, in person, by a licensed nurse. The curriculum is divided into two parts: Core lessons and Supplemental lessons. The Core lessons are further divided into Core A and Core B.

Core A must be passed with a minimum score of 85% before a staff member may administer medication or observe individuals self-administering medication. In addition, staff must demonstrate all steps of medication administration (tablets and liquids) with 100% accuracy. Training on administering any other form of medication must be given to each staff member prior to administering that form of medication. Observation of satisfactorily administering that form of medication is also required. See lesson 5. Core A consists of the following lessons:

1. Asepsis, Universal Precautions, and AIDS
2. Responsibilities in the Area of Medication Administration
3. Principles of Administering Medications
4. Documentation
5. Administering Medications
Core A must be passed before taking Core B. Core B must be passed with a minimum score of 85% within the first 120 days of employment for a staff member to continue to administer medications or observe individuals self-administering medications. Core B consists of the following lessons:

6. Fundamentals of Pharmacology  
7. Inflammation and Infection  
8. Psychotherapeutic Medications  
9. Developmental Disorders

Most of the Core lessons are divided into two parts: core information, which is required material, and supplemental information that is important. There is a final Core A test and a final Core B test that each staff member will be required to take and pass with a score of 85%. Each Core must be passed with a score of 85%. The scores from Core A and Core B may not be combined for a total score.

The Supplemental Lessons 1 through 13 are provided for use according to agency discretion. The information is provided so that the staff may be trained on material that is pertinent to the needs of each individual receiving medication. If the individual receiving the medication has needs that are not addressed by the Core or Supplemental Lessons, then you will have to find other supplemental material to use to train the staff.

Only those group home and supported living providers who are authorized by the Bureau of Developmental Disabilities Services (BDDS) can purchase a packet of testing materials from ETR. The security of the test is entrusted to the licensed nurse instructors of the group home or supported living provider agencies. Copies of all completed tests must be destroyed. Only test scores may be retained by the staff member, agency, or licensed nurse instructor.

In order to achieve, as nearly as possible, complete understanding of the Core materials, the licensed nurse instructor should review the material missed on the test with each student staff member or with the class. The completed tests should not be passed back and specific questions should not be reviewed.

Others who purchase the curriculum, that are not BDDS approved group home or supported living providers, will not be permitted to purchase the test packet. Because it is recognized that staff working with individuals in community settings other than group homes can also benefit from training in this curriculum, it has recently been decided that approved providers who provide supported living services, but not group home services, may also use this curriculum and purchase the competency testing materials. Group home providers who also provide supported living services are encouraged to train all of their staff in this curriculum. This would achieve uniform medication administration training for all staff working in community residential settings and the staff would be prepared to work in any setting.

Provider agencies in states other than Indiana are also welcome to purchase this curriculum. However, they will not be permitted to purchase the test packet regardless of the programs they operate.
A staff member may take the test two times (alternate test forms are provided). If the staff member fails after the second time, the course must be repeated.

No assistance can be given to the student staff member taking the tests. No one may read the test to a student staff member or write any answers for them. The ability to read and write adequately in English is crucial for administering medication or observing individuals self-administer medications.

A certificate of completion is to be given by the group home or supported living provider agency if a score of at least 85% is achieved on the final tests for Core A and B and if observation by the licensed nurse instructor verifies that the student staff member can satisfactorily, with 100% accuracy, administer oral tablets, capsules, and liquids. The scores should be recorded on the back of the certificate. Never place the scores on the front of the certificate. Record the test scores in this manner.

Core A: Number of correct divided by number of questions = the score expressed in a percentage
Core B: Number of correct divided by number of questions = the score expressed in a percentage
Observation of 100% satisfactory medication administration of oral tablets, liquids, and capsules (signature of licensed nurse instructor and date)

A copy of the front and back of the certificate will be kept in the personnel file of the staff member. The certificate is to be kept by the staff member and may be used in the case of a change of employment to another group home provider to let the licensed nurse instructor know that the materials have been completed.

If a BDDS approved group home or supported living provider accepts the training provided by a previous BDDS approved group home or supported living provider, instead of requiring that a new employee be trained again in the curriculum at their agency, the new provider employer should copy the certificate and scores for the personnel file as indicated earlier. The new provider employer should still train the staff member on their own forms and policies and do any other training needed to work with each individual for whom they will be caring.

There is no specified requirement for keeping staff competent in the area of medication administration after their initial training. Each agency must decide what training, in-servicing, observations and so on are necessary to maintain staff skills, resident health, and to prevent injury.

END
Living in the Community
Core A

Lesson 1
Asepsis, Universal Precautions, and Infectious Diseases
ASEPSIS, UNIVERSAL PRECAUTIONS, AND INFECTIOUS DISEASES

<table>
<thead>
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<th>Key Terms</th>
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<td>AIDS</td>
<td>Aseptic</td>
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<td>Antiseptic</td>
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<td>Friction</td>
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Precautions must be taken to ensure that both individuals and staff remain healthy. The spread of disease can be cut dramatically by insisting that both individuals and staff wash their hands. Frequent and careful hand washing is the most effective way to avoid spreading organisms that cause disease.

All staff should wash their hands utilizing aseptic technique upon arrival to work or after handling infectious materials without the use of personal protective equipment (gloves). In the absence of a true emergency, personnel should wash their hands with soap and water or a hand sanitizer for at least 30 seconds (one may recite the alphabet to himself/herself while washing), utilizing friction, from the wrists down. Hands should be washed:

- before and between caring for each individual;
- before and after touching wounds;
- after contact with mucous membranes, blood, body fluids, or excretions;
- after touching objects that are likely to be contaminated by body fluids or excretions;
- before giving or applying medication or ointment;
- after removing gloves used for any purpose.

Universal precautions are to be observed when coming in contact with an individual’s body fluids.

Aseptic hand washing requires attention to the method and manner of hand washing. Hand sanitizer may be used in certain situations. If bar soap is used, it should be kept on a rack that allows drainage of water. If liquid soap is used, the dispenser should be replaced or cleaned when empty; never add liquids to a partially full dispenser. Disposable single use towels should always be used to dry hands instead of common use towels.

Universal precautions should be taken to protect both you and the individual. Avoid direct skin contact with mucous membranes, bodily fluids, secretions, excretions, and wounds. Any open place on your skin, even very small ones, can become an entry site for the infection. Wearing gloves when you are likely to have contact with blood, body fluids, or objects that could be contaminated with blood will offer sufficient protection. If there is a risk of splashing or spraying of infectious materials, protective eye goggles and a surgical mask should also be worn.
Universal precautions should also be used when cleaning personal items. Personal and disposable items contaminated with blood or body fluids should be put in plastic bags, sealed, and removed with other garbage. An OSHA approved sharps container should be used for items such as razors, needles, and so on. Soiled linen and clothing should be laundered using detergent and the hot wash cycle, and then dried in the drier. Dishes should be run through a complete dishwasher cycle or washed in hot soapy water and rinsed in hot water. A viricidal solution or a 1:10 solution of bleach and water prepared within the last 24 hours may be used for cleaning surfaces that may be contaminated with a blood born pathogen.

Universal precautions should be used in maintaining the cleanliness of the medication storage area. First, all equipment must be properly cleaned and disinfected after each use. To begin, clean the surface thoroughly with soap and water. Afterwards, if you need to use a disinfectant, apply and let it stand for a few minutes, according to the manufacturer’s instructions. Wipe with disposable paper towels or with cloth towels that can be washed.

In dealing with medications and their containers, you should wipe the outside of bottles containing liquid with a clean wet cloth. Do not wipe the rim. Never touch the inside of medication containers. Finally, dispense medications into appropriate containers, not into your hand. In addition to washing your hands, gloves will be required when administering certain medications.

**Antiseptics and Disinfectants**

You should be aware of the action and use of antiseptics and disinfectants, as well as common examples of each.

**Antiseptics**: prevent the growth of microorganisms (germs) and are used to prevent infection. Examples:

1. **ethyl alcohol** (ethanol) used on skin for cleaning. Adverse effect includes dryness.
2. **Phisohex** used on skin for cleaning.
3. **Chlorhexidine** used as a mouth rinse.

**Disinfectants**: destroy microorganisms and are used to wash skin and clean objects. Examples:

1. **alcohol/ formaldehyde** used on thermometers and instruments.
2. **providone-iodine** (Betadine) used on skin, mucous membranes, decubitus, and ulcers.
3. **bleach - Virex** can be used on all surfaces but can cause local allergic reaction.

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**The Real Dirt on Antibacterial Soaps!**

New studies have shown that antibacterial soaps are no better than regular soap. The antibacterial agent triclosan requires several minutes to work and most people only wash their hands for three to five seconds. Unfortunately residues of antimicrobial soaps do linger on sinks and countertops and they may contribute to the development of drug-resistant bacteria. A solution recommended by the CDC for people with babies or immune-compromised clients is to use an alcohol-based gel, which kills germs by drying them out.
Blood Born Diseases

Individuals or staff with Acquired Immune Deficiency Syndrome (AIDS) may be among the many people with whom you may have contact during the day. AIDS is caused by HIV (the human immunodeficiency virus). However, a positive HIV test does not indicate that a person has AIDS. An AIDS indicator illness is usually the criterion for an AIDS diagnosis, although certain blood tests can also determine the diagnosis.

AIDS causes a weakening of the immune system which leaves the infected person vulnerable to many unusual, life-threatening illnesses. These illnesses are typically controlled by a normal immune system, but in an individual with AIDS, medical interventions are necessary to treat these illnesses.

Although there is currently no cure for HIV or AIDS, there are medical treatments that can slow the progression of HIV to AIDS. Also, there are treatments that can prevent or cure some of the AIDS-related illnesses.

During the mid to late 1990's, advances in HIV treatments led to dramatic declines in AIDS deaths and slowed the progression from HIV to AIDS. However, in recent years, the rate of decline for both cases and deaths began to slow, and in 1999, the annual number of AIDS cases appears to be leveling, while the decline in AIDS deaths has slowed considerably (source: CDC).

The most common means of transmission of HIV are:

- Having unprotected anal, vaginal, or oral sex with an infected person.
- Sharing needles or syringes with someone who is infected.
- From mothers to their babies during gestation, birth, or through breast-feeding. Proper medical treatment can reduce the risk to the baby, but cannot guarantee the prevention of transmission.

Earlier in the AIDS epidemic, some people became infected through blood transfusions, or organ or tissue transplants. In 1985, a test for HIV was approved. Since then all donated blood, tissue, and organs in the United States have been screened for HIV infection. When caring for an individual with HIV or AIDS, universal precautions should be taken to protect you and the individual.

Health care workers are at risk of getting infected if they are stuck with an infected needle or splashed with infected bodily fluid in the eyes, nose, mouth, or on open cuts or sores. However, you can NOT get HIV from feces, nasal fluid, saliva, sweat, tears, urine, or vomit unless there is blood mixed in them.

The early symptoms of HIV infection often resemble the flu, and usually occur within a month or two after exposure to the virus. These symptoms include: fever, headache, fatigue, and enlarged lymph nodes. These symptoms usually end after about a week, and are often dismissed as another type of infection. More
persistent or severe symptoms may not appear for 10 years or more after infection. These more obvious symptoms include: skin changes (blotches, bumps, and rashes), swollen glands, and weight loss, diarrhea, fatigue, and fever, loss of appetite, persistent dry cough, and night sweats.

At the time of the first AIDS cases in the United States, there were no medicines to fight the deficiency in the immune system and few treatments for the infections that resulted. However, during the past ten years, drugs have been developed that fight both HIV and the diseases associated with this virus.

While there are treatments for HIV and AIDS, there is no cure, nor is there a vaccine to prevent infection. Therefore, people should take care to prevent infection by avoiding high risk behaviors. Many people infected with HIV have no outward symptoms, so it is impossible to know a person’s status without a negative HIV test. Abstinence from sex and IV drug use is the best form of prevention. However, if engaging in sexual activity (oral, anal, or vaginal), a male latex condom or a female polyurethane condom should be used. Keep in mind, these offer only partial protection. Drug needles should never be shared. And while the U.S. blood supply is meticulously screened for HIV and AIDS, you may donate your own blood to be used in surgical procedures for extra assurance. If you feel that you may have been exposed to HIV or AIDS, seek medical treatment immediately. Timely treatment may prevent the development of HIV infection.

**TUBERCULOSIS AND HEPATITIS**

You should be aware of the infectious diseases tuberculosis and hepatitis, as you may come into contact with individuals who have these diseases. With proper precautions, you can protect yourself from contracting these diseases.

**Tuberculosis**

Tuberculosis (TB) is a disease that can attack any part of the body, but most frequently affects the lungs. It is caused by mycobacterium tuberculosis, and is an airborne disease. When a person infected with TB sneezes or coughs, tiny particles containing the bacteria may be expelled, and can remain suspended in the air for several hours. Transmission then may occur if another person inhales these particles.

The probability of transmission depends on the length of exposure, the environment in which the exposure took place, and the contagiousness of the individual.

Just because a person is infected with TB does not mean that person will develop TB disease. The person is said to have TB infection and is not infectious.

If disease becomes active, the person is said to have active TB. This may be manifested by weight loss, fever, night sweats, cough, chest pain, and/or coughing up blood. These symptoms
can develop very soon or many years after infection. Only about 10 percent of all people who have TB infection will develop active TB. This disease is usually curable with the proper medicine.

An individual with active TB should be quarantined (usually in a hospital setting) for at least 3 weeks after initial treatment. The individual must be released from quarantine by the health care provider. You should also be sure to practice good hygiene after coming into contact with the infected person.

**Hepatitis**

Hepatitis is a disease that affects the liver. There are several forms of hepatitis, but the most common are Hepatitis A, Hepatitis B and Hepatitis C. While people infected with Hepatitis A and B usually recover, Hepatitis C is more serious and can lead to liver failure.

Hepatitis B and C are spread through contaminated blood. Like HIV, the virus must enter a person's bloodstream for infection to occur. Sharing needles, accidental needle sticks, sexual contact, and contact between blood and open sores pose serious risk of infection.

Hepatitis A virus (HAV) is found in the stool (feces) of a person with hepatitis A. HAV is usually spread from person to person by putting something in the mouth (even though it may look clean) that has been contaminated with the stool of a person with hepatitis A. Hepatitis A vaccine is the best protection. Always wash your hands with soap and water after using the bathroom, changing a diaper, and before preparing and eating food.

Although a person can be infected with viral hepatitis and not show symptoms, the symptoms include jaundiced skin and eyes, fatigue, loss of appetite, nausea/ vomiting, fever, and joint pain. A person infected with hepatitis can spread the disease even if they are showing no symptoms.

While following Universal Precautions should offer you maximum protection from hepatitis, you may also be immunized against Hepatitis A and B if you are at a greater risk of being exposed. There is no vaccine for Hepatitis C.
Core Lesson 1: Asepsis, Universal Precautions, Infectious Diseases

Statistics of Infectious Disease (U.S) 2000

- Each year, there are approximately
  125,000 - 200,000 hepatitis A infections.
  140,000 – 320,000 hepatitis B infections.
  36,000 hepatitis C infections.
- Tuberculosis strikes nearly 16,000 people annually.
- AIDS deaths: 22,000 (1997), 18,000 (1998), 17,000 (1999), 14,000 (2000)
- The seventh leading cause of death for older adults is influenza and pneumococcal pneumonia.

Sources: National Center for Health Statistics, The National Coalition for Adult Immunizations and the Center for Disease Control (CDC), 2002.

Definitions of Key Terms

AIDS--Acquired Immune Deficiency Syndrome (AIDS) is a disease that affects the body's ability to fight infection. 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, and transfusion of blood or blood products. Can be spread through blood tinged stools or urine.

Antiseptic--A substance that inhibits the growth of germs. Antiseptic solutions are used as cleaning agents to prevent the spread of infection.

Aseptic--Free of infection. Often refers to proper hand-washing and other measures taken to prevent the spread of infection.

Disinfectant--Substance used to destroy microorganisms.

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.

Hepatitis--Inflammation of the liver.

Medical asepsis--Cleaning measures taken to prevent the spread of infection in a doctor's office, hospital, or long-term care agency.
Core Lesson 1: Asepsis, Universal Precautions, Infectious Diseases

**Rotary motion**—Rubbing your hands together in a circular motion.

**Tuberculosis**—Communicable acute or chronic infection caused by mycobacterium tuberculosis.

**Universal precautions**—Treatment of all blood and bodily fluids as if they were contaminated (blood and bodily fluid isolation), proper disposal of needles.
Correct Technique for Aseptic Hand Washing

1. Remove your watch and any rings
2. Turn on the water and regulate it to a comfortable, warm temperature.
3. Wet your hands, wrists, and forearms.
4. Apply soap to your hands, wrists, and forearms.
5. Wash your wrists and forearms using at least 10 rotary motions and at least 10 friction motions.
6. Point your arms downward, and rinse from elbow to fingertips.
7. Wash your palms and the back of your hands using at least 10 rotary motions and at least 10 friction motions.
8. Be sure to scrub between fingers and under fingernails.
9. Interlace your fingers and rub them up and down at least 10 times.
10. Point your hands downward and rinse thoroughly.
11. Leave the water running while you dry your hands with a clean, disposable (or single-use) towel.
12. Blot your arms and hands, beginning at your forearm and blotting down to your fingertips.
13. Turn the faucet off using a clean paper towel as a barrier.
14. Dispose of the towel appropriately, preferably in a can with a foot-pedal-operated lid.

Overview of Universal Precautions

These guidelines are consistent with the Universal Precautions Rule 410 IAC 1-4. It is not the intent of these guidelines to mandate protection from all possible or theoretic exposures to blood or body fluids visibly with blood. Rather, the intent is to provide guidelines for protection from predictable exposure to blood or body fluids visibly contaminated with blood, regardless of known or suspected infectiousness. These guidelines are not intended to replace or equal the infection control measures that hospitals and health care facilities are now using. Rule 410 IAC 1-4 has a very broad effect, relating to industries, schools, etc., as well as health care providers. The rule contains only minimum requirements for those settings which do not have broader requirements.

The human immunodeficiency virus (HIV), the causative agent of AIDS, is transmitted through direct contact with blood, through sexual intercourse, or perinatally from an infected pregnant woman to the baby she is carrying. The virus also appears transmissible from an infected mother to her child through breast milk. Blood, semen, vaginal secretions, and possibly breast milk are the only body fluids known to transmit HIV. Universal precautions also apply to tissues and the following fluids: cerebrospinal fluid (CSF), synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid, and blood or body fluids of animals that have been intentionally
or are suspected of having been exposed to pathogens in the in vivo testing of pharmaceuticals or through other procedures. The risk of transmission of HIV and Hepatitis B Virus (HBV) from these fluids is unknown; epidemiologic studies in the health-care and community setting are currently inadequate to assess the potential risk to health-care workers from occupational exposures to them. However, HIV has been isolated from CSF, synovial fluid, and amniotic fluid, and HBsAG has been detected in synovial fluid, amniotic fluid, and peritoneal fluid. One case of HIV transmission was reported after a percutaneous exposure to bloody pleural fluid obtained by needle aspiration. Whereas aseptic procedures used to obtain these fluids for diagnostic or therapeutic purposes protect health-care workers from skin exposures, they cannot prevent penetrating injuries due to contaminated needles or other sharp instruments.

Employees must protect themselves from direct exposure to blood or body fluids that are visibly contaminated with blood to prevent exposure to HIV, HBV, and other infectious agents. However, many potentially serious communicable diseases, such as those due to infections with cytomegalovirus or Hepatitis A virus, are transmitted by body fluids such as saliva, urine, or feces, in the absence of contamination with blood. For this reason, it is strongly recommended that precautions be taken to prevent direct contact with all body fluids of all persons, whether or not the body fluids are visibly contaminated with blood.

The United States Food and Drug Administration (FDA) has approved several drugs to be used for treating HIV. Some of these nucleoside reverse transcriptase inhibitor drugs, including the well-known AZT, work in the early stages of infection to inhibit the duplication of the virus in the body. These drugs can also delay the start of the opportunistic infections associated with HIV. More recently, the FDA has approved a series of protease inhibitor drugs which interrupt virus duplication at a later stage. Unfortunately, HIV can become resistant to these drugs, so they must be used in combination, often referred to as a drug cocktail. While none of these drugs cure HIV or AIDS, they can improve the lives of those who are infected.

Health care workers should be aware of the possible side effects with these drugs, some of which can be severe. The serious side effects can include a decrease of red or white blood cells, inflammation of the pancreas, and nerve damage. Less serious, but more common side effects include nausea, diarrhea, and other gastrointestinal discomfort. Care should also be taken to avoid interaction with other drugs.

Because individuals with AIDS have suppressed immune systems, they are highly susceptible to infection. You should take care to protect the individual if you have any infection, even a minor one like a cold. Any infection has the potential to become a life-threatening illness to an individual with AIDS. Wearing gloves and a surgical mask and maintaining a clean environment are especially important when you have an infection and must come in contact with the individual with AIDS. However, while you pose much more of an infection risk to the individual than the individual does to you, there is a special
Core Lesson 1: Asepsis, Universal Precautions, Infectious Diseases

consideration for pregnant women. Individuals with AIDS often carry the cytomegalovirus (CMV), which can pose a serious threat to unborn babies. In fact, complications can include hearing and/or vision loss, and varying degrees of mental impairment. Therefore, pregnant women should avoid contact with an individual with AIDS and should practice good personal hygiene.

Finally, while individuals with AIDS will have few dietary restrictions, there are some precautions that are necessary to avoid unnecessary risk for the individual. Do not use unpasteurized milk or raw eggs. Be aware that some prepared foods (i.e. homemade mayonnaise, hollandaise sauce, and ice cream) may contain raw eggs. All meats should be cooked well done, with no pink visible in the middle. Finally, do not eat raw fish or shellfish.

RECOMMENDATION ON WHAT TO DO IF EXPOSURE OCCURS

First, the employee should wash the affected area immediately and thoroughly. If an eye or mucous membrane (mouth) is contaminated, rinse with running water for fifteen minutes. You should then immediately report the incident to the supervisor or designated person. While vomitus, saliva, urine, tears, and feces have not been implicated in the transmission of HIV or Hepatitis B infections (with the exception that human bites have transmitted HBV), other communicable diseases may be transmitted by these fluids.

An incident report should be completed according to institutional policy and state law. The report should include the circumstances of the incident, the blood or body fluid source’s name, institutional number (if appropriate), and what protective equipment and precautions were used at the time of the exposure. If the situation involved an emergency medical care provider, and the exposure was of a magnitude that has been demonstrated epidemiologically to transmit a dangerous communicable disease, the emergency medical care provider may complete the form: REPORT OF BLOOD OR BODY FLUID EXPOSURE: DANGEROUS COMMUNICABLE DISEASE EXPOSURE NOTIFICATION FOR EMERGENCY MEDICAL CARE PROVIDERS as required by IC 16-1-45.

The employer should perform an evaluation and follow-up of the employee according to institutional policy. At a minimum, exposed employees should be counseled about risk of acquisition of HIV and other relevant communicable diseases, receive information about prevention of transmission, and be offered voluntary serologic testing. In general, post-exposure management where HIV and/or HBV infection is considered possible should be in accordance with current CDC guidelines. These guidelines include discussions of HIV serological testing and hepatitis B vaccine usage.

Persons whose blood or body fluids were the source of exposure shall be informed if HIV serologic testing is part of institutional policy and must consent before testing is performed. Persons refusing to give consent should not be tested, except for the purpose of diagnosis or treatment of the patient or
under court order as described in IC 1619.52.5. Persons who refuse HIV testing should be considered seropositive. All persons should be informed of their test results and should receive appropriate counseling; seropositive persons should be referred for further medical assistance according to institutional policy. If a person is exposed to blood or body fluids of an employee, that person should be informed of the exposure (without identification of the employee), and procedures similar to those outlined above should be followed.

Handling Spills of Blood or Body Fluids

The following precautions contain the necessary elements for handling spills of blood or other body fluids. If the spill is extensive, housecleaning or janitorial services should be notified. Large facilities may choose to train selected staff to clean up spills. In the event of a small spill, the employee should first put on impermeable gloves. The employee will then remove visible material with disposable absorbent towels. When cleaning a hard surface, flood with a solution of one part household bleach to ten parts water, or use an approved hospital disinfectant. If the surface is a rug or a carpet, use a sanitary absorbent agent according to directions. Again wipe the area with fresh disposable towels, and place all soiled towels and gloves in a leak-proof bag or container and dispose of in the usual manner. Finally, wash your hands thoroughly in the proper manner.

Note: Items used in handling spills that are contaminated with small amounts of blood such as paper towels, cotton balls, bandages and gloves, are not considered infectious waste if they are not co-mingled with infectious waste. Items so saturated with blood that they could be considered liquid or semi-liquid as defined by the Infectious Waste Rule 410 IAC 1-3, must be considered infectious waste and handled according to 410 IAC 1-3.

References


410 IAC 1-4
Rule 4. Universal Precautions

INTRODUCTION

These guidelines are designed to assist facilities and individuals in the use of universal precautions that are necessary to prevent the spread of Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and certain other infectious agents. These guidelines are consistent with the Universal Precautions Rule 410 IAC 1-4 adopted by the Executive Board of the Indiana State Board of Health under Public Law 123-1988 (Senate Enrolled Act 9).

410 IAC 1-4-0.5 Applicability of definitions
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 0.5. The definitions in this rule apply throughout this rule. Additionally, the definitions of any other terms contained in the Indiana occupational safety and health administration's bloodborne pathogens standards (as found in 29 CFR 1910.1030) are incorporated by reference. (Indiana State Department of Health; 410 IAC 1-4-0.5; filed Nov 22, 1993, 5:00 p.m.: 17 IR 753; readopted filed Jul 11, 2001, 2:23 p.m.: 24 IR 4234)

410 IAC 1-4-1 “Blood” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 1. “Blood” means human blood, human blood components, and products made from human blood. (Indiana State Department of Health; 410 IAC 1-4-1; filed Oct 6, 1989, 4:20 p.m.: 13 IR 280; filed Nov 22, 1993, 5:00 p.m.: 17 IR 753; readopted filed Jul 11, 2001, 2:23 p.m.: 24 IR 4234)

410 IAC 1-4-1.1 “Bloodborne pathogens” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 1.1. “Bloodborne pathogens” means pathogenic micro-organisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, HBV and HIV. (Indiana State Department of Health; 410 IAC 1-4-1.1; filed Nov 22, 1993, 5:00 p.m.: 17 IR 753; readopted filed Jul 11, 2001, 2:23 p.m.: 24 IR 4234)

410 IAC 1-4-1.2 “Contaminated” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 1.2. “Contaminated” means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface. (Indiana State Department of Health; 410 IAC 1-4-1.2; filed Nov 22, 1993, 5:00 p.m.: 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m.: 24 IR 4234)

410 IAC 1-4-1.3 “Contaminated laundry” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 1.3. “Contaminated laundry” means laundry which has been soiled with blood or other potentially infectious materials or laundry which may contain sharps. (Indiana State Department of Health; 410 IAC 1-4-1.3; filed Nov 22, 1993, 5:00 p.m.: 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m.: 24 IR 4234)

410 IAC 1-4-1.4 “Covered individual” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11-4
Sec. 1.4. “Covered individual” means any individual covered by IC 16-41-11-4 whose professional, employment, training, or volunteer activities or duties include any reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials. (Indiana State Department of
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Health; 410 IAC 1-4-1.4; filed Nov 22, 1993, 5:00 p.m. 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m. 24 IR 4234)
410 IAC 1-4-1.5 “Decontamination” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 1.5. “Decontamination” means the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item which does not require sterilization to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal. (Indiana State Department of Health; 410 IAC 1-4-1.5; filed Nov 22, 1993, 5:00 p.m. 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m. 24 IR 4234)
410 IAC 1-4-2 “Department” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 2. “Department” means the Indiana state department of health. (Indiana State Department of Health; 410 IAC 1-4-2; filed Oct 6, 1989, 4:20 p.m. 13 IR 280; filed Nov 22, 1993, 5:00 p.m. 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m. 24 IR 4234)
410 IAC 1-4-2.1 “Employee” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11; IC 22-8-1.1-1
Sec. 2.1. “Employee” has the meaning set forth in IC 22-8-1.1-1. (Indiana State Department of Health; 410 IAC 1-4-2.1; filed Nov 22, 1993, 5:00 p.m. 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m. 24 IR 4234)
410 IAC 1-4-3 “Employer” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11; IC 22-8-1.1-1
Sec. 3. “Employer” has the meaning set forth in IC 22-8-1.1-1. (Indiana State Department of Health; 410 IAC 1-4-3; filed Oct 6, 1989, 4:20 p.m. 13 IR 280; filed Nov 22, 1993, 5:00 p.m. 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m. 24 IR 4234)
410 IAC 1-4-3.1 “ERP” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 3.1. “ERP” means expert review panel, as defined in section 8.1 of this rule. (Indiana State Department of Health; 410 IAC 1-4-3.1; filed Nov 22, 1993, 5:00 p.m. 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m. 24 IR 4234)
410 IAC 1-4-4 “Facility” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 4. “Facility” means a building or location where an individual can be reasonably anticipated in the course of performing his or her professional, employment, training, or volunteer activities or duties to have skin, eye, mucous membrane, or parenteral contact with potentially infectious materials. (Indiana State Department of Health; 410 IAC 1-4-4; filed Oct 6, 1989, 4:20 p.m. 13 IR 280; filed Nov 22, 1993, 5:00 p.m. 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m. 24 IR 4234)
410 IAC 1-4-4.1 “HBeAg” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 4.1. “HBeAg” means the presence of hepatitis B e antigen in human blood as an indicator of high infectivity for hepatitis B virus. (Indiana State Department of Health; 410 IAC 1-4-4.1; filed Nov 22, 1993, 5:00 p.m. 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m. 24 IR 4234)
410 IAC 1-4-4.2 “HBsAg” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 4.2. “HBsAg” means the presence of hepatitis B surface antigens in human blood as an indicator of infectivity for hepatitis B virus. (Indiana State Department of Health; 410 IAC 1-4-4.2; filed Nov 22, 1993, 5:00 p.m. 17 IR 754; readopted filed Jul 11, 2001, 2:23 p.m. 24 IR 4234)
410 IAC 1-4-4.3 “HBV” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 4.3. “HBV” means hepatitis B virus. (Indiana State Department of Health; 410 IAC 1-4-4.3; filed Nov 22, 1993, 5:00 p.m.; 17 IR 755; readopted filed Jul 11, 2001, 2:23 p.m.; 24 IR 4234)
410 IAC 1-4-4.4 “Health care worker” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 4.4. “Health care worker” means any covered individual providing health care for or to a patient during the patient’s care or treatment and whose professional, employment, volunteer, or student training duties or activities can be reasonably anticipated to result in skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials. (Indiana State Department of Health; 410 IAC 1-4-4.4; filed Nov 22, 1993, 5:00 p.m.; 17 IR 755; readopted filed Jul 11, 2001, 2:23 p.m.; 24 IR 4234)
410 IAC 1-4-4.5 “HIV” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 4.5. “HIV” means human immunodeficiency virus. (Indiana State Department of Health; 410 IAC 1-4-4.5; filed Nov 22, 1993, 5:00 p.m.; 17 IR 755; readopted filed Jul 11, 2001, 2:23 p.m.; 24 IR 4234)
410 IAC 1-4-4.6 “Other potentially infectious materials” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 4.6. “Other potentially infectious materials” means the following:
(I) Any body fluid that is visibly contaminated with blood.
(K) All body fluids where it is difficult or impossible to differentiate between body fluids.
(2) Any unfixed tissue or organ, other than intact skin, from a human, living or dead.
(3) HIV-containing cell or tissue cultures, organ cultures, and HIV or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.
(Indiana State Department of Health; 410 IAC 1-4-4.6; filed Nov 22, 1993, 5:00 p.m.; 17 IR 755; readopted filed Jul 11, 2001, 2:23 p.m.; 24 IR 4234)
410 IAC 1-4-4.7 “Parenteral” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 4.7. “Parenteral” means piercing the mucous membranes or the skin barrier through such events as needle sticks, human bites, cuts, or abrasions. (Indiana State Department of Health; 410 IAC 1-4-4.7; filed Nov 22, 1993, 5:00 p.m.; 17 IR 755; readopted filed Jul 11, 2001, 2:23 p.m.; 24 IR 4234)
410 IAC 1-4-4.8 “Sterilize” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 4.8. “Sterilize” means the use of a physical or chemical procedure to destroy all microbial life, including highly resistant bacterial endospores. (Indiana State Department of Health; 410 IAC 1-4-4.8; filed Nov 22, 1993, 5:00 p.m.; 17 IR 756; readopted filed Jul 11, 2001, 2:23 p.m.; 24 IR 4234)
410 IAC 1-4-5 “Universal precautions” defined
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 5. “Universal precautions” means an approach to infection control in which all human blood and certain human body fluids are treated as if known to be
infectious for HIV, HBV, and other bloodborne pathogens. (Indiana State Department of Health; 410 IAC 1-4-5; filed Oct 6, 1989, 4:20 p.m.; 13 IR 280; filed Nov 22, 1993, 5:00 p.m.; 17 IR 756; readopted filed Jul 11, 2001, 2:23 p.m.; 24 IR 4234) 410 IAC 1-4-6 Facility operator responsibilities Authority: IC 16-41-11-9 Affected: IC 16-41-11 Sec. 6. (a) An individual or entity that is a facility operator shall comply with the following:

(1) Inform all health care workers and covered individuals whose professional, employment, training, or volunteer activities or duties are performed at or on behalf of the facility, that it is strongly recommended by the department that all persons who have reason to believe they are at risk of HIV infection should know their HIV status.

(2) Inform all health care workers that it is strongly recommended by the department that all those:

(A) who perform procedures during which there is a recognized risk of percutaneous injury to the health care worker, and, if such injury occurs, the health care worker's blood may contact the patient's body cavity, subcutaneous tissue, or mucous membranes; and

(B) who do not have serologic evidence of immunity to HBV from vaccination or from previous infection should know their HBsAg status and, if that is positive, should also know their HBeAg status.

(3) Ensure that the training described in the Indiana occupational safety and health administration's bloodborne pathogens standards (as found in 29 CFR 1910.1030) is provided to all covered individuals whose professional, employment, training, or volunteer activities or duties are performed at or on behalf of the facility.

(4) Ensure that a record is maintained, as required under the Indiana occupational safety and health administration's bloodborne pathogens standards (as found in 29 CFR 1910.1030) of an individual's participation in the training that is provided. The record shall be made available to the department for inspection upon request.

(5) Ensure that each covered individual whose professional, employment, training, or volunteer activities or duties are performed at or on behalf of the facility, is provided appropriate equipment and expendables needed to implement the precautions required under section 8 of this rule and under the Indiana occupational safety and health administration's bloodborne pathogens standards (as found in 29 CFR 1910.1030).

(6) Require all health care workers whose professional, employment, training, or volunteer activities or duties are performed at or on behalf of the facility to provide evidence of compliance with the continuing universal precautions education requirements contained in section 7.1 of this rule.

(b) The operator of a facility, if providing services to patients or the public in which there is a risk of skin, eye, mucous membrane, or parenteral contact to human blood or other potentially infectious materials, shall display, or make available to the public, a description of compliance with the requirements contained in subsection (a)(6).

(c) The operator of a facility, if providing services to patients or the public in which there is a risk of skin, eye, mucous membrane, or parenteral contact to human blood or other potentially infectious materials, shall display, or make available to the public, written materials prepared or approved by the department explaining universal precautions and patients' rights under this rule. These materials shall include information on how to report violations of universal precautions and shall include information
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regarding the department's duties to investigate. (Indiana State Department of Health; 410 IAC 1-4-6; filed Oct 6, 1989, 4:20 p.m.: 13 IR 280; filed Nov 22, 1993, 5:00 p.m.: 17 IR 756; readopted filed Jul 11, 2001, 2:23 p.m.: 24 IR 4234)

410 IAC 1-4-7 Facility operator policies
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 7. A facility operator shall develop a written policy in compliance with this rule and the requirements of the Indiana occupational safety and health administration's bloodborne pathogens standards (as found in 29 CFR 1910.1030), that:
(1) requires the use of universal precautions by a covered individual when performing those professional, employment, training, or volunteer activities or duties that include any reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials;
(2) provides sanctions, including discipline and dismissal, if warranted, for failure to use universal precautions; and
(3) proscribes the facility operator, or any covered individual acting at or on behalf of the facility, from retaliating against any person, including any professional, employee, trainee, volunteer, or patient, for filing a complaint with the department in good faith under this rule.
(Indiana State Department of Health; 410 IAC 1-4-7; filed Oct 6, 1989, 4:20 p.m.: 13 IR 280; filed Nov 22, 1993, 5:00 p.m.: 17 IR 757; readopted filed Jul 11, 2001, 2:23 p.m.: 24 IR 4234)

410 IAC 1-4-7.1 Covered individuals' minimum training and certification requirements
Authority: IC 16-41-11-9
Affected: IC 16-41-11
Sec. 7.1. All covered individuals shall comply with the following:
(1) Covered individuals, including health care workers, whose professional, employment, training, or volunteer activities or duties are performed at or on behalf of a facility, must complete the training programs which the facility is required to have employees attend under the Indiana occupational safety and health administration's bloodborne pathogens standards (as found in 29 CFR 1910.1030).

Approved programs under this rule shall be as follows:
(A) A bloodborne pathogen training session provided by a facility or employer under the Indiana occupational safety and health administration's bloodborne pathogens standards (as found in 29 CFR 1910.1030).
(B) Unless the department makes a specific determination to the contrary, any continuing professional education program on current universal precautions techniques that has been accepted or accredited by the applicable professional credentialing or health licensing entity.

(2) Covered individuals who are health care workers shall, either individually or through their employer, upon receipt of a written request by the department, employer, or a patient to whom direct services have been provided, provide evidence of compliance with the requirements of this section.
(Indiana State Department of Health; 410 IAC 1-4-7.1; filed Nov 22, 1993, 5:00 p.m.: 17 IR 757; readopted filed Jul 11, 2001, 2:23 p.m.: 24 IR 4234)

410 IAC 1-4-8 Precautions generally
Authority: IC 16-41-11-9
Affected: IC 16-19; IC 16-41-11
Sec. 8. (a) All covered individuals and health care workers under this rule shall comply with the requirements imposed under the Indiana occupational safety and health administration's bloodborne pathogens standards (as found in 29 CFR 1910.1030).
(b) The operator and all covered individuals whose professional, employment, training, or volunteer activities or duties are performed at or on behalf of a facility providing services to patients or other members of the public in which there is a reasonably anticipated risk of skin, eye, mucous membrane, or parenteral contact with human blood or other potentially infectious materials shall also comply with the following requirements:

(1) All equipment and environmental and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials.

(2) Heating procedures capable of sterilization must be used when heat stable, non-disposable equipment is sterilized. Heat labile, reusable equipment requiring sterilization must be sterilized by chemical means. Records must be maintained to document the following:

(A) Duration of sterilization technique.

(B) Mechanisms for determination of effective sterility.

(C) Routine monthly equipment maintenance inspections.

These documents must be made available to the department upon request.

(3) Environmental surfaces and equipment not requiring sterilization which have been contaminated by blood or other potentially infectious materials shall be cleaned then decontaminated. Disinfectant solutions shall:

(A) be a hospital grade, tuberculosis Environmental Protection Agency (EPA) registered disinfectant; or

(B) be sodium hypochlorite, five-tenths percent (0.5%) concentration, by volume (common household bleach in ten percent (10%) concentration in water); the solution shall be dated and shall not be used if it is more than twenty-four (24) hours old.

(4) If a patient's diagnosis, laboratory analysis, or medical condition requires additional infection control measures or isolation, those specific measures apply in addition to the requirements of this rule and other requirements found at IC 16-19.

410 IAC 1-4-8.1 Expert review panel

Authority: IC 16-41-11-9

Affected: IC 16-41-11

Sec. 8.1. (a) An HIV infected or HBV infected (and HBeAg positive) health care worker whose practices include digital palpation of a needle tip in a body cavity or the simultaneous presence of the health care worker's finger and needle or other sharp instrument in a poorly visualized or highly confined human anatomic site should either seek the advice of an ERP approved by the department or voluntarily cease these practices.

(b) As used in this rule, "expert review panel" means a group of experts authorized under this rule to provide confidential consultation and advice to HIV and HBV (and HBeAg) infected health care workers as indicated to promote the highest achievable level of safe, professional care. To be deemed authorized, an ERP must be sponsored by an organization which has been approved by the department under subsection (c).

(c) Before any public or private medical, surgical, dental, nursing, or other health care organization may sponsor an authorized ERP under this section, the potential sponsor must be approved by the department as having provided credible assurances that:

(1) the sponsor is capable of establishing specific ERP protocols and procedures that will accomplish the purposes of an ERP under this section; and
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(2) it will comply with general protocols to be established and disseminated on request by the department.

(d) The ERP will consist of:
(1) an expert review entity consisting of:
(A) the HIV or HBV infected health care worker's treating physician, either directly or through medical and historical treatment records;
(B) an infectious disease specialist knowledgeable in the epidemiology of HIV and HBV infection;
(C) a health care provider of the same profession as the infected health care provider with expertise in the procedures practiced; and
(D) an infection control expert or epidemiologist; or
(2) any other expert review entity expressly authorized by the department.

(e) An ERP sponsored by an organization approved by the department under subsection (c) will be deemed an authorized ERP.

(f) An ERP shall advise the health care worker whether and how to modify techniques or to cease performing certain procedures. In rendering this advice, the ERP shall consider the past history of the health care worker's technique, and the extent to which, in the context of other indicated procedures with a measurable and unavoidable significant risk to patients, an indicated invasive procedure in the hands of that health care worker does or does not expose patients to the significant risk of HIV or HBV transmission from the health care worker.

(g) The role of the ERP is strictly confidential and advisory to the health care worker.

(h) All proceedings and communications of the ERP shall be confidential. All communications to an ERP shall be privileged communications. Neither the personnel nor any participant in a panel proceeding shall reveal the identity of any health care worker consulting such panel nor any content of communication to the records of or the outcomes of an ERP outside the panel to any person or other entity, other than the health care worker consulting such panel.

(i) No person who participates in an ERP proceeding shall be permitted or required to disclose any information acquired in connection with, or in the course of, the proceeding, any opinion, recommendation, or evaluation of the panel or of any panel member.

(j) The only duty of an ERP is to provide good faith consultation and advice to the HIV or HBV infected health care worker seeking such advice. A health care worker is not, by this rule, relieved of any responsibility, either to himself or herself or to others, for all actions taken or not taken in his or her professional capacity after consulting with an ERP. Neither an ERP nor any member of an ERP is approved by this rule to substitute or assume responsibility for the subsequent actions of the health care worker. No civil or other legal action of any nature shall arise against any member or personnel of an ERP for any good faith act or statement made in the confines of the panel or proceeding thereof.

(k) Neither an ERP nor any member of an ERP shall, by virtue of their consultation and advice, assume any liability of any kind to the health care worker, his or her patients, or any other person. The personnel and members of an ERP shall be immune from any civil action arising from any determination or recommendation made in good faith in the scope of their duties. (Indiana State Department of Health; 410 IAC 1-4-8.1; filed Nov 22, 1993, 5:00 p.m.: 17 IR 759; errata, 17 IR 1009; readopted filed Jul 11, 2001, 2:23 p.m.: 24 IR 4234)

410 IAC 1-4-9 Complaints
Authority: IC 16-41-11-9
Sec. 9. A person who believes that this rule has been violated may file a complaint with the department. A complaint must be in writing unless, in the opinion of the department, the violation complained of constitutes an emergency. The department shall reduce an emergency oral complaint to writing. The department shall maintain the confidentiality of the person who files the complaint. The department shall also comply with the following:

(1) The department shall promptly investigate, or cause to be investigated with available resources, all complaints received alleging violations of this rule.

(2) The department shall not disclose the name or identifying characteristics of the person who files a complaint under this rule:
   (A) unless the person consents in writing to the disclosure; or
   (B) the investigation results in an administrative or judicial proceeding and disclosure is ordered by the administrative law judge or the court. Confidential communication of the complaint information to the Indiana department of labor for compliance purposes shall not constitute disclosure for the purposes of this rule.

(3) The department shall give a person who files a complaint under this section the opportunity to withdraw the complaint at any time prior to the issuance of an order under subdivision (2)(B).

(4) A person filing a complaint must make a reasonable attempt to ascertain the correctness of any information to be furnished. Failure to make a reasonable attempt may subject that person to other sanctions available at law.

(5) A determination of a substantiated and unresolved violation of this rule by a health care provider licensed under IC 25 shall be referred by the department to the appropriate licensing board through notification of the attorney general's consumer protection division.

(6) In the investigation of a complaint regarding a violation of this rule, the department shall coordinate the investigation, as appropriate, with the state or federal enforcement agency having jurisdiction over the industry or occupation. All complaints alleging violations of the Indiana occupational safety and health administration's bloodborne pathogens standards (as found in 29 CFR 1910.1030) shall be forwarded to the Indiana department of labor.
Lesson 2
Responsibilities in the Area of Medication Administration
RESPONSIBILITIES IN THE AREA OF MEDICATION ADMINISTRATION

Key Terms
- Assault and battery
- Code of ethics
- Libel
- Medication
- Reasonable care
- Standard of Care
- Competent
- Duty of care
- Malpractice
- Negligence
- Slander

Doctors, pharmacists, nurses and other specified staff are all members of a team that is responsible for giving individuals the correct medications. All staff must be aware of their legal responsibilities regarding the administration of medication. They must therefore understand how to properly give (administer) medications and record their actions (effects).

In addition to understanding the correct method of administration and documentation, the staff must be aware of policies and procedures regarding omitted and refused medications. The material in this lesson will be supplemented with your agency’s specific policies and procedures.

People Responsible for Medication
- Physicians: determine need for and order medication.
- Pharmacists: fill the order and provide information about medications to the staff and individuals.
- Registered nurses, licensed practical nurses, and qualified staff

<table>
<thead>
<tr>
<th>Responsibilities before administering medication</th>
<th>Responsibilities during the administration of medications:</th>
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<tbody>
<tr>
<td>Read the medication order</td>
<td>Identify the individual</td>
</tr>
<tr>
<td>Prepare the medication for administration</td>
<td>Explain the procedure to the individual</td>
</tr>
<tr>
<td>Use the proper equipment</td>
<td>Administer the medication correctly</td>
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<tr>
<td>Prepare the medications accurately</td>
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<table>
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<tr>
<th>Responsibilities following administration of medications</th>
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<tbody>
<tr>
<td>Record the administration of the medication</td>
<td>Record and report the adverse effects or poor response to the medication</td>
</tr>
<tr>
<td>Clean the equipment</td>
<td></td>
</tr>
<tr>
<td>Observe and record the effects of the medication</td>
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Legal and Ethical Obligations of Medical Personnel

State and Federal regulations set forth the rights of individuals. Agencies and all personnel are required to respect individuals’ rights which include:

- The right to refuse medication and treatment.
- The right to be informed of consequences of refusing medication and treatment.
- Freedom from physical and mental abuse and neglect.
- Freedom from restraint without a physician’s written order.
- The right to privacy.
- The right to confidential treatment.

All individuals are legally protected from:

- Libel and slander
- Assault and battery

Charts provide a medical picture of the individual. This is confidential information that is available only to people authorized by the agency. Entries should present an accurate, readable picture of the individual’s care. The chart is a legal record that is admissible evidence in legal action. Legally, the chart is considered accurate. Every medication given must be charted. Staff are held responsible for any medications signed out but not charted. Refer to the six rights of administering medications that are listed in Section H.

Legibility is very important—write or print so the information you chart can be read easily by others. Use ink. The color will be determined by agency policy. 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. Your signature on an entry means that you assume responsibility for the entry. You administered or supervised the administration of the medication, made the observation, knew that the care was given as charted.

State law or regulation determines the length of time records must be kept. At present, Indiana facilities must keep records for five years. PRN medications must be documented. Every entry must be signed and dated.

A “Code of Ethics” is a voluntary set of rules that influence relationships between people based on dignity and respect for each individual’s rights. “Golden Rule” for ethical behavior is “Do unto others as you would have them do unto you, or one of yours.” Words that describe ethical behavior: honesty, sincerity, loyalty, dependability.

Unethical behavior results in:

- Discipline of the worker or group.
- Feelings of guilt.

Negligence and Malpractice

Negligence is the omission or neglect of any reasonable precaution, care, or action. By law, individuals can expect safe and efficient care. Individuals expect medications personnel to administer medications accurately. Individuals are protected from health care negligence—malpractice by a law called “Duty of Care.”

Malpractice is any improper or injurious practice, or any unskillful or faulty medical treatment. The staff is obligated to perform care that meets minimum standards. The staff is
negligent if "reasonable" care is not given or if "unreasonable" care is given.

Both staff and individuals are protected by the standard of "Reasonable Care." Individuals can expect "reasonable care." Reasonable care is doing only that which you have been trained to do; acting as others would act in the same or similar situations. Staff is required to provide care based on this minimum standard of "reasonable care."

To avoid being negligent:

- Do only those things you have been trained to do.
- Observe the legal rights of every individual.
- Complete all records carefully.
- Be informed about the medications including their actions and adverse effects.
- Follow the policies of your agency.

Examples of negligence include:

- Leaving a dependent individual unattended in a shower or bath.
- Giving the wrong medication to an individual.
- Failing to report an observation or adverse effect to the staff nurse that later has profound consequences for the individual's health.
- Causing an injury by using defective/broken equipment or supplies.
- Failing to give a medication at the prescribed time.

All persons are accountable for their own actions. Supervisory personnel are accountable for the actions of whomever they direct and supervise. The agency is legally obligated to ensure all individuals are free from physical and mental abuse and restraints.

Legal action may result from claims of negligence and/or malpractice. Action can be brought against the agency, supervisory personnel, and/or an individual who is considered negligent. See agency policy. Criminal action may also be taken if a crime is committed, such as: battery, neglect, misuse of controlled substances.

**Standardization of Medications**

Medication is standardized to guarantee the purity, potency, and strength. Information concerning resources which provide reliable information about a medication are available from your nurse.

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**Definitions of Key Terms**

**Assault and battery**—The threat to use force upon another person and the carrying out of the threat.

**Code of Ethics**—A voluntary set of rules that influence relationships between people.

**Competent**—Well-qualified or capable.
Core Lesson 2: Responsibilities in the Area of Medication Administration

**Duty of Care**--Performance of services that meet common standards.

**Libel**--Any written statement that damages a person's character.

**Malpractice**--Improper, injurious or negligent professional treatment or care of an individual.

**Medication**--Any substance used in the diagnosis or treatment of disease or the relief of pain or other symptoms.

**Negligence**--Omission or neglect of any reasonable precaution, care, or action.

**Reasonable care**--Doing only those things that you have been trained to do; acting as others would act in the same or similar situations.

**Slander**--A malicious statement or report.

**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.
Living in the Community
Core A

Lesson 3
Principles of Administering Medications
PRINCIPLES OF ADMINISTERING MEDICATIONS

Key Terms
Cardiotonics
Controlled substances
Incident report

Preparing and administering medication requires staff to be diligent at all times. Proper handling and dispensing of medication ensures that the individual is receiving the correct medication. There are specific guidelines that must be followed in the event that a medication is not given at the correct time or a medication needs to be destroyed. It is also important for the staff to be aware of the guidelines for controlled substances, storing medications, and maintaining medical asepsis.

Preparing and Administering Medications

Medication sheets, medication logs or MAR (medication administration records) are used to record each individual’s medication. Refer to your agency’s policy regarding medication sheets. Medications should always be checked at least three (3) times prior to administration. Compare the medication to the order before you pour it. Compare the medication to the order after you pour it. Compare the medication to the order before you administer it. Using medication sheets as a preparation and administration guide enables the staff and the individual to chart immediately. Charting must be done as soon as the medication is given. Never chart until after you have given the medication.

General Considerations when Administering Medications

Staff must follow several safety precautions that will help to avoid errors when preparing medications:

- Wash your hands before administering medication. Individuals should also wash their hands if they will be handling their own medication. Using aseptic technique when administering medications helps reduce the transfer of microorganisms from one person to another.

- Good lighting should be available when preparing medications.

- Work alone and avoid distractions and interruptions while preparing drugs. Do not leave medications unattended during preparation; if you must leave, place the medications in a locked area.

- Read the label three (3) times.

- Make sure that the information on the medicine sheet corresponds exactly to the label on the individual’s medication. If it does not, ask the staff nurse for further instructions and check your agency policy.
Core Lesson 3: Principles of Administering Medications

- Never administer a medicine from an unlabeled or illegibly-labeled container. Never re-label medication yourself, notify the staff nurse.

- Some agencies may prepare medicine boxes weekly for their individuals. Follow your agency’s policy.

- Medications can be given within one-half hour of the prescribed time and still be effective. Follow your agency’s policy.

- Before giving a medication that is more than one-half hour late, refer to your agency’s policy.

- Never borrow medication from one individual to give to another.

- Check the expiration date. Do not give outdated or discolored drugs.

- Never return an unused dose of medicine to its container. Refer to agency policy.

- Always remember to date and sign the medication sheet each time you administer a medication.

The following safety precautions will prevent errors when administering medications if followed correctly:

- Identify the individual: ask the individual their name; check the individual’s picture ID; ask another staff member.

- Remain with the individual while he/she swallows the medication. Do not leave medications for the individual to take later, unless you are directed to do so by the interdisciplinary team.

- Always check the medication sheet to make sure the medication has not already been given.

- Medication must be given by the person who pours it.

- If an individual expresses doubt or concern about a dosage of medication, you must make certain that no mistake has occurred as the individual may be right. Compare the original physician’s order with the label on the medication. If there is still doubt, check with the staff nurse.

- Observe for any undesirable effects of medications. If you notice any symptoms or hear any complaints that are unusual, check with the staff nurse before administering more medication to the individual. Remember that side effects may occur up to several hours after the medication has been given.

  Medication sheets are kept in a flip carrier or notebook. They are used to prepare medication. Medication sheets are stored in medication area and used to compare each medication with the order before the medication is administered. Medication sheets are used to record medication orders. Follow the agency policy and ask the staff nurse for further instruction.

  Medications such as cardiac glycosides (digitoxin, digoxin) are frequently carried in a separate cup so they are separate from other medications if they need to be withheld due to slow pulse rate.

  Keep good notes about medications withheld, refused, and as needed (PRN) medications.

Omitted or Refused Drugs:

Omission of a medication should be reported as soon as it is discovered. The doctor or staff nurse will determine
Core Lesson 3: Principles of Administering Medications

if the dose should still be given. Drugs may be omitted for legitimate reasons, such as suspected allergy or NPO for diagnostic tests. Be sure to chart the omission on the individual’s chart according to agency policy.

When an individual refuses medications you must listen to the reason; if it is a refusal due to nausea or other possible adverse effects, check with your staff nurse. Always explain to the individual why it is important that he/she take the medication and that it was ordered by his/her physician. If the individual still refuses, again ask for advice from your staff nurse; it is the individual’s right to refuse treatment, including medication, and to receive information about the medical consequences of his/her refusal from the nurse or physician.

If a medication is omitted due to refusal, chart the omission on the medication sheet and chart the reason for refusal and your notification of the staff nurse.

Omission of medication for other reasons might include:

- Inability of individual to swallow medication.
- Physician’s order for nothing by mouth (NPO).
- For individuals on certain heart medications (ex. cardiotonics), pulse below 60 unless otherwise ordered by physician.
- Individual has alcohol on his/her breath or appears under the influence. Contact the staff nurse for further instructions.
- Chart an omission on medication record and include the reason for omission.
- Notify the staff nurse when a medication is omitted.

Sometimes the individual is absent from the facility. When the individual is away from the facility, medications are sent along. Medications are prepared for each scheduled time of administration, packaged, labeled and sent with the individual. Refer to the agency policy on how to chart the administration of medication when the individual is away from the facility.

Additional observations that staff should make include comments by individual; signs or symptoms observed; consultation with staff nurse. Remember to date and sign every entry on the individual’s chart.

Individuals may have standing orders. Policies regarding standing orders are agency specific. Check with your staff nurse. Standing orders are used for over-the-counter medications. Examples are aspirin, Maalox, some cough medications.

Medication Errors

Violation of “reasonable care,” often results from not following the “six rights” of medication administration. Refer to Lesson 5 for more in-depth information about 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 Individual
4. Give medication by the Right Route
5. Give medication at the Right Time
6. Provide the Right Documentation
Errors in medication administration can be caused by a lack of concentration; lack of knowledge; failure to follow correct procedure; poor communication; performing a job beyond your scope of duty.

As a staff member you have responsibilities regarding medication errors. You must truthfully reporting an error may prove to be less harmful if reported immediately and immediate action can be taken and is better legally than trying to cover it up. The Individual can be protected from harmful effects by immediate action. Situation can be reviewed and similar errors avoided in the future. The FIRST thing to do if you make or discover a medication error is REPORT IT TO YOUR STAFF NURSE. The staff nurse will notify the physician and receive orders. The staff nurse will probably tell you to observe the individual and complete an incident report.

Always observe the individual for undesirable effects. Check the drug information source book for desired action, adverse effects, and toxic effects of the medication that was administered. Watch for general symptoms, such as nausea, vomiting, difficult breathing, dizziness, itching, hives, drowsiness, and others listed in the drug information source book under the administered drug. Record and report all information that is pertinent to the individual’s care.

An incident report must be completed by whoever is the most familiar with the situation, usually the person who committed or discovered the error. Report is sent to the staff nurse or the agency director, and is not put on the chart. It will be signed by the individual’s physician. Follow your agency’s policy. Incident reports are reviewed periodically by the agency director and the staff nurse, who design plans that will avoid future incidents. Answer all of the questions on the incident report form.

In the individual’s chart you must describe the incident (medication error) on the individual’s chart. Note when the staff nurse and physician were notified (time and date). Chart your observations.

The individual may or may not be informed of the error. The staff nurse must be notified of the medication error immediately. A physician will decide if the individual is to be informed. A physician or designated staff person informs the individual. This decision is not the responsibility of the person administering the medication.

Self Medication

Some individuals will be self-administering their own medications. See Supplemental Lesson 2. or follow your agency policy.

Safety Precautions for Controlled Substances

Controlled Substance Act of 1970—established five schedules for all controlled substances (drugs that are addictive or habit forming). A reference chart for the five controlled substance schedules is included at the end of the lesson. The Controlled Substance Act requires special precautions:

- Controlled substances must be accounted for by the agency, and must be kept double locked and counted regularly. Special accountability forms that are used to record the use of controlled substances are required by agency policy and federal guidelines.
Controlled substances are counted a minimum of once a month. Follow the agency policy.

Wasted or contaminated (dropped) controlled substances must be disposed of following agency policy.

Follow your agency’s policy for disposal of discontinued tranquilizers and/or psychotropics.

Storage of Medications

Medications must be kept in a locked cabinet. Medicine storage areas are always kept locked when not in use. Each home will have a storage cabinet used to store tablets, capsules, and powders. Topical medication or those for instillation must be stored separately from orals to avoid contamination and errors in administration. Many medications are stored in dark bottles that prevent their exposure to light. Some medications must be refrigerated in a locked box. Examples of refrigerated medications include insulin, suppositories and liquid antibiotics. The pharmacist will mark the label “refrigerate” if a medication must be kept cool. Medications are never stored in an area easily accessible to the public.

Key Points about Maintaining Medications

Labels on medications are kept clean and readable. If the label is not readable, notify the staff nurse, do not re-label the medication. A pharmacist must re-label medications. Never administer a medication from a container that has an unreadable label. Keep medications securely capped to maintain their potency—chemical changes can occur when medication is exposed to air. Do not use outdated medications—before giving medications always check the expiration date on each medication. Report to the staff nurse changes in consistency, odor, or color of a medication. (Follow agency policy). If any of these changes are observed, do not administer the medication. Give any changed medication to the staff nurse or pharmacist.

Medication Dispensing, Ordering and Disposal Procedures

The doctor writes an order or co-signs telephone order taken by the staff nurse. The medication order is then sent to the pharmacist to be filled (follow your agency policy). The medication is delivered by the pharmacy or picked up at the pharmacy and stored in the designated medication area. The amount may be a single dose, or one to several days’ supply. The individual’s medication—individual’s own container labeled according to the doctor’s order. Unit-dose packaging—each dose sealed, labeled and dated.

Each agency will have specific guidelines for ordering, receiving and discontinuing medications, the transfer of an individual’s medication when leaving, the disposal of contaminated or unused medication and what to do when an individual refuses medication. Please refer to your agency’s guidelines and policies.
Core Lesson 3: Principles of Administering Medications

**Definitions of Key Terms**

**Cardiotonics**—Medications used to strengthen the activities of the heart.

**Controlled substance**--A drug that is addictive or habit forming.

**Incident report**--Written account of an error in documentation or medication administration, injury to an individual, or injury to a staff member or a visitor.
### CONTROLLED SUBSTANCE SCHEDULES

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Schedule I</strong></td>
<td>Drugs with a high potential for abuse and no currently accepted medical uses. There is a lack of accepted safety for use of the drug</td>
<td>heroin, marijuana, quaalude, PCP, LSD, Methamphetamine, other research drugs</td>
</tr>
<tr>
<td><strong>Schedule II</strong></td>
<td>Drugs that have a medical use but have a high potential for abuse. Every refill requires a new written order from the physician. Abuse of the drug may lead to severe psychological and physical dependence.</td>
<td>morphine, codeine, Percodan, cocaine, Oxycontin, Demerol, mscontin, Fentanyl, Dilaudid, ms-c, Dextro, Roxicet, Tylox, Oxycodone</td>
</tr>
<tr>
<td><strong>Schedule III</strong></td>
<td>Drugs often used in medical treatment with a moderately high potential for abuse. Abuse of the drug may lead to moderate or low physical dependence or high psychological dependence.</td>
<td>medications combined with codeine, Tylenol with codeine, anabolic steroids &quot;body building drugs&quot;, Secobarbital, Benzedrine, Ketamine</td>
</tr>
<tr>
<td><strong>Schedule IV</strong></td>
<td>Drugs with moderate potential for abuse. Abuse of the drug may lead to limited physical dependence or psychological dependence.</td>
<td>Halcion, Meridia, Phenobarbital, Ambien, Valium, Sonata, Dalmane, Librium, Xanax, Talacen, Ativan, Versed, Restoril</td>
</tr>
<tr>
<td><strong>Schedule V</strong></td>
<td>Drugs with a low potential for abuse that still require prescriptions. Abuse of the drug may lead to limited physical dependence or psychological dependence</td>
<td>Lomotil (diphenoxylate), Robitussin AC</td>
</tr>
</tbody>
</table>
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Core A

Lesson 4
Documentation
It is also important that when charting, all staff members chart in the same manner. When all staff members are consistent in what and how they chart, a more accurate picture of the individual's health is given.

A doctor's order is required before any member of the staff can administer a medication. The medication order must contain eight basic parts for it to be valid. It is the responsibility of the personnel administering medications to follow the written orders. However, you have the right and responsibility to question any medication orders you are not comfortable following. When in doubt, contact your supervisor about the order.

Administering Medications Appropriately

The staff must be diligent in administering, charting and observing the effects of medication on an individual. The staff is expected to chart what they see, hear, smell, or touch, not what they think or feel. Refer to Resource/Reference #4 for examples. Remember: medications are charted after they are given, NOT BEFORE.

Every medication given must be charted for the correct individual and include the following information:

- Name and dosage of medication
- Time of administration
- Route of administration

The effects of PRN medication must be
charted after an appropriate period of time. For example, an hour or so after a pain medication is given, observe and chart the individual’s level of pain. Chart medication omission according to agency policy (for example: with an "O" in the appropriate square on the medication sheet and your initials inside the "O") and chart the reason for omission on the back of the medication sheet.

Staff must have:
- Knowledge of expected drug actions. Chart the individual’s response or lack of response to a medication.
- Knowledge of possible adverse effects
- Knowledge of agency policies for charting. Chart as soon as possible after a medication is administered.

Staff must have:
- Knowledge of expected drug actions. Chart the individual’s response or lack of response to a medication.
- Knowledge of possible adverse effects
- Knowledge of agency policies for charting. Chart as soon as possible after a medication is administered.

Staff passing medications needs to familiarize themselves with each medication that is to be given. Each medication must have the following information:
1. Individual’s name
2. Name of medication
3. Route of administration
4. Frequency of administration (may include time of day)
5. Dosage
6. Duration (for how long, number of doses)
7. Doctor’s signature
8. Miscellaneous information (number of refills, take on an empty stomach, do not take

with milk products, etc.)

A medication may be ordered for a specific time or number of doses. For example Achromycin 250 mg. q6h x 28 doses; or Septra Tab qd x 14 days. If unsure of how long or how often to give a medication, contact the staff nurse immediately. Medication may not be stopped unless discontinued by the physician.

Abbreviations and routes of administration are discussed in the following chart. These can be used as additional resource/reference material to the abbreviations used by your agency.
Core Lesson 4: Documentation

Observations to Chart – Report any Deviations from Normal to the Staff Nurse

1. **Vital Signs**

<table>
<thead>
<tr>
<th>Vital Signs</th>
<th>Chart the following</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
<td>Actual thermometer reading</td>
<td>98.6 axillary (AX)</td>
</tr>
<tr>
<td></td>
<td>Area of the body used for measuring the temperature</td>
<td>98.6 rectal (R)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>98.6 oral (O)</td>
</tr>
<tr>
<td><strong>Respirations</strong></td>
<td>Rate of respiration per minute</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dyspnea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orthopnea</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apnea</td>
<td></td>
</tr>
<tr>
<td><strong>Pulse</strong></td>
<td>Rate per minute</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regularity</td>
<td></td>
</tr>
<tr>
<td><strong>Blood pressure</strong></td>
<td>Systolic/diastolic reading</td>
<td>BP 120/90 right arm – sitting.</td>
</tr>
<tr>
<td></td>
<td>Position of individual when blood pressure is taken</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Limb from which blood pressure is taken</td>
<td></td>
</tr>
</tbody>
</table>

2. **General Appearance and Condition**

<table>
<thead>
<tr>
<th>General Appearance and Condition</th>
<th>Chart the following</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skin Color</strong></td>
<td>Pallor – Paleness of the skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flushing – Redness of the skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cyanosis – Bluish discoloration of the skin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jaundice – Yellowish discoloration of tissues and body fluids</td>
<td></td>
</tr>
<tr>
<td><strong>Skin Condition</strong></td>
<td>Turgor – Normal fullness and elasticity of the skin</td>
<td>3cm x 5cm x 1cm (length, width, depth)</td>
</tr>
<tr>
<td></td>
<td>Bedsores (decubiti) – An open wound</td>
<td>reddened area on coccyx.</td>
</tr>
<tr>
<td></td>
<td>Edema – Swelling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rashes/itching</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lacerations – A wound made by tearing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bruises – Black and blue area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Burns</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inflammation/redness – Localized heat, redness, swelling and pain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dryness/wetness</td>
<td></td>
</tr>
<tr>
<td><strong>Weakness</strong></td>
<td>Loss of strength</td>
<td>Individual prefers soft food.</td>
</tr>
<tr>
<td></td>
<td>General or localized</td>
<td>Lunch: ate ½ meat, all vegetables, ½</td>
</tr>
<tr>
<td></td>
<td>Unequal hand grips. Right hand stronger than left</td>
<td>dessert, drank all liquids.</td>
</tr>
<tr>
<td><strong>Eating Habits</strong></td>
<td>Amount of food eaten</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any difficulty in swallowing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difficulty in feeding self</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food preferences</td>
<td></td>
</tr>
<tr>
<td><strong>Sleep</strong></td>
<td>Ability to sleep at night</td>
<td>Individual stated difficulty sleeping</td>
</tr>
<tr>
<td></td>
<td>Severe drowsiness during the day</td>
<td>last night due to another individual</td>
</tr>
<tr>
<td></td>
<td>Statements made by the individual about sleep habits</td>
<td>being noisy.</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Accurate weight labeled in lbs. or kilos</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Report variance of three (3) or more pounds to staff nurse</td>
<td></td>
</tr>
</tbody>
</table>
### 3. Gastrointestinal Tract

<table>
<thead>
<tr>
<th>Chart the following</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nausea and vomiting (emesis)</strong></td>
<td>Emesis of 100 cc green, thick liquid, 3:00 a.m.</td>
</tr>
<tr>
<td>Color</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
</tr>
<tr>
<td>Amount of vomitus</td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td></td>
</tr>
<tr>
<td>Times of nausea</td>
<td></td>
</tr>
<tr>
<td><strong>Abdominal distention</strong></td>
<td>Abdomen appears more distended, but remains soft.</td>
</tr>
<tr>
<td>Variation in size of the abdomen</td>
<td></td>
</tr>
<tr>
<td>Whether the abdomen is soft, hard, or painful</td>
<td></td>
</tr>
<tr>
<td><strong>Bowel movement (feces)</strong></td>
<td>Individual expelled 100 cc tarry, liquid stool.</td>
</tr>
<tr>
<td>Amount</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td></td>
</tr>
<tr>
<td><strong>Mouth and gums</strong></td>
<td>Individual c/o soreness on right upper gum. States dentures “need to be adjusted.”</td>
</tr>
<tr>
<td>Bleeding</td>
<td></td>
</tr>
<tr>
<td>Soreness</td>
<td></td>
</tr>
<tr>
<td>Lesions or sores</td>
<td></td>
</tr>
<tr>
<td>Ill-fitting dentures</td>
<td></td>
</tr>
</tbody>
</table>

### 4. Respiratory Tract

<table>
<thead>
<tr>
<th>Chart the following</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cough</strong></td>
<td>Individual has productive cough of thick, yellow sputum. Alcohol odor on breath.</td>
</tr>
<tr>
<td>Productive or non-productive</td>
<td></td>
</tr>
<tr>
<td>Any difficulty breathing</td>
<td></td>
</tr>
<tr>
<td>Breath odor- foul, sweet, fruity, alcohol</td>
<td></td>
</tr>
<tr>
<td><strong>Respirations</strong></td>
<td>See Vital Signs</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 5. Genitourinary Tract

<table>
<thead>
<tr>
<th>Chart the following</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urine (voiding)</strong></td>
<td>Individual voiding 50 cc concentrated urine every 30 minutes. Slight pain upon urination.</td>
</tr>
<tr>
<td>Amount</td>
<td></td>
</tr>
<tr>
<td>Color - redness, deep brown, pale yellow, dark yellow, amber</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td></td>
</tr>
<tr>
<td>Difficulty in voiding</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
</tr>
<tr>
<td><strong>Discharge</strong></td>
<td>Thin, watery, clear discharge from vagina.</td>
</tr>
<tr>
<td>Color of any discharge from vagina, urethra, penis</td>
<td></td>
</tr>
<tr>
<td>Consistency of any discharge from vagina urethra</td>
<td></td>
</tr>
</tbody>
</table>

### 6. Musculoskeletal System

<table>
<thead>
<tr>
<th>Chart the following</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical activity</strong></td>
<td>ROM to all extremities for 5 minutes.</td>
</tr>
<tr>
<td>Movement of limbs</td>
<td></td>
</tr>
<tr>
<td>Ability to walk</td>
<td></td>
</tr>
<tr>
<td>Involuntary movements</td>
<td></td>
</tr>
<tr>
<td>Tremors - involuntary trembling or shaking</td>
<td></td>
</tr>
<tr>
<td>Contractions</td>
<td></td>
</tr>
<tr>
<td>Pain, swelling</td>
<td></td>
</tr>
<tr>
<td>Exercises, including Range of Motion (ROM)</td>
<td></td>
</tr>
</tbody>
</table>
## Core Lesson 4: Documentation

### 7. Mental and Emotional State

<table>
<thead>
<tr>
<th>State of consciousness</th>
<th>Chart the following</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert</td>
<td>Lethargic – not alert, drowsy, sluggish</td>
<td></td>
</tr>
<tr>
<td>Comatose</td>
<td>Responsive</td>
<td>Individual arouses only to painful stimuli (sternal rub).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emotional status – describe what the individual is doing which might indicate the individual is:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprehensive</td>
</tr>
<tr>
<td>Fearful</td>
</tr>
<tr>
<td>Nervous</td>
</tr>
<tr>
<td>Distressed</td>
</tr>
<tr>
<td>Withdrawn</td>
</tr>
<tr>
<td>Happy</td>
</tr>
<tr>
<td>Friendly</td>
</tr>
<tr>
<td>Sad</td>
</tr>
<tr>
<td>Depressed</td>
</tr>
<tr>
<td>Apathetic – lack of concern or caring</td>
</tr>
<tr>
<td>Individual is pacing up and down the hall, wringing his hands, and talking to self for 30 minutes.</td>
</tr>
</tbody>
</table>

### 8. Nervous System

<table>
<thead>
<tr>
<th>Changes in sensation or movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slurring</td>
</tr>
<tr>
<td>Drooling</td>
</tr>
<tr>
<td>Tremors of the tongue</td>
</tr>
<tr>
<td>Periods of vertigo, aphasia, syncope</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Convulsions – abnormal, uncontrolled movement of all or part of the body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time convolution occurred</td>
</tr>
<tr>
<td>Part of the body affected</td>
</tr>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Duration</td>
</tr>
<tr>
<td>Injury (if any occurred)</td>
</tr>
<tr>
<td>15 second syncopal episode after being outdoors (T. 99) for 30 minutes BP 80/60, P. 120, R. 30.</td>
</tr>
</tbody>
</table>

### 9. Pain

<table>
<thead>
<tr>
<th>Time</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Area</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
</tr>
<tr>
<td>Steady</td>
</tr>
<tr>
<td>Intermittent</td>
</tr>
<tr>
<td>Sharp</td>
</tr>
<tr>
<td>Dull</td>
</tr>
<tr>
<td>Throbbing</td>
</tr>
<tr>
<td>Sudden onset</td>
</tr>
<tr>
<td>Gradual onset</td>
</tr>
<tr>
<td>Severity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individual’s statement regarding pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual complaining of headache. Aspirin given. No relief in an hour.</td>
</tr>
</tbody>
</table>
10. Eyes

<table>
<thead>
<tr>
<th>Changes in vision</th>
<th>Chart the following</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blurred</td>
<td></td>
<td>Individual complained of double vision in right eye. Staff nurse notified.</td>
</tr>
<tr>
<td>Double</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreased</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in pupil size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity to light</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual halo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inability to see</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color of sclera – White tissue covering all of the eyeball except the cornea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recurrent headaches</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Physical signs                                        |                     |                                               |
| Drainage                                              |                     |                                               |
| Itching                                                |                     |                                               |

11. Ears

<table>
<thead>
<tr>
<th>Changes in hearing</th>
<th>Chart the following</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreased hearing</td>
<td></td>
<td>Individual complained of ringing in right ear.</td>
</tr>
<tr>
<td>Presence of ringing in ear(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain/pressure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Physical signs                                        |                     |                                               |
| Drainage                                              |                     |                                               |
| Itching                                                |                     |                                               |

Definitions of Key Terms

Abdominal distention--Enlarged abdomen.

Anorexia--Lack or loss of appetite for food.

Anuria--No urinary output.

Apathetic--Lack of concern or caring.

Blood pressure--The force exerted by the heart against the arterial walls when the heart contracts (systolic) or relaxes (diastolic).

Bradycardia--Slowness of the heartbeat; less than 50 beats per minute.

Bruise--Black and blue area caused by an injury to the surface of the skin.

Chills--Shivering or shaking.

Constipation--Difficult, incomplete or infrequent bowel movements.
Core Lesson 4: Documentation

**Convulsions**--Abnormal, uncontrolled movement of all or part of the body.

**Cyanosis**--A bluish discoloration of the skin caused by the lack of oxygen in the blood.

**Decubitus ulcer**--An open wound that is caused by the pressure of lying or sitting in one position for a long period of time. Also called a pressure sore or bedsore.

**Diarrhea**--Frequent, loose bowel movements.

**Dyskinesia**--Abnormal movements of the body such as a dramatic onset of spasms, oculogyric crisis (begins with a stare, rolling of eyes, tilting of head, facial expressions), protrusion of the tongue, stiff neck, inability to swallow, stammering speech (dysarthria), labored breathing, and involuntary muscle movements.

**Dysphagia**--Difficulty in swallowing.

**Dyspnea**--Difficulty in breathing.

**Dysuria**--Painful or difficult urination.

**Edema**--Swelling caused by large amounts of fluid in the tissues.

**Emaciated**--Thin, underweight.

**Emesis**--Vomiting.

**Feces**--Waste excreted from the bowels.

**Fever**--Body temperature above normal.

**Flushing**--Redness of the skin.

**Hemiplegia**--Paralysis on only one side of the body.

**Hives**--Red, swollen, itchy areas.

**Inflammation**--Localized heat, redness, swelling, and pain as a result of irritation, injury, or infection.

**Insomnia**--Inability to sleep.
Core Lesson 4: Documentation

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.

Laceration--A wound made by tearing.

Lethargic--Not alert, drifts off into sleep, drowsy, sluggish.

Nausea--Feeling the need to vomit.

Nystagmus--A spasmodic, involuntary motion of the eyeball.

Obese--Extremely overweight.

Oliguria--Secretion of a diminished amount of urine in relation to the fluid intake.

Orthopnea--Inability to breathe except in an upright position.

Pallor--Paleness of the skin.

Paraplegia--Paralysis of the legs and lower part of the body; caused by spinal disease or injury.

Petechia--A small spot on the body surface caused by a minute hemorrhage.

Polyuria--Large amounts of urinary output.

Pulse--Rhythmical throbbing of the arteries caused by the heartbeat.

Quadriplegia--Paralysis of both arms and both legs.

Range of motion--Moving a joint its full range in an attempt to prevent muscle contractures and joint deformity.

Rash--A skin eruption, usually reddened and raised.

Respiration--Process of breathing.

Sclera--White tissue covering all of the eyeball except the cornea.

Sediment--Solid particles in the urine.

Somnolence--Drowsiness, sleepiness.

Syncope--A brief loss of consciousness.

Tachycardia--Excessively rapid heartbeat, usually applied to a pulse rate above 100 per minute.
### Core Lesson 4: Documentation

**Summary of Common Abbreviations for Medication Orders**

<table>
<thead>
<tr>
<th>Word Element</th>
<th>Refers to or Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>before</td>
</tr>
<tr>
<td>ac</td>
<td>before meals</td>
</tr>
<tr>
<td>ad lib</td>
<td>as desired</td>
</tr>
<tr>
<td>AM, am</td>
<td>morning</td>
</tr>
<tr>
<td>bid</td>
<td>twice a day</td>
</tr>
<tr>
<td>B/P</td>
<td>blood pressure</td>
</tr>
<tr>
<td>c</td>
<td>with</td>
</tr>
<tr>
<td>CBC</td>
<td>complete blood count</td>
</tr>
<tr>
<td>cc</td>
<td>cubic centimeter</td>
</tr>
<tr>
<td>cm</td>
<td>centimeter</td>
</tr>
<tr>
<td>c/o</td>
<td>complained of</td>
</tr>
<tr>
<td>dr</td>
<td>dram</td>
</tr>
<tr>
<td>GI</td>
<td>gastrointestinal</td>
</tr>
<tr>
<td>g, gm, Gm</td>
<td>gram</td>
</tr>
<tr>
<td>gr</td>
<td>grain</td>
</tr>
<tr>
<td>gtt, gtts</td>
<td>drop(s)</td>
</tr>
<tr>
<td>h, hr</td>
<td>hour</td>
</tr>
<tr>
<td>hs, HS</td>
<td>at bedtime</td>
</tr>
<tr>
<td>IM</td>
<td>intramuscular</td>
</tr>
<tr>
<td>IV</td>
<td>intravenous</td>
</tr>
<tr>
<td>kg, Kg</td>
<td>kilogram</td>
</tr>
<tr>
<td>L</td>
<td>left</td>
</tr>
<tr>
<td>L</td>
<td>liter</td>
</tr>
<tr>
<td>lb, #</td>
<td>pound</td>
</tr>
<tr>
<td>med, meds</td>
<td>medication(s)</td>
</tr>
<tr>
<td>mEq, meq</td>
<td>millequivalent</td>
</tr>
<tr>
<td>mcg</td>
<td>microgram</td>
</tr>
<tr>
<td>mg</td>
<td>milligram</td>
</tr>
<tr>
<td>ml</td>
<td>milliliter</td>
</tr>
<tr>
<td>NPO, npo</td>
<td>nothing by mouth</td>
</tr>
<tr>
<td>OD</td>
<td>Overdose</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Word Element</th>
<th>Refers to or Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.D.</td>
<td>right eye</td>
</tr>
<tr>
<td>O.S.</td>
<td>left eye</td>
</tr>
<tr>
<td>OU</td>
<td>both eyes</td>
</tr>
<tr>
<td>oz</td>
<td>ounce</td>
</tr>
<tr>
<td>p</td>
<td>after</td>
</tr>
<tr>
<td>pc</td>
<td>after meals</td>
</tr>
<tr>
<td>per</td>
<td>by means of</td>
</tr>
<tr>
<td>PM, pm</td>
<td>afternoon, evening</td>
</tr>
<tr>
<td>po, PO, per os</td>
<td>by mouth, orally</td>
</tr>
<tr>
<td>PRN, prn</td>
<td>whenever necessary</td>
</tr>
<tr>
<td>pt</td>
<td>pint</td>
</tr>
<tr>
<td>q</td>
<td>every</td>
</tr>
<tr>
<td>qd</td>
<td>daily</td>
</tr>
<tr>
<td>qh</td>
<td>every hour</td>
</tr>
<tr>
<td>q2h</td>
<td>every two hours</td>
</tr>
<tr>
<td>q3h</td>
<td>every three hours</td>
</tr>
<tr>
<td>q4h</td>
<td>every four hours</td>
</tr>
<tr>
<td>qid</td>
<td>four times a day</td>
</tr>
<tr>
<td>qod</td>
<td>every other day</td>
</tr>
<tr>
<td>qt</td>
<td>quart</td>
</tr>
<tr>
<td>RBC</td>
<td>red blood count</td>
</tr>
<tr>
<td>R</td>
<td></td>
</tr>
<tr>
<td>s</td>
<td>without</td>
</tr>
<tr>
<td>SC, subc, subq</td>
<td>subcutaneous</td>
</tr>
<tr>
<td>ss, ss</td>
<td>one-half</td>
</tr>
<tr>
<td>stat</td>
<td>immediately</td>
</tr>
<tr>
<td>supp</td>
<td>suppository</td>
</tr>
<tr>
<td>tbsp, T, Tbs</td>
<td>tablespoon</td>
</tr>
<tr>
<td>tid</td>
<td>three times a day</td>
</tr>
<tr>
<td>tsp, t</td>
<td>teaspoon</td>
</tr>
<tr>
<td>WBC</td>
<td>white blood count</td>
</tr>
</tbody>
</table>
Living in the Community
Core A

Lesson 5
Administering Medications
Core Lesson 5: Administering Medications

ADMINISTERING MEDICATIONS

<table>
<thead>
<tr>
<th>Key Terms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Atomizer</td>
<td>Auditory canal</td>
</tr>
<tr>
<td>Back sinus</td>
<td>Buccal</td>
</tr>
<tr>
<td>Capsules</td>
<td>Conjunctival sac</td>
</tr>
<tr>
<td>Creams</td>
<td>Elixirs</td>
</tr>
<tr>
<td>Dorsal recumbent position</td>
<td></td>
</tr>
<tr>
<td>Emulsions</td>
<td>Enema</td>
</tr>
<tr>
<td>Fluid extracts</td>
<td>Inhalation</td>
</tr>
<tr>
<td>Inhaler</td>
<td>Inner canthus</td>
</tr>
<tr>
<td>Insertion</td>
<td>Instillation</td>
</tr>
<tr>
<td>Liniment</td>
<td>Lotions</td>
</tr>
<tr>
<td>Lozenges</td>
<td>Medicine dropper</td>
</tr>
<tr>
<td>Milks</td>
<td>Mucous membrane</td>
</tr>
<tr>
<td>Ointment</td>
<td>Outer canthus</td>
</tr>
<tr>
<td>Parenteral</td>
<td>Perineum</td>
</tr>
<tr>
<td>Powder</td>
<td>Reception</td>
</tr>
<tr>
<td>Rectum</td>
<td>Solution</td>
</tr>
<tr>
<td>Spirits</td>
<td>Sprays</td>
</tr>
<tr>
<td>Suppositories</td>
<td>Suspension</td>
</tr>
<tr>
<td>Syrup</td>
<td>Tablet</td>
</tr>
<tr>
<td>Timed-release</td>
<td>Tincture</td>
</tr>
<tr>
<td>Topical</td>
<td>Transdermal patch</td>
</tr>
<tr>
<td>Vagina</td>
<td>Volatile</td>
</tr>
</tbody>
</table>

Oral medications are a frequently used method of treatment in the agency. Accuracy in preparation and administration is essential if the individual is to receive the desired effect. Administering oral medications isn't always easy. Sometimes an individual doesn't want to take his/her medication. Sometimes an individual chokes easily or hides a tablet under his/her tongue and later throws it away. These and other similar problems must be handled daily by staff.

It is important to observe the other staff members as they give the medications to the individuals. This will allow you to gain valuable information on how the staff interacts with each individual. This will help to minimize the effect that staff changes may have on the individuals and enable all staff members to be consistent in their interactions with the individuals.

Observations while Administering Medications

Make observations continuously: before administration, during administration, and after administration. Use all your senses: sight, hearing, touch, smell. (Review the section on observations in Lesson 4.) Relate observations to possible medication reactions or adverse effects. If you suspect the individual is having an adverse effect or toxic effect, tell your staff nurse immediately. Make certain individual is safe from physical harm.

Factors that Influence Administration of Medications

There are many factors, which may influence how an individual may react to a medication. Some factors are:

- Activities of individual: may not be in the home, may be in the community or at work.
Core Lesson 5: Administering Medications

THE "SIX RIGHTS" OF MEDICATION ADMINISTRATION

1. **Right medication**: compare the label on the medication container with the individual's medication sheet.
2. **Right dose**: compare the order on the medication sheet with the label on the medication. If it is different, ask the staff nurse for further instructions.
3. **Right individual**: compare the name on the medication sheet with the individual's I.D. band (or other means of identifying individual).
4. **Right route**: compare the medication sheet and the label. Refer to Resource/Reference #5 at the end of this lesson for examples.
5. **Right time**: compare the medication sheet and the label. Always chart the exact time administered. If not administered within 30 minutes prior to or after the prescribed time, you must chart the exact time you administered it.
6. **Right documentation**: record medication as soon as it is given.

- Desires and needs of individual--individual may not want to take medication, may be nauseated or not feeling well, etc.
- Ability to communicate with individual--individual may have a speech and/or hearing problem, there may be a language barrier, or the individual may be unable to communicate due to a change in his/her physical condition.
- Position of individual--may be unable to move self, in or attached to special devices, etc.
- Ability of individual to take medication--may have difficulty swallowing, feeding tube, etc.
- Abuse of other substances (alcohol, illegal drugs, etc.).

Follow-up on Administered Medication

Check on individual later to see if desired results were achieved. Check on individual later for any other symptoms which may be drug-related. Example--pulse and/or blood pressure for heart or blood pressure medication. Check individual later for delayed reaction. Example--skin rash, chilling, nausea, etc.

Medication Administration Checklists

Staff will be administering medications in a variety of forms: pill, cream or ointment, suppository, lotion, liniment, spray, drops, and liquid. The following checklists should be used as a guide while the techniques are being demonstrated to staff. The checklists may then be used to evaluate the ability of the staff member to perform the procedure. Oral tablets, capsules, and liquid medication checklists are required to be taught to all staff and staff must receive a score of 100% before they may pass medications. The rest of the checklists will be taught according to agency policy and/or needs.
Core Lesson 5: Administering Medications

### Definitions of Key Terms

**Atomizer**—A device used to deliver a fine spray of medicine.

**Auditory canal**—Tubular passages or ducts that assist in hearing or in the sense of hearing.

**Buccal**—Medication is placed between the teeth and the mucous membrane of the cheek.

**Capsules**—Medication in small cylinder-like containers.

**Conjunctival sac**—Mucous membrane that lines the inner surface of the lower eyelid.

**Creams**—Medication applied to the skin or mucous membrane that is more easily absorbed by the skin than ointments.

**Dorsal recumbent position**—Lying flat on the back with the legs parted, the knees bent, and the soles of the feet flat on the bed.

**Elixirs**—A water-alcohol solution which may contain sugar and flavoring.

**Emulsions**—Suspensions of oils, water and other substances.

**Fluid extracts**—A concentrated alcohol solution of a vegetable drug.

**Inhalation**—To draw in by breathing.

**Inhaler**—A device used to administer medication by the act of breathing in.

**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.

**Instillation**—The process of administering a liquid - usually drop by drop.

**Liniment**—A solution used as a vehicle to distribute medication.

**Lotions**—Watery preparations that contain medication; are to be patted on, not rubbed in.

**Lozenges**—Flat, rounded discs made up of medication and sugar.
Core Lesson 5: Administering Medications

**Medicine dropper**--A small glass or plastic tube usually capped by a hollow rubber bulb at one end that is used for measuring and administering medication.

**Milks**--Bulky suspensions in water that are insoluble and must be shaken.

**Mucous membrane**--The inner lining of the mouth and labia minora.

**Ointment**--Mixtures of medications with a fatty base, soft enough to spread at room temperature or melt at body temperature.

**Oral**--By mouth.

**Outer canthus**--The outer corner of the eyelid.

**Parenteral**--Introducing medication or food into the body by injection.

**Perineum**--The area between the anus and the posterior part of the external genitalia.

**Powder**--Solid medication that has been ground into fine particles and used in that form.

**Reception**--Method of introducing medicine into the body; by mouth, injection, rectally, inhalation, etc.

**Rectum**--The lowest or last, segment of the large intestine that ends at the anus.

**Solution**--Substance dissolved in water.

**Spirits**--An alcohol solution of a volatile substance.

**Sprays**--Medications administered by an atomizer.

**Suppositories**--A solid medication designed to melt within a body cavity other than the mouth.

**Suspension**--Fluid mixtures that need to be shaken; only stay together for a short period of time.

**Syrup**--Medication made with water, flavoring and sugar.

**Tablet**--Dried, powdered medication pressed into shape.

**Timed-release**--Medication that is designed to be slowly absorbed by the system so that it has a longer lasting effect.
Core Lesson 5: Administering Medications

**Tincture**—An alcohol solution of an animal or vegetable drug or chemical substance.

**Topical**—Pertaining to a particular spot; local.

**Transdermal patch**—Adhesive bandage containing medication.

**Vagina**—The canal leading from the vulva to the uterus in the female.

**Volatile**—Substances that evaporate easily at normal temperatures and pressures.
## Routes for Administering Medications

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>HOW MEDICATION IS ADMINISTERED</th>
<th>TERM USED DO DESCRIBE ROUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouth</td>
<td>Client swallows the medication</td>
<td>Oral administration (po, per, os)</td>
</tr>
<tr>
<td>Respiratory tract</td>
<td>Client inhales the medication</td>
<td>Inhalation (puffs)</td>
</tr>
<tr>
<td>Injection</td>
<td>Injection of medicine into:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Subcutaneous tissue</td>
<td>Hypodermic or subcutaneous injection (S.C.)</td>
</tr>
<tr>
<td></td>
<td>2. Muscle tissue</td>
<td>Intramuscular injection (I.M.)</td>
</tr>
<tr>
<td></td>
<td>3. Under epidermis</td>
<td>Intradermal injection (I.D.)</td>
</tr>
<tr>
<td></td>
<td>4. Vein</td>
<td>Intravenous injection (I.V.)</td>
</tr>
<tr>
<td>Placing on skin or mucous membrane</td>
<td>Inserting medication into:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Vagina</td>
<td>Vaginal administration</td>
</tr>
<tr>
<td></td>
<td>2. Rectum</td>
<td>Rectal administration (suppository, supp)</td>
</tr>
<tr>
<td></td>
<td>3. Eye</td>
<td>Eye instillation (opth, os, ou, od)</td>
</tr>
<tr>
<td></td>
<td>4. Ear</td>
<td>Ear instillation (otic)</td>
</tr>
<tr>
<td></td>
<td>5. Nose</td>
<td>Nasal instillation</td>
</tr>
<tr>
<td>Medication is placed under tongue</td>
<td></td>
<td>Sublingual administration (S.L.)</td>
</tr>
<tr>
<td>Medication is placed between teeth and mucous membrane of the cheek</td>
<td></td>
<td>Buccal</td>
</tr>
<tr>
<td>Medication is placed on the skin</td>
<td></td>
<td>Topical application</td>
</tr>
<tr>
<td>Medication is placed in direct contact with the mucous membrane</td>
<td></td>
<td>Instillation</td>
</tr>
<tr>
<td>Area is flushed with medication</td>
<td></td>
<td>Irrigation</td>
</tr>
<tr>
<td>Medication patch is applied to the skin</td>
<td></td>
<td>Transdermal patch</td>
</tr>
</tbody>
</table>
Medication Administration Checklist

Task: Oral Tablets or Capsules

Staff Member: ___________________________ Date: ____________

Staff Nurse: ____________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

S = Satisfactory  U = Unsatisfactory  N/A = Not Applicable

1. Check the medication sheets to see what medication is ordered. 
   ___________ ___________ ___________

2. Be sure the order is valid; check the date that the order began. 
   ___________ ___________ ___________

3. Wash your hands. 
   ___________ ___________ ___________

4. Have individual wash his/her hands. 
   ___________ ___________ ___________

5. Obtain paper cups, a glass of water and if necessary, food to mix with the medication. 
   ___________ ___________ ___________

6. Unlock the medication storage area. 
   ___________ ___________ ___________

7. Check the label with the order to determine individual's medication and dosage ordered. 
   ___________ ___________ ___________

8. Check the individual's drug supply. 
   ___________ ___________ ___________

9. Select the medication ordered. 
   ___________ ___________ ___________

10. Check the label with the order. 
    ___________ ___________ ___________

11. Check the medication according to the six rights of administration. 
    ___________ ___________ ___________

12. Remove the medication ordered from the container and put it in a paper cup or directly in the individual's hand. 
    ___________ ___________ ___________
    a. For unit dose, remove from the container. 
       ___________ ___________ ___________
    b. For a multi-dose bottle, remove the cap; without touching the medicine, pour required capsules or tablets into cap and then into the paper cup or directly into the individual's hand. 
       ___________ ___________ ___________

13. Read the label again. 
    ___________ ___________ ___________

14. Return medicine to the locked storage container. 
    ___________ ___________ ___________

15. Mix the medication with food if necessary. 
    ___________ ___________ ___________

16. Give individual a drink of water before administering medications. 
    ___________ ___________ ___________
17. Instruct individual on how to take medication.
   a. For oral medications--swallow with more water
   b. For buccal--dissolve between cheek and gum, do not swallow.
   c. For sublingual--dissolve under tongue, do not swallow.
18. Administer medications to individual with water unless fluid is not indicated as in buccal or sublingual.
19. Wait for individual to swallow oral medications.
20. Observe for any immediate reactions to the medication.
21. Wash your hands.
22. Dispose of trash according to agency policy.
23. Chart medications administered and observations made.

Comments: ____________________________________________________________
______________________________________________________________
Medication Administration Checklist

Task: Liquid Medications

Staff Member: ___________________________ Date: _____________

Staff Nurse: _____________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

S = Satisfactory U = Unsatisfactory N/A = Not Applicable

1. Check the medication sheets to see what medication is ordered. ______ ______ ______
2. Be sure the order is valid; check the date that the order began. ______ ______ ______
3. Wash your hands. ______ ______ ______
4. Obtain a calibrated medicine cup. ______ ______ ______
5. Unlock the medication storage area. ______ ______ ______
6. Check the individual's drug supply. ______ ______ ______
7. Select the medication ordered. ______ ______ ______
8. Check the label with the order to determine individual's medication and dosage ordered. (Check #1) ______ ______ ______
9. Check the medication according to the six rights of administration. (Check #2) ______ ______ ______
10. Pick up the liquid medication with the label against your palm. ______ ______ ______
11. Shake the bottle if necessary. ______ ______ ______
12. Remove the cap and place the cap upside down on the work area. ______ ______ ______
13. Hold the calibrated cup at eye level. ______ ______ ______
14. Pour the medication in the cup so that the lowest point of the surface of the medication is at the desired dosage. ______ ______ ______
15. Place the medication on the medicine tray. ______ ______ ______
16. Replace the cap on the liquid medication. ______ ______ ______
17. Read the label again. (Check #3) ______ ______ ______
18. Wait for the individual to take the medication and observe for any immediate reactions to the medication. ______ ______ ______
19. Wipe off the outside of the bottle without touching the lip area. ______ ______ ______
20. Return the medication to the storage area. ______ ______ ______
21. Chart the medications administered and the observations made.
22. Wash your hands.

Comments: ________________________________
Medication Administration Checklist

Task: **Powdered Medications**

Staff Member: ___________________________ Date: ________________

Staff Nurse: ________________________________

**Directions:** Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

<table>
<thead>
<tr>
<th>S = Satisfactory</th>
<th>U = Unsatisfactory</th>
<th>N/A = Not Applicable</th>
</tr>
</thead>
</table>

1. Check the medication sheets to see what medication is ordered. _______ _______ _______
2. Be sure the order is valid; check the date that the order began. _______ _______ _______
3. Wash your hands. _______ _______ _______
4. Obtain a calibrated medicine cup and a spoon. _______ _______ _______
5. Obtain a cup of water in the amount ordered for administration or food to mix with the medication. _______ _______ _______
6. Unlock the medication storage area. _______ _______ _______
7. Check the individual's drug supply. _______ _______ _______
8. Select the medication ordered. _______ _______ _______
9. Check the label with the order to determine individual's medication and dosage ordered. (Check #1) _______ _______ _______
10. Check the medication according to the six rights of administration. (Check #2) _______ _______ _______
11. Remove the medication ordered from the container. _______ _______ _______
   a. For unit dose, remove package from container. _______ _______ _______
   b. For a multi-dose container, measure amount ordered into a calibrated medicine cup. _______ _______ _______
12. Read the label again. (Check #3) _______ _______ _______
13. Return the medicine to the storage container. _______ _______ _______
14. Mix the medication with the correct amount of water or food. _______ _______ _______
15. Observe the individual taking the medication and observe for any immediate reactions to the medication.
16. Chart the medications administered and the observations made.
17. Wash your hands.

Comments: ____________________________________________________________

_________________________________________________________
Medication Administration Checklist

Task: Crushing Tablets

Staff Member: ___________________________ Date: ____________

Staff Nurse: ____________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

S = Satisfactory
U = Unsatisfactory
N/A = Not Applicable

S  U  N/A

1. Check for safety and effectiveness before altering the form of any medication. Some medications cannot be crushed.  
2. Check the medication sheets to see what medication is ordered.  
3. Be sure the order is valid; check the date that the order began.  
4. Wash your hands.  
5. Obtain paper cups, a glass of water and if necessary, food to mix with the medication,  
6. Obtain a mortar and pestle or a leverage-type crusher and an alcohol swab.  
7. Unlock the medication storage area.  
8. Check the individual's drug supply.  
9. Select the medication ordered.  
10. Check the label with the order to determine individual's medication and dosage ordered. (Check #1)  
11. Check the medication according to the six rights of administration. (Check #2)  
12. Place tablets to be crushed in a paper cup with a paper cup on top so the crushing apparatus does not touch the medications.  
13. Press down on the crusher or twist the pestle to crush the medication.  
14. Read the label again. (Check #3)  
15. Return the medicine to the storage container.  
16. Wipe the mortar and pestle or leverage-type crusher with an alcohol swab.
17. Mix the medication with food if necessary.
18. Observe the individual taking the medication and observe for any immediate reactions to the medication.
19. Return the mortar and pestle to the storage area
20. Chart the medications administered and the observations made.
21. Wash your hands.

Comments: ____________________________________________________________
Medication Administration Checklist

Task: Altering Capsules

Staff Member: ___________________________ Date: __________

Staff Nurse: ____________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

S = Satisfactory  U = Unsatisfactory  N/A = Not Applicable

2. Check for safety and effectiveness before altering the form of any medication.

3. Check the medication sheets to see what medication is ordered.

4. Be sure the order is valid; check the date that the order began.

5. Wash your hands.

6. Obtain paper cups, a glass of water and if necessary, food to mix with the medication.

7. Unlock the medication storage area.

8. Check the individual's drug supply.

9. Select the medication ordered.

10. Check the label with the order to determine individual's medication and dosage ordered. (Check #1)

11. Check the medication according to the six rights of administration. (Check #2)

12. Hold the capsule over the paper cup.

13. Twist the capsule apart and allow the powder to fall into the cup.

14. Read the label again. (Check #3)

15. Return the medicine to the storage container.

16. Mix the medication with food if necessary.

17. Observe the individual taking the medication and observe for any immediate reactions to the medication.

18. Give the individual a drink of water and observe for any immediate reactions to the medication.
18. Dispose of the empty capsule according to policy
19. Chart the medications administered and the observations made.
20. Wash your hands.

Comments: ________________________________________________________________

__________________________________________________
## Medication Administration Checklist

**Task:** Applying a Lotion, Liniment, or Ointment

**Staff Member:** ____________________________  **Date:** ____________

**Staff Nurse:** ____________________________

<table>
<thead>
<tr>
<th>Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.</th>
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<tbody>
<tr>
<td>1.</td>
<td>Check the medication sheets to see what medication is ordered.</td>
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<td></td>
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<tr>
<td>2.</td>
<td>Be sure the order is valid; check the date that the order began.</td>
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<tr>
<td>3.</td>
<td>Wash your hands.</td>
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<td>4.</td>
<td>Obtain clean gloves to use when applying the medication.</td>
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<td>5.</td>
<td>Obtain gauze squares or cotton balls, a bag or piece of paper for used materials and a tongue blade for ointments.</td>
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<td>6.</td>
<td>Unlock the medication storage area.</td>
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<td>7.</td>
<td>Check the individual's drug supply.</td>
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<tr>
<td>8.</td>
<td>Select the medication ordered.</td>
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<tr>
<td>9.</td>
<td>Check the label with the order to determine individual's medication and dosage ordered. (Check #1)</td>
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<tr>
<td>10.</td>
<td>Check the medication according to the six rights of administration. (Check #2)</td>
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<tr>
<td>12.</td>
<td>Provide privacy for the individual. Apply medication while the individual is in his/her private room and only expose the area that needs the medication.</td>
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<tr>
<td>12.</td>
<td>Read the label again. (Check #3)</td>
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<td></td>
<td></td>
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<tr>
<td>13.</td>
<td>Put on the clean gloves.</td>
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<tr>
<td>18.</td>
<td>Prepare to administer the medication.</td>
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<tr>
<td>a.</td>
<td>Pour enough lotion or liniment on the gauze or cotton balls to cover all or a portion of the affected area.</td>
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<tr>
<td>b.</td>
<td>Squeeze or scoop ointment onto the end of the tongue blade.</td>
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</tbody>
</table>
15. Apply the medication.
   a. Swab or par the lotion gently on affected area. **DO NOT RUB.**
   b. Rub the liniment on the skin in a circular motion.
   b. Apply ointment with firm strokes forming a thin layer of medication over the area, as ordered.

16. Observe the individual for any immediate reactions to the medication.

17. Discard soiled gauze or cotton balls, tongue blades, and gloves appropriately.

18. Return medication to medication area.

19. Chart the medications administered and the observations made.

20. Wash your hands.

Comments: ____________________________________________________________

Additional Considerations:

1. Application of topical medication must be done with care and tenderness.
2. Do not apply more topical medication than is necessary.
3. Always keep skin warm and dry. Moisture facilitates the growth of germs.
4. All topical steroids are as potent as oral steroids.
5. Store topical medication correctly: put the caps back on, store in original containers, and refrigerate if directions indicate.
6. Topical application of acne medication:
   a. Usually sufficient to control superficial acne.
   b. Start treatment slowly; determine tolerance by applying a small amount of a low-concentration product to a small area of the skin.
   c. Only apply once or twice per day.
   d. Apply to dry skin, ½ hour after washing.
   e. Use soap and water to remove skin oils.
Medication Administration Checklist

Task: Applying a Transdermal Patch

Staff Member: ___________________________ Date: __________

Staff Nurse: _____________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

S = Satisfactory  U = Unsatisfactory  N/A = Not Applicable

1. Check the medication sheets to see what medication is ordered. _______ _______ _______
2. Be sure the order is valid; check the date that the order began. _______ _______ _______
3. Wash your hands. _______ _______ _______
4. Obtain clean gloves to use when applying the medication. _______ _______ _______
5. Obtain an alcohol sponge and a bag or piece of paper for discarding materials. _______ _______ _______
6. Unlock the medication storage area. _______ _______ _______
7. Check the individual's drug supply. _______ _______ _______
8. Select the medication ordered. _______ _______ _______
9. Check the label with the order to determine individual's medication and dosage ordered. (Check #1) _______ _______ _______
10. Check the medication according to the six rights of administration. (Check #2) _______ _______ _______
13. Provide privacy for the individual. Apply medication while the individual is in his/her private room and only expose the area that needs the medication. _______ _______ _______
12. Read the label again. (Check #3) _______ _______ _______
13. Put on the clean gloves. _______ _______ _______
19. Using an alcohol sponge, clean the area carefully and allow it to dry completely. _______ _______ _______
15. Open the package containing the patch. _______ _______ _______
16. Remove the protective backing from the patch; do not touch the inside. _______ _______ _______
17. Place the exposed adhesive side on the skin site.
18. Press firmly with the palm of your hand.
19. Press around the outer edges to ensure adhesion.
20. Observe the individual for any immediate reactions to the medication.
22. Return medication to medication area.
23. Chart the medications administered and the observations made.
24. Wash your hands.

Comments: ______________________________________

________________________________________
Medication Administration Checklist

Task: Instilling Liquid Eye Medication and Administering Ophthalmic Ointments

Staff Member: __________________________ Date: ____________

Staff Nurse: ___________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

S = Satisfactory  U = Unsatisfactory  N/A = Not Applicable

1. Check the medication sheets to see what medication is ordered. __________________________
2. Be sure the order is valid; check the date that the order began. __________________________
3. Wash your hands. __________________________
4. Obtain supplies.
   a. Cotton balls and tissues for liquid eye medications. __________________________
   b. Cotton balls or tissues, gauze sponge and sterile saline solution for ophthalmic ointments. __________________________
5. Unlock the medication storage area. __________________________
6. Check the individual's drug supply. __________________________
7. Select the medication ordered. __________________________
8. Check the label with the order to determine individual's medication and dosage ordered. Make certain it is OPHTHALMIC medication. (Check #1) __________________________
9. Check the medication according to the six rights of administration. (Check #2) __________________________
10. Read the label again. (Check #3) __________________________
11. Place the individual in the dorsal recumbent position in bed or sitting in a chair. __________________________
12. Position the individual with the head tilted back so that the face is directed upward. __________________________
13. Prepare the affected eye for the ophthalmic ointment.
   a. Moisten a gauze sponge with saline or irrigating solution. __________________________
   b. Cleanse the eyelid and lashes with the gauze sponge. __________________________
14. Prepare the medication.
   a. Liquid eye medication – draw up the medication into the Eye dropper.
   b. Ophthalmic ointments – remove cap from ointment tube, invert upward and lay on table or tray.
15. Pull down the lower lid to form a little pouch.
16. Ask the individual to look up.
17. Administer the medication.
   a. Liquid eye medication.
      (1) Squeeze the dropper or bottle and instill the correct dosage onto the center of the lower extended eyelid without touching the eyedropper to the surface of the eye or lid.
      (2) Close the eye.
      (3) Press your finger on the inner canthus of eye for two minutes.
   b. Ophthalmic ointment.
      (1) Spread the ointment from the inner to outer canthus along the conjunctival sac.
      (2) Twist the tube with a sideways motion of the wrist to stop the flow of ointment.
      (3) Ask individual to close eye for one to two minutes and roll the eyeball around to ensure entire eyeball is covered.
18. Give the individual a tissue or cotton ball to wipe away excess.
19. Observe the individual for any immediate reactions to the medication.
20. Return medication to medication area.
21. Chart the medications administered and the observations made.
22. Wash your hands.

Comments: ____________________________________________
Additional Considerations:

1. The instillation of eye medication can be very uncomfortable for the individual. Be careful and gentle.
2. Make sure eye medications are at room temperature before administering.
3. Since eye medications can cause blurred vision, it is important that you take care of the individual’s safety.
4. Put the individual into the correct position before administering the medications.
5. Give the individual a tissue to wipe away any excess medication.
6. Some individuals will not be able to tell you their eyes hurt. Watch for the following nonverbal signs:
   a. Tearing
   b. Drainage
   c. Glazed or fixed look
   d. Discoloring
   e. Cloudiness
   f. Itching
Medication Administration Checklist

Task: Administering Nasal Medication by Atomizer

Staff Member: ___________________________ Date: ________________

Staff Nurse: ________________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

S = Satisfactory       U = Unsatisfactory       NA = Not Applicable

1. Check the medication sheets to see what medication is ordered. _______ _______ _______
2. Be sure the order is valid. _______ _______ _______
3. Wash your hands. _______ _______ _______
4. Obtain tissues _______ _______ _______
5. Unlock the medication storage area. _______ _______ _______
6. Check the individual’s drug supply. _______ _______ _______
7. Select the medication ordered. _______ _______ _______
8. Check the label with the order to determine the individual’s medication and amount required. (Check #1) _______ _______ _______
9. Check the medication according to the six rights of administration. (Check #2) _______ _______ _______
10. Check the label again. (Check #3) _______ _______ _______
11. Prepare the nasal spray pump. _______ _______ _______
12. Ask the individual to gently blow his/her nose to clean out nostrils. _______ _______ _______
13. Ask the individual to bend slightly forward. _______ _______ _______
14. Insert the atomizer into the correct nostril. _______ _______ _______
15. Gently close the other nostril by pressing it toward center bone. _______ _______ _______
16. If using an inhaler, hold it in position. _______ _______ _______
17. If using an atomizer, compress container twice unless otherwise ordered. _______ _______ _______
18. Ask individual to sniff gently through the open nostril with mouth open at the same time the container is compressed.

19. After administration, remove unit from nostril, and ask the individual to bend head slightly backward to allow the medication to spread over the back of the nose.

20. Observe for any immediate reaction.

21. Chart instillation of medication and your observations.

22. Wash your hands.

Comments: ____________________________________________________________
Medication Administration Checklist

Task: Administering Nasal Medication by Dropper

Staff Member: ________________________________ Date: ________________________________

Staff Nurse: ________________________________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

S = Satisfactory  U = Unsatisfactory  NA = Not Applicable

1. Check the medication sheets to see what medication is ordered.  
2. Be sure the order is valid.  
3. Wash your hands.  
4. Obtain tissues  
5. Unlock the medication storage area.  
6. Check the individual's drug supply.  
7. Select the medication ordered.  
10. Check the label with the order to determine the individual's medication and amount required. (Check #1)  
11. Check the medication according to the six rights of administration. (Check #2)  
10. Check the label again. (Check #3)  
11. Position the individual so medication will flow to the appropriate site.  
12. Warm medication by holding it in your hand if it has been refrigerated.  
13. Shake medication if ordered on label.  
14. Pinch rubber bulb of medicine dropper and draw up prescribed amount of medication.  
15. Slowly place prescribed amount of medication into the nostril.  
16. Squeeze any unused medication into tissues.
20. Return dropper to bottle and secure.
21. Keep individual flat for five to ten minutes.
19. Observe for any immediate reaction.
20. Chart instillation of medication and your observations.
21. Wash your hands.

Comments: ______________________________ _
Medication Administration Checklist

Task: Administering Medication by Oral Inhaler

Staff Member: ____________________________ Date: ________________
Staff Nurse: ________________________________

**Directions:** Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with **100% accuracy** to successfully pass this demonstration.

S = Satisfactory  U = Unsatisfactory  NA = Not Applicable

1. Check the medication sheets to see what medication is ordered.    S  U  N/A
2. Be sure the order is valid.                                      S  U  N/A
3. Wash your hands.                                                S  U  N/A
4. Unlock the medication storage area.                             S  U  N/A
5. Check the individual's drug supply.                             S  U  N/A
6. Select the medication ordered.                                  S  U  N/A
7. Check the label with the order to determine the individual's   S  U  N/A
   medication and amount required. (Check #1)
8. Check the medication according to the six rights of administration. (Check #2) S  U  N/A
9. Check the label again. (Check #3)                                S  U  N/A
10. Shake the inhaler well.                                         S  U  N/A
11. Remove the cap from the mouthpiece.                            S  U  N/A
12. Check that canister is firmly and fully inserted into actuator S  U  N/A
13. Ask individual to breathe out fully through the mouth expelling S  U  N/A
    as much air as possible from the lungs.
14. Place the mouthpiece fully into the mouth while holding the S  U  N/A
    inhaler in the upright position.
15. Ask the individual to close lips around the mouthpiece.         S  U  N/A
16. Ask the individual to begin breathing deeply and slowly through the mouth.

17. Fully depress the top of the metal canister with your index finger.

18. Ask the individual to hold their breath as long as possible.

19. Before the individual breathes out, remove the inhaler from the mouth and release your finger from the canister.

20. Wait one minute and shake the inhaler again.

21. Repeat steps 15 through 21 for each inhalation prescribed by the doctor.

22. Observe for any immediate reaction.

23. Cleanse the inhaler by removing the metal canister and cleaning the plastic case and cap by thoroughly rinsing in warm running water.

24. After thoroughly drying the plastic case and cap, replace the canister into the case and replace the cap.

25. Return medicine to the storage area.

26. Wash your hands.

27. Chart instillation of medication and your observations.

Comments: ______________________________ _
# Medication Administration Checklist

**Task:** Administering Ear Medications

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<th>Staff Member:</th>
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<tr>
<th>Staff Nurse:</th>
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</table>

**Directions:** Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with **100% accuracy** to successfully pass this demonstration.

*S* = Satisfactory  
*U* = Unsatisfactory  
*N/A* = Not Applicable

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<td><strong>U</strong></td>
<td><strong>N/A</strong></td>
</tr>
</tbody>
</table>

1. Check the medication sheets to see what medication is ordered.  
2. Be sure the order is valid; check the date that the order began.  
3. Wash your hands.  
5. Obtain cotton balls or tissues.  
5. Unlock the medication storage area.  
6. Check the individual's drug supply.  
7. Select the medication ordered.  
8. Check the label with the order to determine individual's medication and dosage ordered. (Check #1)  
9. Check the medication according to the six rights of administration. (Check #2)  
10. Read the label again. (Check #3)  
13. Position the individual.  
   a. Ask the individual to lay his/her head down on the table with the affected ear up.  
   b. If the individual is unable to sit up, position the individual on the side opposite the affected ear.  
14. Warm the medication to room temperature by holding the container in your hand or placing it in warm water.  
15. Pinch rubber bulb of medicine dropper and draw up prescribed amount of medication into ear dropper.  
16. Straighten the auditory canal by gently pulling the outer ear upward and backward and holding it in that position.
17. With your other hand, position the tip of the ear dropper just slightly into the opening of the ear canal, then point the tip upward and toward the inner ear canal.

18. Gently and slowly instill the prescribed amount of medication into the ear canal.

17. Return the dropper to the medication bottle when finished.

18. Gently place a cotton ball in front of the opening to the ear canal to keep the medicine from escaping.

19. Wipe away any excess medication from the surface of the outer ear or the individual’s neck with a tissue.

20. Ask the individual to remain in this position for 3-5 minutes and observe for any immediate reaction.

21. Return medication to medication area.

22. Chart the medications administered and the observations made.

23. Wash your hands.

Comments: ____________________________________________________________
Medication Administration Checklist

Task: Administering Ear Medications

Staff Member: ____________________________ Date: __________

Staff Nurse: ____________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

<table>
<thead>
<tr>
<th>S = Satisfactory</th>
<th>U = Unsatisfactory</th>
<th>N/A = Not Applicable</th>
</tr>
</thead>
</table>

1. Check the medication sheets to see what medication is ordered. 
2. Be sure the order is valid; check the date that the order began.
3. Wash your hands.
6. Obtain cotton balls or tissues.
5. Unlock the medication storage area.
6. Check the individual's drug supply.
7. Select the medication ordered.
8. Check the label with the order to determine individual's medication and dosage ordered. (Check #1)
9. Check the medication according to the six rights of administration. (Check #2)
10. Read the label again. (Check #3)
19. Position the individual.
   c. Ask the individual to lay his/her head down on the table with the affected ear up.
   d. If the individual is unable to sit up, position the individual on the side opposite the affected ear.
20. Warm the medication to room temperature by holding the container in your hand or placing it in warm water.
21. Pinch rubber bulb of medicine dropper and draw up prescribed amount of medication into ear dropper.
22. Straighten the auditory canal by gently pulling the outer ear upward and backward and holding it in that position.
23. With your other hand, position the tip of the ear dropper just slightly into the opening of the ear canal, then point the tip upward and toward the inner ear canal.

24. Gently and slowly instill the prescribed amount of medication into the ear canal.

17. Return the dropper to the medication bottle when finished.

21. Gently place a cotton ball in front of the opening to the ear canal to keep the medicine from escaping.

22. Wipe away any excess medication from the surface of the outer ear or the individual’s neck with a tissue.

23. Ask the individual to remain in this position for 3-5 minutes and observe for any immediate reaction.

21. Return medication to medication area.

22. Chart the medications administered and the observations made.

23. Wash your hands.

Comments: ____________________________________________________________

---------------------------------------------------------------
Medication Administration Checklist

Task: Administering a Vaginal Suppository

Staff Member: ________________________________ Date: __________________

Staff Nurse: ________________________________

**Directions:** Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with **100% accuracy** to successfully pass this demonstration.

S = Satisfactory  U = Unsatisfactory  N/A = Not Applicable

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<tbody>
<tr>
<td>S</td>
<td>U</td>
<td>N/A</td>
</tr>
</tbody>
</table>

1. Check the medication sheets to see what medication is ordered.  
2. Be sure the order is valid.  
3. Wash your hands.  
4. Obtain examination gloves, appropriate lubricant, a chux or bed protector, paper towels, bath blanket, and toilet tissue.  
5. Unlock the medication storage area.  
6. Check the individual’s drug supply.  
7. Select the ordered medication.  
8. Check the label with the order to determine the individual's medication and amount required. (Check #1)  
9. Check the medication according to the six rights of administration. (Check #2)  
10. Check the label again. (Check #3)  
11. Take the suppository from the container (unit-dose or quantity container) according to prescribed method.  
12. Provide privacy for the individual. Insert the vaginal suppository while the individual is in her private room and only expose the perineum.  
13. Place the individual in the dorsal recumbent position.  
14. Place the chux or bed protector under the individual's buttocks.  
15. Tear perforated end off wrapper and place suppository on medicine tray.  
16. Squeeze small amount of lubricant onto paper towel on medicine tray.  
17. Put on examination gloves.
18. Pick up suppository holding base of suppository between thumb, index, and middle fingers with the tip exposed approximately one-half inch.

19. Pass exposed tip of suppository through lubricant on paper towel.

20. Lift the drape between the individual's legs, exposing only enough of the individual to visualize the vaginal area.

21. Gently insert the suppository into the vaginal opening.

22. Using the index finger, gently push the suppository upward into the vagina so that the entire suppository is past the vaginal opening.

23. When certain the suppository is in place, gently withdraw the insertion finger.

24. Hold, or ask the individual to hold legs together for a few minutes to keep suppository from slipping out and until the urge to expel the suppository is gone. Individual must remain in bed for 15 minutes.

25. Observe for any immediate reaction to the medication.

26. Remove chux or bed protector.

27. Remove gloves and wrap in paper towel.

28. Chart insertion of suppository and your observations.

29. Dispose of all soiled items according to agency policy.

30. Wash your hands.

Comments: ____________________________________________
Medication Administration Checklist

Task: Administering a Rectal Suppository

Staff Member: _______________________________ Date: _______________

Staff Nurse: ____________________________________________________________________________________

Directions: Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps with 100% accuracy to successfully pass this demonstration.

S = Satisfactory
U = Unsatisfactory
N/A = Not Applicable

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Check the medication sheets to see what medication is ordered.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Be sure the order is valid.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Wash your hands, use hand sanitizer, and/or wear gloves.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Obtain examination gloves, appropriate lubricant, a chux or bed protector, paper towels, bath blanket, and toilet tissue.</td>
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</tr>
<tr>
<td>5.</td>
<td>Unlock the medication storage area.</td>
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<tr>
<td>6.</td>
<td>Check the individual's drug supply.</td>
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<tr>
<td>7.</td>
<td>Select the medication ordered.</td>
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</tr>
<tr>
<td>8.</td>
<td>Check the label with the order to determine the individual's medication and amount required. (Check #1)</td>
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<tr>
<td>9.</td>
<td>Check the medication according to the six rights of administration. (Check #2)</td>
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</tr>
<tr>
<td>10.</td>
<td>Take the suppository from the container (unit-dose or quantity container) according to prescribed method.</td>
<td></td>
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<tr>
<td>11.</td>
<td>Check the label again. (Check #3)</td>
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</tr>
<tr>
<td>12.</td>
<td>Provide privacy for the individual. Insert the rectal suppository while the individual is in their private room and only expose the anal region.</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Place the individual in the dorsal recumbent position.</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Drape the bath blanket loosely over hip area to allow for space when inserting.</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Place the chux or bed protector under the individual's buttocks.</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Tear perforated end off wrapper and place suppository on medicine tray.</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Squeeze small amount of lubricant onto paper towel on medicine tray.</td>
<td></td>
</tr>
</tbody>
</table>
18. Put on examination gloves.
19. Pick up suppository holding base of suppository between thumb, index, and middle fingers with the tip exposed approximately one-half inch.
20. Pass exposed tip of suppository through lubricant on paper towel.
21. Lift the drape between the individual's legs, exposing only enough of the individual to visualize the anal region
22. Gently insert the suppository into the anal sphincter.
23. Using the index finger, gently push the suppository upward so that it passes through the anal sphincter into the rectum.
24. When certain the suppository is in place, gently withdraw the insertion finger.
25. Hold, or ask the individual to hold buttocks together for a few minutes to keep suppository from slipping out and until the urge to expel the suppository is gone. Individual must remain in bed for 15 minutes.
26. Remove gloves and wrap in paper towel.
27. Observe for any immediate reaction.
28. If suppository was given for elimination
   a. Instruct the individual to withhold bowel movement at least 10 minutes, if possible. If individual is not in control, place on bed pan or take to bathroom after insertion to observe closely.
   b. Instruct individual to call you when ready for assistance to bathroom; when called, assist individual, give privacy, but stay close at hand.
29. When individual is finished, assist with cleaning, as necessary.
30. Remove chux or bed protector.
31. Dispose of all soiled items according to agency policy.
32. Wash your hands.
33. Chart insertion of suppository and your observations.

Comments: ____________________________________________________________
FUNDAMENTALS OF PHARMACOLOGY

Key Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Term</th>
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</thead>
<tbody>
<tr>
<td>Absorption</td>
<td>Adverse effect</td>
</tr>
<tr>
<td>Analgesics</td>
<td>Cumulative effect</td>
</tr>
<tr>
<td>Antagonistic effect</td>
<td>Drug interaction</td>
</tr>
<tr>
<td>Capsules</td>
<td>Enteric-coated</td>
</tr>
<tr>
<td>distribute</td>
<td>Idiosyncrasy</td>
</tr>
<tr>
<td>Excretion</td>
<td>Metabolism</td>
</tr>
<tr>
<td>Generic</td>
<td>Primary effect</td>
</tr>
<tr>
<td>Local action</td>
<td>Tolerance</td>
</tr>
<tr>
<td>Oral</td>
<td>Trade name</td>
</tr>
<tr>
<td>Physical dependency</td>
<td></td>
</tr>
<tr>
<td>Psychological dependency</td>
<td></td>
</tr>
<tr>
<td>Secondary effect</td>
<td></td>
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<tr>
<td>Toxic effect</td>
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</tbody>
</table>

Medication is an important part of health care for many individuals in group homes. The individuals and staff must be knowledgeable regarding the different names, uses, actions, and adverse effects of all medication that is being administered. In addition, each individual should participate in their medication program to the best of their abilities. Each individual reacts differently to medication. Factors such as health, age, sex, body size, and internal functions can and do alter the effectiveness of medications. Staff members must recognize the limits of their ability and knowledge, the limits of the ability of some individuals to communicate, and seek the advice and assistance of the staff nurse, pharmacist, or doctor when needed.

Reasons to Order Medication

- Maintain health – for example vitamins, other supplements
- Treat disease – for example antibiotics, digitalis, insulin
- Relieve symptoms – for example aspirin, Tylenol, Kaopectate, cough syrup, Sudafed
- Prevent disease – for example vaccines, immunizations
- Alter body processes – for example hormones, contraceptives, thyroid medicine
- Diagnose disease – for example barium, radioactive iodine, Mantoux TB testing

Naming Medications

The generic name is the official name of a drug. It is usually named after its chemical structure for example tetracycline. The generic name is not a patented name and therefore is not capitalized. The trade name carries the symbol ®, which means the name is registered or patented (owned) by an individual. Examples are Prozac® and Panmycin® (brand name for tetracycline).

Effects of Medication

There are two observable changes that may occur in the body when a medication is taken or applied. The first is a systemic action, which affects the entire body. The second is a local action, which affects a specific area.
of the body. There are several effects that can occur from a single medication:

- Primary or desired effect
- Secondary effect
- Adverse effect
- Allergic effect or hypersensitivity
- Toxic effect
- Cumulative effect
- Tolerance
- Idiosyncrasy
- Psychological (emotional) dependency
- Physical dependency or addiction

A drug interaction can occur when an individual takes two or more medications.

- Antagonistic effect
- Enhancing effect which is sometimes beneficial and sometimes detrimental

**Factors about Medications that Influence Effectiveness**

Absorption occurs when medication moves from the site of administration into the bloodstream. The route of administration affects absorption. Oral medications are absorbed slowest. Sublingual (under the tongue) is faster than oral. Injectable drugs are absorbed faster and more completely than oral. Inhaled drugs are absorbed rapidly.

The form of an oral medication affects how fast it is absorbed. Oral drugs often must be taken with fluids to be absorbed. Liquid medications absorb more rapidly than solids. Sustained release tablets and capsules are designed to absorb slowly. Enteric-coated tablets are not absorbed until they reach the intestine.

Significant changes in body weight may change the dosage of medication required to produce a desired effect. Several factors may change the rate at which a medication is absorbed. Food may prevent some medications from being absorbed. One medication may delay or prevent another from being absorbed. Oral medication usually absorbs faster if the stomach is empty, although some medication is prescribed with food.

Metabolism is the process by which a substance is changed into a form that is more easily excreted by the body. The liver metabolizes most drugs, but the kidneys, lungs, and intestines help.

The amount of physical activity, chronic illness, pain, anxiety, age, and emotional factors may affect the body’s response to medication. Different drugs are metabolized at different rates. If metabolism is decreased, then medication will accumulate in the blood and cells. If metabolism is increased, then more medication will be required to produce the same effect. Adverse effects will appear mainly in the liver and kidneys.

Excretion is the process by which a drug is eliminated from the body through the urine, feces, and lungs. The kidneys, through the urine, excrete most oral and parenteral medications. Some drugs are excreted in their original form; most are changed by metabolism before excretion. All medications excreted by the kidneys are dissolved in the urine relative to the amount of fluid intake. The intestines, through the feces, excrete some oral medications. The lungs through breathing excrete inhalant medications.
Drinking fluids with oral medications increase the rate of absorption, metabolism, and excretion.

**Drug Information**

Complete information about a drug may be obtained by consulting one of the many drug resource books available. If you have further questions, contact your pharmacist or staff nurse. A sampling of the many drug information materials available are listed in the Print Resource section of Appendix I under Pharmacological. The charts “Examples of Medication Classifications” at the end of this lesson provide basic information on medications. The charts are not meant to be all inclusive as medications and their prescribed uses change frequently. Check with your nurse or pharmacist for clarification.

- Action of the drug is how the drug provides its therapeutic effect.
- Use describes what the drug is commonly prescribed for.
- Adverse effects are commonly observed effects that should be watched for.
- Nursing considerations are a listing of useful information including contraindications and precautions. Some suggestions for prevention and treatment are included.

**ALLERGIC REACTIONS**

**What is anaphylaxis?**

Anaphylaxis is a serious and rapid allergic reaction usually involving more than one part of the body, which if severe enough, can lead to death. Most of the time anaphylaxis is a life-threatening rapid allergic reaction requiring emergency medical treatment.

**Causes**

- Food: especially nuts, some kinds of fruits, food preservatives, fish, and less commonly spices.
- Drugs: especially penicillin, aspirin and other pain killers, anesthetic drugs, some intravenous infusion medications, and the dye used for x-rays.
- Latex: mainly found in rubber gloves, catheters, and other medical supplies. However, it may be found in many things encountered in daily life. Those who suffer from this type of allergy are usually health care workers or individuals who have occupational contact with latex. They may have anaphylaxis from bananas, avocados, kiwi fruit, figs, or other fruits and vegetables including potatoes and tomatoes.
- Bee stings: Stings typically cause faintness, difficulty in breathing, rash, and swelling. The rash and swelling may be of a body part that has not been stung. Very large swelling and redness of the area that has been stung does not mean that this person will progress to anaphylaxis with future stings.
- Unknown: A large number of people who suffer from this type of reaction have no known cause, despite all efforts. This is known as idiopathic anaphylaxis.
- Exercise may actually precipitate such a reaction. This may occur
after eating sometimes irrespective of what food has been eaten.

- Beta blocker medications are usually used for high blood pressure or heart disease. These medications can change mild reactions into severe anaphylactic reactions because they block the body’s main defense against anaphylaxis.

**Signs and Symptoms**

- An itchy rash or hives
- Itchy watery eyes
- Faintness or loss of consciousness (usually associated with low blood pressure) is usually a late finding in children
- Generalized swelling
- Swelling of the throat causing difficulty in swallowing or breathing
- Shortness of breath and wheezing
- Vomiting
- Cramping and abdominal pain
- Diarrhea (may be bloody)
- Tingling sensation in the lips or mouth (usually associated with a food allergy)
- Cardiopulmonary arrest which can lead to death

The residential staff need not distinguish between fainting and/or anaphylaxis, but must know and follow agency or facility policy.

- An individual suffering from anaphylaxis will exhibit the following characteristics: pink skin color, fast heart rate, blood pressure remaining low while lying down, rash, swelling, difficulty breathing, abdominal pain, and diarrhea.
- An individual who has fainted will exhibit the following characteristics: pale skin color, slow heart rate, blood pressure that normalizes while lying down, and a history of fainting.

**Body’s Response**

While some individuals develop symptoms immediately, usually those with food allergies, others may take up to an hour or more before symptoms occur. If proper treatment is administered to those with severe reactions, these individuals may recover quickly. However, a second wave may occur and require repeat treatment.

**Treatment of Allergic Reactions**

Histamine is released during an allergic reaction. Antihistamines, such as Benadryl, stop histamine from working. Benadryl tablets take about an hour to get into the bloodstream and will not work quickly enough for severe reactions.

If an individual is having a mild anaphylactic response it may not be necessary to treat but warrants medical evaluation. Adrenaline (epinephrine) in the form of an injection should be given as soon as possible in severe, life-threatening reactions.

Epinephrine is a quick acting hormone produced in the body in response to emergencies or stimulation. It causes our heart to beat faster, widens the air passages in the lungs, and
constricts our blood vessels. This is known as “fight or flight.”

It is important that definite evidence of a reaction is occurring. The goal is to inject before the individual’s life is in jeopardy. If the individual is improving prior to injecting, keep the epinephrine immediately available and seek immediate medical attention. If death seems a possibility and/or deterioration continues, give the epinephrine and call 911. If in doubt, give the epinephrine and call 911.

There are several different syringe kits available for treatment such as the Epipen or the AnaKit. The dose of epinephrine in most of the kits is 0.3mg for an adult or 0.15mg for children. This is a small dose for an adult due to safety margin, and may require more than one dose in really severe reactions. This works in a vast majority of adults, but a doctor may advise you differently for certain individuals.

Epinephrine will usually wear off in 15 to 20 minutes, but may work longer when injected just under the skin. In most cases, one injection is all that is needed. Normal effects of the medication include trembling, palpitations, and a feeling of uneasiness or anxiousness. This is normal and should wear off soon. Note: Injecting epinephrine in the wrong place can be dangerous. Some individuals have accidentally injected the drug into their thumb when trying to figure out how the syringe worked or when trying to check why it did not work. This could shut off the supply of blood by constricting the blood vessels at the base of the finger or thumb. The result may progress to gangrene. Seek immediate medical attention.
Definitions of Key Terms

Absorption--The taking up of fluids or other substances by the skin, mucous surfaces, or absorbent vessels.

Adverse effect--Side effect of a medication; undesirable reaction.

Analgesics-- Medications that relieve muscle, joint and bone pain.

Antagonistic effect--An agent, such as a remedy or a drug, which tends to nullify the action of another agent.

Capsules--Medication in small cylinder-like containers.

Cumulative effect--Build-up of medication in the body due to slow excretion that could lead to a toxic effect.

Distribute--To divide and dispense in portions.

Drug interaction--The action of one medication interferes with the action of another; the effects of two or more medications.

Enteric-coated--Protective coating on medication that allows for protection of the stomach lining.

Excretion--Elimination of wastes, from the body, through the lungs, urine or feces.

Generic--Commonly available drugs that are not protected by trademark.

Idiosyncrasy--Unusual or unexpected effects from a medication.

Local action--Medication acting at the site of administration on the skin or mucous membrane.

Metabolism--The physical and chemical processes involved in the maintenance of life.

Physical dependency--State in which withdrawal of a drug produces specific symptoms such as muscle cramps, vomiting, or tremors.

Primary effect--Reason a medication was ordered.

Psychological dependency--An emotional need or craving for a drug.

Oral—Mouth.
Core Lesson 6: Fundamentals of Pharmacology

Secondary effect--Additional effect of the medication besides the one for which it was intended.

Tolerance--The ability to withstand the effects of a drug, after single or multiple administrations, without showing adverse effects.

Toxic effect--Medications that are or have become poisonous to the body.

Trade name--The name, given be a manufacturer, by which a medication is known.
### Supplemental Information for Lesson 6

**Examples of Medication Classifications**

1. **Skin System**

<table>
<thead>
<tr>
<th>Action</th>
<th>Uses</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dermatomucosal Medications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleanse and medicate skin</td>
<td>Treat blemishes</td>
<td>Topical benzoyl peroxide (Benoxyl, Oxy-5, Dry and Clear)</td>
<td>Peeling skin</td>
<td>For benzoyl peroxide: Many preparations are available without prescription. Start with a 5% preparation, applying once a day in the morning. This drug inactivates retinoic acid. Do not use these two drugs at the same time.</td>
</tr>
<tr>
<td></td>
<td>Prevent new blemishes</td>
<td>tretinoin (Retinoic acid) antibiotic lotions</td>
<td></td>
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<tr>
<td></td>
<td>Prevent scarring</td>
<td>Systemic tetracycline</td>
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<td></td>
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<td>prednisone ibuprofen</td>
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</tbody>
</table>
2. Gastrointestinal System

<table>
<thead>
<tr>
<th>Action</th>
<th>Uses</th>
<th>Examples</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antacids</strong></td>
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<tr>
<td>Neutralize acidity by</td>
<td>Treat indigestion, ulcers</td>
<td>Gaviscon</td>
<td>May cause mild constipation or</td>
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<tr>
<td>chemical reaction</td>
<td></td>
<td>Maalox</td>
<td>diarrhea</td>
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<td></td>
<td></td>
<td>Riopan</td>
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<td></td>
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<td>Mylanta</td>
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<td></td>
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<td>Di-Gel</td>
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<td></td>
<td>Gelusil</td>
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<tr>
<td><strong>Antidiarrheals</strong></td>
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<td></td>
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<tr>
<td>Stop diarrhea</td>
<td>Treat diarrhea</td>
<td>bismuth subsalicylate</td>
<td>Drowsiness</td>
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<tr>
<td></td>
<td></td>
<td>(Pepto-Bismol)</td>
<td>Fatigue</td>
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<td></td>
<td></td>
<td>loperamide</td>
<td>Rash</td>
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<td></td>
<td></td>
<td>(Imodium)</td>
<td>Constipation and fecal impaction</td>
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<tr>
<td></td>
<td></td>
<td>kaolin/pectin mixtures</td>
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<tr>
<td></td>
<td></td>
<td>(Kapectate)</td>
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<tr>
<td></td>
<td></td>
<td>diphenoxylate HCl</td>
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<tr>
<td></td>
<td></td>
<td>(Lomotil)</td>
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</tr>
<tr>
<td><strong>Laxatives - Saline</strong></td>
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<tr>
<td>Increase fluid in the</td>
<td>Promote bowel action</td>
<td>magnesium salts (Milk of</td>
<td>Diarrhea</td>
</tr>
<tr>
<td>intestine</td>
<td></td>
<td>Magnesia sodium biphosphate</td>
<td>Cramping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Fleet Enema)</td>
<td></td>
</tr>
<tr>
<td><strong>Laxatives – Lubricants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make stool slippery</td>
<td>Treat constipation</td>
<td>Mineral Oil</td>
<td>Nausea</td>
</tr>
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<td></td>
<td></td>
<td>Haley’s M.O.</td>
<td>Abdominal cramps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Glycerin suppository</td>
<td>Incontinence</td>
</tr>
<tr>
<td><strong>Laxatives - Bulk</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase bulk in the</td>
<td>Promote bowel action</td>
<td>psyllium (Metamucil, Effersyl-</td>
<td>Nausea and vomiting</td>
</tr>
<tr>
<td>stool</td>
<td></td>
<td>lium)</td>
<td>Diarrhea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>methylcellulose</td>
<td>Laxative dependence</td>
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<td>calcium polycarbophil</td>
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### Core Lesson 6: Fundamentals of Pharmacology

#### 2. Gastrointestinal System Continued

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<tr>
<td><strong>Laxatives – Stool Softeners</strong></td>
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<tr>
<td>Soften fecal material</td>
<td>Treat constipation</td>
<td>docusate sodium (Colace, Doxinate) Sometimes combined with other drugs (Senokot-S, Doxidan, Dialose-Plus, Peri-Colace)</td>
<td>Mild cramping Laxative dependence</td>
<td>Give with milk or fruit juice. Do not crush other drugs (Senokot-S, medication Doxidan, Dialose-Plus, Peri-Colace)</td>
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<td><strong>Osmotic Laxatives</strong></td>
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<td>Retain fluid in the bowel</td>
<td>Stimulate the large bowel</td>
<td>Lactulose, lactitol Magnesium salts</td>
<td>Flatulence Cramping Bloating Rapid bowel evacuation</td>
<td>Must be taken 3 days before an effect is seen Used prior to surgery</td>
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<td>Phosphates (rectal enema) Sodium citrate (rectal enema)</td>
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<td><strong>Stimulant Laxatives</strong></td>
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<td>Stimulate bowel lining Increase peristalsis, bowel training</td>
<td>bisacodyl (Dulcolax, Bisacodyl) senna (Senokot) Dulcolax Suppository</td>
<td>Diarrhea Cramping</td>
<td>Tablet must be swallowed without chewing.</td>
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### 3. Musculoskeletal System

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<tbody>
<tr>
<td>Steroid medications</td>
<td>Decreases inflammation</td>
<td>Treat arthritis, dermatitis, chronic respiratory conditions</td>
<td>dexamethasone (Decadron), prednisone (Deltasone, Meticorten), methylprednisolone (Medrol), hydrocortisone (Cortef), triamcinolone diacetate (Kenalog)</td>
<td>Weight gain from increased appetite and edema, Mood swings, Night sweats, Increased blood sugar and electrolyte imbalance, Masks symptoms of infection, Slows healing, Elevates blood pressure, Ulcers, Muscle weakness, Hair loss, Cushing syndrome, Prolonged bleeding and bruising</td>
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</table>

| Nonsteroidal anti-inflammatory drugs (NSAID) | Anti-inflammatory analgesic and antipyretic effects | | Anti-inflammatory analgesic, Bursitis, Tendonitis, Gout | indomethacin (Indocin), sulindac (Clinoril), fenoprofen calcium (Nalfon), ibuprofen (Motrin), meclofenamate (Meclomen), naproxen (Naprosyn), aspirin (A.S.A, Bayer, Ecotrin) | Nausea and vomiting, Headaches, Gastrointestinal bleeding, Dizziness, Heartburn, Rashes, Decreased appetite, Prolonged bleeding and bruising, Tinnitus | Observe individual for blood in the stool, which may indicate gastrointestinal bleeding. Blood will initially appear as black, not red in color. |
### 4. Sensory System

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<td><strong>Lubricants (Eye Medication)</strong></td>
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<td>Soothe and lubricate dry eyes</td>
<td>Treat decreased tear production</td>
<td>artificial tears (Tears Naturale, Liquifilm Tears)</td>
<td>Localized irritation and burning sensation</td>
<td>Use with caution in individuals with glaucoma. Do not touch any surface of eye with end of dropper. Crust forming on the eyelids and eyelashes indicate an eye infection.</td>
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<td><strong>Ear Medications</strong></td>
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<td>Relieve pressure</td>
<td>External otitis</td>
<td>benzocaine (Auralgan)</td>
<td>Irritation or itching</td>
<td>Do not rinse dropper after use. Insert cotton into the ear canal after applying the drops and allowing the drops to drain into the inner ear. Many of these medications are used in combination with oral antibiotics, analgesics, and anti-inflammatories – watch for drug interactions.</td>
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<td>Reduce inflammation</td>
<td>Pain</td>
<td>Cortisporin Otic</td>
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<td>Reduce pain in the ear</td>
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### 5. Urinary System

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<td><strong>Urinary Antiseptics</strong></td>
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<td>Prevent growth of disease-producing organisms in the urinary tract</td>
<td>Treat urinary tract infections</td>
<td>nalidixic acid (Negram) nitrofurantoin (Furadantin) nitrofurantoin macrocrystals (Macrodantin)</td>
<td>Drowsiness Headache Nausea and vomiting Dizziness Skin rash</td>
<td>Individual should avoid exposure to sunlight. May cause a false-positive Clinitest. Individual should report vision problems. Drink plenty of water (6-8 glasses per day). Avoid cola, caffeine</td>
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6. Cardiovascular System (Antihypertensives)

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<tr>
<td>Adrenergic Blockers</td>
<td>Decrease blood pressure with effect on the nervous system</td>
<td>Treat hypertension</td>
<td>methyldopa (Aldomet)</td>
<td>Dizziness, Weakness, Nausea and vomiting, Hypotension</td>
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<td>clonidine HCl (Catapres)</td>
<td>atenolol (Tenormin)</td>
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<td>captopril (Capoten)</td>
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<td>Diuretics</td>
<td>Decrease blood pressure and increase urinary output</td>
<td>Treat congestive heart failure Hypertension Severe edema</td>
<td>spironolactone (Aldactone) chlorothiazide (Diuril, Hydro DIURIL) methyclothiazide (Enduron) furosemide (Lasix) Aldactazide and Dyazide (combinations containing hydrochlorothiazide)</td>
<td>Dizziness, Weakness, Nausea and vomiting, Hypotension</td>
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7. Respiratory System

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<tr>
<td>Antihistamines</td>
<td>Combat the effects of histamine, which is released by the body in an allergic reaction</td>
<td>Treat motion sickness and allergic reactions</td>
<td>diphenhydramine (Benadryl) chlorpheniramine (Chlor-Trimeton, Teldrin) promethazine (Phenergan) trimeprazine (Temaril) terfenadine (Seldane) Dimetapp Extentabs</td>
<td>Drowsiness (most common) Dizziness Loss of appetite Dry mouth Urinary retention</td>
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8. Endocrine System

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<tr>
<td>Oral Contraceptives</td>
<td>Inhibit ovulation</td>
<td>Regulation of menstrual cycle Prevent pregnancy</td>
<td>Estrogen with progestogen (Ovral, Norinyl, Ortho-Novum)</td>
<td>Headache, Weight gain, Hypertension, Thrombophlebitis Edema Breast tenderness Vaginitis Nausea</td>
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Core Lesson 6: Fundamentals of Pharmacology

9. Nervous System

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<tr>
<td>Stimulants – Caffeine</td>
<td>Increase mental and physical alertness and activity</td>
<td>Increase activity</td>
<td>Coffee, Caffeine drinks, Some aspirin compounds</td>
<td>Nervousness, Headache, Insomnia</td>
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<td>Depressants - Analgesics</td>
<td>Decrease sensitivity of nervous system</td>
<td>Relieve pain</td>
<td>morphine sulfate (Duramorph, Epimorph), codeine, meperidine HCl (Demerol), oxycodone HCl (Tylox, Percocet, Percodan)</td>
<td>Constipation, Nausea and vomiting</td>
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**Core Lesson 6: Fundamentals of Pharmacology**

**Task:** Administering an EpiPen

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<tr>
<td>Staff Nurse: _________________________</td>
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**Directions:** Complete the following task under the direct supervision of the staff nurse. Do this task only after it has been demonstrated to you. You must complete all applicable steps satisfactorily to successfully pass this demonstration.

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<tr>
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<th>S = Satisfactory</th>
<th>U = Unsatisfactory</th>
<th>NA = Not Applicable</th>
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<td>1.</td>
<td>Observe that the individual is having a severe allergic reaction.</td>
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<td>2.</td>
<td>Obtain the individual’s EpiPen.</td>
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<td>3.</td>
<td>Pull off the gray safety cap.</td>
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<td>4.</td>
<td>Place the black tip on the outer thigh (always apply to the thigh)</td>
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<td>5.</td>
<td>Using a quick motion, press hard into the thigh until the Auto-Injector mechanism functions.</td>
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<td>6.</td>
<td>Hold in place and count to 10.</td>
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<td>7.</td>
<td>Remove the EpiPen unit.</td>
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<td>8.</td>
<td>Massage the injection site for about 10 seconds.</td>
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<td>9.</td>
<td>Dispose of the EpiPen in a sharps container or place a penny in the bottom of the plastic tube, slip the EpiPen into the tube and close it. Return the used EpiPen to the staff nurse for proper disposal.</td>
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<td>10.</td>
<td>Wash your hands.</td>
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<td>11.</td>
<td>Observe the individual for any adverse effects.</td>
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<td>12.</td>
<td>Chart the EpiPen administration.</td>
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**Comments:** ________________________________________________________________
Living in the Community
Core B

Lesson 7
Inflammation and Infection

101
INFLAMMATION AND INFECTION

The body has ways of protecting itself from injury and disease. These defenses can be quite effective, but sometimes require assistance from medicines. This section will examine the role of the immune system in inflammation and infection.

Immunity refers to the security a body has against any particular disease or poison. This power can be acquired both through immunization and from prior infection, and allows a body to resist and/or overcome an infection to which other people may be susceptible. The body is equipped to defend itself against injury and disease through the immune system. The immune system includes the lymphatic system, white blood cells, and antibodies. If any part of the immune system does not work properly, the body’s ability to defend itself against disease is weakened.

Inflammation is caused by the body attempting to remove physical, chemical, or disease causing organisms. The signs and symptoms of redness, swelling, heat, pain, and loss of function may be interpreted as the problem, but they are actually indications that the body is doing its job. When the body is injured (e.g., ankle sprain), affected by irritating substances (e.g., an insect bite), or is suffering from overuse, it reacts with inflammation. The increased circulation brings white blood cells to the affected area to ingest bacteria and dead tissue which results in pus. The pain is a result of the swelling pressing on nerve endings, and is an additional sign that the body is doing its job.

Additionally, the body can sometimes attack itself, which can result in inflammation. Examples of inflammation include arthritis, which results in pain, stiffness, and swelling in joints, and otitis, which is an inflammation of the ear and is usually caused by infection. Treatment may be required with analgesics, steroids, anti-inflammatory drugs, or antibiotics.

Infection occurs when disease-causing microorganisms invade the body. The results of infection depend on how the tissues react to the presence of these microorganisms, and the strength of the immune system. Infection occurs when these organisms enter the body through skin breaks, mucous membranes, and infected food or water. The single most important way to prevent the spread of infection is through proper hand washing techniques.

When the body becomes infected with microorganisms such as bacteria,
they begin to multiply and spread from the infected tissue to other parts of the body through the blood, the lymph system, and tissue. The immune system will react by sending specialized white blood cells to fight the microorganisms. This can result in the symptoms of inflammation, increased body temperature, pain, discharge, and decrease in function. Sometimes the body can fight the infection itself, but other times it will require medication to treat the infection or relieve its symptoms.

There are several common infectious diseases, which the body may not be able to fight alone. An example is strep throat, which is caused by the streptococcus bacteria. The symptoms of strep throat include fever, pain upon swallowing, and a throat that may contain whitish pustules or red streaks. Strep throat is treated with antibiotics and soothing gargles.

Another infectious condition that usually requires treatment is influenza, or the flu. The flu is caused by an airborne virus, and results in fever, headache, extreme fatigue, dry cough, sore throat, runny or stuffy nose, and muscle aches. Immunization can help prevent or lessen the severity of the flu. Treatment consists of relieving the symptoms.

Pneumonia is an infection that can rarely be conquered by the body itself. With a number of causes (virus, bacteria, aspiration, stasis, or secondary infection), pneumonia can be a serious and even deadly disease. Symptoms may include difficult and painful breathing, cough, fever, chills, shortness of breath, and yellow-green sputum or sometimes a rust-colored sputum. Treatment of pneumonia depends on the cause and may require bed rest and medication. Diagnostic testing may include a chest x-ray or sputum culture. Immunization may prevent some types of pneumonia.

Fungi can cause infections such as athlete’s foot and ringworm. Symptoms of athlete’s foot include itching and watery blisters between toes, as well as scaling and cracking of the skin. This condition is treated with antifungal powders, ointments, or oral medications. This is a preventable condition; care should be given to the treatment of feet to prevent athlete’s foot. Keep feet dry, wear absorbent socks, avoid standing barefoot on public floors, and disinfect the shower after each use. Ringworm is also caused by a fungus and manifests itself on the scalp with small bald areas covered with dry, grayish scales, or on the body with circular or oval areas with tiny bumps around the edges. Again, ointments or antibiotics may be used to treat this condition.

Antibiotics are a large class of medications that kill or prevent the growth of specific germs. Because antibiotics are such a large group of medications, there is no way to make an inclusive list of trade names. However, some of the more common antibiotics include Amoxil, Augmentin, Rocephin, Zithromax, Keflex, Ceclor, and Biaxin. Penicillin is also an antibiotic. Adverse effects of antibiotics include sensitivity to the sun, nausea and vomiting, and allergic reactions such as hives, rashes, and anaphylactic shock. It is important to administer antibiotics at the exact times ordered to maintain adequate amounts of medication in the blood at all times, and they are most effective if given one to two hours after eating.
Tetracyclines should not be given with antacids and milk. Finally, it is extremely important to complete the entire prescription of antibiotics, even if symptoms have improved or even disappeared. Diminished symptoms do not indicate an elimination of the infectious organism. Ending use of the antibiotic before the end of the prescription can leave weakened organisms in the body, which can mutate to become resistant to antibiotics. Antibiotic-resistant germs can pose a serious threat to people and must be prevented by thoroughly administering prescribed antibiotics.

**Definitions of Key Terms**

**Antibiotics**—Substances produced by certain fungi, bacteria, and other organisms that are effective in inhibiting the growth of or destroying microorganisms—penicillin.

**Arthritis**—Inflammation of a joint.

**Bacteria**—One-celled microorganisms which have no chlorophyll, multiply by simple division, and can be seen only with a microscope. Some bacteria cause diseases such as pneumonia, tuberculosis, and anthrax, and others are necessary for fermentation, nitrogen fixation, and so on.

**Fungi**—Any of a large group of thallophytes, including molds, mildews, mushrooms, rusts, and smuts, which are parasites on living organisms or feed upon dead organic material.

**Immunity**—Resistance of the body to a particular disease.

**Infection**—Activity of disease-producing bacteria, virus, or fungus in the body and the reaction of the body to the microorganisms and their products.

**Inflammation**—Localized heat, redness, swelling, and pain as a result of irritation, injury, or infection.

**Influenza**—An acute highly contagious infection. Flu.

**Lymph**—A clear, yellowish fluid resembling blood plasma, found in the lymphatic vessels.

**Otitis**—Inflammation of the ear.

**Pustules**—Small elevations of the skin containing pus (i.e., a blister or a pimple)
## Supplemental Information for Lesson 7

### Signs and Symptoms of Illness

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<thead>
<tr>
<th>Definition</th>
<th>Indications</th>
<th>Intervention</th>
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<tr>
<td><strong>Diarrhea</strong></td>
<td>Frequent passage of watery bowel movements</td>
<td>Temperature of 100° or more must be reported. Clear liquid diet for 24 hrs. if stools are frequent. Avoid caffeine and fruit. Encourage proper hand and body hygiene.</td>
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<td>May be due to diet, inflammation, irritation of the mucosa of the intestines, gastrointestinal infections, certain drugs, or emotional distress</td>
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<td><strong>Drug Toxicity</strong></td>
<td>Occurs when a medication has accumulated in the body exceeding therapeutic or beneficial levels. May occur with first dose or be cumulative. May also be related to dehydration, constipation, or an infection</td>
<td>Changes in individual’s behavior should be reported immediately. Medications should be withheld until the nurse establishes if toxicity is present</td>
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<td>Observe a change in behavior; symptoms are usually related to the desired effect of the medication, only exaggerated.</td>
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<td><strong>Fever</strong></td>
<td>Elevation of body temperature above normal levels. Oral temp. above 98.6° or 94.6° axillary is considered a fever.</td>
<td>Encourage fluids, limit physical activity, encourage light attire. Cool moist compress to the forehead may help. Check with nurse before administering medications.</td>
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<td>Flushed and pink cheeks, “dull” eyes, decreased appetite, irritability, decreased physical activity, and/or thirst. Individual may complain of headache, dizziness, body aches, or chills.</td>
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<td><strong>Nausea</strong></td>
<td>Unpleasant sensation usually associated with a distinct revulsion to food.</td>
<td>Abdominal firmness, rigidity, or responses of pain to a lightly touched stomach area should be reported. Restrict oral intake to clear liquids. Refusal of meds due to complaints of nausea should be reported to the nurse.</td>
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<td>Nonverbal indications may include cessation of physical activity, decreased appetite or refusal to eat, frequent swallowing, pale skin, sweating or irregular breathing. A sudden increase in physical activity or restlessness may indicate vomiting is imminent.</td>
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Vomiting

| Sudden forceful expulsion of stomach contents through the mouth and/or nose. | Assist as needed. Provide privacy and a calm soothing attitude. Casually observe the vomitus to determine the character and quantity. For example, vomitus could be “a small amount of odorless, frothy, clear liquid” or a “large amount of foul smelling, brownish liquid, coffee grounds in appearance. Encourage individual to rinse mouth and swallow a small sip of water. | Contact the nurse for any of the following: Vomiting with: --temp of 100° or greater --abdominal rigidity or extreme tenderness --interruption of a medication schedule --appearance of coffee grounds material or with presence of bright red blood --headache or changes in behavior, mobility and/or vision |

First Aid Training

It is important that all staff be trained in a variety of basic first aid techniques. Information is available from a variety of sources on this topic including your local Red Cross and public library. The following web sites may also be useful:


1UpHealth. 1 Sept., 2003. (http://www.1uphealth.com)

All staff should be trained in the following areas:
- Choking (Heimlich maneuver)
- Trauma
- Broken bones
- Severe bleeding
- Burns
- Poisoning
- Seizures
- Objects in the eye
- Objects in the ear
Living in the Community
Core B

Lesson 8
Psychotropic Medications
Psychotropic Medications

Key Terms

- Antianxiety
- Antidepressant
- Anticonvulsant
- Antipsychotic
- Controlled substance
- Physical dependence
- Psychoactive drugs
- Psychological dependence
- Psychosis
- Psychotropic

Adults and children with mental retardation and developmental disabilities (MR/DD) may have a “dual diagnoses” – a psychiatric diagnosis along with a diagnosis of a developmental disability. Any psychiatric illness may coexist with MR/DD. Some illnesses may be based on the individual’s experiences. For example, they may have been abused and develop post-traumatic stress disorder, or may experience a major depression after the death of a parent. Some illnesses may develop as a result of their physical disabilities, such as seizure disorders. Some may simply occur, such as schizophrenia. Often, there may be multiple reasons for an illness.

Medicines may be prescribed for a specific illness (for example, depression) or to help control behavior, so that the individual functions better in his/her environment. Medications must, however, always be given in an effort to benefit the individual – never to just sedate them for the benefit of the caregiver.

A wide variety of medications may be prescribed, but they must be given as part of a comprehensive treatment plan. Routine labs to monitor various blood levels and/or organ functioning, that is, kidneys, liver, and so on, may be indicated. Medications which may be prescribed include antidepressants, antipsychotics, anxiolytics, hypnotics, stimulants, anticonvulsants, and mood stabilizers. While medications may often be helpful, they may also have side effects. For example:

- Antianxiety drugs may produce drowsiness, impaired concentration, loss of coordination, fatigue, and mental slowing or confusion
- Anticonvulsant drugs may produce allergic reactions, drowsiness, irritability, nausea, rash, physical clumsiness, and in children hyperactivity
- Stimulants may produce insomnia, depression, irritability, weight loss, and anxiety
- Antipsychotic drugs may produce drowsiness, restlessness, muscle spasms, tremors, dry mouth, blurred vision, involuntary movements, and weight gain
- Antidepressant drugs may produce drowsiness, fatigue, agitation, dizziness, trouble sleeping, blurred vision, constipation, diarrhea, difficulty urinating, nausea, changes in appetite, anxiety, headache, increased sweating, weight gain, and tremors

When an individual is prescribed a medication, it is important for caregivers to
Core Lesson 8: Psychotropic Medications

have an idea of what side effects may occur with that medication. No one can know all possible side effects, so it is also important for caregivers to be alert to unexpected changes in the individual’s behavior that suggest a side effect may be occurring. With limited coping and verbal skills, these individuals may not recognize a side effect or may have difficulty explaining it to a caregiver. Caregivers, who are in frequent contact with the individual, have a special role to play in documenting and giving feedback to the doctor or nurse that prescribed the medication.

It is important to remember that over-the-counter medications, dietary supplements, and herbal medications may have side effects or interact with an individual’s medications. Non-psychiatric prescription medications (such as high blood pressure medications) may also have psychiatric side effects.

Another important thing to keep in mind is that many medications may also cause physical and mental changes when they are stopped abruptly. The individual may experience withdrawal symptoms. This means it is important for individuals to take their medications regularly, as prescribed, without interruption. Stocks of an individual’s medications should always be checked to make sure they won’t run out before their next appointment or on a weekend or holiday. When medications are stopped, it is often best to gradually decrease the amount taken (taper) over a period of time.

This should be done as directed by the psychiatrist, neurologist, or other health professional. Individuals often take more than one medication. They may see more than one doctor or nurse. It is essential that every health professional prescribing medication to an individual knows what medications they might already be taking. It is also important for the medical team to know what the individual’s experience has been with medications in the past. Often the individual’s caregivers are much better equipped to give this information than the individual is. Thorough and accurate documentation is essential.

Sometimes individuals may have allergic reactions to medication. This is often an emergency. Prescribers must be notified immediately, and the reaction needs to be documented for future reference.

It is important that everyone involved in an individual’s care knows about their treatment – and this includes appropriate family members.

The individual must also participate in their own treatment to the best of their abilities. Efforts should be made to educate the individual as to the reasons why they are taking medication and the possible side effects that may occur. Caregivers need to be prepared to provide calm support if problems develop.

Always remember that an individuals’ behavior is influenced by many things:

• The environment they live in
• Their memories and coping skills
• Their physical limitations and
Core Lesson 8: Psychotropic Medications

- Their cognitive abilities
- Psychiatric illnesses
- Their educational level and problem solving skills

Changes in behavior can mean many things. For example, an aggressive outburst might be because an individual is in physical or mental pain. It is essential that caregivers stay attuned to what is going on in the individual's life and to know how he or she normally copes with stress. Remember that all changes, whether good or bad, may be stressful. Sometimes making changes in the environment may prove quite useful and relieve symptoms and stress without the use of medications.

A caregiver's careful and detailed description of the individual's usual behaviors and level of functioning and how these have changed is essential to the accurate diagnosis and treatment of an illness.

All treatments must be specifically prescribed for the individual. Two people may react quite differently to a given medication or medical treatment. Some may need smaller doses. Others may take larger doses. One individual might experience one side effect much more strongly than the next. One size never fits all.

Maintaining consistency is very important in the treatment of individuals with MR/DD. Medications that are given only as needed, (PRN), may actually be disruptive to an individual’s stability. The skillful treatment of an individual requires the attention of each and every member of the multidisciplinary treatment team. Conditions must be accurately diagnosed; medications may be prescribed; side effects must be recognized and documented; changes may be made to the living and social environment; the individual must be educated to the best of their abilities; their families must be involved in the process so that they may help with compliance; watch for side effects, and report changes to the rest of the treatment team.

Communication, trust, and effectiveness are the watchwords that guide the team.
Core Lesson 8: Psychotropic Medications

Definitions of Key Terms

**Antianxiety drugs**--Minor tranquilizers, used to treat anxiety, also used for prevention and treatment of convulsions.

**Anticonvulsants**--Medications used to stop or prevent convulsions or seizures.

**Antidepressants**--Alleviate the symptoms of depression.

**Antipsychotics**--Major tranquilizers used to control symptoms of psychoses and organic brain syndrome; change behavior but do not cure the disease.

**Controlled substance**--A drug that is addictive or habit forming.

**Physical dependency**--State in which withdrawal of a drug produces specific symptoms such as muscle cramps, vomiting, or tremors.

**Psychoactive drugs**--Drugs which alter the individual's psychological functions and behavior.

**Psychological dependency**--An emotional need or craving for a drug.

**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.

**Psychotropics**--Drugs that are used to modify behavior.

Supplemental Information for Lesson 8

The following fourteen statements (Kalachnik, et.al., 1998) should be used as guidelines as the interdisciplinary team thinks about the treatment of an individual who has been placed on a psychotropic medication.

**DO** treat any substance prescribed to improve or stabilize mood mental status, or behavior as a psychotropic medication. This includes herbal or nutritional substances when they are used in this manner.

**DON'T** use psychotropic drugs excessively, for convenience, as a substitute for meaningful psychosocial services, or in quantities that interfere
Core Lesson 8: Psychotropic Medications

with the quality of a life activity.

DON'T use psychotropic medication unless a coordinated multidisciplinary care plan has been approved and is in place.

DO use psychotropic medication based on a psychiatric diagnosis or a specific behavioral-pharmacologic hypothesis and only after conducting complete diagnostic and functional assessments.

DO obtain written informed consent from the individual or guardian and establish a therapeutic partnership involving all decision-makers.

DO track and document the effects of the treatment by accurately measuring behaviors, and quality of life.

DO monitor for side effects and document using standardized assessment instruments.

DO monitor for tardive dyskinesia if antipsychotic or other dopamine blocking medications are prescribed.

DO conduct clinical and data reviews on a regular and systematic basis.

DO strive to use the lowest optimal effective dose.

DO avoid frequent drug and dosage changes unless truly needed and approved by the physician and team.

DO keep the psychotropic medication regimen as simple as possible in order to encourage compliance and minimize side effects.

DO minimize the following practices as possible:
  - Long-term PRN (as needed) orders
  - Use of long-acting sedative-hypnotics (e.g., chloral hydrate)
  - Long-term use of short-acting sedative hypnotics (e.g., temazepam)
  - Long-term use of benzodiazepine antianxiety medications (e.g., lorazepam, diazepam)
  - High antipsychotic medication doses
  - Long-term use of anticholinergic medication (e.g., benztropine)

DO evaluate drug and monitoring practices through a peer or interdisciplinary team group.

References

FUNCTIONAL BEHAVIORAL ASSESSMENT

An individual with emotional and/or behavioral problems is one of the greatest challenges staff can face. We all know that individuals with behavioral issues are capable of contributing to society in important ways. We also know that helping them reach their potential can be frustrating and difficult. However, we have many effective strategies that can be used to help the individuals learn new and positive ways to function in the community.

Behavior is a form of communication. Thoroughly assessing the communicative intent of the behavior will help determine the environmental, social, or academic barriers and will facilitate the design of an intervention plan that supports the individual in learning skills and strategies to replace the negative behavior.

A Functional Behavioral Assessment (FBA) is a means of systematic collection and analysis of data that will vary in length and scope depending upon the severity of a individual’s behavior. Results and analysis of the data collection are used in developing the individual’s behavioral intervention plan. A FBA identifies patterns in the individual’s behavior and the purpose or function of the behavior.

An FBA brings together a team of persons who are important in the day-to-day life of the individual to assess the current status and to effectively plan the supports necessary to increase appropriate behaviors. This team interaction is called for when a consistent pattern of negative or inappropriate behavior diminishes the individual’s opportunity to participate in the community. It is assumed that, prior to initiating an FBA, multiple individualized strategies have been attempted with limited success.

An FBA is predicted on a strength-based model that considers the whole individual. Counselors, families, educators (if in school) and the individual share information and strategically plan for success. It is unwise for any one person to attempt to complete an assessment. The knowledge about the individual collected by each team member is valued and imperative. The FBA informs the team about the elements which support and negate success. This information is then used to build a plan of action that focuses on the successful interactions and environments. The importance of team based assessment and planning cannot be overstated.

The FBA focuses on the reasons for behaviors that are disruptive. Factors associated with emotional disorders and behavioral problems are described below. It is important to recognize that the individual cannot be penalized for behaviors they are unable to control. Behavior related to a biological factor or hyperactivity related to a neurological condition, for example, may require adjustments to the environment or
instructional strategies rather than imposing expectations that cannot be met.

- **Biological Factors.** Certain biological conditions have been associated with emotional disorders and behavioral problems, as there appear to be genetic links to depression and schizophrenia, as well as nutritional deficits, certain physical illnesses and injuries, and some neurological conditions.

- **Environmental Factors.** The environment in which individuals live can either help or hurt healthy development, just as a individual’s behavior may have both positive and negative influences upon other house members.

- **School Factors.** Generally, individuals with emotional disorders or behavior problems tend to “underachieve.” Learning problems are a disadvantage in any environment, particularly since many of these individuals have not developed adequate social skills by the time they enter school, and poor social skills often result in social rejection by both peers and teachers. This may lead to further disinterest in school and even greater underachievement.

- **Community Factors.** Individuals may be exposed to stressors within their community. Exposure to crime and violence has been linked to a tendency to behave in ways associated with emotional disorder and behavior problems.

The team meeting is a consensus building opportunity. The facilitator should ensure that all voices are heard and respected. This meeting sets the tone of care for the individual’s success. The FBA is a strength-based process, building on what the individual is able to do successfully today and outlining the objectives for increased success in the future.

The behavior specialist for your agency will provide you with forms to document the different types of information that might be collected on the individual. The forms are designed to increase participation of all team members, to support the team in maintaining a positive focus, and to allow the team to progress effectively and efficiently through the FBA process. The information gathered will be the basis for the development of a realistic and individual specific intervention plan.

**Types of Information to be Gathered**

The FBA team will decide which methods, tools, and information is needed to begin to understand why the challenging behaviors occur. It will be necessary to gather this information from multiple sources, across a range of settings, activities and situations. Functional assessments are typically completed through interviews or questionnaires and direct observation. Information
gathering usually involves indirect and direct methods. Indirect methods include:

- Review of records – general information, medical assessments, academic assessments, evaluation data, discipline referrals, social history and intervention history.

Direct observation involves:

- Observing and recording the individual’s behavior and events in the environment while the behavior is occurring.
- Data should be collected at various times in various settings, continuing until discernable patterns emerge.
- Data can describe the frequency, intensity and duration of the behavior.
# Core Lesson 8: Psychotropic Medications: Functional Behavioral Assessment

## Glossary of Medicines

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<th>Functional Category</th>
<th>Generic Name</th>
<th>Brand Name</th>
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<tr>
<td>Adjustment Disorders</td>
<td>anxiolytics</td>
<td>alprazolam</td>
<td>Xanax</td>
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<td>Generalized Anxiety Disorder</td>
<td></td>
<td>lorazepam</td>
<td>Ativan</td>
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<td>Tourrette Syndrome</td>
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<td>buspirone hydrochloride</td>
<td>BuSpa</td>
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<td>prazepam</td>
<td>Centrax</td>
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<td>clorazepate dipotassium</td>
<td>Tranxene</td>
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<td>diazepam</td>
<td>Valium</td>
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<td>quazepam</td>
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<td>temazepam</td>
<td>Equnil, Miltown</td>
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<td>meprobamate</td>
<td>Euhypnos, Restoril</td>
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<td>flurazepam hydrochloride</td>
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<td>Attention-Deficit Hyperactivity</td>
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<td>generalized anxiety disorder,</td>
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<td></td>
<td>trimipramine maleate</td>
<td>Surmontil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>venlafaxine hydrochloride</td>
<td>Effexor</td>
</tr>
</tbody>
</table>
## Glossary of Medicines (continued)

<table>
<thead>
<tr>
<th>Category</th>
<th>Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggression (chronic &amp;</td>
<td>beta blockers</td>
</tr>
</tbody>
</table>
| organic), self-injurious behavior| propanol  
|                                 | metoprolol succinate  
|                                 | metoprolol tartrate  
|                                 | trimolol maleate  
|                                 | buspirone hydrochloride  
|                                 | Inderal  
|                                 | Reglan  
|                                 | Toprol XL  
|                                 | Timoptic  
|                                 | BuSpar  
|                                 | Buspirone  
|                                 | carbamazepine  
|                                 | valproic acid  
|                                 | clonazepam  
|                                 | mesoridazine besylate  
|                                 | molindone hydrochloride  
|                                 | thiothixene  
|                                 | olanzapine  
|                                 | perphenazine  
|                                 | pimozide  
|                                 | promazine hydrochloride  
|                                 | reserpine  
|                                 | risperidone  
|                                 | trifluoperazine hydrochloride  
|                                 | chlorpromazine hydrochloride  
|                                 | Triflupromazine  
|                                 | Tegretol  
|                                 | Depakene  
|                                 | Klonopin  
|                                 | Serentil  
|                                 | Moban  
|                                 | Navane  
|                                 | Zyprexa  
|                                 | Trilafon  
|                                 | Orap  
|                                 | Sparine  
|                                 | Serpasil  
|                                 | Risperdal  
|                                 | Stelazine  
|                                 | Thorazine  
|                                 | Vesprin  
|                                 | clonidine  
|                                 | clonidine hydrochloride  
|                                 | Catapres  
| Hyperactivity, sleep problems, | clonidine  
| Tourrette syndrome              | clonidine hydrochloride  
|                                 | Catapres  
|                                 | clomipramine  
|                                 | clomipramine hydrochloride  
|                                 | Anafranil  
|                                 | fluoxetine  
|                                 | fluoxetine hydrochloride  
|                                 | Prozac  
|                                 | Paroxetine  
|                                 | paroxetine hydrochloride  
|                                 | Paxil  
| Mania                           | lithium  
|                                 | lithium carbonate  
|                                 | Eskalith  
|                                 | Cibalith-S  
| lithium citrate                | lithium carbonate  
|                                 | Eskalith  
|                                 | Cibalith-S  
| Obsessive-Compulsive Disorder  | clomipramine  
|                                 | clomipramine hydrochloride  
|                                 | Anafranil  
|                                 | fluoxetine  
|                                 | fluoxetine hydrochloride  
|                                 | Prozac  
|                                 | Paroxetine  
|                                 | paroxetine hydrochloride  
|                                 | Paxil  
| Sleep problems                 | melatonin  
|                                 | hormone  
|                                 | melatonin  
|                                 | hormone  

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## Differential Diagnosis of Movement Disorders

<table>
<thead>
<tr>
<th></th>
<th>Parkinsonism / Acute EPS</th>
<th>Tardive Dyskinesia</th>
<th>Tics</th>
<th>Mannerisms / Stereotyped</th>
<th>Lithium Tremor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time of Appearance</strong></td>
<td>5-30 days after treatment started. Can be immediate with IM antipsychotic. Can occur with increased dose.</td>
<td>Peak is after 3-5 years of treatment. Occurs when drug is decreased or stopped usually.</td>
<td>Can occur before or after medication is initiated.</td>
<td>Can occur before or after medication is initiated.</td>
<td>Within first week of therapy, but may occur at any time.</td>
</tr>
<tr>
<td><strong>Etiology</strong></td>
<td>Dopamine blockade from drugs.</td>
<td>Dopamine receptor sensitivity from drugs.</td>
<td>Encephalopathy or genetic</td>
<td>Mannerisms: Psychosis or personality trait. Stereotype: Usually associated with psychosis (Catatonia).</td>
<td>Inhibition of acetylcholine synthesis and release. Potentiates neuroleptic-induced blockade.</td>
</tr>
<tr>
<td><strong>Characteristics of Movements</strong></td>
<td>Slowed movements absence of voluntary movements, decreased blink, decreased arm swing, drooling, resting tremor, shuffling gait, mask like face, loss of balance, cramping or rigidity of muscles, inner restlessness.</td>
<td>Rapid, involuntary movements. Becomes worse when activity is increased. Especially common are purposeless movements of the face, hands, and legs. Movements are fairly constant and rhythmic.</td>
<td>Vocal or motor, involuntary, frequent. Other neurological signs often present.</td>
<td>Mannerisms: Bizarre purposeless acts peculiar to an individual. May be incorporated into a goal-directed behavior. Example: One short step for every 3 regular steps. Stereotypes: Constant repetition of any action. Example: Writing same work over and over; rubbing body part constantly.</td>
<td>Intention or essential tremor of hands usual site. Also muscle twitching and weakness occur.</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>Increase caffeine intake; Anti-Parkinson drugs; lower dose of neuroleptic; discontinue neuroleptic; switch to anti-cholinergic neuroleptic.</td>
<td>Increase neuroleptic; drug holiday; switch to different neuroleptic, other medications such as neurotransmitter precursors.</td>
<td>Neuroleptics usually suppress, Haloperidol commonly used.</td>
<td>Neuroleptics or no treatment. Behavior modification can be used.</td>
<td>Reduce Lithium dose, reduce caffeine intake, and beta blockers such as Inderal.</td>
</tr>
<tr>
<td><strong>Prognosis</strong></td>
<td>Usually complete remission. May resolve on its own. Some Individuals may have persistent smacking and sucking.</td>
<td>1/3 improve, 1/3 remain the same, 1/3 worsen with treatment. Some improvement usually seen if off drugs. When first taken off drugs, movements may worsen for awhile. Some have irreversible movements.</td>
<td>May be persistent despite treatment.</td>
<td>Stereotypes more likely to improve than mannerisms with neuroleptic treatment.</td>
<td>Usually improves.</td>
</tr>
<tr>
<td><strong>Individual Subjective Complaints</strong></td>
<td>Acute discomfort, awareness of dystonias and Often not painful unless severe. Individual often askathisia. Slowed movements may be misdiagnosed as psychotic, depression or catatonia.</td>
<td>Often not painful unless severe. Individual often aware of movements, but denies that he/she has them. May try to hide movements.</td>
<td>Aware of movements, utterances, but not control over them.</td>
<td>Sometimes aware of movements, sometimes not. Can probably exert some control over them.</td>
<td>Can be troublesome, especially for those who use hands and fingers for fine motor movements. May complain of often dropping objects.</td>
</tr>
</tbody>
</table>
Examination Procedure  
(For Tardive Dyskinesia)

Either before or after completing the Examination Procedure, observe the client unobtrusively, at rest (e.g., in the living room).

The chair to be used in this examination should be hard, firm, and without arms.

1. Ask individual whether there is anything in his/her mouth (i.e., gum, candy, etc.) and if there is, to remove it.

2. Ask individual about the current condition of his/her teeth. Ask individual if he/she wears dentures. Do teeth or dentures bother individual now?

3. Ask individual whether he/she notices any movements in mouth, face, hands, or feet. If yes, ask to describe and to what extent they currently bother individual or interfere with his/her activities.

4. Have individual sit in chair with hands on knees, legs slightly apart, and feet flat on floor. (Look at entire body for movements while in this position).

5. Ask individual to sit with hands hanging unsupported: if male, between legs, if female and wearing a dress, hanging over knees. (Observe hands and other body areas).

6. Ask individual to open mouth. (Observe tongue at rest within mouth). Do this twice.

7. Ask individual to protrude tongue. (Observe abnormalities of tongue movement). Do this twice.

8. Ask individual to tap thumb, with each finger, as rapidly as possible for 10-15 seconds; separately with right hand, then with left hand. (Observe facial and leg movements).

9. Flex and extend individual’s left and right arms (one at a time). (Note any rigidity).

10. Ask individual to stand up. (Observe in profile. Observe all body areas again, including the hips).

11. Ask individual to extend both arms outstretched in front with palms down. (Observe trunk, legs, and mouth).

12. Have individual walk a few paces, turn, and walk back to chair. (Observe hands and gait). Do this twice.
### ABNORMAL INVOLUNTARY MOVEMENT SCALE (AIMS)

**Individual Name:** ____________________ **Rater:** ____________________ **Date:** __________

**Instructions:** Complete the Examination Procedure before assessing movement ratings.

**Movement Ratings:** Rate highest severity observed. Rate movements that occur upon activation one less than those observed spontaneously.

**Code:**
- 0 = None
- 1 = Minimal, may be extreme normal
- 2 = Mild
- 3 = Moderate
- 4 = Severe

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>Minimal, may be extreme normal</td>
</tr>
<tr>
<td>2</td>
<td>Mild</td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>Severe</td>
</tr>
</tbody>
</table>

#### FACIAL AND ORAL MOVEMENTS:

1. **Muscles of Facial Expression.** e.g., movement of forehead, eyebrows, periorbital area, cheeks; include frowning, blinking, smiling, grimacing.

2. **Lips and Perioral Area.** e.g. puckering, pouting, smacking.

3. **Jaw.** e.g. biting, clenching, chewing, mouth opening, lateral movement.

4. **Tongue.** Rate only increase in movement both in and out of mouth, NOT ability to sustain movement.

#### EXTREMITIES MOVEMENTS:

5. **Upper (arms, wrists, hands, fingers)** include choreic movements (i.e., rapid, objectively purposeless, irregular, spontaneous), athetoid movements (i.e. slow, irregular, complex, serpentine). DO NOT include tremor (i.e., repetitive, regular, rhythmic).

6. **Lower (legs, knees, ankles, toes)** e.g., lateral knee movement, foot tapping, heel dropping, foot squirming, inversion and eversion of foot.

#### TRUNK MOVEMENTS:

7. **Neck, Shoulders, Hips.** e.g., rocking, twisting, squirming, pelvic gyrations

#### GLOBAL JUDGEMENTS:

8. **Severity of Abnormal Movements
9. Incapacitation Due to Abnormal Movements
10. Individual’s Awareness of Abnormal Movement - Rate Only Individual’s Report**

<table>
<thead>
<tr>
<th>Awareness Level</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Awareness</td>
<td>0</td>
</tr>
<tr>
<td>Aware, no distress</td>
<td>1</td>
</tr>
<tr>
<td>Aware, mild distress</td>
<td>2</td>
</tr>
<tr>
<td>Aware, moderate distress</td>
<td>3</td>
</tr>
<tr>
<td>Aware, severe distress</td>
<td>4</td>
</tr>
</tbody>
</table>

#### DENTAL STATUS:

11. **Current Problems with Teeth and/or Dentures**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
</tr>
</tbody>
</table>

12. **Does Individual Usually Wear Dentures?**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
</tr>
</tbody>
</table>
## ABNORMAL INVOLUNTARY MOVEMENT SCALE (AIMS)

**INDIVIDUAL NAME:** Joe Green  
**RATER:** R.Y.  
**DATE:** 1-15-2020

**INSTRUCTIONS:** Complete the Examination Procedure before assessing movement ratings. 
**MOVEMENT RATINGS:** Rate highest severity observed. Rate movements that occur upon activation one less than those observed spontaneously. 
**CODE:** 0 – None; 1 = Minimal, may be extreme normal; 2 = Mild; 3 = Moderate; 4 = Severe

### FACIAL AND ORAL MOVEMENTS:

13. **MUSCLES OF FACIAL EXPRESSION.** e.g., movement of forehead, eyebrows, periorbital area, cheeks; include frowning, blinking, smiling, grimacing.

14. **LIPS AND PERIORAL AREA.** e.g. puckering, pouting, smacking.

15. **JAW.** e.g. biting, clenching, chewing, mouth opening, lateral movement.

16. **TONGUE.** Rate only increase in movement both in and out of mouth, NOT ability to sustain movement.

### EXTREMITY MOVEMENTS:

17. **UPPER** (arms, wrists, hands, fingers) include choreic movements, (i.e., rapid, objectively purposeless, irregular, spontaneous), athetoid movements (i.e. slow, irregular, complex, serpentine). DO NOT include tremor (i.e., repetitive, regular, rhythmic).

18. **LOWER** (legs, knees, ankles, toes) e.g., lateral knee movement, foot tapping, heel dropping, foot squirming, inversion and eversion of foot.

### TRUNK MOVEMENTS:

19. **NECK, SHOULDERS, HIPS.** e.g., rocking, twisting, squirming, pelvic gyrations

### GLOBAL JUDGEMENTS:

20. **SEVERITY OF ABNORMAL MOVEMENTS**

21. **INCAPACITATION DUE TO ABNORMAL MOVEMENTS**

22. **INDIVIDUAL'S AWARENESS OF ABNORMAL MOVEMENT- RATE ONLY INDIVIDUAL'S REPORT**

| Aware, no distress | 1 |
| Aware, mild distress | 2 |
| Aware, moderate distress | 3 |
| Aware, severe distress | 4 |

### DENTAL STATUS:

23. **CURRENT PROBLEMS WITH TEETH AND/OR DENTURES**

24. **DOES INDIVIDUAL USUALLY WEAR DENTURES?**

| No | 0 |
| Yes | 1 |
Abnormal Involuntary Movement Scale (AIMS) Graph

1) Complete the AIMS scale for the individual. 2) Transfer the scores the AIMS scale to the corresponding box found on the top section of the graph sheet. 3) Code: 0 = none; 1 = minimal; 2 = mild; 3 = moderate; 4 = severe. 4) Total the scores for the top section. 5) Plot the total on the graph in the middle of the page. 6) Place your initials in the rater box.

<table>
<thead>
<tr>
<th>DATE</th>
<th>Muscles of facial expression</th>
<th>Lips and perioral area</th>
<th>Jaw</th>
<th>Tongue</th>
<th>Upper Extremity</th>
<th>Lower Extremity</th>
<th>Trunk Movements</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AIMS Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Severity (0-4)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Incapacitation (0-4)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Awareness (0-4)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Problems? Teeth/Dentures</th>
<th>Yes/No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Dentures? Yes/No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Rater</th>
</tr>
</thead>
</table>
Lesson 9
Developmental Disabilities
Core Lesson 9: Developmental Disabilities

DEVELOPMENTAL DISABILITIES

Key Terms
Adaptive behavior Disability
Intelligence Supports

Definitions of Disability

Staff in group homes will work with many different individuals with disabilities. What is a disability? A disability refers to personal limitations that represent a substantial disadvantage when attempting to function in society. A disability should be considered within the context of the environment, personal factors, and the need for individualized supports. (American Association on Mental Retardation, 2002) The population typically in need of supports and services includes individuals with developmental disabilities such as autism, mental retardation, and cerebral palsy. Additional diagnoses may also include epilepsy and/or psychiatric disorders. It is important for staff to be familiar with the different types of disabilities, but it is more important for staff to learn how to provide appropriate care and services for the individuals.

The reason people with disabilities are often given labels, is so they are able to access medical, educational, and human services systems and supports. The laws, funding sources, services, and supports provided are all driven by disability categories (i.e., severe, profound, or labels such as mentally retarded, autistic, seriously mentally ill, or medically fragile). What people with disabilities and their families want is quality care from those paid to help them. Quality life supports and outcomes are what individuals, families, and caregivers are striving to achieve.

Using the Federal Laws as a basis, Indiana has defined developmental disability broadly with a focus on the supports people need to succeed in life. A physical or mental impairment (other than a sole diagnosis of mental illness) that originates before age 22, is expected to continue indefinitely, requires an intensive interdisciplinary plan of habilitative services leading to greater functional independence, and includes substantial limitations in at least three of the following areas requiring intervention:
• Self-care
• Language
• Learning
• Mobility
• Self-direction
• Capacity for independent living
• Economic self-sufficiency

Services & Supports

Currently, best practices in disability related services and supports suggest that providers use a person-centered delivery model that is driven by a person centered planning process. The Indiana Bureau of
Core Lesson 9: Developmental Disabilities

Developmental Disability Services emphasizes services that utilize "person-centered planning, and the development of personal skills and outside supports needed for individuals to live independently and be fully included in the community."

This way of thinking about services and supports has tremendous impact on the way you carry out your job responsibilities. For some of the individuals you work with, plans will need to include services and supports around taking medications at home, in the community, and at the work place. This means that whoever is responsible for supporting a person with a disability in reaching the outcomes of their entire plan, needs to be familiar with the ideas behind person centeredness and be able to implement them in their work.

Understanding your own thoughts and feelings about people with disabilities and how services and supports should be delivered is a first step toward implementing this model.

Types of Developmental Disabilities

Mental Retardation

Mental Retardation is a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical skills. (American Association on Mental Retardation (AAMR), 2002)

When using the AAMR definition, classification, and systems of supports, team members must:

- Evaluate limitations in present functioning within the context of the individual’s age peers and culture
- Take into account the individual’s cultural and linguistic differences as well as communication, sensory, motor, and behavioral factors
- Recognize that within an individual, limitations often coexist with strengths
- Describe limitations so that an individual’s plan of needed supports can be developed
- Provide appropriate personalized supports to improve the functioning of a person with mental retardation

Levels of mental retardation

Intelligence refers to a general mental capacity. It involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience. It is important to remember, however, that an IQ score is only one aspect in determining if a person has mental retardation. Significant limitation in adaptive behavior skills and evidence that the disability was present before age 22 are two additional elements that are critical in determining if an individual has mental retardation.

- Mild (IQ of 70 and below) - Affects about 10 out of every 1,000 persons.
- Moderate (50 and below) - Affects about 3 out of every 1,000 people.
- Severe/profound (30 and below) - Affects about 1 out of every 1,000 people.

Some major contributors to mental retardation include:

1. Infection and intoxication during pregnancy
Core Lesson 9: Developmental Disabilities

- Fetal Alcohol Syndrome - alcohol crosses the placenta and remains in the fetus's bloodstream depressing the central nervous system functions in the fetus. It is thought that as little as 3 ounces of pure alcohol can harm the fetus.
- Lead poisoning - ingestion of lead paint, breathing in large amounts of lead (switching to unleaded gas was a specific attempt by the government to control this).
- Rubella or German measles - in the first three months of pregnancy can cause visual and/or hearing impairment, mental retardation and birth defects in the fetus.
- Encephalitis – inflammation of the brain.

2. Trauma
- Injury during delivery.
- Lack of oxygen at birth.
- High levels of X-rays during the pregnancy.

3. Deficiency in metabolism or nutrition
- Phenylketonuria (PKU) - caused by the inability of the body to convert a common dietary substance - phenylalanine - to tyrosine. This causes abnormal development of the brain. Many states require that testing for this deficiency is done before the infant leaves the hospital. If the proper diet is followed, retardation can be prevented.
- Galactosemia - caused by the inability to metabolize galactose. Treatment includes following a milk-free diet.

4. Gross brain disease - caused by tumors and other diseases that result in mental deterioration.

5. Unknown causes during pregnancy
- Microcephalus - characterized by a small head with a sloping forehead. It can be a genetic disorder or be caused by an infection such as rubella.
- Apert's syndrome - narrowing of the skull which inhibits the proper development of the brain. Surgery may sometimes prevent retardation.

6. Chromosomal abnormalities
- Down Syndrome - 47 chromosomes instead of 46; some level of retardation, and a variety of hearing, skeletal and heart problems; higher incidence in children born to mothers over the age of 35; physical characteristics include protruding tongue, flat face, malformed feet and hands, short height, and a tendency toward obesity.


8. Social factors – social and family interaction, such as child stimulation and adult responsiveness.

9. Educational factors – availability of family and educational supports that promote mental development and increases in adaptive skills. Also, factors present during one generation can influence the outcomes of the next generation.

Cerebral Palsy

Cerebral Palsy (CP) is a condition characterized by paralysis, weakness, coordination problems, and other motor dysfunction due to brain damage. It is estimated that at least 40% of individuals with cerebral palsy have normal intelligence. CP
Core Lesson 9: Developmental Disabilities

can be caused by anything that occurs before, during or soon after birth that results in oxygen deprivation, poisoning, cerebral bleeding, or direct trauma to the brain. The characteristics of CP vary according to the individual. CP can affect all four limbs, only the legs, the legs to a greater extent than the arms, or just one-half of the body. There are four types of motor disability:

- Spasticity - muscles involuntarily contract when they are suddenly stretched.
- Athetosis - involuntary, jerky, writhing movements.
- Ataxia - awkward fine and gross motor movements.
- Mixed types – some combination of the above.

Spina Bifida

Spina Bifida is a congenital midline defect resulting from the failure of the bony spinal column to close completely during fetal development. Since the cord does not completely close, the nerves below the site of the defect may be damaged causing paralysis. Spina bifida may also result in other conditions such as meningitis or hydrocephalus. Spina bifida by itself does not usually cause retardation. Surgery is usually performed in early infancy. Individuals with spina bifida may need to use braces, crutches, and wheelchairs to get around.

Pervasive Developmental Disorders

Individuals with pervasive developmental disorders (PDD) exhibit a disturbance in multiple areas of development. PDD is divided into autistic disorder, Asperger’s disorder, Rhett syndrome, childhood disintegrative disorder, and PDD NOS (includes atypical autism). Mental retardation is present in up to 80% of the people with PDD. An exception is individuals with Asperger’s disorder where by definition there is no delay in language and cognitive ability.

Autism is a life long developmental disability, which appears during the first three years of life and is four times more common in boys than girls. Characteristics shown by an individual with autism may include:

- Severe impairment in relating to family and other people.
- Delayed and deviant language development characterized by inappropriate use of language and peculiar speech patterns (echoing words or phrases).
- Behaviors ranging from repetitive body movements (finger flecking, twirling) to ritualistic behaviors (lining up toys or furniture in a particular order).

At this time there is probably no single underlying cause for autism, probably there are multiple causes. Research in this area continues and at this time the primary causes could involve some form of brain abnormality or biochemical imbalance that impairs perception and understanding.

Attention-Deficit Hyperactivity Disorder

ADHD is the current term for a specific developmental disorder seen in both children and adults. This disorder comprises deficits in behavioral inhibition, sustained attention, resistance to distraction, and the regulation of one’s activity level to the demands of a situation (hyperactivity or restlessness).
Core Lesson 9: Developmental Disabilities

Individuals with ADHD may exhibit the following (Barkley & Murphy):

- Impaired response inhibition, impulse control, or the capacity to delay gratification
- Excessive task-irrelevant activity or activity poorly regulated to the demands of the situation
- Poor sustained attention or persistence of effort to tasks
- Remembering to do things
- Delayed development of internal language (the mind's voice) and rule following
- Difficulties with regulation of emotions, motivation, and arousal
- Diminished problem-solving abilities, ingenuity, and flexibility in pursuing long-term goals
- Greater than normal variability in their task or work performance

References


Mental Retardation Fact Sheet.
http://www.aamr.org/Policies/faq_mental_retardation.shtml

For more information about Indiana developmental disability definitions:
http://www.state.in.us/fssa/servicedisabl/ddguide/general.html

For more information on services and supports in Indiana:
http://www.state.in.us/fssa/servicedisabl/ddguide/residential.html

Definitions of Key Terms

Adaptive behavior—The collection of conceptual, social and practical skills that people have learned so they can function in their everyday lives. Significant limitations in adaptive behavior impact a person’s daily life and affect the ability to respond to a particular situation or to the environment.

Disability—Personal limitations that represent a substantial disadvantage when attempting to function in society. A disability should be considered within the context of the environment, personal factors, and the need for individualized supports.

Intelligence—General mental capability. It involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience.

Supports—Evaluation of the specific needs of the individual and then the suggesting of strategies, services and assistance that will optimize individual functioning. The support approach also recognizes the individual needs and circumstances will change over time.
Core Lesson 9: Developmental Disabilities

Supplemental Information for Lesson 9

Tips for Providing Person Centered Services and Supports

Value each person as a person first, not a disability label.

Put yourself in the person’s place. How would you want to have someone talk to you? Do you like to be talked about or with? Do you like it when people talk about you as “4 eyes”, “the heavy one”, “the bald guy with glasses”? Often, people with disabilities are thought about as their labels, rather than their names. Remember each of us is a person first. For a person with a disability, the disability is only one part of who they are as fellow human beings. Talk to people not about them. Share information with the person about their wellness, health, and medications.

Sometimes, professionals in our field carry out their practices based on stereotypes associated with the labels themselves rather than getting to know an individual person and what they are good at and need support with. Get to know the uniqueness of each individual you support; recognize their gifts and capacities. When you understand what a person likes, is good at, and is interested in, you can figure out ways to help them direct their own wellness and health care with the supports they need.

Think Holistically

Sometimes we tend to consider ourselves specialists. After all, we have gone to school to learn the knowledge and skills we need to do our specific job. This can lead to thinking of a person in terms of our specific job, rather than as a whole person. Remember what you do with a person is only one part of their lives. Make sure that you recognize how and when your work is related to other parts of the person’s life.

Value and empower the person, their family, and other members of their network.

Work collaboratively with the person and your team to ensure the person’s vision is met and quality services and supports are provided. Ask yourself if the person feels that he or she can share their ideas and support needs, and preferences with you and the team? Do they have enough information so that they are truly informed about their choices? Can the person and their family decide the type and amount of supports they use? Taking medications is a very complex and personal task. Making sure that the person is fully informed will support them in learning to participate as fully as they are able in the process.

Do with, not for or to

Historically, human services were created to help people with disabilities have a better quality of life. Sometimes in the efforts to make lives better, we have done things to people (like sterilization) or for people (like make them take a medication they don’t want to take) rather than teach them how to do things for themselves. Systems have created learned helplessness in many individuals with disabilities.

Work with an individual and their family to figure out the best supports for them, in learning as much as they can about their own healthcare and the impact that it
Core Lesson 9: Developmental Disabilities

has on their lives. Remember, every person can participate actively (partial participation is good!), in their wellness and healthcare if we are creative in designing purposeful activities and supports they need to succeed.

The following table compares some of the new and old ideas and is meant to “jog your thinking” about what you do everyday at work.

<table>
<thead>
<tr>
<th>Traditional Ways of Thinking</th>
<th>Innovative Ways of Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Something is wrong with this person and the label tells me what it is. My job is to help them be more normal.</td>
<td>This person has lots of abilities, interests and preferences, individual learning styles, and unique support needs.</td>
</tr>
<tr>
<td>Services for people with disabilities are already in place according to perceived disability label and cognitive, physical, and cognitive capacity. I must provide services and supports exactly the way they have always been provided.</td>
<td>I can design creative, individualized meaningful and purposeful, learning activities and supports using abilities, etc., as my building blocks.</td>
</tr>
<tr>
<td>I am responsible only for one part of the person (i.e., making sure that a person takes the right medication at the right time).</td>
<td>Every part of a person and their life circumstances influences all other parts. I am responsible for making sure my team members know how our work fits together to support the whole person and the quality of life. For example, a person who works at Kmart may need to take their seizure medication at the store during work hours.</td>
</tr>
<tr>
<td>My job is to do everything for the person (i.e., give them medication).</td>
<td>I can teach the person how to do things for themselves, with the support they need to succeed (i.e., self-medication). I can be creative in deciding how a person can participate partially in an activity (i.e., gaze at the pill bottle when asked if they are ready to take their medication for seizures).</td>
</tr>
</tbody>
</table>
Core Lesson 9: Developmental Disabilities

Muscular Dystrophy

Muscular Dystrophy is a hereditary disease characterized by progressive weakness caused by the degeneration of muscle fibers. Its cause is not known at this time. Symptoms exhibited will depend on the type of muscular dystrophy and may include muscles being replaced by fatty tissue, weakness in the shoulders and arms, and physical mobility becoming impaired. There is no known cure; can be associated with early death.

Tourette and other Tic Disorders

These disorders are characterized by motor movements and vocalizations that are rapid, sudden, not rhythmic, recurrent, and usually frequent. Individuals with these disorders may feel that their urges to move or vocalize are irresistible, but they can usually suppress them for certain lengths of time. Swearing occurs infrequently. Diagnosis of these disorders is difficult especially in individuals with mental retardation.
Living in the Community
Supplemental Lessons

Supplemental Lesson 1
Self-Medication
SELF-MEDICATION

Teaching an individual to self-medicate must be an individualized process based on the individual's functioning level. The process used to teach an individual to self-medicate will vary between the homes that serve the developmentally disabled and the homes that serve the mentally ill.

When teaching an individual to self-medicate, the individual's learning style and abilities must be considered. The individual may be able to remember drug names and match the written name to the name on the bottle. Some individuals may need cues concerning shape or color of the drug to be able to locate the correct drug. It is important to encourage each individual, no matter what his/her functioning level, to participate in learning about his/her medication.

Steps to Self-Administration

The following steps are only suggestions and should be adapted to meet the needs of your individuals. Additional information related to self-administration of medication. If the individual is in a day program, the medication counter will be checked daily. The nurse or designated staff member will fill the medication counter weekly. Eventually, the individual will be responsible for handling the bottle of medication and filling own medication counter. Depending on the individual's ability, the medication counter may be filled on a daily basis until the individual is ready to be responsible for a week's medication.

| Level 1 | Staff nurse or designated staff member will fill the individual's weekly medication box or pill counter with the week's medication. The medication box must be labeled with the name of each medication, who ordered it, when it was ordered, the dosage required, and the time when the medication should be taken. Individual will be informed of the times to report for medication and reminded as necessary. Staff member will supervise individual taking medication out of container. Staff member will question the individual as to the name of the medication being taken. Staff member will question the individual why the medication is being taken. Staff member will observe the individual taking the medication and chart observation. A black circle will be put around the time area if the medication is late and a red circle will be used if the medication is missed. |
### Supplemental Lesson 1: Self-Medication

#### Level 2
Staff nurse or designated staff member will fill the individual's weekly medication box or pill counter with the week's medication. Medication box must be labeled with the name of each medication, who ordered it, when it was ordered, the dosage required, and the time when the medication should be taken.

- Individual will report to staff member at assigned times, will be given medication container and medication sheet and will be expected to take medication as prescribed.
- Individual will initial medication sheet.
- Staff member will check medication containers and medication sheet. Late and missed medication will be noted on the sheet.

#### Level 3
Staff nurse or designated staff member will fill individual's weekly medication box or pill counter with the week's medication. Medication box must be labeled with the name of each medication, who ordered it, when it was ordered, dosage required, and the time when the medication should be taken.

- Individual will keep medication in own room.
- Individual will initial medication sheet.
- Individual will report to staff when medication has been taken.
- Staff will chart that individual reported taking medication.
- Staff will count pills weekly, or as needed, to check accuracy of individual reporting.

### Steps to Learning Medication

**Choosing the correct medication:**
- Memorization--individual will memorize the name of the drug and the dosage. This will take repeated practice and as the individual's medication changes, will have to be re-taught.
- Color code the top or back of the prescription bottle. The individual can look at the medication sheet which will also be color coded and match the name of the medication to the correct bottle.
- Place a picture of the medicine on the back of the bottle and on the medication sheet. The individual can look at the medication sheet and match the picture to the bottle.
- Number the bottle and the medication sheet. The individual can match the numbers.

**Selecting the correct amount of medication:**
- Memorization--individual will memorize the name of the drug and the dosage. This will take repeated practice and as the individual's medication changes, will have to be re-taught.
- Use a pill counter or medication box.
- Place the number needed on the back of the bottle and the individual can match to the medication sheet.

**Encouraging participation:**
- Include medication information on communication books and boards so that the individual can interact with the staff at medication time.
- Develop a calendar, daily schedule, or weekly schedule for the individuals to keep track of whether or not they took their medication. Develop a non-food reward system to encourage 100% participation.
Supplemental Lesson 1: Self-Medication

Teaching Self-Administration

The following task analyses are geared toward the lower functioning individual who will need supervision while handling medication. Sample #1 is for the individual who is just learning how to self-medicate. Sample #2 is for the individual who is more advanced in the technique. Sample #3 is for the individual who is independent. These are just samples and should be adapted to meet individual individual's needs.

Sample #1
The individual will:
- Come to the medication area when asked.
- Locate a drinking glass.
- Fill the drinking glass with water.
- Listen to the name of the first medication to be taken.
- Repeat the name of the medication.
- Listen to the amount of medication to be taken.
- Repeat the amount of medication to be taken.
- Listen to a description of the medication.

Sample #2
Inform the individual it is time to take his/her medication.
Ask the individual to come to the medication storage area.
The individual will:
- Locate a drinking glass.
- Fill the drinking glass with water.
- Locate personal medication storage container.
- Open container.
- Locate medication sheet.
- Match the time on the medication sheet with the clock.
- Listen to the name of the first medication to be taken. Repeat the name of the first medication to be taken.
- Listen to the amount of medication to be taken.
- Repeat the amount of medication to be taken.
- Listen to a description of the medication.
- State reason for taking the medication.
- Take the medication.
- State reason for taking medication.
- State the name of the medication.
- State the amount of medication to be taken.
- Remove the correct dosage.
- Place correct dosage on the tray.
- Close the medication container.
- State the name of the medication.
- State the amount of medication to be taken.
- Take the medication.
- Locate the medication sheet.
- Find the correct medication.
- Find the correct time.
- Initial the medication sheet.
- Place medication into medication storage container.
- Return the medication sheet to storage area.

Repeat the amount of medication to be taken.
Listen to a description of the medication.
  a. Color
  b. Shape
State reason for taking medication.
Take the medication.

a. Color
b. Shape
State reason for taking the medication.
Locate the medication according to the name and description.
Match the name on the medication to the medication sheet.
Open the medication.
State the name of the medication.
State the amount of medication to be taken.
Remove the correct dosage.
Place correct dosage on the tray.
Close the medication container.
State the name of the medication.
State the amount of medication to be taken.
Take the medication.
Locate the medication sheet.
Find the correct medication.
Find the correct time.
Initial the medication sheet.
Place medication into medication storage container.
Return the medication sheet to storage area.
Supplemental Lesson 1: Self-Medication

**Sample #3**
The individual will:
Locate a drinking glass.
Fill the drinking glass with water.
Locate personal medication storage container.
Open container.
Locate medication sheet.
Match the time on the medication sheet with the clock.
Locate the name of the medication to be taken on the medication sheet.
State the name of the medication.
State the amount of medication to be taken.
Locate the medication.
Match the name on the medication to the medication sheet.
Open the medication.
State the name of the medication.
State the amount of medication to be taken.
Remove the correct dosage.
Place correct dosage on the tray.
Close the medication container.
State the name of the medication.
State the amount of medication to be taken.
Take the medication.
Locate the medication sheet.
Find the correct medication.
Find the correct time.
Initial the medication sheet.
Place medication into medication storage container.
Return the medication sheet to storage area.
Supplemental Lesson 1: Self-Medication

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Living in the Community
Supplemental Lessons

Supplemental Lesson 2
Diabetes
DIABETES

Management of Diabetes

Diabetes is caused by the 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 does not enter the cells of the body and so is not used as fuel. Symptoms include increased appetite, weight loss, development of diabetic ketoacidosis, frequent urination, increased amounts of urine, and thirst.

There are two types of diabetes. Insulin Dependent Diabetes Mellitus (IDDM) Type I usually occurs in younger people. The cells in the pancreas failing to produce and release insulin cause it. Diet is low in sugar and high in protein and carbohydrates. Treatment is with injectable insulin. Carbohydrates must be replenished by medication in lacking in the diet.

Non-Insulin Dependent Diabetes Mellitus (NIDDM) Type II usually occurs after age thirty-five. It is caused by the cells in the pancreas failing to produce enough insulin or the insulin being produced is ineffective. NIDDM Type II can often be controlled by a carefully balanced diet, oral hypoglycemic medications and/or insulin.

Antidiabetic Agents

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insulin</strong></td>
<td>Replace insulin in the body when it is not produced by the islets of Langerhans</td>
<td>Treat diabetes</td>
<td>insulin zinc suspension (Lente Insulin) protamine zinc insulin suspension (Iletin PZI) isophane insulin suspension [NPH] (Humulin, Iletin NPH) regular insulin concentrated (Regular Iletin) prompt insulin zinc suspension (Semilente)</td>
</tr>
</tbody>
</table>
Supplemental Lesson 2: Diabetes

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stimulate islets of Langerhans cells to produce insulin and lower blood sugar.</td>
<td>Treat Type II diabetes, sometimes given along with insulin in Type I</td>
<td>acetohexamide (Dymelor) chlorpropamide (Diabinese) Tolbutamide (Orinase) glyburide (Diabeta, Micronase) tolazamide (Tolinase) glipizide (Glucotrol)</td>
<td>Renal impairment Sulfonamide sensitivity Liver dysfunction Skin rash Nausea and vomiting Heartburn Hypoglycemia</td>
<td>These drugs interact with many others. Be aware of what other medications the individual is taking and watch for signs and symptoms of drug interactions. Watch the individual for hypoglycemia. Report any change in the urine test to the staff nurse. Administer hypoglycemics ½ hour before a meal.</td>
</tr>
</tbody>
</table>

Drawing Insulin

1. Assemble all supplies
   a. bottle of insulin
   b. alcohol swabs
   c. insulin syringe
2. Wash your hands
3. Mix the insulin
   a. Slowly roll the bottle between your hands
   b. NEVER shake the bottle
4. Inspect the bottle of insulin
   a. Insulin should appear uniformly cloudy after mixing (This is for NPH and other cloudy long-lasting insulin).
   b. Do not use if the insulin material remains at the bottom of the bottle after mixing.
   c. Do not use if clumps are floating in the mixture.
   d. Do not use if particles on the bottom or sides give the bottle a frosted appearance.
5. Clean the rubber stopper on the insulin bottle with an alcohol swab.
6. Draw air into the syringe by pulling out on the plunger to the approximate dose.
7. Insert the needle into the rubber stopper on the upright bottle and push the plunger down.
8. Turn the bottle and syringe upside down.
9. Slowly pull the plunger down about five units past the dose.
   a. If there are no bubbles – push the top of the plunger tip up to the line, which marks the exact dose.
Supplemental Lesson 2: Diabetes

b. If there are air bubbles – flick or tap the syringe at the bubble with your finger. When the bubble goes to the tip of the syringe, push the plunger tip up to the exact dose.

10. Remove the syringe from the bottle, place cap over the needle and place on a flat surface.

Injecting Insulin

Site selection is very important. Insulin should be injected into the subcutaneous tissue between the fat layer under the skin and the muscles, which lie below that. Possible sites include the upper outer area of the arms; the front and side areas of the thighs; the buttocks; just above the waist on the back; and the abdomen, except the area around the navel and at the waistline.

If the individual is going to be running, jogging or exercising during the day, the legs should not be used as an injection site. If the individual is going to be performing tasks that require heavy lifting do not use the arms as an injection site that day. If an injection site has developed unusual bumps and dimples it should not be used for two weeks. If after the two weeks the bumps are still there, the site cannot be used again. The fat has atrophied.

Site rotation is a system of choosing a pattern of injection sites that will help the individual choose different sites for each injection. Rotation of sites will help to avoid a spot that might still be tender from a recent injection.

Injecting Insulin

1. Clean the injection site with an alcohol swab
2. Pinch up a large area of skin
3. Insert the needle into the skin at a 90-degree angle making sure the needle is all the way in
4. Quickly push the plunger all the way down
5. Hold the alcohol swab near the needle tip and pull the needle straight out of the skin
6. Dispose of all supplies according to agency policy
7. Chart injection and rotation site used

Diabetic Reactions

Hypoglycemia (low blood sugar) is caused by an insulin reaction from too much insulin, an increase in exercise and/or a decrease in food intake. Symptoms include:
- Early symptoms are headache, nervousness, paleness, irritability, moody, profuse perspiration, blurred vision,
- numbness of extremities, giddiness, hunger, drowsiness, confusion
- Late symptoms are loss of consciousness, coma, and convulsions.

At the first sign, take sugar immediately (2 teaspoons or 2 packs
granulated sugar; \( \frac{1}{2} \) to 1 cup fruit juice; or 1 candy bar)

Hyperglycemia (high blood sugar) is caused by ketoacidosis, poor diet, emotional stress, refusal or neglect to take medication.

- Early symptoms are dry hot skin, drowsiness, breath smelling fruity, low blood pressure, vomiting, thirst, large amount of sugar in the urine, high blood sugar
- Late symptoms include Kussmaul breathing (deep and fast), unconsciousness, coma, and death.

Monitoring Medication Response

Urine tests detect ketones by using Ketostix and Dia-stix. To test for sugar use a Testape, a strip of tape dipped into urine. If glucose is present, the tape will turn green or blue. The Clinitest uses ten drops of water that are placed in a test tube with five drops of urine and a Clinitest tablet. The color of the solution is compared to a chart to determine the amount of sugar in the urine. Clinistix are plastic strips that are dipped into urine and compared to a color chart. Dia-stix is similar to Clinistix.

Regular urine testing before meals and at bedtime provides the necessary information for proper adjustment of insulin dosage. Accuracy is improved if the bladder is emptied first and then the urine to be tested is collected 30 minutes later. The sugar content of the second collection is more representative of the current blood sugar level.

Blood tests are also used to monitor sugar levels. Fasting blood sugar (FBS) involves the individual drawing blood in the morning after eight hours without food. Postprandial glucose is blood tested for sugar after two hours without food. Monitoring of blood for sugar levels is the method of choice for managing diabetes. Blood sugar strips such as Chemstrip bG and Visidex II may be used for this purpose; or a Glucometer. Observe, chart and record the individual’s dietary intake. Some individuals will need carbohydrate replacements. Report uneaten items to the staff nurse.

Interactions with Over-the-Counter Medications

An individual with diabetes should avoid products containing sugar since sugar adds calories; products containing alcohol; liquid medications tablets or capsules should be used instead; oral decongestants which can raise blood sugar; and aspirin on large doses.

The following list contains a few examples of medications that might be used and is not meant to be all-inclusive.

- Cough medications – Colorex expectorant, Hytuss tablets
- Sore throat products – Chloraseptic spray, salt water gargles
- Decongestants – Afrin, Neo-Synephrine
- Fever reducers/pain relievers – Tylenol, Datril
- Cold and allergy medications – Chlo-Trimetron, use face masks
- Antidiarrheals – Pepto-Bismol, Kaopectate
- Laxatives – Konsyl, Agoral
Supplemental Lesson 2: Diabetes

- Vitamins – TheraGran Liquid, Tri-Vi-Sol Drops
- Antacids – Di-Gel, Mylanta
- Nausea/Vomiting – Bonine, Dramamine

Interactions with Prescription Medications

Examples of drugs that can raise blood glucose are Lithium, estrogens, caffeine, morphine, nicotine, corticosteroids, Epinephrine-like drugs, Phenytoin.

Examples of drugs that can decrease blood glucose are ethyl alcohol, insulin, sulfonylureas, anabolic steroids, fenfluramine salicylates in large doses.

Health Care

Individuals with diabetes must take extra precautions with all aspects of their health care. When caring for their skin, individuals should avoid scratches, punctures and other injuries. Individuals should wear gloves if participating in an activity that might injure their hands. They should avoid getting sunburned. All injuries should be treated promptly. If injuries do not start to heal within 24 hours, or if they become infected, contact the staff nurse.

Feet should be checked daily for sores, changes in color, temperature, shape and signs of infection. Toenails should be clipped straight across. Contact the staff nurse concerning the removal of corns and calluses. The individual should avoid going barefoot, using hot water bottles, heating pads, etc. on their feet.

The individual should have a sick-day plan. Check with the staff nurse. The individual should always take their medication. Encourage the individual to drink fluids. Monitor blood glucose as necessary.

Additional Information Concerning Diabetes

Know which individuals are on insulin so that you can observe dietary intake and reactions to the medication. Oral hypoglycemic agents are primarily used in adult-onset diabetics. Use all of your senses to observe and monitor these high-risk individuals. Observe their skin condition closely. Diabetic medications along with cardiovascular medications should have priority in administration if important medications need to be given before others. Goals of drug treatment are to:

- Normalize carbohydrate, protein and fat metabolism
- Control blood sugar
- Eliminate acidosis
- Prevent hypoglycemia (insulin shock)
- Promote normal growth
Living in the Community
Supplemental Lessons

Supplemental Lesson 3
Substance Abuse
Individuals who are taking over-the-counter and/or prescribed medications must be aware of the interactions that can occur between those medications and alcohol, marijuana, cocaine, and caffeine. Staff must also be aware of these interactions. A chart listing the interaction effects of alcohol and other drugs is included.

If you suspect an individual is under the influence of alcohol or an illegal substance and it is time for the client to receive medication, do not administer the medication to the individuals. Contact the staff nurse immediately for further instructions.

**Alcohol**

Alcohol is a drug. Alcohol can produce feelings of well being, sedation, intoxication, unconsciousness, and death. Alcohol affects the metabolic process when drugs are forced to compete with alcohol for processing by the body; one or both are metabolized more slowly. The effect of alcohol and/or the drug is exaggerated because it remains active in the blood for an extended period of time. Adverse effects of alcohol include:
- Liver damage resulting from prolonged drinking which can reduce the metabolism of many drugs, causing a normal dose to be unexpectedly potent.
- Barbiturates or sedatives will have less effect in heavy drinkers during periods of sobriety. Excessive drinking has increased the body's ability to metabolize these drugs. Heavy drinkers will begin to take larger doses of these drugs, because the usual dose will have little effect. Results of taking the large dose and then drinking can be fatal.
- The combination of downers, alcohol and diazepam (Valium) being used to combat a cocaine crash can cause delay withdrawal of up to ten days. This may lead to the possible onset of delayed or “unexpected” seizures and improper diagnosis because of the delay.

**Marijuana**

Physical effects of marijuana include a faster heartbeat and pulse rate, bloodshot eyes, and a dry mouth and throat. Mental effects include impaired or reduced short-term memory, altered sense of time, and a reduced ability to do things that require concentration.

Marijuana affects several different systems of the body.
- Reproductive system – influences levels of some hormones related to sexuality; irregular menstrual cycles; temporary loss of fertility.
- Cardiovascular system – increases the heart rate as much as 50 percent; can cause chest pain.
Supplemental Lesson 3: Substance Abuse

- Respiratory system – irritates the lungs and damages the way they work; when combined with nicotine, can cause cancer and emphysema.

Cocaine

Cocaine is addictive. Immediate effects include dilated pupils and increased blood pressure, heart rate, breathing rate and body temperature. The effects begin within a few minutes and peak in about 15 to 20 minutes and disappear within an hour. Long-term effects include depression, hallucinations, and signs of psychosis. Early signs of trouble are increased irritability, short temper and paranoia.

Effects on the systems of the body include:
- Cardiovascular system – moderate doses can overtax the heart and may be fatal. Regular use can cause heart palpitations, angina, arrhythmia, and even a heart attack.
- Brain – overstimulates the neurotransmitters.

Combining cocaine with depressants such as heroin, barbiturates, or sedatives may result in the build-up of either drug to seriously toxic levels. Combining cocaine with other stimulant can be especially dangerous. Mixing local anesthetics and cocaine is also hazardous.

Caffeine

Caffeine has several immediate effects on the body including:
- an increase in heart rate and breathing
- an increase in blood pressure
- an increase in body temperature
- a quickening of the overall body processes
- an increase in the speed in which you react to stimuli
- an increase in stomach acids
- a decrease in the body’s ability to burn sugar
- an increase in urine production
- an increase in sensitivity to sensory stimuli

Caffeine is included in many over-the-counter and prescription drugs because it is a mild stimulant; it offsets the drowsiness other ingredients in the medicine cause and it gives you a lift and helps you feel better. Physical problems include: headaches, loss of appetite, loss of weight, diarrhea, frequent loose stools, stomach upset, muscle tremors, heart palpitations, rapid breathing, ringing in the ears, sleeping problems. Emotional problems associated with caffeine are: mood changes, emotional upset, feelings of nervousness, agitation, anxiety or depression, exaggerated or unnecessary concern.

Definitions of Key Terms

Alcohol—A colorless, volatile, flammable liquid derived from fermentation of sugars and starches and used, either pure or denatured, as a solvent and in drugs, cleaning solutions, explosives, and intoxicating beverages.

Caffeine—A white, bitter, crystalline substance that has stimulant effects and constricts blood vessels in the brain.
Supplemental Lesson 3: Substance Abuse

**Cocaine**—A colorless or white crystalline narcotic extracted from coca leaves and used medically as a local anesthetic.

**Marijuana**—The dried flower clusters and leaves of the hemp plant especially when taken to induce euphoria.

**Metabolize**—To undergo change in the body.
Supplemental Lesson 4
The Nervous System and Seizure Disorders
THE NERVOUS SYSTEM AND SEIZURE DISORDERS

Key Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analgesic</td>
<td>Pain reliever</td>
</tr>
<tr>
<td>Anaesthetic</td>
<td>Analgesic</td>
</tr>
<tr>
<td>Depressant</td>
<td>Drowsiness</td>
</tr>
<tr>
<td>Hypnotic</td>
<td>Deep sleep</td>
</tr>
<tr>
<td>Sedative</td>
<td>Calm</td>
</tr>
<tr>
<td>Tic douloureaux</td>
<td>Painful muscle twitches</td>
</tr>
<tr>
<td>Anticonvulsant</td>
<td>Prevents seizures</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>Seizure disorder</td>
</tr>
<tr>
<td>Neuron</td>
<td>Nervous cell</td>
</tr>
<tr>
<td>Stimulant</td>
<td>Stimulates</td>
</tr>
</tbody>
</table>

Review of the Structures and Functions of the Nervous System

The nervous system is divided into four parts: the brain, spinal cord, nerves and the autonomic nervous system. The two main functions for the nervous system are to carry and coordinate impulses from the outside world (external) and the body (internal) to the brain; and carry the brain’s responses (reactions) to the body in reaction to impulses.

Additional Information Concerning the Nervous System

When working with an individual who is receiving medication for nervous system disorders, speak in short, simple sentences; be prepared to give frequent explanations; approach the individual in a calm, unhurried manner; and listen to the individual’s fears and concerns. There are five major special considerations that the staff must follow for individuals taking nervous system medications:

- Safety
- Activity
- Respite
- Structured environment
- Support

When working with an individual who has seizures it is important to help the individual maintain a healthy self-concept and maintain independence. Individuals with seizure disorders should carry an ID card and medical information with them at all times. Individuals should always go swimming with a buddy. Individuals should avoid working at great heights; working around moving machinery; large amounts of caffeine; alcohol; becoming overly tired and activities that require a great deal of spinning.

Staff should encourage the individual to brush and floss their teeth after every meal and snack. If circumstances during the day do not permit brushing after the noon meal, encourage the individual to floss. A disclosing agent may be used which will leave a mild stain on all the places where plaque remain. A water pick, or dental stimulators may also be used. Poor dental care will increase the chances of gum tissue overgrowth that is frequently painful, embarrassing, and must sometimes be corrected with oral surgery.
Supplemental Lesson 4: The Nervous System and Seizure Disorders

Major Nervous System Disorders

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Cause</th>
<th>Symptoms</th>
<th>Example</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow or non-functioning nerves or brain cells</td>
<td>Unknown</td>
<td>Poor respiration, Poor heartbeat</td>
<td>Epilepsy. Grand mal (tonic-clonic seizures), Petit mal (absence seizures), psychomotor or temporal lobe epilepsy (complex partial seizures)</td>
<td>medication</td>
</tr>
<tr>
<td>Over-functioning nerves or brain cells</td>
<td>A sudden, abnormally excessive electrical discharge from the brain</td>
<td>Twitching, irregular movements, improper thought patterns, convulsions. Can last from a few seconds to several minutes.</td>
<td>Some of the common medications used to treat epilepsy are: phenobarbital (Luminal), ethosuximide (Zarontin), valproic acid (Depakene), carbamazepine (Tegretol), phenytoin (Dilantin).</td>
<td></td>
</tr>
<tr>
<td>Interference of impulse on nerve pathway</td>
<td>unknown</td>
<td>loss of motion, uncontrollable movements</td>
<td>Huntington's Disease, Myasthenia Gravis, Parkinson's Disease</td>
<td>medications help temporarily</td>
</tr>
<tr>
<td>Infections of nerves or brain cells</td>
<td>Infections from other parts of body or germs that attack nerve cells and interfere with nervous system structures</td>
<td>fever, general aches, weakness in extremities</td>
<td>Meningitis, Encephalitis, Poliomyelitis, Guillain-Barr Syndrome</td>
<td>medication</td>
</tr>
<tr>
<td>Inflamed nerves or brain cells</td>
<td>varied</td>
<td>nerves or brain cells irritated and swollen, may be constant or intermittent condition, almost always accompanied by pain</td>
<td>neuritis, neuralgia, Tic Douloureux, sciatica</td>
<td>medication to reduce pain and swelling</td>
</tr>
</tbody>
</table>
### Selected Medications by Classification

#### 1. Stimulant - Amphetamines

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>increase mental and physical alertness and activity</td>
<td>weight reduction, control hyperactivity</td>
<td>amphetamine sulfate, dextroamphetamine sulfate (Dexedrin), methylphenidate HCl (Ritalin)</td>
<td>Restlessness, Palpitations, Tachycardia, Hyperactivity</td>
<td>Do not give within six hours of going to sleep. Individual should void drinks with caffeine. Some amphetamines are controlled substances and can become habit-forming.</td>
</tr>
</tbody>
</table>

#### 2. Depressants

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sedatives</strong></td>
<td>decrease sensitivity of nervous system</td>
<td>reduce physical and mental activity, control convulsions</td>
<td>phenobarbital (Luminal)</td>
<td>Rash, Nausea, Dependence</td>
</tr>
<tr>
<td><strong>Hypnotics</strong></td>
<td>decrease sensitivity of nervous system</td>
<td>produce sleep</td>
<td>temazepam (Restoril), ethchlorvynol (Placidyl), flurazepam HCl (Dalmane), triazolam (Halcion)</td>
<td>Morning-after drowsiness, Stomach upset</td>
</tr>
<tr>
<td><strong>Anesthetics</strong></td>
<td>decrease sensitivity of nervous system</td>
<td>to cause loss of sensation, treat burns</td>
<td>dibucaine HCl (Nupercainal Cream), lidocaine HCl (Xylocaine)</td>
<td>Drowsiness, Palpitations</td>
</tr>
<tr>
<td><strong>Anticonvulsants</strong></td>
<td>decrease sensitivity of nervous system</td>
<td>stop or prevent convulsions or seizures</td>
<td>phenytoin sodium (Dilantin), primidone (Mysoline, Sertan), haloperidol (Haldol), carbamazepine (Tegretol), valproic acid (Depakene, Depakote)</td>
<td>Swelling and redness of gums, Drowsiness, Dizziness, Double vision, Tremors, Confusion</td>
</tr>
</tbody>
</table>
### Supplemental Lesson 4: The Nervous System and Seizure Disorders

#### Additional Information Concerning Commonly Ordered Medications

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Adult Dosage</th>
<th>Adverse Effects</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phenobarbital (Luminal) - Sedative</strong></td>
<td>A mild sedative to relieve anxiety or nervous tension and as an anticonvulsant to control grand mal epilepsy and all types of partial seizures.</td>
<td>As a sedative--15 to 30 mg 2-4 times per day As an anticonvulsant--100 to 200 mg given as a single dose at bedtime Total daily dose should not exceed 600 mg. Actual dosage and administration schedule must be determined individually by the individual's physician.</td>
<td>Expected--drowsiness, impaired concentration, mental and physical sluggishness. Unexpected--allergic reactions (skin rash, hives), dizziness, unsteadiness, impaired vision, double vision, nausea, vomiting, diarrhea</td>
<td>If used as an anticonvulsant, drug should not be discontinued abruptly. Sudden withdrawal can cause repetitive seizures. Gradual reduction in dosage should be made over a period of time.</td>
</tr>
<tr>
<td><strong>Temazepam (Restoril) - Hypnotic</strong></td>
<td>A sedative used to induce sleep.</td>
<td>15 - 30 mg at bedtime Total dosage should not exceed 90 mg.</td>
<td>Expected--drowsiness, lethargy, and unsteadiness Unexpected—allergic reactions, dizziness, slurred speech, nausea, indigestion</td>
<td>Do not discontinue abruptly if taken continually for more than 4 weeks. Using some over-the-counter drugs containing antihistamines (allergy and cold preparation, sleep aids) can cause excessive sedation in some persons. Avoid regular nightly use of any hypnotic. Restoril can produce psychological and/or physical dependence if used in large doses for extended periods of time.</td>
</tr>
</tbody>
</table>
### Supplemental Lesson 4: The Nervous System and Seizure Disorders

<table>
<thead>
<tr>
<th>Action</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Phenytoin (Dilantin) - anticonvulsant</strong></td>
<td>Not completely known but thought to promote loss of sodium from nerve fibers to lower and stabilize their excitability and thereby inhibit the spread of electrical impulses along nerve pathways.</td>
<td>As an antiepileptic drug to control seizures, available in combination with phenobarbital as some seizure disorders require the combined actions of both drugs for effective control.</td>
<td>Initial dose 100 mg three times per day Increase dose with caution by 100 mg/week as needed and tolerated Once optimal maintenance dose is established, total daily dose may be taken once per day if capsules are used Total daily dosage should not exceed 600 mg</td>
<td>Expected: mild fatigue, sluggishness and drowsiness, discoloration of urine (pink to red to brown) -- this is not significant Unexpected: allergic reactions - skin rash, hives, headache, dizziness, nervousness, insomnia, muscle twitching, nausea, vomiting, constipation, overgrowth of gum tissues, excessive growth of body hair Prompt action capsules and extended action capsules should not be substituted for each other; consult a physician Must not be stopped abruptly. Dosage schedule must be individualized. Drug must be taken at the same time each day for successful management of seizure disorders.</td>
</tr>
<tr>
<td><strong>Carbamazepine (Tegretol) - anticonvulsant</strong></td>
<td>Not completely known but thought to reduce excitability of certain nerve fibers in the brain.</td>
<td>For control of several types of epilepsy.</td>
<td>Initially -- 200 mg/12 Hours Total daily dosage should not exceed 1200 mg and must be determined by the physician for each individual.</td>
<td>Expected: dry mouth and throat, constipation, impaired urination. Unexpected: allergic reactions (skin rash, hives, itching), headache, dizziness, drowsiness, unsteadiness, fatigue, blurred vision, confusion, ringing in ears, loss of appetite, nausea, vomiting, indigestion, diarrhea, hair loss, water retention, frequent urination. Can cause serious adverse effects therefore should only be used after less hazardous drugs have proven ineffective Drug should not be discontinued suddenly. Should be taken at the same time every day.</td>
</tr>
</tbody>
</table>

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### valproic acid (Depakene, Depakote) - anticonvulsants

<table>
<thead>
<tr>
<th>Action</th>
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<th>Adult Dosage</th>
<th>Adverse Effects</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not completely known. Thought to suppress spread of abnormal electrical discharges that cause seizures by increasing the availability of a nerve impulse transmitter.</td>
<td>effective management of epilepsy (petit mal, grand mal, myoclonic), sometimes used in combination with other anticonvulsants.</td>
<td>Initially--15 mg/kg/24 hours and is increased cautiously by 5-10 mg/kg/24 hours every seven days as needed and tolerated. Usual dose is 1000 mg - 1600 mg in divided doses. Note: Preferably taken one hour before meals. May be taken with or after food if needed to prevent stomach irritation.</td>
<td>Expected: drowsiness and lethargy Unexpected: allergic reaction, headache, dizziness, confusion, unsteadiness, slurred speech, nausea, indigestion, stomach cramps, diarrhea.</td>
<td>Valproic acid can impair blood clotting mechanisms. If injured or having surgery or dental work, inform physician or dentist that individual is taking this drug. Avoid aspirin. Over-the-counter medications containing antihistamines (allergy and cold medications, sleep aids) can enhance sedative effects of the drug. Avoid concurrent use with Klonopin (could result in continuous petit mal episodes). To avoid mouth and throat irritation the tablet should not be crushed and the capsule should not be opened. Syrup can be diluted in water or milk.</td>
</tr>
</tbody>
</table>
### Definitions of Key Terms

**Analgesics**—Medications that relieve muscle, joint and bone pain.

**Anesthetics**—Medications that cause a loss of sensation.

**Anticonvulsants**—Medications used to stop or prevent convulsions or seizures.

**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.

**Depressants**—Medications used to decrease mental and physical activity.

**Epilepsy**—Chronic disorder characterized by recurring seizures that last from a few seconds to several minutes and require specific medication for prevention and control.

**Hypnotics**—Medications used to produce sleep.

**Neuron**—A nerve cell.

**Sedatives**—A drug having a calming effect, relieves anxiety and tension, being replaced by tranquilizers (less likely to cause drowsiness or dependency).

**Stimulant**—An agent that promotes the activity of a body system or function (example: amphetamines and caffeine).

**Tic Douloureux**—Spasm of a nerve in the face.
<table>
<thead>
<tr>
<th>SEIZURE TYPE</th>
<th>WHAT HAPPENS</th>
<th>WHAT TO DO</th>
<th>WHAT NOT TO DO</th>
</tr>
</thead>
</table>
| 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.  
□ If single seizure lasted less than 10 minutes, ask if hospital evaluation is needed.  
□ If multiple seizures, or if one seizure lasts longer than 10 minutes, take to emergency room. | □ Don’t put any hard object in the mouth.  
□ Don’t try to hold the tongue. It can’t be swallowed.  
□ Don’t try to give liquids during or just after a seizure.  
□ Don’t use oxygen unless there are symptoms of a heart attack.  
□ Don’t use artificial respiration unless breathing is absent after muscle jerks subside, or unless water has been inhaled.  
□ Don’t restrain. |
| Convulsive Generalized Tonic-clonic (Grand 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. | □ Don’t restrain. |
| Nonconvulsive Absence seizure (Petit mal) | | |
| Seizure consisting of sudden alterations in behavior. Person may walk about aimlessly, talk in an irrational manner, laugh, and 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 individual and others.  
□ Guide gently away from obvious hazards.  
□ Stay with the individual until completely aware of the environment. | □ Don’t grab hold unless sudden danger threatens.  
□ Don’t try to restrain.  
□ Don’t shout.  
□ Don’t expect verbal instructions to be obeyed. |
Supplemental Lesson 4: The Nervous System and Seizure Disorders

The Nervous System

Function:

1. Controls body activities
2. Coordinates body activities
3. Carries impulses to and away from brain
Supplemental Lesson 5
Nutritional Deficiencies
NUTRITIONAL DEFICIENCIES

Key Terms
Anaphylactic reaction
Aspiration
Dehydration
Hypokalemia
Iron deficiency anemia
Osteoporosis
Pernicious anemia

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 of these substances are available in the foods we eat. Eating the foods necessary for good health is called nutrition. People can get sick if they fail to eat any substance needed for nutrition for a period of time. This illness is a “nutritional deficiency.” People with a serious deficiency are said to have “malnutrition.” If the foods needed to replace the missing nutrients cannot be eaten, the nutrients can be taken in medication form.

Food may become less attractive to an individual because 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 population, specific groups of persons may be at risk to develop inadequate nutrient intake. Chronic illness, disabilities such as arthritis, emotional problems, and poverty are all factors that can contribute to nutritional deficiencies.

Staff must understand nutritional needs, and be able to identify commonly ordered medications including their actions and effects, which are used to treat nutritional deficiencies.

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 — meats, milk, eggs
- Vitamins — vegetables, meats, fruits, milk, eggs
- Minerals — milk, cheese, eggs, meats, vegetables
- Water - contained in all food and drink

The three major functions of nutrients are to supply heat and energy to the body (carbohydrates, fats, and proteins); build and repair body tissues (proteins), and regulate body processes (vitamins, minerals, and water). If nutrients are lacking in the diet, then either the diet must be changed, or nutrients must be given in the form of medication to prevent the individual from becoming ill.
Factors Relating to Nutritional Deficiencies

- Changes in the sensory system: loss of sense of smell, loss of sense of taste
- Changes in the gastrointestinal system: loss of teeth makes chewing difficult, reduced salivary function may cause individuals to prefer soft foods
- Changes in gastric acidity may cause impaired iron absorption.
- Dietary deficiencies: inadequate quantities of proteins, fruits, vegetables, fiber foods maintain gastrointestinal mobility, but excess leads to malabsorption of essential nutrients.

- Physical disabilities and immobility: crippling diseases (arthritis, blindness) makes preparing food difficult, illness and disability are stressful to the body and deficiencies may, therefore, occur more easily
- Emotional problems: the depressed, lonely or bereaved individual may reduce food intake and develop deficiencies, communication problems due to deafness and/or speech problems make it difficult for some individuals to make their needs known.

| Common Nutritional Disorders Treated by Medication |
|---------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| **Cause**                                        | **Symptoms**                                    | **Treatment**                                   |
| Pernicious anemia                               | low red blood cell count, fatigue, low hemoglobin level, pallor, fatigue | requires lifelong use of vitamin B. |
| Iron deficiency anemia                          | low hemoglobin level, pallor, fatigue           | oral iron and vitamin supplements |
| Osteoporosis                                     | bowed legs, deformed bones in children, and porous, easily broken bones in adults. | Treatment - increased intake of vitamin D, calcium, and phosphorus. Deficiencies can usually be treated by adequate diet (milk, fish oils, meats) and sun. Special note - Overdoses of vitamin D can be dangerous. Can cause hardening of soft tissues and abnormality of bones. |
Supplemental Lesson 5: Nutritional Deficiencies

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypokalemia</td>
<td>frequently a side effect of</td>
<td>diet (bananas, milk, cereals, meat), often</td>
</tr>
<tr>
<td></td>
<td>diuretics, potassium is not</td>
<td>treated with potassium replacement medications</td>
</tr>
<tr>
<td></td>
<td>absorbed by the body</td>
<td></td>
</tr>
<tr>
<td></td>
<td>heart irregularity, flu-like</td>
<td></td>
</tr>
<tr>
<td></td>
<td>symptoms, leg cramps</td>
<td></td>
</tr>
<tr>
<td>Dehydration</td>
<td>inadequate fluid intake, diseased</td>
<td>encourage individual to drink fluids, intravenous fluids may be necessary, water is essential for body functions, clear liquid diets may be ordered for short periods of time.</td>
</tr>
<tr>
<td></td>
<td>such as diabetes, diuretics,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>vomiting, diarrhea, fever</td>
<td></td>
</tr>
<tr>
<td></td>
<td>poor skin turgor, constipation,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fever, decreased urine output,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>increased pulse.</td>
<td></td>
</tr>
</tbody>
</table>

Selected Medications by Classification

1. **Vitamins**

<table>
<thead>
<tr>
<th>Action</th>
<th>Uses</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beta Carotene (Vitamin A)</strong></td>
<td>Necessary for growth and repair of body tissues, vision, reproduction and integrity of immune system</td>
<td>Lactating females, infections, and severe vitamin A deficiency</td>
<td>Usually only seen with toxicity, headache, vomiting, hair loss, dry mucous membranes, joint pain and blurred vision</td>
</tr>
<tr>
<td><strong>thiamine HCl (vitamin B₁)</strong></td>
<td>necessary for carbohydrate metabolism</td>
<td>treat alcoholism, gastrointestinal disease, cirrhosis</td>
<td>hypotension nausea sweating anaphylactic reaction diarrhea restlessness</td>
</tr>
<tr>
<td><strong>Riboflavin (Vitamin B₂)</strong></td>
<td>Necessary for carbohydrate, fat and protein metabolism.</td>
<td>Riboflavin deficiency or adjunct to thiamine treatment for polyneuritis</td>
<td>High doses may make urine bright yellow</td>
</tr>
</tbody>
</table>
### Supplemental Lesson 5: Nutritional Deficiencies

<table>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Niacinamide (vitamin B₃, nicotinic acid)</strong></td>
<td>Necessary for fat metabolism</td>
<td>Lowers cholesterol, treat Meniere's Disease, vasodilator</td>
<td>Headache, Facial flushing, Itching, Jaundice, Postural hypotension</td>
</tr>
<tr>
<td><strong>Pyridoxine HCl (vitamin B₆)</strong></td>
<td>Required for amino acid metabolism</td>
<td>Used in combination with isoniazid (INH) therapy which causes B₆ deficiency</td>
<td>Drowsiness, Itching, Jaundice</td>
</tr>
<tr>
<td><strong>Folic Acid (vitamin B₉)</strong></td>
<td>Maturation of red blood cells and amino acid metabolism</td>
<td>Megaloblastic or macrocytic anemia secondary to folic acid or other nutritional deficiency, liver disease, alcoholism, intestinal obstruction, supplement used during pregnancy to help prevent neural defects</td>
<td>Rash, Itching, Red skin, Allergic bronchospasm</td>
</tr>
<tr>
<td><strong>Cobalamin (Vitamin B₁₂)</strong></td>
<td>Formation of red blood cells, DNA synthesis</td>
<td>Macrocystic anemia, megaloblastic anemia, B₁₂ deficiency due to inadequate diet, subtotal gastrectomy</td>
<td>Blood clots, Transient diarrhea, Itching, Anaphylaxis</td>
</tr>
<tr>
<td><strong>Ascorbic acid (vitamin C)</strong></td>
<td>Necessary for collagen formation and tissue repair</td>
<td>Burns, increase healing of fractures and wounds, may prevent viral infections</td>
<td>Diarrhea, Renal calculi</td>
</tr>
<tr>
<td><strong>Biotin</strong></td>
<td>Energy metabolism, production of fatty acids of antibodies, of digestive enzymes, and in niacin metabolism.</td>
<td>Dermatitis, anemia, depression,</td>
<td>No known toxicity</td>
</tr>
</tbody>
</table>
### Supplemental Lesson 5: Nutritional Deficiencies

<table>
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</thead>
<tbody>
<tr>
<td><strong>Inositol</strong></td>
<td>Cell membrane integrity, help emulsify fats</td>
<td>High blood cholesterol, eczema</td>
<td>None identified</td>
</tr>
</tbody>
</table>

**Vitamin D**

<table>
<thead>
<tr>
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<th>Uses</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of calcium and phosphorus homeostasis, bone mineralization, dental development</td>
<td>Dialysis patients, osteoporosis, rickets, and hypocalcemia</td>
<td>Headache, Dizziness, Weakness, Dry mouth, Metallic taste, Anorexia, Nausea, Constipation, Frequent urination, High blood calcium levels</td>
<td>May cause hypercalcemia-induced cardiac arrhythmias. Use cautiously in cardiac patients. Dry mouth, nausea, vomiting, metallic taste, and constipation can be early signs of toxicity.</td>
</tr>
</tbody>
</table>

### Vitamin E

<table>
<thead>
<tr>
<th>Action</th>
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<th>Examples</th>
<th>Adverse Effects</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Maintains integrity of cell membranes, acts as an antioxidant.</td>
<td>Vitamin E deficiency, elevated blood cholesterol levels</td>
<td>Muscular weakness, Fatigue, Nausea, Diarrhea, Gastrointestinal disturbance</td>
<td>Increases effects of oral anticoagulants, intake of doses of 800IU or greater have caused adverse effects. Mega doses may cause thrombophlebitis.</td>
<td></td>
</tr>
</tbody>
</table>

### Vitamin K

<table>
<thead>
<tr>
<th>Action</th>
<th>Uses</th>
<th>Examples</th>
<th>Adverse Effects</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Promotes hepatic formation of active prothrombin</td>
<td>Hypothrombinemia (usually associated with oral anticoagulants)</td>
<td>Dizziness, Transient hypotension after IV administration, Nausea, Sweating, Bronchospasm, Anaphylaxis</td>
<td>Monitor prothrombin time to determine effectiveness, report side effects to the doctor</td>
<td></td>
</tr>
</tbody>
</table>

### Multivitamin products (combination of vitamins and minerals)

<table>
<thead>
<tr>
<th>Source of vitamins and minerals</th>
<th>Supplement diet</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Becotin-T (contains several B vitamins and vitamin C) Multicebrin (contains vitamins B, C, E, A, &amp; D) Theragram (contains vitamins A, B complex, C, D, &amp; E)</td>
<td>Itching, Diarrhea, Nausea</td>
<td>Do not crush medication.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 2. Minerals

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Iron products</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>replaces iron</td>
<td>treat iron deficiency anemia</td>
<td>ferrous sulfate (Feosol, Slow-Fe)</td>
<td>Nausea, Insomnia, Constipation, Diarrhea</td>
<td>Dilute liquid preparations in juice or water. May cause black, tarry stools. Chart color and amount of stool. Do not crush medications. Do not give with antacids</td>
</tr>
<tr>
<td><strong>Potassium products</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>replaces and maintains potassium levels</td>
<td>treat potassium deficiency</td>
<td>potassium chloride (Micro-K, K-Tab, K-Lor, K-Lyte/Cl)</td>
<td>Listlessness, Mental confusion, Cardiac arrhythmias, GI irritation</td>
<td>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</td>
</tr>
<tr>
<td><strong>Calcium</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>reduces acid load in the gastrointestinal tract, replaces calcium</td>
<td>treat osteoporosis and dyspepsia</td>
<td>calcium carbonate (Tums), Caltrate (combination calcium + vitamin B), Os-Cal</td>
<td>calcium deposits form in joints</td>
<td>do not give with milk or milk products</td>
</tr>
</tbody>
</table>

### Tube Feedings

Tube feedings are used to maintain adequate nutritional status (alone or as a supplement to oral or parenteral nutrition), or as a treatment for malnutrition. Routes of administration:

- Transnasally—used for short-term feeding, food is supplied directly into the stomach through tubes that have been inserted through the nostrils.
- Gastrostomy—food is administered through a surgical opening directly into the stomach. Usually well tolerated by individuals who are on long-term therapy.
Supplemental Lesson 5: Nutritional Deficiencies

- Jejunostomy—food is supplied through a surgical opening through the abdominal wall into the jejunum which is the part of the small intestine that extends from the duodenum to the ileum. Used for long-term and short-term therapy.

Types of formulas:

- Complete formulas—contain all six necessary nutrients—carbohydrates, fat, protein, vitamins, minerals, and trace elements.
- Incomplete formulas—lack one or more necessary nutrients and may require supplementation.

Methods of feeding:

- Bolus—feeding is rapidly instilled by a bulb or plunger syringe. The feeding is administered over a few minutes, four to six times daily. Can cause bloating, cramping, nausea, diarrhea and aspiration.
- Intermittent, slow gravity-drip feedings—given four to six times per day, generally well tolerated.
- Continuous infusions—administered by gravity or by way of a pump. The feeding is generally administered over 16 to 24 hours.
- Information concerning complications that can arise during tube feedings can be found on the chart Common Problems of Tube Feedings located at the end of this lesson.

- Information concerning medication administration:
- Flushing the feeding tube
  (1) Flush the tube with 30 ml of warm water before giving any drugs.
  (2) Flush the tube with 5 ml warm water between drugs.
  (3) Flush the tube with 30 ml of warm water before resuming feeding.
- Flushing clears the tube, helps propel the drug into the gastrointestinal tract and warns you if the tube is clogged.
- Crushing medication for feeding tubes:
  (1) Crush only some forms and only when absolutely necessary.
  (2) Do not crush enter-coated or time-release tablets of capsules. This can contribute to clogging.
  (3) Crush suitable tablets to a fine powder and dissolve in a small amount of warm water.
  (4) If the individual is on multiple drugs, be sure and give each one separately.

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  (4) If the individual is on multiple drugs, be sure and give each one separately.
Supplemental Lesson 5: Nutritional Deficiencies

Definitions of Key Terms

Anaphylactic reaction—Life-threatening allergic reaction caused by an allergen. Characterized by respiratory problems, fainting, itching, welts on the skin.

Aspiration—The taking of foreign matter (such as food) into the lungs during the respiratory cycle.

Dehydration—Excessive loss of water from the body.

Hypokalemia—An abnormally low level of potassium in the blood.

Iron deficiency anemia—Low iron levels in the blood due to inadequate diet or blood loss.

Osteoporosis—Abnormal porousness of the bone caused by the enlargement of its canals or the formation of abnormal spaces. Causes brittleness.

Pernicious anemia—Vitamin B₁₂ deficiency.
## Supplemental Lesson 5: Nutritional Deficiencies

### Common Problems of Tube Feeding

<table>
<thead>
<tr>
<th>Factors to Assess to Determine How Individual is Tolerating the Feeding</th>
<th>Possible Causes of Problems</th>
<th>Corrective Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gastrointestinal Function</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vomiting</td>
<td>Feeding too soon after intubation</td>
<td>Allow individual to relax and rest after tube is inserted</td>
</tr>
<tr>
<td></td>
<td>Improper location of tip of feeding tube</td>
<td>Repositioning of tube by qualified health care professional</td>
</tr>
<tr>
<td></td>
<td>Rapid rate infusion</td>
<td>Administer slowly</td>
</tr>
<tr>
<td></td>
<td>Excessive volume: 1. Air 2. Formula</td>
<td>Be sure feeding tube container does not run dry before feeding is completed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check with physician regarding number and size of feedings</td>
</tr>
<tr>
<td></td>
<td>Position of individual</td>
<td>Position on right side for 3/4 hour following feeding – reverse Trendelenburg or semi-Fowler’s</td>
</tr>
<tr>
<td>Applies to both vomiting and diarrhea</td>
<td>Food injection or poisoning</td>
<td>Check sanitation of formula and equipment</td>
</tr>
<tr>
<td></td>
<td>Anxiety</td>
<td>Explain procedures: provide reassurance and other related type of support: provide privacy</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>Rapid rate of infusion</td>
<td>Administer slowly – very slowly if formula is cold</td>
</tr>
<tr>
<td></td>
<td>High osmolality of formula or high concentration of formula</td>
<td>Adapt individual to formula gradually</td>
</tr>
<tr>
<td></td>
<td>Lactose intolerance</td>
<td>Contact physician regarding change of formula</td>
</tr>
<tr>
<td>Constipation</td>
<td>High content of milk formula</td>
<td>Contact physician regarding:</td>
</tr>
<tr>
<td></td>
<td>Lack of fiber</td>
<td>1. Change in formula</td>
</tr>
<tr>
<td></td>
<td>Inadequate fluid intake</td>
<td>2. Laxatives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Increasing fluid</td>
</tr>
<tr>
<td><strong>Fluid and Electrolyte Balance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dehydration</td>
<td>Rapid infusion of carbohydrate &gt; hyperglycemia &gt; osmotic diuresis &gt; dehydration</td>
<td>Administer slowly: exogenous insulin sometimes needed</td>
</tr>
<tr>
<td></td>
<td>Excess protein and electrolytes in formula</td>
<td>Change formula and/or increase fluid according to physician’s orders</td>
</tr>
<tr>
<td></td>
<td>Inadequate food intake</td>
<td></td>
</tr>
<tr>
<td>Edema</td>
<td>Excessive sodium in formula</td>
<td>Check with physician about change in formula</td>
</tr>
<tr>
<td><strong>Nutritional Adequacy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under nutrition (gradual weight loss)</td>
<td>Inadequate number of calories to meet energy requirements</td>
<td>Check to see if individual is receiving prescribed amount of formula: estimate individual’s caloric intake</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check with physician regarding increasing the volume, concentration, or number of feedings given</td>
</tr>
<tr>
<td>Over nutrition (gradual gain of undesirable weight)</td>
<td>Excessive caloric intake</td>
<td>Check with physician regarding decreasing the volume, concentration, or number of feedings given</td>
</tr>
<tr>
<td>Under nutrition (inadequate intake of protein and/or micronutrients leading to biochemical or clinical signs of deficiency)</td>
<td>Amount of standard formula needed to maintain weight is too low to meet requirements for essential nutrients</td>
<td>Check with physician regarding providing appropriate nutrient supplements</td>
</tr>
</tbody>
</table>

Living in the Community
Supplemental Lessons

Supplemental Lesson 6
The Gastrointestinal System
THE GASTROINTESTINAL SYSTEM

**Key Terms**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antiemetics</td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td></td>
</tr>
<tr>
<td>Duodenum</td>
<td></td>
</tr>
<tr>
<td>Fecal impaction</td>
<td></td>
</tr>
<tr>
<td>Hepatitis</td>
<td></td>
</tr>
<tr>
<td>Pancreas</td>
<td></td>
</tr>
<tr>
<td>Systemic infection</td>
<td></td>
</tr>
<tr>
<td>Cirrhosis</td>
<td></td>
</tr>
<tr>
<td>Diarrhea</td>
<td></td>
</tr>
<tr>
<td>Dyspepsia</td>
<td></td>
</tr>
<tr>
<td>Gallbladder</td>
<td></td>
</tr>
<tr>
<td>Liver</td>
<td></td>
</tr>
<tr>
<td>Pyorrhea</td>
<td></td>
</tr>
</tbody>
</table>

**Review of the Structures and Functions of the Gastrointestinal System**

The digestive system digests or changes food into a form the body can use for maintenance, repair, energy, growth and homeostasis; provides a place for liquid nutrients to be absorbed; eliminates waste products of the digestive process.

The gastrointestinal system is divided into two parts:
- Alimentary canal or tract - passageway for food. It is a continuous tract from the mouth to the rectum approximately 30 feet in length.
- Accessory organs - aid in the digestion of food.

Structures of the alimentary canal include the:
- Mouth (oral cavity) which is the normal entrance for food. It contains six pairs of salivary glands. The enzymes in saliva begin breaking down food for digestion.
- Throat (pharynx) is where swallowing takes place here. Joined to the esophagus.
- Esophagus is the muscular tube covered with mucous membrane. Propels food toward stomach.
- Stomach is the muscular pouch that excretes enzymes, hydrochloric acid and other juices for digestion. Located in the upper left side of the abdomen, below the diaphragm. Peristaltic action churns and mixes food with gastric juice, breaking it down for absorption. Food remains in stomach 3-5 hours (depending on type and amount).
- Small intestine is the muscular tube approximately 1 1/2” in diameter and 20 feet long. It is the area where digestion is completed. Products of digestion absorbed into bloodstream through the small intestine. Contents reach the large intestine approximately three hours after stomach is emptied. Unabsorbed food moves into large intestine be peristaltic action.
- Large intestine is the muscular tube approximately 1 1/2” in diameter and five feet long. Water is absorbed from unused food. Contents are stored until eliminated form the body as feces through the rectum.
Accessory organs of the digestive system include the:

- **Teeth** - break up food for digestion.
- **Tongue** which is a 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. Contain ptyalin to assist in carbohydrate digestion.
- **Pancreas** is the 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** is the highly vascular organ located in the upper right of the abdomen. 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 digestions of fats.
- **Gall bladder** is located behind the liver. Stores bile from the liver until it is needed for the digestion of fat.

### Additional Information about the Gastrointestinal System

Fluid intake is important to facilitate proper bowel movement. Bulk producing or forming laxatives can cause obstructions if not given with enough liquids. When giving gastrointestinal medication, monitor for any change in mouth odor. Monitor for signs of stomach cramps, decrease in appetite, and enlarged abdomen. Individual may become dependent on the laxatives.

### Disorders of the Gastrointestinal System

#### 1. Disorders of the mouth

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tooth decay</strong></td>
<td>loss of appetite, inability to eat meat which can cause anemia, and abscesses which can cause systemic infection</td>
<td>daily mouth care, dental work</td>
</tr>
<tr>
<td>poor oral hygiene</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pyorrhea</strong></td>
<td>loss of teeth due to bone infection</td>
<td>special mouthwash and mouth care</td>
</tr>
<tr>
<td>poor oral hygiene</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2. Disorders of the stomach

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nausea and vomiting</td>
<td>Symptomatic of many diseases</td>
<td>antiemetics are sometimes used</td>
</tr>
<tr>
<td>infectious disease, allergy,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>reactions to medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyspepsia</td>
<td>heartburn, feeling of fullness in the stomach, irritability</td>
<td>medications</td>
</tr>
<tr>
<td>changes in the lining of the stomach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>change in the amount of gastric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>secretions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ulcer—found in stomach or small</td>
<td>intolerance to certain foods, dyspepsia,</td>
<td>medications</td>
</tr>
<tr>
<td>intestine (duodenum area)</td>
<td>bleeding may occur if the ulcer is near a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>blood vessel, perforation (a hole) may occur</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and the stomach contents may leak into the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>area outside the stomach.</td>
<td></td>
</tr>
<tr>
<td>Motion Sickness</td>
<td>nausea and vomiting, loss of balance,</td>
<td>antiemetics and antihistamines</td>
</tr>
<tr>
<td>irregular motion, especially up and</td>
<td>often experienced while on a moving boat,</td>
<td></td>
</tr>
<tr>
<td>down motion</td>
<td>train, airplane, or car.</td>
<td></td>
</tr>
</tbody>
</table>

### 3. Disorders of the intestines

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diarrhea</td>
<td>cramping, gas formation, body fluids are lost</td>
<td>antidiarrheal medications</td>
</tr>
<tr>
<td>infection, allergy, medication,</td>
<td>rapidly, dehydration</td>
<td></td>
</tr>
<tr>
<td>tumor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td>stool may become hard, making elimination</td>
<td>medications, increase fiber in</td>
</tr>
<tr>
<td>inactivity, poor diet, change in</td>
<td>painful, impaction may occur with diarrhea</td>
<td>diet according to physician’s</td>
</tr>
<tr>
<td>diet, medication</td>
<td>leaking around the impaction.</td>
<td>order</td>
</tr>
<tr>
<td>Irritable colon</td>
<td>alternate diarrhea and constipation,</td>
<td>anticholinergic medications are</td>
</tr>
<tr>
<td>unknown, possibly stress</td>
<td>bloating, cramping, weight loss</td>
<td>sometimes used, stool softeners,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>laxatives (avoid irritant laxatives)</td>
</tr>
</tbody>
</table>
4. Disorders of the liver

<table>
<thead>
<tr>
<th>Types</th>
<th>Causes</th>
<th>Symptoms</th>
<th>Treatments</th>
<th>Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viral hepatitis</td>
<td>Type A infectious</td>
<td>ingestion of contaminated</td>
<td>generalized, fever</td>
<td>medication, fluids, rest</td>
</tr>
<tr>
<td></td>
<td>Type B - serum</td>
<td>food, contaminated needles,</td>
<td>usually present</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Type non-A, non-B - post-transfusion</td>
<td>contact with infected</td>
<td></td>
<td>- gamma globulin B given to persons</td>
</tr>
<tr>
<td></td>
<td></td>
<td>human blood, serum, feces,</td>
<td></td>
<td>who have been exposed to disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>semen, or secretions, or</td>
<td></td>
<td>to prevent type B hepatitis, follow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>blood transfusions</td>
<td></td>
<td>universal precautions procedures.</td>
</tr>
<tr>
<td>Chemical hepatitis</td>
<td>exposure to toxic chemicals or drugs</td>
<td>occur within 24-48 hours for chemical toxicity, or 2-5 weeks for drug toxicity. Symptoms resemble those of viral hepatitis.</td>
<td>remove the chemical or drug from the body.</td>
<td></td>
</tr>
<tr>
<td>Cirrhosis</td>
<td>alcoholism, previous liver disease</td>
<td>loss of appetite, fatigue, weight loss, fever, jaundice</td>
<td>includes vitamins, good diet, no alcohol.</td>
<td></td>
</tr>
</tbody>
</table>

Selected Gastrointestinal Medications by Classification

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antacids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>neutralize acidity by chemical reaction</td>
<td>treat indigestion, ulcers</td>
<td>Gaviscon, Maalox, Riopan, Mylanta, DiGel, Gelusil</td>
<td>may cause mild constipation or diarrhea.</td>
<td>chart amount and consistency of stools.</td>
</tr>
<tr>
<td>Antiflatulants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>decreases gas formation</td>
<td>treat indigestion</td>
<td>simethicone (Mylanta, Mylicon)</td>
<td>belching, flatus</td>
<td>tablets must be chewed.</td>
</tr>
<tr>
<td>Digestants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>replace digestive enzymes</td>
<td>assist with digestion</td>
<td>pancrelipase (Pancrease)</td>
<td>Nausea Diarrhea, which occurs with increased doses.</td>
<td></td>
</tr>
</tbody>
</table>

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### Supplemental Lesson 6: The Gastrointestinal System

<table>
<thead>
<tr>
<th>Antidiarrheals</th>
<th>Effects</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>stop diarrhea</td>
<td>treat diarrhea</td>
<td>bismuth subsalicylate (Pepto-Bismol)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>loperamide (Imodium)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>kaolin/pectin mixtures (Kaopectate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>diphenoxylate HCl (Lomotil)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Laxatives - Saline laxatives</th>
<th>Effects</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>increase fluid in intestine</td>
<td>promote bowel action</td>
<td>magnesium salts (Milk of Magnesia)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Laxatives – Bulk laxatives</th>
<th>Effects</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>increases bulk in the stool</td>
<td>promote bowel action</td>
<td>psyllium (Metamucil, Effercyllium)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>methylcellulose (Hydrolose)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fiberall (Peridium)</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stool Softeners</th>
<th>Effects</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>soften fecal material</td>
<td>treat constipation</td>
<td>docusate sodium (Colace, Doxinate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>docusate calcium (Surfak)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sometimes combined with other drugs (Senokot-S, Doxidan, Dialog Plus, Peri-Colace)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lubricants</th>
<th>Effects</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>make stool slippery</td>
<td>treat constipation</td>
<td>Mineral Oil Haley's M.O. Glycerin suppository</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stimulant laxatives</th>
<th>Effects</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>stimulate bowel lining</td>
<td>Increase peristalsis Bowel training</td>
<td>bisacodyl (Dulcolax, Bisacodyl)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>seens (Senokot) Dulcolax Suppository</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
## Supplemental Lesson 6: The Gastrointestinal System

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antiemetics</td>
<td>inhibit nausea and vomiting</td>
<td>treat nausea, vomiting</td>
<td>prochlorperazine maleate (Compazine)</td>
<td>drowsiness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>trimethobenzamidite</td>
<td>dizziness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCl (Tigan)</td>
<td>dry mouth</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>scopolamine (Transderm-Scop)</td>
<td></td>
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<td></td>
<td></td>
<td>metoclopramide HCl (Reglan)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>dimenhydrinate (Dramamine, Travamine)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>meclizine HCl (Aritivert, Bonamine, Bonine)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticholinergics (antimuscarinics)</td>
<td>decrease the secretion of digestive juices and peristaltic action. May act on other systems</td>
<td>treat dyspepsia, ulcers, irritable bowel</td>
<td>methantheline (Banthine)</td>
<td>headache</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>clidinium bromide and chlordiazepoxide HCl (Librax Capsules)</td>
<td>drowsiness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>belladonna leaf (Belladonna)</td>
<td>confusion; agitation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>methscopolamine bromide (Pamine)</td>
<td>urinary retention</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>dicyclomine HCl (Bentyl)</td>
<td>blurred vision</td>
</tr>
<tr>
<td>Miscellaneous Gastrointestinals</td>
<td>lessens production of gastric juices</td>
<td>prevent duodenal ulcers or ulcer</td>
<td>cimetidine (Tagamet)</td>
<td>mental confusion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ranitidine (Zantac)</td>
<td>dizziness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>famotidine (Pepcid)</td>
<td>headaches</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>liver dysfunction</td>
</tr>
<tr>
<td>Carafate</td>
<td>works by adhering to the ulcerated area</td>
<td>treat ulcers</td>
<td>dizziness</td>
<td>dissolve the tablet in water.</td>
</tr>
</tbody>
</table>
**Definitions of Key Terms**

**Antiemetics**—Drugs used to treat and prevent nausea and vomiting.

**Cirrhosis**—Chronic liver damage caused by previous disease.

**Constipation**—Difficult, incomplete or infrequent bowel movements.

**Diarrhea**—Frequent, loose bowel movements.

**Duodenum**—The first portion of the small intestine.

**Dyspepsia**—Indigestion.

**Fecal impaction**—A collection of "putty-like" or hardened feces in the rectum.

**Gallbladder**—Sac in which the bile from the liver is stored.

**Hepatitis**—Inflammation of the liver.

**Liver**—Organ of the body that secretes bile and causes changes in many of the substances in the blood.

**Pancreas**—A large gland that secretes digestive enzymes and the hormone insulin.

**Pyorrhea**—Inflammation of the gum and tooth sockets leading to loosening of the teeth.

**Systemic action/infection**—Affecting the entire body.
GASTROINTESTINAL SYSTEM

FUNCTIONS:

1. Ingests food
2. Prepares food for use by the body
3. Excretes wastes
Supplemental Lesson 7
The Musculoskeletal System
## THE MUSCULOSKELETAL SYSTEM

### Key Terms

- Analgesics
- Anti-inflammatory
- Arthritis
- Fracture
- Muscle relaxant
- Muscle spasm
- Nonsteroidal anti-inflammatory agents (nsaia)
- Osteoporosis
- Range of motion

Muscles and bones support and protect the internal organs and give shape to the body. Injury, disease, and aging may make it necessary for people to have medications ordered specifically for the treatment of muscle or bone problems.

Staff must understand how muscles and bones work and be able to identify medications, including their actions and effects, which are commonly ordered to treat musculoskeletal disorders.

### Review of the Structures and Functions of the Musculoskeletal System

The musculoskeletal system consists of 206 bones. Muscles are attached to bones by tendons and to other muscles by tendons. Muscles are able to stretch and contract and are controlled by nerves. Bones are joined together with a joint. Some joints move freely (elbow, hip). Other joints move only slightly or not at all (pelvis, skull). Bones are living tissue — contain a lot of calcium, which makes them hard. Bones and muscles provide movement, support, and protection of internal organs and body shape.

### Additional Information about the Musculoskeletal System

- Observe the individual’s body alignment while in bed, in a chair, or while standing. Observe the individual for any skin breakdowns. Promote comfort and prevent contractions by proper turning and ambulation, and by ensuring correct posture in wheelchairs. Help the individual do range of motion (ROM) exercises when necessary.
- Observe the individual’s nonverbal signs of musculoskeletal pain: facial gestures, tightening of the muscles, favoring an area of the body, limping, tentative movement. Observe the individual for swollen, reddened, or hot joints. Good body posture, ROM, and proper medication will help keep the individual comfortable and mobile. Exercise is necessary to maintain mobility, although it may be painful, especially in the morning. The individual’s mobility will improve with movement. Analgesics and anti-inflammatory drugs are sometimes given for months or years. Adverse effects can be severe - watch the individual closely.
## Supplemental Lesson 7: The Musculoskeletal System

### Major Musculoskeletal Conditions

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arthritis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rheumatoid — occurs in younger population, cause unknown</td>
<td>pain and swelling in joints, decreased mobility</td>
<td>medication, exercise, heat to joints, surgery</td>
</tr>
<tr>
<td>Osteoarthritis - occurs in older population, also known as degenerative arthritis</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Muscle spasm</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>irritation of muscle</td>
<td>sudden pain and knotting of muscles</td>
<td>massage, heat, medication</td>
</tr>
<tr>
<td><strong>Muscle strain</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>injury</td>
<td>pain, swelling</td>
<td>rest, medication, elevation of injured limb</td>
</tr>
<tr>
<td><strong>Gout</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>increased uric acid levels, usually caused by diet</td>
<td>pain and swelling in joints, can be acute or chronic</td>
<td>medication, diet</td>
</tr>
<tr>
<td><strong>Fractures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accidental injury or disease conditions such as cancer or osteoporosis</td>
<td>pain, swelling, discoloration, abnormal position or movement</td>
<td>casting or surgery</td>
</tr>
<tr>
<td><strong>Osteoporosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>inadequate calcium absorption</td>
<td>bones are brittle and are easily broken, sometimes with less than normal amount of stress on bones</td>
<td>medication, treatment of fractures if necessary</td>
</tr>
</tbody>
</table>
Supplemental Lesson 7: The Musculoskeletal System

Selected Musculoskeletal Medications by Classification

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle relaxants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>reduce transmission of impulses from the spinal cord to the skeletal muscles</td>
<td>to treat acute, painful musculoskeletal conditions</td>
<td>Carisoprodol (Soma) methocarbamol (Robaxin, Delaxin) Parafon Forte — combination muscle relaxant and analgesic</td>
<td>drowsiness headache weakness nausea anorexia gastrointestinal upset</td>
<td>Caution individual not to use alcohol. Withdrawal symptoms may occur if the drug is stopped abruptly. Weakness may cause increased incidence of falls.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cyclobenzaprline (Flexeril)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analgesics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>alter both perception of and often emotional response to pain</td>
<td>treat muscle spasm and strain, arthritis, gout</td>
<td>Acetaminophen (Tylenol) Propoxyphene HCl (Darvon) meperidine (Demerol) morphine Duramorph, Epimorph) Aspercreme aspirin (A.S.A.) Codeine ibuprofen (Motrin) Bromptoms Tylenol with codeine</td>
<td>gastritis, ulcers dizziness headache sedation constipation rashes respiratory depression tinnitus (with a.s.a.) nausea and vomiting increased bleeding tendencies (with a.s.a.)</td>
<td>Possible gastrointestinal bleeding. Observe individual for bloody stools. Possibly addictive. Check respiratory rate before administering potent analgesics and report to staff nurse if rate is less than 12 per minute.</td>
</tr>
</tbody>
</table>
## Supplemental Lesson 7: The Musculoskeletal System

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anti-inflammatory - Steroid medications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>decreases inflammation</td>
<td>arthritis, dermatitis, chronic respiratory conditions</td>
<td>Dexamethasone (Decadron) prednisone (Deltasone, Meticorten) methylprednisolone (Medrol) hydrocortisone (Cortef) triamcinolone diacetate (Kenalog)</td>
<td>Weight gain from increased appetite and edema Mood swings Night sweats Increased blood sugar and electrolyte imbalance Masks symptoms of infection Slows healing Elevates blood pressure Ulcers Muscle weakness Hair loss Cushing Syndrome Prolonged bleeding and bruising</td>
<td>Observe individual closely for signs of infection Watch diabetic individuals for change in urine glucose or fasting blood sugar. Withdrawal symptoms occur if stopped abruptly. Administer with food. Report any complaints (especially those that are new) to the staff nurse.</td>
</tr>
<tr>
<td><strong>Nonsteroidal anti-inflammatory agents (NSAIA)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>anti-inflammatory analgesic and antipyretic effects</td>
<td>arthritis, bursitis, tendonitis, gout</td>
<td>Indomethacin (Indocin) sulindac (Clinoril) fenoprofen (Nalfon) ibuprofen (Motrin) meclofenamate (Mclomen) naproxen (Naprosyn) (g) aspirin (ASA, Bayer, Ecotrin)</td>
<td>Nausea and vomiting headaches gastrointestinal bleeding dizziness heartburn rashes decreased appetite prolonged bleeding and bruising tinnitus</td>
<td>Check with staff nurse before giving aspirin with NSAIA medications. Give with food. Observe for blood in the stool which may indicate gastrointestinal bleeding</td>
</tr>
</tbody>
</table>
**Definitions of Key Terms**

**Analgesics**—Medications that relieve muscle, joint and bone pain.

**Anti-inflammatory**—Medications used to reduce swelling, pain, and tenderness caused by inflammation.

**Arthritis**—Inflammation of a joint.

**Fracture**—Broken bone.

**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 strain**—Condition in which the muscle is stretched.

**Nonsteroidal anti-inflammatory agents (NSAIA)**—Medications used to reduce symptoms of inflammation.

**Osteoporosis**—Abnormal porousness of the bone caused by the enlargement of its canals or the formation of abnormal spaces. Causes brittleness.

**Range of motion**—Moving a joint its full range in an attempt to prevent muscle contractures and joint deformity.

**Sprain**—Wrenching of a joint, with partial rupture of its ligaments. More severe than a strain and requires longer recuperation.
The Musculoskeletal System

Function:

1. Support
2. Protection
3. Movement
4. Shape
Living in the Community
Supplemental Lessons

Supplemental Lesson 8
The Skin and Sensory System

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THE SKIN AND SENSORY SYSTEMS

<table>
<thead>
<tr>
<th>Key Terms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Burns</td>
<td>Dermis</td>
</tr>
<tr>
<td>Decubitis ulcer</td>
<td>Eczema</td>
</tr>
<tr>
<td>Epidermis</td>
<td>Pediculosis</td>
</tr>
<tr>
<td>Psoriasis</td>
<td>Scabies</td>
</tr>
<tr>
<td>Topical</td>
<td>Urticaria</td>
</tr>
</tbody>
</table>

The skin is the largest organ of the body. It functions as a protective covering for all other body parts and contains sensing devices for heat, cold, pain and texture.

The skin can be affected by injury, irritation, disease and the aging process making medications necessary in some instances. With the aging process, there is loss of fatty tissue which serves as heat insulation. Individuals 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 (sensations) 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. Staff must understand how the skin and sensory organs work and be able to identify commonly ordered medications, their actions and effect that are used to treat the systems.

THE SKIN

Review of the Structures and Functions of the Skin

The thickness of skin varies from 1/30 to 1/3 of an inch. The skin is the thinnest on the face; thickest on the palms of the hands and the soles of the feet. The epidermis is the outer layer which protects the inner layer. Old cells are constantly rubbed off of this layer. The dermis is the inner layer. It is sometimes called the "true skin." The dermis is composed of live cells, nerve endings, blood vessels, sweat glands, hair sacs with hairs, oil glands, some fat cells, and pigment for the skin. The fingers and toe nails are an extension of the skin. Directly beneath the skin "subcutaneous" 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 nerves connected to the skin).
- Absorbs substances.
- Excretes waste products (through perspiration).
- Helps control temperature of the body.
- Defends against disease-producing organisms.
### Common Skin Disorders

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dermatitis</strong></td>
<td>rash that causes itching</td>
<td>medications for symptoms</td>
</tr>
<tr>
<td>allergic response to food, drugs, insect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stings, inhalants, plants</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scabies</strong></td>
<td>itching that gets worse at night, tiny thread-</td>
<td>cream or lotion topical</td>
</tr>
<tr>
<td>mites that burrow under the skin.</td>
<td>like blisters which generally appear between</td>
<td>medications</td>
</tr>
<tr>
<td>Contamination occurs from infested bed</td>
<td>fingers, on wrists, and inside elbows; lesions</td>
<td></td>
</tr>
<tr>
<td>clothing, undergarments, or close body</td>
<td>may occur under arms, around the waist</td>
<td></td>
</tr>
<tr>
<td>contact with an infested person</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pediculosis</strong></td>
<td>itching of scalp or body, small red bumps on</td>
<td>medicated shampoo, ointment or lotion</td>
</tr>
<tr>
<td>lice which infest different body areas,</td>
<td>shoulders, trunk, or buttocks.</td>
<td>containing a pediculicide.</td>
</tr>
<tr>
<td>usually spread by direct body contact by</td>
<td></td>
<td>Clothes, sheets, and other personal articles</td>
</tr>
<tr>
<td>using contaminated personal articles, such</td>
<td></td>
<td>must be laundered to prevent reinfestation</td>
</tr>
<tr>
<td>as hats, combs, or bedding</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Athlete’s foot</strong></td>
<td>scaling and blistering between toes, burning</td>
<td>antifungal powder, ointment, or spray</td>
</tr>
<tr>
<td>highly contagious fungus found in warm</td>
<td>and itching</td>
<td></td>
</tr>
<tr>
<td>damp places such as shower rooms, and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>public baths</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Psoriasis</strong></td>
<td>skin has red patches covered with silvery</td>
<td>topical medications, ointments to soften and</td>
</tr>
<tr>
<td>genetic tendency, possible effect of</td>
<td>scales that have a tendency to shed. Skin</td>
<td>remove the scales, oral medications may be</td>
</tr>
<tr>
<td>trauma, onset influenced by environmental</td>
<td>surfaces may have pinpoint bleeding.</td>
<td>ordered if symptoms are severe.</td>
</tr>
<tr>
<td>factors, such as stress, may be</td>
<td></td>
<td></td>
</tr>
<tr>
<td>accompanied by arthritic symptoms. Is</td>
<td></td>
<td></td>
</tr>
<tr>
<td>common in individuals who have Parkinson's</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eczema</strong></td>
<td>itching, crusting of broken vesicles on the</td>
<td>remove cause of irritation, topical</td>
</tr>
<tr>
<td>allergic reaction, may flare up in response to extremes in humidity or temperature,</td>
<td>skin</td>
<td>medications to control itching.</td>
</tr>
<tr>
<td>sweating, or psychological stress</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Burns</strong></td>
<td>First degree burn - skin area is red.</td>
<td>dependent upon degree and type of burn.</td>
</tr>
<tr>
<td>accidental injury</td>
<td>Second degree burn - skin is blistered.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Third degree burn - skin may appear charred</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or pearly white</td>
<td></td>
</tr>
<tr>
<td><strong>Decubitus ulcer</strong></td>
<td>Stage I - reddened areas.</td>
<td>the best treatment is prevention:</td>
</tr>
<tr>
<td>continuous pressure on body areas, which</td>
<td>Stage II - blistered area or break in the</td>
<td>turn bedridden individuals at least</td>
</tr>
<tr>
<td>leads to decreased blood circulation to</td>
<td>skin.</td>
<td>every two hours, according to facility policy.</td>
</tr>
<tr>
<td>tissues</td>
<td>Stage III - tissue invasion and necrosis.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stage IV - muscle and bone involvement</td>
<td></td>
</tr>
</tbody>
</table>
Supplemental Lesson 8: Skin and Sensory System

### Selected Skin Medications by Classification

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Local Anti-infectives</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>destroy bacteria or fungus</td>
<td>treat athlete's foot, infection</td>
<td>Tolnaftate (Aflate, Tinactin) neomycin (Neocin) clotrimazole (Lotrimin)</td>
<td>Itching, rashes</td>
<td>wear gloves when applying</td>
</tr>
<tr>
<td>Scabicides and Pediculicides</td>
<td>destroy parasites</td>
<td>kill scabies, mites, and lice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-inflammatory Steroids</td>
<td>reduce inflammation</td>
<td>treat dermatitis</td>
<td></td>
<td>Steroid contain steroids. Refer to Supplemental Lesson 7. Use gloves when applying. Watch diabetic individuals for change in urine glucose or fasting blood sugar. Withdrawal symptoms occur if stopped abruptly</td>
</tr>
<tr>
<td>Antipruritics and local anesthetics</td>
<td>relieve localized itching and pain</td>
<td>treat hemorrhoids, sunburn, and poison ivy</td>
<td>Sensitization to medication</td>
<td>monitor for inflammation and infection.</td>
</tr>
</tbody>
</table>

Local Anti-infectives
- **Examples:**
  - Tolnaftate (Aflate, Tinactin)
  - Neomycin (Neocin)
  - Clotrimazole (Lotrimin)

Scabicides and Pediculicides
- **Examples:**
  - Lindane (Kwell)
  - Pyrethrins (A-200 Pyrinate)
  - Lindane (Kwell)

Anti-inflammatory Steroids
- **Examples:**
  - Betamethasone Valerate (Valisone)
  - Flurandrenolide (Cordran)
  - Triamcinolone acetonide (Aristocort, Kenalog)

Antipruritics and local anesthetics
- **Examples:**
  - Benzocaine (Salcaine, Americaine)
  - Dibucaine (Nupercainal)
  - Caladryl lotion
Supplemental Lesson 8: Skin and Sensory System

**Protectants**

| cover and protect the skin | reduce irritation and friction, irritation from urine and stool, provide sunburn protection | Petrolatum (Vaseline) talc vitamins A and D ointment paraobenzoic acid (PreSun, RV Paba Lipstick) zinc oxide (Desinex) (Desitin) | No adverse effects | monitor for inflammation and infection. |

**Debridement medications**

| enzymatic destruction of necrotic tissue | treat decubitus ulcers | lytic enzymes (Elase, Travase) collagenase hydrogen peroxide (Santyl) | hypersensitivity to the medication | can be applied only by licensed personnel |

**Definitions of Key Terms**

**Burns**—Injury to the skin by strong chemicals, electricity, high temperatures, or radiation.

**Decubitus ulcer**—An open wound that is caused by the pressure of lying or sitting in one position for a long period of time. Also called a pressure sore or bedsore.

**Dermis**—A layer of skin.

**Eczema**—A non-contagious inflammation of the skin, marked mainly by redness, itching, and the outbreak of lesions that discharge fluid and become encrusted and scaly.

**Epidermis**—The outer protective layer of the skin.

**Pediculosis**—A contagious infestation of the hair, body, and pubic area caused by lice.

**Psoriasis**—A chronic, non-contagious disease characterized by inflammation, reddened lesions, and white scaly patches.

**Scabies**—A contagious skin condition caused by mites that burrow under the skin; characterized by tiny, thread-like blisters that itch.

**Topical**—Pertaining to a particular spot; local.

**Urticaria**—A skin condition characterized by intensely itching welts and caused by an allergic reaction - hives.
THE SENSORY SYSTEM

Review of the Structures and Functions of the Sensory System

There are five structures that make up the sensory system: eyes, ears, nose, tongue, and skin (hot and cold sensation, touch). The sensory system connects outside sensations to the proper nerves, producing visual images, sound, odors, tastes, temperature, pain, textures.

Sensory System Disorders

1. Eye Disorders

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conjunctivitis</td>
<td>redness, itching, swelling, tearing</td>
<td>systemic or local medication</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>mild aching in the eye, loss of peripheral vision, perception of halos around lights, inability to see well at night</td>
<td>use of medications to decrease intraocular pressure</td>
</tr>
<tr>
<td>Cataracts</td>
<td>gradual blurring of vision, milky white pupil</td>
<td>surgery, lens implantation or corrective glasses</td>
</tr>
<tr>
<td>Keratitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mydriatics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Ear disorders

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacted ear canal</td>
<td>pain hearing loss</td>
<td>medication, irrigation, or extraction of foreign object by physician</td>
</tr>
<tr>
<td>Swimmer's ear</td>
<td>pain, fever, itching, partial hearing loss, possible discharge</td>
<td>medication</td>
</tr>
<tr>
<td>Otitis media</td>
<td>pain, fever, dizziness, nausea, vomiting, drainage</td>
<td>antibiotics</td>
</tr>
<tr>
<td>Meniere's Syndrome</td>
<td>dizziness, ringing in the ears, nausea, and vomiting. Loss of hearing as disease progresses</td>
<td>education to relieve symptoms</td>
</tr>
</tbody>
</table>
### Selected Sensory System Medications by Classification

**1. Eye medications**

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Miotics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>decrease eye pressure</td>
<td>to treat glaucoma</td>
<td>pilocarpine HCl</td>
<td>Headache</td>
<td>Place inside the lower lid, not directly on the eye. Monitor blood pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Pilocar)</td>
<td>Perspiration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Salivation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Night blindness</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Blurred vision</td>
<td></td>
</tr>
<tr>
<td><strong>Mydriatics</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>dilates pupil</td>
<td>facilitates eye examination</td>
<td>atropine sulfate</td>
<td>Dry mouth</td>
<td>Place inside the lower lid, not directly on the eye.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Blurred vision</td>
<td></td>
</tr>
<tr>
<td><strong>Beta blocker</strong></td>
<td></td>
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</tr>
<tr>
<td>lowers intraocular pressure</td>
<td>to treat glaucoma</td>
<td>timolol maleate</td>
<td>Eye irritation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Timoptic Solution)</td>
<td>Blurred vision</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Reduced heart rate and blood pressure</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Confusion</td>
<td></td>
</tr>
<tr>
<td><strong>Lubricants</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>soothes and lubricates dry eyes</td>
<td>treat decreased tear production</td>
<td>artificial tears (Tears Naturale, Liquifilm) Lacri-Lube</td>
<td>localized irritation and burning sensation</td>
<td>Use with caution in glaucoma individuals. Do not touch any surface of the eye with the end the dropper. Crust may form on eyelids and eyelashes.</td>
</tr>
</tbody>
</table>

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Supplemental Lesson 8: Skin and Sensory System

2. Ear medications

<table>
<thead>
<tr>
<th>Action</th>
<th>Uses</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Miscellaneous</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relieve pressure; reduce inflammation and congestion in the ear</td>
<td>otitis media, otitis externa</td>
<td>benoxocaine (Auralgan) Cortisporin Otic</td>
<td>irritation or itching</td>
<td>Do not rinse dropper after use. Insert cotton into the ear canal after applying the drops. Many of these medications are used in combination with oral antibiotics, analgesics and anti-inflammatories: Watch for drug interactions.</td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Wax control agents</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>soften and dissolve ear wax</td>
<td>prevent wax build-up</td>
<td>carbamide oxide (Debrox)</td>
<td>Pruritus Erythema</td>
<td>Use with caution if the ear is draining. Use with caution for more than four days in a row. The ear often requires irrigation to facilitate removal of the wax.</td>
</tr>
</tbody>
</table>

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

**Definitions of Key Terms**

**Cataracts**—The lens or capsule of the eye loses its transparency or translucency causing partial or total blindness.

**Conjunctivitis**—Inflammation of the mucus membrane that lines the inner surface of the eyelid and the exposed surface of the eyeball.

**Keratitis**—Inflammation of the cornea.

**Miotics**—An agent that causes contraction of the pupil of the eye.

**Mydriatics**—A drug that produces dilation of the pupils.

**Sensory system**—Receives outside sensations and relates these sensations to the proper nerves.
Supplemental Lesson 8: Skin and Sensory System

The Integumentary System

Function: 1. Protects the body
2. Regulates temperature
3. Discharges waste
4. Manufactures vitamin D
5. Makes human appearance presentable
The Sensory System

Eye Structure

near sighted

far sighted

sclerotic coat
choroid coat

iris

vitreous humor

pupil

cornea

lens

aqueous humor

vitreous humor

retina

blind spot

optic nerve

fovea

Lacrimal Apparatus

superior lacrimal gland

upper duct

upper lid

lower lid

lacrimal sac

inferior lacrimal gland

ducts of lacrimal gland

nasolacrimal duct

lower duct

mouh of duct (in nose)

Function:

1. Vision
Supplemental Lesson 8: Skin and Sensory System

The Sensory System

Taste, Smell, and Hearing

1. Sweet
2. Salt
3. Sour
4. Bitter
5. Papillae

Function:
1. Hearing
2. Balance
Supplemental Lesson 8: Skin and Sensory System

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Living in the Community
Supplemental Lessons

Supplemental Lesson 9
The Urinary and Male Reproductive System
THE URINARY AND MALE REPRODUCTIVE SYSTEMS

<table>
<thead>
<tr>
<th>Key Terms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulbourethral glands</td>
<td>Cystitis</td>
</tr>
<tr>
<td>Chronic kidney failure</td>
<td>Edema</td>
</tr>
<tr>
<td>Epididymis</td>
<td>Incontinence</td>
</tr>
<tr>
<td>Penis</td>
<td>Perineal</td>
</tr>
<tr>
<td>Prostate</td>
<td>Pyelonephritis</td>
</tr>
<tr>
<td>Scrotum</td>
<td>Testicles</td>
</tr>
<tr>
<td>Seminal vesicles</td>
<td>Vas deferens</td>
</tr>
</tbody>
</table>

The male reproductive system and the urinary system are discussed together because the urethra of the male is used by both the male reproductive and urinary systems and sometimes disorders of one system will affect structures of body systems. The female reproductive system is discussed in Supplemental Lesson 12. The urinary system, which includes the kidneys, urinary bladder and urethra, filters (cleans) the blood and eliminates excess fluids and toxins from the body.

The male reproductive system, which includes the penis, testicles, scrotum, epididymis, vas deferens, seminal vesicles, prostate gland and bulbourethral glands produces male hormones and sperm cells.

Injuries, disorders and aging may interfere with the filtration and elimination (voiding) processes of the urinary and the male reproductive systems. Medications may help restore partial or complete functioning of these systems.

Staff must understand how the urinary and male reproductive systems work and be able to identify commonly ordered medications, including their actions and effects, to treat genitourinary disorders.

Review of the Structures and Functions of the Urinary and Male Reproductive Systems

The urinary system is composed of two kidneys, two ureters, a urinary bladder and the urethra. The kidneys are bean-shaped organs located on either side of the spinal column in the small area of the back. The kidneys are very complex structures - each kidney contains over one million tiny filters. Every drip of blood passes through the kidney approximately 4-6 times per day for the purpose of filtering (cleaning). Removes excess liquids and unused substances from the blood and takes to the outside as waste (urine).

The ureters are small, thin tubes, about 10-12 inches long, which 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.

The bladder is a hollow, sac-like structure in the pelvis for holding urine. Person usually has the desire to empty bladder when 250-300 cc are collected. Muscle walls distend to hold 500 cc or more.

The urethra is a tube through which urine passes from the bladder. Where the urethra is connected to the bladder, there is a tight muscle that opens and closes releasing
Supplemental Lesson 9: The Urinary and Male Reproductive Systems

urine. Two major functions of the urinary system:

• Filter (clean the blood through the kidneys.
• Eliminate excess fluids and unused substances in the fluid.

There are eight major structures of the male reproductive system.

• Testicles - also called testes contain the sex glands of the male - located in the pelvis 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 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 body, houses external portion of urethra, male organ of copulation (intercourse).

The male reproductive system functions to produce hormone (testosterone) necessary to have male secondary sex characteristics, begins in puberty, slows down with aging process. It also produces sperm necessary for reproduction.

Additional Information for the Urinary System

Incontinent individuals must be kept clean and dry. Individuals with catheters must be given frequent and/or additional perineal care. Cleanse the head of the penis thoroughly with water after catheter care and do not leave foreskin retracted. Cleanse female individuals from front to back for perineal care and following elimination. Encourage fluids for individuals with urinary tract infections (UTI) unless otherwise ordered. Provide bladder training according to facility policy. Observe and chart the color, concentration, odor, consistency and amount of urine. Observe for reddened areas on perineal area. Treat the individual with respect.
Supplemental Lesson 9: The Urinary and Male Reproductive Systems

**Common Disorders of the Urinary Tract and Male Reproductive Systems**

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cystitis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bacteria</td>
<td>cloudy urine, frequent urination, burning and painful urination,</td>
<td>antibiotics, urinary antiseptics, cranberry juice, Vitamin C, increase</td>
</tr>
<tr>
<td></td>
<td>sometimes fever and chills if severe, voiding small amount, feeling of</td>
<td>fluid intake</td>
</tr>
<tr>
<td></td>
<td>urgency to void</td>
<td></td>
</tr>
<tr>
<td><strong>Pyelonephritis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>may result from infection</td>
<td>chills, fever, nausea, cloudy urine, back pain, decreased urine output,</td>
<td>medication, possible kidney dialysis in chronic or severe acute stage.</td>
</tr>
<tr>
<td>elsewhere in the body;</td>
<td>more pronounced in acute phase</td>
<td></td>
</tr>
<tr>
<td>frequently responsible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>for renal failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Edema</strong></td>
<td></td>
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</tr>
<tr>
<td>inability of the body to</td>
<td>swelling of hands, feet, legs; inability to breathe with exertion or</td>
<td>diuretic drugs</td>
</tr>
<tr>
<td>rid itself of fluid due to</td>
<td>when lying down</td>
<td></td>
</tr>
<tr>
<td>kidney or heart failure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>**Benign prostatic</td>
<td>difficult, painful urination, dribbling, frequent urination of small</td>
<td>surgical removal of all or part of the prostate gland, trans-urethral</td>
</tr>
<tr>
<td>hypertrophy (BPH)</td>
<td>amounts, inability to urinate.</td>
<td>resection (TUR), medication</td>
</tr>
<tr>
<td>enlargement of the prostate gland, associated with aging and cancer</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Urinary incontinence</strong></td>
<td>frequent bed wetting, inability to control urine flow</td>
<td>bladder training, medication surgery</td>
</tr>
<tr>
<td>decrease in muscle tone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>due to disease processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or medication, decreased</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bladder capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Urinary retention</strong></td>
<td>inability to empty bladder</td>
<td>medication, catheterization, surgery</td>
</tr>
<tr>
<td>BPH, bladder or prostate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cancer, medication</td>
<td></td>
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</tr>
</tbody>
</table>
## Selected Medications by Classification

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urinary antiseptics</strong></td>
<td>prevent growth of disease-producing organisms in the urinary tract</td>
<td>to treat urinary tract infection</td>
<td>nalidixic acid (NegGram)</td>
<td>Drowsiness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>nitrofurantoin (Furadantin)</td>
<td>Headache</td>
</tr>
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<td></td>
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<td></td>
<td>nitrofurantoin macrocrystals (Macrodantin)</td>
<td>Nausea and Vomiting</td>
</tr>
<tr>
<td><strong>Systemic Anti-infectives</strong></td>
<td>Systemic Anti-infectives (Sulfa drugs), which are often used to treat UTI, are discussed in Core Lesson 7.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Diuretics</strong></td>
<td>to decrease blood pressure and increase urinary output</td>
<td>chlorothiazide (Diuril)</td>
<td>Hypotension</td>
<td>Check blood pressure at least weekly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>furosemide (Lasix)</td>
<td>Weakness</td>
<td>Observe for symptoms of decreased potassium levels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hydrochlorothiazide (Hydro Diuril)</td>
<td>Nausea and Vomiting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spironolactone (Aldactone)</td>
<td>Dizziness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>methycIothiazide (Enduron)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aldactazide and Dyazide (combinations which contain hydrochlorothiazide)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Androgens</strong></td>
<td>replacement of male hormones</td>
<td>promote weight gain, treat an enlarged prostate gland due to malignancy, and treat breast cancer</td>
<td>testosterone (Androgen, Oreton-Methyl)</td>
<td>Edema</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Change in Appetite</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Increased serum cholesterol</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Male characteristics appear in females</td>
</tr>
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</tbody>
</table>

Dizziness, May cause a false-positive Clinitest, Tell individual to report vision problems, Avoid overexposure to sunlight, Check blood pressure at least weekly. Observe for symptoms of decreased potassium levels.
### Supplemental Lesson 9: The Urinary and Male Reproductive Systems

#### Selected Medications by Classification Continued

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urinary Tract Analgesics</strong></td>
<td></td>
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</tr>
<tr>
<td>decrease pain from urinary tract infections</td>
<td>treat symptoms of urinary tract infections (UTI) and cystitis, and relieve pain, urgency, frequency, and burning associated with urination</td>
<td>phenazopyridine HCL (Pyridium) Azo Gantanol</td>
<td>Produces a harmless reddish-orange discoloration of the urine. Nausea and Vomiting May alter urine glucose results in some tests</td>
<td>Use Glucometer for more accurate urine glucose test results. Discoloration in the urine will stain clothes and linens. Medication works quickly; some relief will be felt within one hour of administration</td>
</tr>
</tbody>
</table>

| **Urinary Muscle Relaxants** | | | | |
| directly affects the smooth muscles of the urinary tract | prevent urinary retention, neurogenic bladder | flavoxate HCl (Urispas) bethanechol chloride (recholine) Pyridium Plus | Dysuria Tachycardia Dry mouth Blurred vision Frequency Urgency Incontinence Diarrhea Abdominal Cramps | Do not give with food - give only on an empty stomach. Given only for retention that is NOT due to an obstruction. |
Supplemental Lesson 9: The Urinary and Male Reproductive Systems

Definitions of Key Terms

Bulbourethral glands--Small structures about halfway between the bladder and the end of the penis that secrete sperm protectant.

Chronic kidney failure--Reduction in kidney function.

Cystitis--Inflammation of the urinary bladder.

Edema--Swelling caused by large amounts of fluid in the tissues.

Epididymis--Coiled structure that stores and matures sperm cells.

Incontinence--Loss of bladder and/or bowel control.

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.

Perineal--The area between the thighs that includes the anus and vulva in the female and the anus and penis in the male.

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.

Pyelonephritis--Inflammation of both the kidney and the lining of the pelvis.

Scrotum--Sac-like structure, located behind the penis, which holds the testicles.

Seminal vesicles--Pouch-like structures, behind the bladder, which store sperm.

Testicles--Also called testes, produce testosterone and sperm cells for reproduction.

Vas deferens (ductus deferens)--Tube that carries sperm to the seminal vesicles.
Supplemental Lesson 9: The Urinary and Male Reproductive Systems

The Urinary System

Function:

1. Produces urine
2. Removes wastes from blood stream
Supplemental Lesson 9: The Urinary and Male Reproductive Systems

The Male Reproductive System

Function:

1. Produce male hormones
2. Produce male sex cells
Supplemental Lesson 9: The Urinary and Male Reproductive Systems

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Supplemental Lesson 10
The Cardiovascular System
Supplemental Lesson 10: The Cardiovascular System

THE CARDIOVASCULAR SYSTEM

Key Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angina</td>
<td>Arrhythmia</td>
</tr>
<tr>
<td>Arteriosclerosis</td>
<td>Atherosclerosis</td>
</tr>
<tr>
<td>Electrolytes</td>
<td>Hematemesis</td>
</tr>
<tr>
<td>Hemothysis</td>
<td>Hypertension</td>
</tr>
<tr>
<td>Hypotension</td>
<td>Ischemia</td>
</tr>
<tr>
<td>Phlebitis</td>
<td>Syncope</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>Thrombosis</td>
</tr>
<tr>
<td>Thrombophlebitis</td>
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</tbody>
</table>

The cardiovascular system, which contains the heart, blood vessels and blood, supplies the body with all vital substances needed for life and is the system by which waste products are removed from cells. The circulatory system must function for the body to live. Diseases, injuries and the aging process may interfere with the circulatory system. Medications may sometimes be helpful in restoring partial or complete functioning.

Staff must understand how the cardiovascular system works and be able to identify commonly ordered medication, including their actions and effects, used to treat cardiovascular disorders.

Review of the Structures and Functions of the Cardiovascular System

The cardiovascular system is composed of the heart, blood vessels and blood.

- The heart is about the size of a fist. It lies in the center of the chest, slightly to the left. It is hollow inside; divided into four chambers or compartments - two upper (atria); two lower (ventricles). The heart is made of muscle that contracts and extends - works like a pump. The right side pumps blood to the lungs, left side pumps blood to the rest of the body. It works continuously, rests between beats. Pulse is the number of heart beats, can be felt in any artery. Blood pressure is the force of heartbeat, which pushes blood through the arteries.

- Blood vessels are made up of arteries - carry blood to all cells. Veins - carry blood back to the heart. Capillaries - vessels that carry supplies to cells, pick up wastes from cells.

- Blood is pumped through the body by the heart. It is circulated through blood vessels. An average adult has about 4-6 quarts. 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 - hold substance that is essential to clot formation, help prevent hemorrhage.

The cardiovascular system functions to pump the blood (heart); provide a pathway for the blood (blood...
vessels); carry essentials to body cells via blood; carry wastes away from body cells via blood. The effectiveness of the circulatory systems depends on the rate, rhythm, and force of heart and the elasticity of blood vessels.

**Additional Information for the Cardiovascular System**

Follow the doctor’s orders when administering cardiovascular drugs. Individuals who are on anticoagulant therapy must be observed closely. Elevate their legs at night and intermittently throughout the day. The individual should wear support stockings if recommended by the physician. Watch the individual’s sodium intake. Watch for medication interactions. Individuals with chronic heart failure may become congested. Do not give them mucous-producing liquids. Monitor the urinary output and weight of individuals who are taking diuretics for chronic heart failure. Use all of your senses when observing the individual’s response to cardiovascular medications. Check blood pressure and pulse routinely.

**Major Circulatory Disorders**

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myocardial Ischemia</td>
<td>shortness of breath, chest pains</td>
<td>medications and rest</td>
</tr>
<tr>
<td>lack of adequate oxygen supply to the heart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angina Pectoris</td>
<td>pain in chest and left arm, flushing and perspiration, sudden attack of vertigo, can be aggravated by smoking</td>
<td>usually relieved by vasodilator drugs</td>
</tr>
<tr>
<td>myocardial ischemia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coronary Occlusion (heart attack, M.I.)</td>
<td>crushing chest pain, shortness of breath, anxiety, indigestion, shock, collapse.</td>
<td>medication, rest, hospitalization</td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>edema (swelling) in feet and legs, cough and shortness of breath, fatigue, tachycardia.</td>
<td>cardiotonics and diuretics</td>
</tr>
<tr>
<td>heart muscle weakness, hypertension, changes in heart valves due to disease, heart contractions are inadequate to pump blood to all body parts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Arrhythmias</td>
<td>irregularity in rate and rhythm of heart, syncope, may exhibit tachycardia (rapid heart rate) or bradycardia (heart rate below 60).</td>
<td>medication, rest</td>
</tr>
<tr>
<td>inability of impulse center to function properly, sometimes follows coronary occlusion, toxic effect of other drugs (digitalis).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Supplemental Lesson 10: The Cardiovascular System

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shock</strong></td>
<td>collapse of the blood vessels resulting in poor blood supply to entire body, dilation of the blood vessels, blood loss (hemorrhage).</td>
<td>rapid heart beat, pallor, perspiration, light-headedness, chills, fainting, hypotension.</td>
</tr>
<tr>
<td><strong>Arteriosclerosis/Atherosclerosis</strong></td>
<td>build up of plaque deposits in blood vessels which causes narrowing of the vessel.</td>
<td>pale or blue skin color, muscle cramping, decreased circulation which may result in pain in the extremities or ulcers (sores) to develop on legs and feet.</td>
</tr>
<tr>
<td><strong>Hypertension (high blood pressure)</strong></td>
<td>kidney disease, adrenal gland tumors, brain disease, heart disease, aggravated by obesity and smoking, usually cause is unknown.</td>
<td>dizziness, headache, palpitations, fatigue, tinnitus, systolic pressure above 140, diastolic pressure above 90.</td>
</tr>
<tr>
<td><strong>Cerebral Vascular Accident (CVA)—stroke</strong></td>
<td>blood clot, ruptured blood vessel in the brain, hypertension</td>
<td>depend on which area of the brain is affected, weakness or paralysis, inability to speak or read, loss of memory, unconsciousness.</td>
</tr>
<tr>
<td><strong>Thrombophlebitis</strong></td>
<td>injury, surgery, abnormal blood clotting</td>
<td>pain, redness, tenderness, swelling of the affected limb</td>
</tr>
</tbody>
</table>

Selected Medications by Classification

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiotonics</strong></td>
<td>slows and strengthens the heart action.</td>
<td>as maintenance therapy in congestive heart failure, atrial fibrillation, atrial flutter.</td>
<td>digitoxin (Crystodigin) (2) digoxin (Lanoxin)</td>
<td>fatigue loss of appetite dizziness agitation irregular heart beat</td>
</tr>
<tr>
<td>Action</td>
<td>Use</td>
<td>Examples</td>
<td>Adverse Effects</td>
<td>Nursing Considerations</td>
</tr>
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</tr>
<tr>
<td><strong>Antiarrhythmics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>regulate heart</td>
<td>angina and arrhythmias</td>
<td>propranolol (Inderal)</td>
<td>nausea</td>
<td>Administer one hour before or two hours after meals with a full glass of water.</td>
</tr>
<tr>
<td>rate and rhythm</td>
<td></td>
<td>quinidine (CinQuin, Cardioquin)</td>
<td>vomiting</td>
<td>Administer at prescribed times.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>procainamide HCl (Pronestyl)</td>
<td>confusion</td>
<td>Check pulse routinely.</td>
</tr>
<tr>
<td><strong>Antihypertensives - Adrenergic blockers</strong></td>
<td>decrease blood pressure by having an effect on the nervous system</td>
<td>treat hypertension</td>
<td>dizziness</td>
<td>check blood pressure each week</td>
</tr>
<tr>
<td></td>
<td></td>
<td>methyldopa (Aldomet)</td>
<td>weakness and vomiting hypotension</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>clonidine HCl (Catapres)</td>
<td>nausea and vomiting hypotension</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>atenolol (Tenormin)</td>
<td></td>
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</tr>
<tr>
<td><strong>Antihypertensives - Diuretics</strong></td>
<td>decrease blood pressure and increase urinary output.</td>
<td>treat congestive heart failure, hypertension, severe edema</td>
<td>dizziness</td>
<td>Check blood pressure each week. Watch for symptoms of decreased potassium levels such as irritability, confusion, cardiac arrhythmias, severe muscle weakness and sometimes paralysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spironolactone (Aldactone)</td>
<td>weakness and vomiting hypotension</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(chlorothiazide (Diuril, Hydrodiuril)</td>
<td>nausea and vomiting hypotension</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>methyclothiazide (Enduron)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(furosemide (Lasix) Aldactazide and Diazide (combinations containing hydrochlorothiazide</td>
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</tr>
<tr>
<td><strong>Vasodilators</strong></td>
<td></td>
<td>nitroglycerin (Nitro-Bid)</td>
<td>perspiration</td>
<td>Do not get the nitroglycerin on your skin.</td>
</tr>
<tr>
<td>dilate blood</td>
<td>treat angina pectoris and decreased circulation to the brain and extremities</td>
<td>nicotinic acid papaverine (Cerespan, Pavacen) isoxsuprime HCl (Vasodilan) cyclandelate (Cyclospasmol)</td>
<td>flushed face hypotension headache</td>
<td>Monitor the individual's blood pressure and pulse rate</td>
</tr>
<tr>
<td>vessels and</td>
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<tr>
<td>improve blood</td>
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<tr>
<td>supply to the</td>
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<td></td>
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<tr>
<td>heart</td>
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</tbody>
</table>
Supplemental Lesson 10: The Cardiovascular System

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anticoagulants</strong></td>
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</tr>
<tr>
<td>decrease blood clot formation</td>
<td>thrombophlebitis, abnormal clot formation</td>
<td>aspirin (A.S.A.) heparin (Coumadin) warafin (Coumadin)</td>
<td>gastrointestinal bleeding blood in stool or urine bleeding gums bruises on arms or legs hemoptysis</td>
<td>Report any signs of bleeding to charge nurse. The physician must watch the individual’s blood clotting ability carefully; these drugs can be very dangerous</td>
</tr>
</tbody>
</table>

| **Calcium Blockers** | | | | |
| reduce constriction of heart muscles and increase blood supply to correct arrhythmias | treat angina and arrhythmias | verapamil HCl (Calan, Isoptin) nifedipine (Procardia) | dizziness slow pulse hypotension chest pain constipation | Give only at prescribed times. Monitor the individual’s blood pressure prior to administration. |

**Definitions of Key Terms**

**Angina**—Any disease in which spasmodic and painful suffocation or spasms occur.

**Arrhythmia**—A change in the time or force of the rhythm of the heartbeat.

**Arteriosclerosis**—Thickening and hardening of arterial walls caused by calcium build-up that interferes with blood circulation.

**Atherosclerosis**—A deposit or degenerative accumulation of cholesterol and lipoid material in the arteries.

**Electrolytes**—Chemical elements in the blood and body that are important for muscle function.

**Hematemesis**—Vomiting blood.

**Hemoptysis**—Coughing up blood.

**Hypertension**—High blood pressure.

**Hypotension**—Low blood pressure.

**Ischemia**—Temporary decrease in the amount of blood being delivered to a part of the
body; mainly due to the contraction of the blood vessel.

**Phlebitis**—Inflammation of a vein.

**Syncope**—A brief loss of consciousness.

**Tachycardia**—Excessively rapid heartbeat, usually applied to a pulse rate above 100 per minute.

**Thrombosis**—The formation of blood clots.

**Trendelenburg position**—Lying on the back with the pelvis higher than the head, inclined at a 45 degree angle.
The Cardiovascular System

Function:

1. Carries nutrients and oxygen to cells by way of blood vessels
2. Removes waste from cells by way of blood vessels
The Heart

Function: 1: Pumps blood through the blood vessels
Supplemental Lesson 11
The Respiratory System
THE RESPIRATORY SYSTEM

Key Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergen</td>
<td>Allergic reaction</td>
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<tr>
<td>Anaphylactic reaction</td>
<td></td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Antitussives</td>
</tr>
<tr>
<td>Asthma</td>
<td>Bronchitis</td>
</tr>
<tr>
<td>Chronic Obstructive Lung Disease (COLD)</td>
<td></td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease (COPD)</td>
<td>Common cold</td>
</tr>
<tr>
<td>Emphysema</td>
<td>Expectorant</td>
</tr>
<tr>
<td>Histamine</td>
<td>Pneumonia</td>
</tr>
<tr>
<td>Rhinitis</td>
<td>Tuberculosis</td>
</tr>
</tbody>
</table>

The respiratory system, which includes the larynx, trachea, bronchi and lungs, is the means by which we breathe. Breathing brings oxygen into the body and removes waste products. Medications are frequently given to help correct breathing difficulties such as chronic diseases of the respiratory tract.

Staff must understand how the respiratory system works, and be able to identify commonly ordered medications including their actions and effects, that are ordered to treat breathing disorders.

Review of the Structures and Functions of the Respiratory System

The respiratory system consists of air passageways which include the nose which has two sides, or flares. The throat which is called the pharynx and has three parts:

- **Nasal** - where the throat joins with the nose.
- **Oral** - where the throat joins with the mouth.
- **Laryngeal** - where the throat joins the passage to the lungs.

The larynx is cartilaginous and muscular, it forms the upper part of the trachea and contains the vocal cords. The trachea (windpipe) in adults is approximately five inches long and one inch in diameter. The bronchi are two passageways branching off the trachea into each lung. The lungs are inside the rib cage there is a right and left lung. Each lung has thousands of little air sacs called alveoli, which absorb oxygen and give off carbon dioxide. Pleura covers the lungs and lines the chest cavity with a protective covering.

Accessory structures to the respiratory system include the diaphragm which is a dome-like muscle below the lungs which acts like bellows to draw fresh air in and push waste products out. Muscles between the ribs allow the chest to expand and contract when breathing.

Functions of the respiratory system include bringing oxygen into the body which is distributed to every cell via the blood. Oxygen is carried to the body cells (hemoglobin) which is contained in red blood cells. The normal range of hemoglobin in adults is 12—15 gm per 100 ml of blood. The respiratory system also takes carbon dioxide and other wastes out of the body. Rate and depth of breathing depends upon the
Supplemental Lesson 11: The Respiratory System

“respiratory center” located in the brain — can be triggered by activity, illness, and medications. Average respiratory rate for an adult is 12-16 respirations per minute. Average respiratory rate for children (1-8 years) is about 20 respirations per minute.

Modes of administering respiratory medications include:
- Oral—by mouth, most commonly used method
- Inhalation—by breathing in
- Parenteral—by injection
- Rectal—by suppository
- Sublingual—under the tongue
- Nebulization—mist to lining of the nose and/or throat

**Additional Considerations for the Respiratory System**

Individuals with chronic lung problems may be on a comprehensive regime of medication management, oxygen therapy, nutrition, progressive exercise, and education. Narcotics and barbiturates depress respiration, so these medications are not used with COPD individuals. Individuals with asthma usually exhibit continuous wheezing, dyspnea, and coughing. Fatigue is often associated with chronic lung conditions. Administer medications slowly and monitor individuals closely. Individuals with chronic lung diseases may sometimes be treated with corticosteroids. These individuals are at a higher risk for peptic ulcers. Approximately 25% of COPD individuals will have a peptic ulcer at some time. Avoid giving mucous-producing liquids to individuals who are congested.

**Disorders of Respiratory System**

<table>
<thead>
<tr>
<th>Causes</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal respirations and respiratory arrest</td>
<td>loss of consciousness, sudden death (cerebral anoxia), confusion, drowsiness, restlessness.</td>
<td>stimulate breathing, improve gas exchange, medication to treat symptoms as well as causes.</td>
</tr>
<tr>
<td>Asthma</td>
<td>moderate to severe wheezing, shortness of breath, coughing, cyanosis</td>
<td>medication to dilate bronchiolius</td>
</tr>
<tr>
<td>Bronchitis</td>
<td>dry cough, productive cough</td>
<td>antibiotics, medications to relieve bronchospasm (bronchodilators), expectorants</td>
</tr>
</tbody>
</table>
### Supplemental Lesson 11: The Respiratory System

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pulmonary Emphysema</strong></td>
<td>chronic cough, loss of appetite, barrel chest, pursed lip breathing, cyanosis of extremities and clubbing of fingers, shortness of breath</td>
<td>antibiotics, bronchodilators, breathing treatments</td>
</tr>
<tr>
<td>smoking, recurrent, inflammation, infection</td>
<td>dyspnea with minimal exertion, productive cough, frequent respiratory infections, barrel chest, severe respiratory failure</td>
<td>incurable, but condition may improve with breathing exercises, bronchodilators, and expectorants.</td>
</tr>
<tr>
<td><strong>COLD (Chronic Obstructive Lung Disease) or COPD (Chronic Obstructive Pulmonary Disease)</strong></td>
<td>allergic reactions, irritants, germs, pollens (hay fever).</td>
<td>medications to relieve symptoms</td>
</tr>
<tr>
<td>Rhinitis</td>
<td>sneezing, runny nose, congestion.</td>
<td>incurable, medications to relieve symptoms</td>
</tr>
<tr>
<td>Common cold</td>
<td>muscular aches, stuffy nose, congestion</td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td>cough, rusty sputum, fever, cyanosis, moist respirations</td>
<td>bed rest and medication</td>
</tr>
<tr>
<td>Tuberculosis (TB)</td>
<td>none for 6-8 weeks, then fatigue, weakness, loss of appetite, weight loss, night sweats, low grade fever</td>
<td>medications (drug therapy), isolation till non-contagious, TB skin test for close associates to detect infection, possible chest x-rays.</td>
</tr>
<tr>
<td>Allergic reactions</td>
<td>histamine causes various reactions (swelling, hives, rhinitis, difficulty breathing, nausea, vomiting, diarrhea). An extreme reaction may cause anaphylactic shock and death</td>
<td>antihistamines</td>
</tr>
</tbody>
</table>

**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 drugs, penicillin
- Insect bites - bees, spiders (this allergy is an emergency because it can cause anaphylactic shock).
### Selected Respiratory Medications by Classification

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respiratory Stimulants</strong></td>
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</tr>
<tr>
<td>Inhalation of drug triggers the respiratory center of the brain; increases the rate and depth of respiration.</td>
<td>treat fainting</td>
<td>spirits of ammonia (smelling salts)</td>
<td>irritates lining of the nose nausea</td>
<td>Don’t hold the medication too close to the individual’s nose.</td>
</tr>
<tr>
<td><strong>Cough Medications - Antitussive</strong></td>
<td></td>
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</tr>
<tr>
<td>Depress the cough by depressing the activity of the cough center in the brain or by local action.</td>
<td>treat coughs</td>
<td>Codeine (controlled substance) Dextromethorphan (Benylin-DN, Tussi-Organidin-DM, Robitussin-DM) benzonatate (Tessalon)</td>
<td>drowsiness nasal congestion nausea</td>
<td>After taking cough syrup, the individual should not receive fluids for 15 minutes.</td>
</tr>
<tr>
<td><strong>Cough Medications - Expectorants</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Clear the respiratory tract by liquefying mucous</td>
<td>cause productive coughing</td>
<td>Robitussin terpin hydrate (ETH) Potassium iodide (SSKI)</td>
<td>gastric irritation nausea and vomiting</td>
<td>Many over the counter cough and cold preparations contain ammonium chloride and should therefore be taken with water.</td>
</tr>
<tr>
<td><strong>Bronchodilators</strong></td>
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<td></td>
</tr>
<tr>
<td>Relax bronchial muscles and open the breathing passages.</td>
<td>treat asthma, bronchitis, and chronic lung disease</td>
<td>Aminophylline theophylline (Elixophyllin) terbutaline sulfate (Brethine) isoetharine HCl 1% (Bronkosol) metaproterenol sulfate (Alupent) beclomethasone dipropionate (Vanceril)</td>
<td>Withdrawal symptoms may occur if medication is discontinued. restlessness dizziness palpitations nausea hypertension</td>
<td>Individual may become frightened, anxious, manipulative, or demanding while on the medication. Drugs in combinations may cause increased adverse effects. The doctor must be notified if medication is withheld because of nausea. Observe for drug interactions.</td>
</tr>
</tbody>
</table>
# Supplemental Lesson 11: The Respiratory System

<table>
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<tr>
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<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antihistamines</strong></td>
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</tr>
<tr>
<td>combat the effects of histamine, which is released by the body as an allergic reaction.</td>
<td>treat motion sickness and allergic reactions</td>
<td>diphenhydramine (Benedryl), chiorpheniramine (Chlor-Trimeton, Teldrin), promethazine (Phenergan), trimeprazine (Temaril), terfenadine (Seldane), Dimetapp Extentabs</td>
<td>drowsiness (most common), dizziness, loss of appetite, dry mouth, urinary retention</td>
<td>Use with caution with individuals who have cardiac conditions. Use with caution with men who have prostate conditions. Do not give to individuals with respiratory conditions. Do not give with alcohol or other depressants. The individual can develop a tolerance to the medication.</td>
</tr>
<tr>
<td><strong>Nasal Decongestants</strong></td>
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</tr>
<tr>
<td>shrinks mucous membrane and relieves nasal swelling and congestion</td>
<td>treat allergies, hay fever, and cold symptoms</td>
<td>naphazoline HCl (Privine), oxymetazoline HCl (Afrin), phenylephrine HCl (Neo-Synephrine, Coricidin Nasal Mist), pseudoephedrine HCl (Sudafed)</td>
<td>Prolonged use can: cause irritation. perforate the nasal septum. cause rebound nasal congestion</td>
<td>Individual can build up tolerance to the medication</td>
</tr>
<tr>
<td><strong>Combination Products</strong></td>
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</tr>
<tr>
<td>preparations containing more than one product to produce more than one effect</td>
<td>treat coughs and allergies, to relieve pain</td>
<td>Sinutab, Actifed, Ornade</td>
<td>drowsiness, dry mouth</td>
<td>May cause elevated blood pressure. Over-the-counter medications are potent; use with caution. Rebound symptoms can occur if given more often than indicated</td>
</tr>
</tbody>
</table>
### Supplemental Lesson 11: The Respiratory System

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</tr>
</thead>
</table>
| Oxygen Therapy                | relieve shortness of breath      | Oxygen                                        | Hyperventilation Hypoventilation  | Individuals with chronic lung disease should use lower liter flow rates.  
|                               |                                  | Stored in three forms: Gas, liquid, Concentrator |                                   | Mask should not be used at less than 5 liters per minute.  
|                               |                                  | Administered two primary ways: by nasal cannula, mask |                                   | Dries out the mucous membrane — good mouth care must be given.  
|                               |                                  |                                               |                                   | Individuals, visitors, and staff must not smoke in areas where oxygen is being used.  
|                               |                                  |                                               |                                   | Can be given in an emergency situation with licensed nurse approval.  

### Tuberculin Medications

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
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</tr>
</thead>
</table>
| reduce growth or kill the bacteria that cause TB | treat the active disease | rifampin (Rifadin) ethambutol HCl (Myambutol) isoniazid [INH] (Rimifon, Rolazid) | Fatigue/drowsines Numbness in extremities Nausea Confusion Headache Vision problems Anorexia Rash | Can turn urine, feces, sputum, sweat, or tears to a harmless red-orange color.  
|                               |                                  |                                               |                                   | Administer with caution to individuals who have a history of alcoholism and liver disease.  
|                               |                                  |                                               |                                   | Watch for signs of hepatitis (jaundice).  
|                               |                                  |                                               |                                   | Monitor the individual for weight loss.  
|                               |                                  |                                               |                                   | Give with food if the individual complains of nausea.  
|                               |                                  |                                               |                                   | Store the medication in a light-resistant container.  
|                               |                                  |                                               |                                   | The individual will probably be taking a combination of these drugs.  

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### Supplemental Lesson 11: The Respiratory System

<table>
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<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
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<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tuberculin Testing</strong></td>
<td>check for contact with the bacteria:</td>
<td>Tine</td>
<td></td>
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<tr>
<td></td>
<td>Negative results mean lung tissue has not been in contact with TB bacteria.</td>
<td>Used in schools, but not accepted in health care facilities because it gives too many false-positive readings.</td>
<td>Give a PPD as a follow-up test if the individual tests positive with Tine.</td>
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<tr>
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<td>Positive results mean lung tissue has been exposed to the TB bacteria, but it does not necessarily mean the person has tuberculosis</td>
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<td><strong>Mantoux or PPD</strong></td>
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<td>Accepted test for health care workers and individuals in long-term care.</td>
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<td>Given be a nurse, injected just under the skin.</td>
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<td>Required annually, unless the test has been positive in the past.</td>
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<td>Follow-up a positive test with a CXR.</td>
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<td></td>
<td><strong>Chest X-ray (CXR)</strong></td>
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<td>Used for persons with a positive PPD to diagnose the disease, and after an initial positive reaction, to rule out an active disease.</td>
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<td>After two negative CXR and a doctor's statement, repeat CXR only if symptoms occur</td>
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</tbody>
</table>
### Definitions of Key Terms

**Allergen**—A substance that causes a hypersensitive reaction (an allergy).

**Allergic reaction**—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, difficulty in breathing.

**Anaphylactic reaction**—Life-threatening allergic reaction caused by an allergen. Characterized by respiratory problems, fainting, itching, welts on the skin.

**Antihistamines**—Drugs that are used to reduce the effects associated with histamine production in allergies and colds.

**Antitussives**—Medications that relieve coughing.

**Asthma**—A chronic respiratory disease, often from allergies, and accompanied by labored breathing, chest constriction, and coughing.

**Bronchitis**—Inflammation or swelling of the bronchial tubes.

**Chronic Obstructive Lung Disease (COLD)**—Chronic airway obstruction.

**Chronic Obstructive Pulmonary Disease (COPD)**—Chronic airway obstruction.

**Common cold**—Communicable viral disease.

**Emphysema**—A condition of the lungs resulting in labored breathing and increased susceptibility to infection.

**Expectorant**—Medication that assists in liquefying the mucus to make it easier to cough up.

**Histamine**—A white crystalline compound found in plant and animal tissue. It is a stimulator of gastric secretion, and is used medicinally as a vasodilator to increase the blood supply to the brain.

**Pneumonia**—An acute or chronic disease marked by inflammation and infection in the lungs.

**Rhinitis**—Inflammation and swelling of the lining of the nose.

**Tuberculosis**—Communicable acute or chronic infection caused by mycobacterium tuberculosis.
Supplemental Lesson 11: The Respiratory System

The Respiratory System

Function:
1. Provides oxygen to cells
2. Removes waste in form of carbon dioxide

Chronic obstructive pulmonary disease

- Normal bronchioles and alveolar sacs
- Enlarged bronchioles
- Distended alveolar sacs
Living in the Community
Supplemental Lessons

Supplemental Lesson 12
The Endocrine and Female Reproductive Systems
THE ENDOCRINE AND FEMALE REPRODUCTIVE SYSTEMS

Key Terms

| Androgens | Estrogen |
| Hormone   | Labia    |
| Mons pubis| Vestibule area |

The female reproductive system and the endocrine system are discussed at the same time because of the interaction between the endocrine system and the ovaries.

The endocrine system has eight kinds of glands: the pineal, pituitary, parathyroids, thyroid, thymus, adrenals, islets of Langerhans and gonads. These glands, situated throughout the body, secrete liquid substances called hormones. Hormones are the chemical regulators of cell activity within the body.

The female reproductive system has two ovaries, two fallopian tubes, the uterus, vagina, external genitalia and breasts. The system stabilizes the female physically and emotionally, provides female sex cells and a place to conceive and nourish a baby.

Disorders, injuries and aging processes that interfere with the endocrine or female reproductive systems may be treated with medication. Staff must understand how these systems work, and be able to identify commonly ordered medications, including their actions and effects, which are used to treat endocrine or female reproductive disorders.

Review of the Structures and Functions of the Endocrine System

Structures of the endocrine system (for further information refer to the chart Common Disorders of the Endocrine Glands located at the end of this lesson) include: pineal gland, pituitary gland (master gland), thyroid gland, parathyroid glands, thymus gland, adrenal glands, pancreas, testes (male gonads), and the ovaries (female gonads). Functions of the endocrine system: the endocrine glands secrete hormones that are the chemical regulators of all cell activity. Produce hormones which can either excite or inhibit physiological processes.

Review of the Structures and Functions of the Female Reproductive System

The female reproductive system is made up of internal and external structures. The internal structures are:

- Two ovaries located in the pelvis, one on either side of the uterus. Size and shape of an almond, contain all the available egg cells. At puberty, two hormones from the pituitary gland stimulate the ovaries to release estrogen. Estrogen, the hormone released form the ovaries, controls the female secondary sex characteristics. It also controls the maturation of approximately one egg each month, which matures in a sac-like structure that ruptures and releases the egg from an alternate ovary each month. The hormone
Supplemental Lesson 12: The Endocrine and Female Reproductive Systems

progesterone, which is produced by the sac-like structure, will help the egg divide if the egg is fertilized by sperm. If the egg is not fertilized by sperm, it is discharged from the body during menstruation. Cycle recurs monthly.

- Two fallopian tubes which are attached to the upper sides of the uterus, projecting outward. Small fingerlike projections on the ends of each fallopian tube lift the mature egg from the abdominal cavity when it is released from the ovary. The egg is transported through the fallopian tube toward the uterus. Fertilization usually takes place in the fallopian tubes.

- Uterus is a muscular pear-shaped organ capable of stretching twenty times its normal size. The inner lining becomes saturated with blood. A fertilized egg attaches itself to the lining in the uterus where development of the fetus will occur. If a fertilized egg does not attach, then the lining and blood is discharged each month, which is called menstruation.

- Vagina is the opening from the uterus to the outside of the body, sometimes called the birth canal. The organ used during intercourse. The lining of the uterus is shed through the vagina during menstrual flow. Vaginal infections can be contracted from organisms entering from the outside. An infection entering through the vagina can spread into the uterus, the fallopian tubes and the pelvic cavity.

External structures:
- Genital area contains four structures. The mons-pubis - fatty pad over the pubic bone, covered with hair after puberty. The labia - two lip-like structures or folds of skin that cover and protect the urinary and vaginal openings, extends downward toward the rectum. The clitoris - located inside the upper junction of the labia, a small structure of erectile tissue. The vestibule area - area into which the vagina and urethra open to outside of the body.

- Chest area contains the breasts - modified glandular structures that contain the mammary glands and the mammary glands - stimulated by hormones during pregnancy to produce milk after childbirth.

The major functions of the female reproductive system are:
- The production of hormones
- Stabilize the female physically and emotionally.
- Provide a place for conception (fertilization).
- House and nourish a developing baby.
Common Disorders of the Endocrine and Female Reproductive Systems

1. Disorders of the endocrine glands - for additional disorders, see the chart of "Common Disorders of the Endocrine Glands."

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothyroidism</td>
<td>fatigue, unexplained weight gain, dry skin, sensitivity to cold.</td>
<td>medication, thyroid hormone replacement.</td>
</tr>
<tr>
<td>Hyperinsulinism</td>
<td>low blood sugar, fatigue, headaches, hunger, confusion</td>
<td>diet.</td>
</tr>
</tbody>
</table>

2. Common disorders of the female reproductive system

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginitis</td>
<td>whitish vaginal discharge, foul odor, burning and itching of genital area, especially around the vaginal opening</td>
<td>Keep area clean and dry, use medicated vaginal creams, jellies, suppositories and douches. Can be resistant to treatment</td>
</tr>
<tr>
<td>Breast cancer</td>
<td>lump, dimpling, or indented areas in breast tissue, fluid oozing from nipples, orange peel appearance of skin, change in breast size or shape</td>
<td>surgery, x-ray radiation, chemotherapy</td>
</tr>
<tr>
<td>Menopause</td>
<td>vary; mucous membranes become dry, pubic hair thins turning gray or white and may disappear, pelvic muscles atrophy, breasts become pendulous and decrease in size and firmness, sexual activity may increase in some women as the need for contraceptives disappears, some women experience &quot;hot flashes&quot; - sweating and occasional chills</td>
<td>Low-dose estrogen therapy, Vaginal creams, counseling to assist the woman in coming to terms with the changes that are occurring.</td>
</tr>
</tbody>
</table>
### Supplemental Lesson 12: The Endocrine and Female Reproductive Systems

#### Selected Medications by Classification

<table>
<thead>
<tr>
<th>Action</th>
<th>Uses</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adrenal cortex hormones</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>decreases inflammation</td>
<td>treat allergies, arthritis, dermatitis</td>
<td>prednisone (Ellesone) dexamethasone (Decadron) methylprednisolone (Medrol)</td>
<td>Moon face Fluid retention Depression Increased blood sugar Hair loss Night sweats Thin, shiny skin</td>
<td>May mask infection. Serious reactions such as decreased blood pressure, fatigue, depression, anorexia, and rebound inflammation, may occur if the medication is stopped suddenly. Administer with food.</td>
</tr>
<tr>
<td><strong>Thyroid hormones</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>affect how the body cells use food substances, also affect growth and development</td>
<td>replacement therapy for when thyroid is not producing enough hormones</td>
<td>levothyroxine sodium (Synthroid) liotrix (Euthroid)</td>
<td>Nervousness Insomnia Palpitations Sweating Tremors Chest pains</td>
<td>Report chest pains immediately. Onset is gradual – full effect in about three weeks. Administer as a single dose, preferably before breakfast</td>
</tr>
<tr>
<td><strong>Gonadal hormones</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Estrogen</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>maintain normal menstrual cycle and secondary sex characteristics</td>
<td>replacement therapy for symptoms of menopause, treat symptoms of prostate and breast cancer and osteoporosis</td>
<td>Diethylstilbestrol (DES) Premarin (congrated estrogen) Esterderm patch</td>
<td>Depression Hair loss Thrombophlebitis Breast tenderness Leg cramps Increase in blood pressure</td>
<td>Check the individual's blood pressure regularly. Usually given cyclically (on 25 days, off 5 days).</td>
</tr>
<tr>
<td><strong>Androgens</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>maintain male secondary sex characteristics and stimulate repair of body tissues</td>
<td>treat symptoms of several types of cancers</td>
<td>testosterone (Histerone, Malogen, Oreton)</td>
<td>Headache Depression Growth of facial hair Edema Weight gain</td>
<td>Watch a diabetic individual for symptoms of hypoglycemia. Bedridden individuals should be given range of motion exercises to prevent the loss of calcium from the bone. Check the individual's weight regularly</td>
</tr>
</tbody>
</table>
Supplemental Lesson 12: The Endocrine and Female Reproductive Systems

Oral contraceptives

| inhibit ovulation | prevent pregnancy | estrogen with progestogen (Ovral, Norinyl, Ortho-Novum) | Headache | Weight gain | Hypertension | Thrombophlebitis | Edema | breast tenderness | Vaginitis | Nausea | Adverse effects often decrease after three months. Administer with food at bedtime to decrease nausea. |

Definitions of Key Terms

**Androgens**--Male hormones.

**Estrogen**--Female hormones.

**Hormone**--A chemical substance secreted into the body fluids by an endocrine gland, which has a specific effect on the activities of other organs.

**Labia**--Folds of skin or mucus membrane that surround the vagina.

**Mons pubis**--Soft fatty tissue covering the joint of the pubic bones.

**Vestibule area**--Contains the opening to the urethra.
**COMMON DISORDERS OF THE ENDOCRINE GLANDS**

<table>
<thead>
<tr>
<th>Gland</th>
<th>Hormone</th>
<th>Function</th>
<th>Overproduction</th>
<th>Treatment</th>
<th>Underproduction</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pituitary</td>
<td>Contains 6 hormones</td>
<td>Stimulate other hormones responsible for growth</td>
<td>Hyperpituitarism</td>
<td>Curb production of hormone, surgery, replacement of needed hormones</td>
<td>Hypopituitarism dwarfism, pubertal delay, diabetes insipidus</td>
<td>Replacement of hormone</td>
</tr>
<tr>
<td>Thyroid</td>
<td>Thyroid</td>
<td>Energy metabolism</td>
<td>Hyperthyroidism</td>
<td>Surgery, antithyroid medications</td>
<td>Hypothyroidism fatigue, forgetfulness, sensitivity to cold, unexplained weight gain, dry skin, puffy face, hands, and feet</td>
<td>Thyroid hormone replacement, iodine and potassium</td>
</tr>
<tr>
<td>Pancreas (islets of Langerhans)</td>
<td>Inulin</td>
<td>Transports sugar into cells for use as energy</td>
<td>Hyperinsulinism</td>
<td>Diet high in protein, low in carbohydrates</td>
<td>Hypoinsulinism (hyperglycemia), diabetes mellitus, increased urination, thirst, visual disturbances, weight loss, hunger</td>
<td>Oral hypoglycemic medications, insulin, diet</td>
</tr>
<tr>
<td>Adrenal</td>
<td>ACTH, corticosteroids, catechoismines</td>
<td>Regulation of sugar, salt, sex, B/P, CNS activity, and energy metabolism</td>
<td>Cushing Syndrome moon face, stretch mark on skin, buffalo hump, sugar in urine, protruding abdomen, edema upper legs</td>
<td>Radiation, drug therapy, surgery</td>
<td>Addison's Disease anemia, weight loss, dehydration, thinning of hair, tremors, bronze coloring of skin</td>
<td>Corticosteroid replacement</td>
</tr>
<tr>
<td>Parathyroids</td>
<td>Parathyroid hormone (PTH)</td>
<td>Maintain adequate level of calcium in body fluids</td>
<td>Kidney failure, kidney stones, bone tenderness, bones easily broken, muscle weakness, skeletal deformities</td>
<td>Surgery, medication, peritoneal dialysis</td>
<td>Tetany, convulsions, muscle spasms, paralysis, difficult breathing, death from exhaustion</td>
<td>Large doses of calcium, I.V. large doses of vitamins</td>
</tr>
<tr>
<td>Testes (male gonads)</td>
<td>Testosterone, androsterone</td>
<td>Stimulate development of male sex characteristics at puberty, maintain sperm production, influence other hormonal activities</td>
<td>Before puberty, early maturation of secondary sex characteristics before age 10</td>
<td>Depends on cause, medication, surgery to remove tumor</td>
<td>Hypogonadism, before puberty, no maturation of secondary sex characteristics in adulthood, slow regression of secondary sex characteristics</td>
<td>Hormonal replacement</td>
</tr>
<tr>
<td>Ovaries (female gonads)</td>
<td>Estrogens, progesterone</td>
<td>At puberty, development of secondary sex characteristics, stimulates other hormones, menstruation</td>
<td>Early development of secondary sex characteristics before age 9</td>
<td>Depends on cause</td>
<td>Menopause (cessation of menstruation)</td>
<td>Hormonal replacement</td>
</tr>
<tr>
<td>Pineal</td>
<td>None known</td>
<td>No known function</td>
<td>No known function</td>
<td>No known function</td>
<td>No known function</td>
<td>No known function</td>
</tr>
</tbody>
</table>
Function:

1. Secrete hormones to regulate body processes of growth and development

2. Regulates body functions, metabolism, and reproduction
Living in the Community
Supplemental Lessons

Supplemental Lesson 13
The Immune System
THE IMMUNE SYSTEM

Key Terms

<table>
<thead>
<tr>
<th>Immunity</th>
<th>Infectious hepatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubella</td>
<td>Tetanus</td>
</tr>
</tbody>
</table>

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, which is one part of the system of absorbent vessels which drain the lymph from various body tissues and return the lymph to the blood stream. The lymph system also filters out foreign particles and bacteria, and produces antibodies, which defend the body against disease-producing organisms.

One way the body protects itself is through the immune system. Immunity refers to the security a body has against any particular disease or poison. Immunity is the power which an individual acquires (actively or passively) to resist and/or overcome an infection to which most or many other people are susceptible.

Process of Immunity

Active immunity (long lasting) is naturally acquired by contracting a disease, such as measles, mumps, chicken pox, and producing antibodies to ward off the disease. It can also be artificially acquired by injecting the body with attenuated disease causing microorganisms, which stimulate the body to produce antibodies.

Passive immunity (short term) is naturally acquired by passing antibodies from the mother's blood stream to the baby. It can also be artificially acquired by ingesting antibodies from an immunized animal or human to prevent disease in persons who haven't developed their own antibodies.
Supplemental Lesson 13: The Immune System

Common Non-Immune Conditions for which Medications or Preparations May be Helpful

<table>
<thead>
<tr>
<th>Cause</th>
<th>Symptoms</th>
<th>Treatment</th>
<th>Prevention</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hepatitis B</strong></td>
<td>virus - fecal or oral route loss of appetite, nausea, fever, jaundice, loss of weight and strength</td>
<td></td>
<td>hepatitis B vaccine, universal precautions</td>
<td></td>
</tr>
<tr>
<td><strong>Tetanus - &quot;Lockjaw&quot;</strong></td>
<td>specific bacteria growing at the site of injury, especially around puncture wounds stiff jaw, difficulty swallowing, stiff neck, irritability, headache, fever, hills, muscle spasms, convulsions, and possibly death</td>
<td></td>
<td>active acquired immunity with periodic booster shots.</td>
<td></td>
</tr>
<tr>
<td><strong>Rubella - &quot;German Measles&quot;</strong></td>
<td>virus 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</td>
<td></td>
<td>active acquired immunity</td>
<td>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 individual</td>
</tr>
<tr>
<td><strong>Polio</strong></td>
<td>virus Fever, sore throat, headache, vomiting, stiff neck, paralysis</td>
<td>medication</td>
<td>active acquired immunity</td>
<td></td>
</tr>
<tr>
<td><strong>Measles</strong></td>
<td>virus 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 as small dark red spots starting behind the ears spreading and becoming blotchy over the face and body.</td>
<td>antibiotics, eye medication</td>
<td>active acquired immunity</td>
<td>acute conjunctivitis, sore throat, bronchitis, pneumonia, inflammation of the brain leading to encephalitis</td>
</tr>
<tr>
<td><strong>Mumps</strong></td>
<td>virus swollen, painful gland(s) running from behind the ear to beneath the jaw bone; dry mouth; acute stinging pain on swallowing anything acidic; swelling changing the whole shape of the face. Incubation period is 14-28 days</td>
<td>rest, pain relievers, fluids</td>
<td>deafness, mumps meningitis</td>
<td>active acquired immunity</td>
</tr>
</tbody>
</table>
Supplemental Lesson 13: The Immune System

Tuberculin Testing

Tuberculin testing is very important as there has been an increase in the number of cases of tuberculosis in recent years. The tuberculin test produces an allergic reaction to tuberculin bacteria. It is used to check for contact with tuberculin bacteria. A negative result means lung tissue has not been in contact with TB bacteria. A positive result means lung tissue has been exposed to the TB bacteria, but it does not necessarily mean the person has tuberculosis.

Tuberculin testing is very important as there has been an increase in the number of cases of tuberculosis in recent years. The tuberculin test produces an allergic reaction to tuberculin bacteria. It is used to check for contact with tuberculin bacteria. A negative result means lung tissue has not been in contact with TB bacteria. A positive result means lung tissue has been exposed to the TB bacteria, but it does not necessarily mean the person has tuberculosis.

There are three different types of tests which might be used:

- Tine is used in schools, but not accepted in health care facilities because it gives too many false-positive readings. Give a purified protein derivative (PPD) as a follow-up test if the individual tests positive with the Tine.

- Mantoux or purified protein derivative (PPD) is accepted test for health care workers and individuals in long-term care. Given by nurse—-injection just under the skin. Required annually, unless the test has been positive in the past. Follow up a positive test with a chest x-ray.

- Chest X-ray (CXR) is used for persons with a positive PPD to diagnose the disease, and after an initial positive reaction to rule out an active disease. After two negative CXR's and a doctor's statement, a repeat CXR is needed only if symptoms occur.

Selected Medications by Classification

<table>
<thead>
<tr>
<th>Action</th>
<th>Use</th>
<th>Examples</th>
<th>Adverse Effects</th>
<th>Nursing Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccines and toxoids</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stimulate the body to produce its own immunity (antibodies).</td>
<td>prevention of disease</td>
<td>tetanus toxoid, measles, mumps, and rubella vaccine (MMR) pneumococcal (Pneumovax-23) influenza virus (Fluogen)</td>
<td>Allergic reaction, Pain and swelling at the site of the injection, Rash, Fever, Flu-like symptoms, Convulsions</td>
<td>Reaction may occur in individuals who are allergic to feathers, chickens, or eggs</td>
</tr>
<tr>
<td>Immune serum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gives immediate protection against a disease</td>
<td>prevention, given exposure to hepatitis B</td>
<td>hepatitis B immune globulin (HyperHep)</td>
<td>Fever, Rash, Headache</td>
<td>Caregiver should receive immunization if exposed to hepatitis B.</td>
</tr>
</tbody>
</table>

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### Definitions to Key Terms

**Immunity**--Resistance of the body to a particular disease.

**Infectious hepatitis**--Contagious infection of the liver.

**Rubella**--Known as German Measles; an acute infectious disease spread by droplet infection.

**Tetanus**--Known as Lockjaw; an acute infectious disease often caused by puncture wounds. Often fatal.
Abbreviation: A shortened form of a word or phrase

Abdominal distention: Enlarged abdomen

Abscess: A localized collection of pus in any part of the body, formed by tissue disintegration and surrounded by an inflamed area

Absorption: The taking up of fluids or other substances by the skin, mucous surfaces, or absorbent vessels

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

Adhesion: Sticking together

Adverse effect: Side effect of a medication; undesirable reaction

Affective psychosis: Psychotic reaction in which a person exhibits wide swings in emotional feelings

AIDS: Acquired Immune Deficiency Syndrome is a disease that affects the body's ability to fight infection -- 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, 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, mouth, picking at self, rocking in a chair, and drumming fingers, pacing the floor, rocking when standing

Akinesia: Fatigue and weakness of the arms and legs: Apathetic, disinclined to initiate or to expend energy to complete a task

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, difficulty in breathing
Living in the Community: Glossary

**Amniocentesis:** Test that analyzes the watery liquid in which the embryo is suspended to determine any genetic defects in the fetus

**Analgesics:** Medications that relieve muscle, joint and bone pain

**Analgesics:** Medications that relieve muscle, joint and bone pain

**Anaphylactic reaction:** Life-threatening allergic reaction caused by an allergen – Characterized by respiratory problems, fainting, itching, welts on the skin

**Androgens:** Male hormones

**Anemia:** A condition in which the blood is deficient either in quantity or in quality

**Anesthetics:** Medications that cause a loss of sensation

**Angina:** Any disease in which spasmodic and painful suffocation or spasms occur

**Anorexia:** Lack or loss of appetite for food

**Antagonistic effect:** An agent, such as a remedy or a drug, which tends to nullify the action of another agent

**Antianxiety drugs:** Minor tranquilizers, also used for 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: penicillin

**Anticonvulsants:** Medications used to stop or prevent convulsions or seizures

**Antidepressants:** Alleviate the symptoms of depression

**Antiemetics:** Drugs used to treat and prevent nausea and vomiting

**Antihistamines:** Drugs that are used to reduce the effects associated with histamine production in allergies and colds

**Anti-inflammatory:** Medications used to reduce swelling, pain, and tenderness caused by inflammation

**Antipsychotics:** Major tranquilizers, used to control symptoms of psychoses and organic brain syndrome; change behavior but do not cure disease

**Antiseptic:** A substance that inhibits the growth of germs: Antiseptic 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

Apnea: Temporary suspension of respiration

Apothecary: A system of measures historically used by the person who prepares and sells drugs and medicines

Arrhythmia: A change in the time or force 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 hand washing and other measures taken to prevent the spread of infection

Aspiration: The taking of foreign matter (such as food) into the lungs during the respiratory cycle

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 medication are measured

Asthma: A chronic respiratory disease, often from allergies, and accompanied by labored breathing, chest constriction, and coughing

Atherosclerosis: A deposit or degenerative accumulation of cholesterol and lipid material in the arteries

Athlete’s foot: A contagious fungus infection of the feet

Atomizer: A device used to deliver a fine spray of medicine

Atrophy: The emaciation or wasting of tissues, organs or the entire body
Auditory canal: Tubular passages or ducts that assist in hearing or in the sense of hearing

Autism: A severely incapacitating life-long developmental disability, characterized by bizarre behavior and serious developmental delays in social and communication areas, that usually appear before age 3

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

Bioavailable: When a drug 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 pulse: The pulse taken on the inside of the forearm at the elbow

Bradycardia: Slowness of the heartbeat; less than 50 beats per minute

Bronchitis: Inflammation or swelling of the bronchial tubes

Bruise: Black and blue 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: Small structures about halfway between the bladder and the end of the penis that secrete sperm protectants

Burns: Injury to the skin by strong chemicals, electricity, high temperatures, or radiation

Bursitis: Inflammation of a bursa, usually at the shoulder, elbow, or knee joints

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

Cardiotonics: Medications used to strengthen the activities of the heart

Cataracts: The lens or capsule of the eye loses its transparency or translucency causing partial or total blindness
Central nervous system: The part of the nervous system (brain and spinal cord) where sensory impulses are transmitted and from which motor impulses originate

Cerebral palsy: Number of abnormal conditions, generally present at or near the time of birth, that affect the control of the motor system due to brain dysfunction

Chemotherapy: The treatment of a disease with chemicals

Chills: Shivering or shaking

Chronic kidney failure: Reduction in kidney function

Chronic Obstructive Lung Disease (COLD): Chronic airway obstruction

Chronic Obstructive Pulmonary Disease (COPD): Chronic airway obstruction

Cirrhosis: Chronic liver damage caused by previous disease

Clean: Fresh, unused and free from disease-causing organisms

Code of Ethics: A voluntary set of rules that influence relationships between people

Common cold: Communicable viral disease

Competent: Well-qualified or capable

 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 Dirty

 Contracture: Permanent shortening of a muscle that produces a deformity

 Controlled substance: A drug that is addictive or habit forming

 Convulsions: Abnormal, uncontrolled movement of all or part of the body

 Creams: Medication applied to the skin or mucous membrane that is more easily absorbed by the skin than ointments
Living in the Community: Glossary

**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

**Cystic fibrosis:** A hereditary disease that affects many organs in the body, especially the lungs, resulting from a dysfunction of the pancreas

**Cystitis:** Inflammation of the urinary bladder

**Daydream:** A dreamlike musing or fantasy while awake

**Decubitus ulcer:** An open wound that is caused by the pressure of lying or sitting in one position for a long period of time: Also called a pressure sore or bedsore

**Dehydration:** Excessive loss of water from the body

**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, loss of appetite due to inability to cope with one's life

**Dermis:** A layer of skin

**Diabetes:** A disorder of carbohydrates, protein, and fat metabolism that prevents the body from properly converting foods into energy for carrying out vital functions

**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 reading (the bottom number) is within normal range between 60-90 mm Hg

**Dirty:** Exposed to disease-causing organisms: Contaminated: No longer clean

**Disinfectant:** Substance used to destroy microorganisms

**Distribute:** To divide and dispense in 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:** Lying flat on the back with the legs parted, the knees bent, and the soles of the feet flat on the bed
Living in the Community: Glossary

**Down syndrome:** A chromosomal abnormality that leads to mild or moderate retardation and a variety of hearing, skeletal and heart problems

**Drug interaction:** The action of one medication interferes with the action of another; 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 head, facial expressions), protrusion of the tongue, stiff neck, inability to swallow, stammering speech (dysarthria), labored breathing, and involuntary muscle movements

**Dyspepsia:** Indigestion

**Dysphagia:** Difficulty in swallowing

**Dyspnea:** Difficulty in breathing

**Dysuria:** Painful or difficult urination

**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

**Elixirs:** A water-alcohol solution which may contain sugar and flavoring

**Emaciated:** Thin, underweight

**Emesis:** Vomiting

**Emphysema:** A condition of the lungs resulting in labored breathing and increased susceptibility to infection

**Emulsions:** Suspensions of oils, water and other substances

**Encephalitis:** A disease accompanied by high fever and inflammation of the brain that can produce mental retardation

**Enteric-coated:** Protective coating on medication that allows for protection of the stomach lining
Living in the Community: Glossary

**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 hormones

**Excoriation:** A scratch on the skin, usually covered with a scab

**Excretion:** Elimination of wastes, from the body, through the lungs, urine or feces

**Expectorant:** Medication that assists in liquefying the mucus to make it easier to cough up

**Fat:** A white or yellowish tissue which 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:** A collection of "putty-like" or hardened feces in the rectum

**Feces:** waste excreted from the bowels

**Fetal alcohol syndrome:** A possible cause of mental retardation related to drinking alcohol during pregnancy

**Fever:** Body temperature above normal

**Fluid:** A liquid or a solid (such as jello) that is measured as a liquid

**Fluid balance:** Taking in approximately the same amount of fluid as one eliminates

**Fluid extracts:** A concentrated alcohol solution of a vegetable drug

**Flushing:** Redness of the skin

**Flutter:** Very rapid rhythmic contractions of the heart muscles

**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

**Galactosemia:** An inherited condition that results in mental retardation which is caused by an inability to metabolize the galactose in milk

**Gallbladder:** Sac in which the bile from the liver is stored
Generic: Commonly available drugs that are not protected by trademark

Graduated container: A container divided into equal parts that is used to measure liquids

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

Hematemesis: Vomiting blood

Hemiplegia: Paralysis on only one side of the body

Hemoptysis: Coughing up blood

Hepatitis: Inflammation of the liver

Hg: The symbol for mercury

Histamine: A white crystalline compound found in plant and animal tissue: It is a stimulator of gastric secretion, and is used medicinally as a vasodilator to increase the blood supply to the brain

Hives: Red, swollen, itchy areas

Hormone: A chemical substance secreted into the body fluids by an endocrine gland, which has a specific effect on the activities of other organs

Hyperglycemia: An abnormally high level of sugar in the blood

Hypertension: High blood pressure

Hypnotics: Medications 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

Incident report: Written account of an error in documentation or medication administration, injury to a resident, or injury to a staff member or a visitor
Incontinence: Loss of bladder and/or bowel control

Infection: Activity of disease-producing bacteria, virus, or fungus in the body and the reaction of the body to the microorganisms and their products

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: Flu

Inhalation: To draw in by breathing

Inhaler: A device used to administer medication by the act of breathing in

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 - usually drop by drop

Insulin: A preparation derived from the pancreas of the pig, ox, or developed from semi-synthetic human insulin that is used in the medical treatment of diabetes

Inunction: Medication is rubbed into the skin

Iron deficiency anemia: Low iron levels in the blood due to inadequate diet or blood loss

Irrigation: The mucous membrane is flushed with medication

Ischemia: Temporary decrease in the amount of blood being delivered to a part of the body; mainly due to the contraction of the blood vessel

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

Keratitis: Inflammation of the cornea

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 clients who have diabetes mellitus

Kilogram: A unit of mass equal to 1,000 grams in the metric system
Living in the Community: Glossary

**Labia:** Folds of skin or mucus membrane that surround the vagina

**Laceration:** A wound made by tearing

**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

**Local action:** Medication acting at the site of administration on the skin or mucous membrane

**Lotions:** Watery preparations that contain medication; are to be patted on, not rubbed in

**Lozenges:** Flat, rounded discs made up of medication and sugar

**Malpractice:** Improper, injurious or negligent professional treatment or care of a resident

**Medical asepsis:** Cleaning measures taken to prevent the spread of infection in a doctor's office, hospital, or long-term care agency

**Medication:** Any substance used in the diagnosis or treatment of disease or the relief of pain or other symptoms

**Medicine dropper:** A small glass or plastic tube usually capped by a hollow rubber bulb at one end that is used for measuring and administering medication

**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

**Microorganisms:** Living organisms that can be seen only through a microscope

**Milks:** Bulky suspensions in water that are insoluble and must be shaken

**Milliliter (ml):** A measurement of volume in the metric system that equals one thousandth of a liter: Also 1 milliliter (ml) = 1 cubic centimeter

**Millimeter (mm):** A metric measurement of length that equals one thousandth of a meter

**Miotics:** An agent that causes contraction of the pupil of the eye

**Mons pubis:** Soft fatty tissue covering the joint of the pubic bones
Mucous membrane: The inner lining of the mouth and labia minora

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 strain: Condition in which the muscle is stretched

Muscular dystrophy: One of the more common primary diseases of the muscle: It is characterized by weakness and atrophy of the skeletal muscles with increasing disability and deformity as the disease progresses

Mydriatics: A drug that produces dilation of the pupils

Nausea: Feeling the need to vomit

Negligence: Omission or neglect of any reasonable precaution, care, or action

Neuron: A nerve cell

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

Nonsteroidal anti-inflammatory agents (NSAIA): Medications used to reduce symptoms of inflammation

Norepinephrine: Chemical present in the adrenal glands

Nutrient: Any substance which provides nourishment

Nystagmus: A spasmodic, involuntary motion of the eyeball

Obese: Extremely overweight

Ointment: Mixtures of medications with a fatty base, soft enough to spread at room temperature or melt at body temperature

Oliguria: Secretion of a diminished amount of urine in relation to the fluid intake

Ophthalmic medication: Medication that is used exclusively in the eyes
Oral: By mouth

Oral-hypoglycemics: Stimulate 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 ozs - 1 lb)

Outer canthus: The outer corner of the eyelid

Pain tolerance: Amount of pain a person is able to withstand

Palliative: Affording relief, but not curing

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 ambition and delusions of persecution or of grandeur

Paraplegia: Paralysis of the legs and lower part of the body; caused by disease or injury to the spine

Parasites: Small, round white worms found in the stool and around the anus

Parenteral: Introducing medication or food into the body by injection

Parkinsonism: Varying degrees of loss of associated movements: Rigidity of limbs, tremors, gait and posture disturbances, drooling, and skin changes

Pathogen: Disease-causing organism

PDR: Physician's Desk Reference; includes trade and generic names, uses, side effects, interactions of drugs

Pediculosis: A contagious infestation of the hair, body, and pubic area caused by lice

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 in order 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 B12 deficiency

Perineum: The area between the anus and the posterior part of the external genitalia

Petechia: A small spot on the body surface caused by a minute hemorrhage

Phenylketonuria (PKU): A single-gene defect that can produce severe retardation because of the body's inability to breakdown phenylalanine, which when accumulated at high levels in the blood results in severe damage to the developing brain

Phlebitis: Inflammation of a vein

Phobia: A persistent, illogical, or intense fear of something

Physical dependency: State in which withdrawal of a drug produces specific symptoms such as muscle cramps, vomiting, or tremors

Pneumonia: An acute or chronic disease marked by inflammation and infection in the lungs

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

Projection: Blaming personal failures or traits on someone else

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

Pruritis: Intense itching

Psoriasis: A chronic, non-contagious disease characterized by inflammation, reddened lesions, and white scaly patches

Psychoactive drugs: Drugs which alter the resident's psychological functions and behavior
Psychological dependency: An emotional need or craving for a drug

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

Psychotropics: Drugs that affect moods

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

Quadriplegia: Paralysis of both arms and both legs

Radial pulse: The pulse taken at the inner part of the wrist

Range of motion: Moving a joint its full range in an attempt to prevent muscle contractures and joint deformity

Rash: A skin eruption, usually reddened and raised

Rationalization: To devise self-satisfying but incorrect reasons for one's behavior

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, rectally, inhalation, etc

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

Rhinitis: Inflammation and swelling of the lining of the nose

Ringworm: A contagious fungus infection of the scalp or body

Rotary motion: Rubbing your hands together in a circular motion
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**Rubella:** Known as German Measles; an acute infectious disease spread by droplet infection

**Scabies:** A contagious skin condition caused by mites that burrow under the skin; characterized by tiny, thread-like blisters that itch

**Schizophrenia:** Severe emotional disorder, characterized by misinterpretation, retreat from reality, experiences of delirium, hallucination; resident loses ability to tell fact from imagination

**Sclera:** White tissue covering the entire eyeball except the cornea

**Scrotum:** Sac-like structure, located behind the penis, which holds the testicles

**Secondary effect:** Additional effect of the medication besides the one for which it was intended

**Sedatives:** A drug having a calming effect, relieves anxiety and tension, being replaced by tranquilizers (less likely to cause drowsiness or dependency

**Sediment:** Solid particles in the urine

**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:** Chemical present in many parts of the body that has important physiological functions, i.e., transmission of a nerve impulse across a synapse - neurotransmitter

**Sinus:** Air cavities in the skull that open into the nasal cavities

**Slander:** A malicious statement or report

**Solution:** Substance dissolved in water

**Somnolence:** Drowsiness, sleepiness

**Spasm:** A sudden, violent, involuntary contraction of a muscle or group of muscles

**Spirits:** An alcohol solution of a volatile substance

**Sprain:** Wrenching of a joint, with partial rupture of its ligaments: More severe than a strain and requires longer recuperation

**Sprays:** 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
Stasis: A stoppage of the flow of blood or other body fluids in part of the body

Sterile: Completely free from all living organisms; a state that can be achieved by special measures, such as subjecting objects to steam under pressure

Sterile tongue blade: Flat, wooden instrument that is free of germs

Stimulant: An agent that promotes the activity of a body system or function (example: amphetamines and caffeine)

Stomatitis: Inflammation of the mucous tissue of the mouth

Strain: An overstretching or overexertion of some part of the musculature

Strept throat: A severely inflamed and infected throat

Stress: Any circumstances, physical or mental, that causes strain or tension

Sublingual: Medication placed under the tongue

Suppositories: A solid medication designed to melt within a body cavity other than the mouth

Suspension: Fluid mixtures that need to be shaken; 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) is within the normal range between 100-140 mm Hg

Tablet: Dried, powdered medication pressed into shape

Tachycardia: Excessively rapid heartbeat, usually applied to a pulse rate above 100 per minute

Tardive Dyskinesia: Involuntary, repetitive useless movements such as spasms, oculogyric crisis, and protrusion of the tongue, stiff neck and inability to swallow that occur almost continuously during waking hours but cease during sleep

Temperature: A measurement of body heat: The normal temperature range is between 97.6 degrees and 99.6 degrees Fahrenheit or between 36 degrees and 38 degrees Celsius

Testicles: Also called testes, produce testosterone and sperm cells for reproduction
Tetanus: Known as Lockjaw; an acute infectious disease often caused by puncture wounds: Often fatal

Thermometer: An instrument that measures body temperature: Different thermometers measure oral, rectal and axillary temperatures

Thrombophlebitis: Inflammation of a vein that results in the formation of a clot

Thrombosis: The formation of blood clots

Tic Douloureux: Spasm of a nerve in 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 drug or chemical substance

Tinnitus: A sound in the ears, such as buzzing, ringing, or whistling

Tolerance: The ability to withstand the effects of a drug, after single or multiple administrations, without showing adverse effects

Topical: Pertaining to a particular spot; local

Toxic effect: Effects of medications that becomes poisonous to the body

Trade name: The name, given be a manufacturer, by which a medication is known

Tranquilizers: A drug 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 degree angle

Tuberculosis: Communicable acute or chronic infection caused by mycobacterium tuberculosis

Tumor: A circumscribed, noninflammatory growth arising from existing tissue but growing independently of the normal rate or structural development of such tissue and serving no physiological function

Turgor: Normal fullness and elasticity of the skin
Universal precautions: Treatment of all blood and bodily fluids as if they were contaminated (blood and bodily fluid isolation), proper disposal of needles

Urticaria: A skin condition characterized by intensely itching welts and caused by an allergic reaction - hives

Vagina: The canal leading from the vulva to the uterus in the female

Vas deferens (ductus deferens): Tube that carries sperm to the seminal vesicles

Vasodilators: Drug that increases the blood supply to the brain and other parts of the body

Vertigo: Dizziness

Vestibule area: Contains the opening to the urethra

Vital signs: Temperature, pulse, respiratory rate and blood pressure

Voiding: Eliminating urine

Volatile: Substances that evaporate easily at normal temperatures and pressures

Withdrawal: The physiological readjustment that takes place upon the discontinuation of a medication
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Resources
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RESOURCES

A variety of print, audio and video resources are available from a variety of publishers. The resources listed below are examples of web sites, books and other materials that may be helpful when working with the curriculum. Education and Training Resources (ETR) is providing the listing for information purposes only and does not endorse any of the listings.

DICTIONARIES

Dorland’s Illustrated Medical Dictionary, 29th ed. Philadelphia: Saunders, 2000 - Considered to be the "dean" of medical dictionaries. Unabridged, comprehensive and authoritative, it is updated every few years.

Merriam-Webster’s Medical Desk Dictionary from Medscape http://www.medscape.com/ - Must register with Medscape website to use their resources. Click on Medical Professional, and then go to the bottom of the page to the search form. Fill in your term, and then click on the Dictionary button.

Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, 6th ed. Philadelphia: Saunders, 1997. $29.00 - Designed for use by nurses and allied health professionals, this is on a level accessible to the layperson. Some line drawings.

Mosby’s Medical, Nursing, and Allied Health Dictionary, 5th ed. St. Louis: Mosby, 1998. $31.95 - Similar to Miller-Keane but has extensive color illustrations (buy one or the other). Updated every four years.


Stedman’s Medical Dictionary, 27th ed. Baltimore: Williams & Wilkins, 2000. Similar to Dorland’s and essentially equal in authority (buy one or the other). Published approximately every five years.


DRUGS

CenterWatch Clinical Trials Listing Service http://www.centerwatch.com/. Source of information on research on new drugs or new uses for existing drugs.
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**drkoop.com Drug Checker** [http://www.drkoop.com](http://www.drkoop.com). As the number of medications prescribed for simultaneous use increase, so does the risk of adverse reactions and interactions. Check for food-drug and drug-drug interactions and potential adverse reactions to drugs with this interactive drug checker.


**Food and Drug Administration** [http://www.fda.gov/default.htm](http://www.fda.gov/default.htm). Consumer information from the federal agency that approves and regulates drugs and medical devices.


Mosby's **Complete Drug Reference: Physicians' GenRx**. St. Louis: Mosby, 1997. $77.00 - Similar to PDR (buy one or the other), but the index is more user friendly. Useful for comparing generic drugs and their alternatives. Updated annually.


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Prescription and Over-the-Counter Drugs. New York: Reader's Digest Association, 2001 - Describes how each drug works, recommended dosages, side effects (serious, common, less common), and interactions with food and other drugs. Color product identification guide. User-friendly format.

EVIDENCE BASED MEDICINE (EBM) RESOURCES

Evidence based medicine is an effort by medical professionals to consider the results of all relevant, high quality, scientific studies before recommending the most effective course(s) of patient care.

Ask NOAH About: Evidence-Based Medicine http://www.noah-health.org/english/ebhc/ebhc.html - Geared toward patients, librarians, educators, and nurses, this comprehensive portal provides links to the best online sources of evidence for consumers. Sections include EBM basics, types of evidence, research methods, statistical terms, special considerations, and evidence for consumers.

Cochrane Collaboration Consumer Network http://www.cochraneconsumer.com - Searchable by topic area, this site contains more than 400 consumer synopses of Cochrane systematic review abstracts (with links to the original abstracts) to help clinicians and consumers make informed health care decisions. A glossary of health care research terms is also available.


DISCERN http://www.discern.org.uk - Since 1996, this U.K. organization has worked to empower consumers and providers to better evaluate online health information. The full DISCERN instrument teaches how to determine a publication’s reliability, and the Quick Reference Guide lists key points to consider while researching treatment options.

eMedicine World Medical Library http://www.emedicine.com - This site provides free, up-to-date, evidence-based information. Searches can be restricted to a consumer option for information from online textbooks and a growing collection of consumer treatment guidelines.

Summaries for Patients: Annals of Internal Medicine http://www.annals.org/issues/v134n2/toc.html - Breakthrough research from select Annals of Internal Medicine articles is translated into everyday language. The American College of Physicians provides succinct explanations of studies’ purposes, methodologies, findings, limitations, and care implications.
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Medical Guides


PDR Family Guide: Encyclopedia of Medical Care http://www.healthsquare.com/medcare2.htm. Includes the causes, symptoms, and care for diseases and health problems. Gives additional information for each condition: "What you should do ...", "Call your doctor if ...", and "If you’re headed for the hospital ..." (what to expect and what to do after leaving the hospital).
MEDICAL MULTIMEDIA AND INTERACTIVE STUDY

Adam.com http://www.adam.com. Excellent source of images, including photographs, illustrations, MRIs, x-rays, and sonograms. The "health illustrated" series offers detailed visual information on procedures, surgeries, tests, and self-care. Also includes animations and video.

Anatomia Universa http://www.lib.uiowa.edu/hardin-www/mascagni/. Paolo Mascagni Anatomia Universa was originally published between 1823 and 1832. Only 3 or 4 copies exist in the US. This site, created by the University of Iowa, scanned the individual plates and uses Quicktime to allow viewers to zoom in for more detailed views and to pan the illustrations.

Clip Art for Health Communication - From Johns Hopkins University http://www.hcmn.org/clipart/ A wide variety of drawings in color and black and white, with an emphasis on health education/public health subjects.

Consumer Medical Atlas http://app1.unmc.edu/nhs/atlas/indexuhs.html. This atlas links anatomy to specific medical conditions. Includes graphics, multimedia, 360 degree modelling, slides, and text.

iTV HealthScout http://healthscout.com. On demand short health videos. Offers low and high bandwidth MS Media Player or Quicktime choices for viewing.


MEDslides http://medslides.com/ - You must register to use this, resources are mostly in Power Point format.


National Eye Institute, National Institutes of Health Photograph and Image Catalog http://www.nei.gov/photo/

PHIL – Public Health Image Library Centers for Disease Control and Prevention http://phil.cdc.gov/Phil/default.asp
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**Stanford Health Library Video Collection** [http://www.med.stanford.edu/healthlibrary/resources/videos.html](http://www.med.stanford.edu/healthlibrary/resources/videos.html). Valuable information is offered, although hindered by a "talking head" lecture format. Some videos have a more engaging newsmagazine format.

**Medical Web Sites**

**Argus Clearinghouse** [http://www.clearinghouse.net/](http://www.clearinghouse.net/). Argus rates directories based on their topic, completeness, and ease of use. A good gateway to hard to find topics.

**CIC Healthweb Alphabetical List of All Subjects** [http://healthweb.org/subjABC.html](http://healthweb.org/subjABC.html). A catalog of professional level web sites organized by medical specialty, selected and maintained by librarians from a Midwestern academic health library consortium.


**MENTAL HEALTH**


**Center for Mental Health Services** [http://www.mentalhealth.org](http://www.mentalhealth.org). This consumer health web site is maintained by an agency of the Substance Abuse and Mental Health Services Administration of the federal government. Of special note is the School Violence Prevention resources, Kid's Area, Surgeon General's report on mental health, and survivor information.


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**SENIOR HEALTH**

*Administration on Aging* [http://www.aoa.gov](http://www.aoa.gov) This web site covers many topics of interest to seniors.

*CarePlanner* [http://www.careplanner.org/](http://www.careplanner.org/) If you are faced with helping someone decide what their caretaking options are in their golden years then this site may help. Nice decision support, and very private. From the Centers for Medicare and Medicaid Services.

*GeroWeb* [http://geroserver.iog.wayne.edu/GeroWeb/GeroWeb.html](http://geroserver.iog.wayne.edu/GeroWeb/GeroWeb.html) Another helpful and content rich web site for seniors that includes health information. A site search engine speeds the user to relevant information.

*Centers for Medicare & Medicaid Services, Medicare Information* [http://www.medicare.gov](http://www.medicare.gov) One of the most confusing and complicated aspects of senior health is dealing with Medicare. This site provides information for seniors. Spanish and Asian language pages are available.

**CHILD HEALTH**


*KidsHealth.org* [http://www.kidshealth.org](http://www.kidshealth.org) - Premier consumer health site for child health. Sponsored by the Nemours Foundation, a Dupont family fund devoted to the care of children through hospitals and pediatric clinics.

SPECIAL INTEREST GROUPS


HealthFinder: Just for you http://www.healthfinder.gov/justforyou/. HealthFinder provides links to information based on "special health concerns based on age, gender, race, ethnic origin, or role in helping others care for their health."

Resources for People with Disabilities http://www.cclsweb.org/MidnightFiles/Disabilities/dismidnt.htm. This resource list links to nearly 100 web sites, and is provided by the authors of the acclaimed series, "Midnight at the Internet Cafe".


END
Living in the Community

Vocabulary Activities
Instructions: Complete the crossword puzzle. Use the clues to help you solve the puzzle.

Across
1. inflammation of the liver marked by jaundice; caused by infections or toxic agents
8. the act of rubbing one thing against another
9. cleaning measures used to prevent the spread of infection a doctor's office, hospital, or long-term care facility
11. free from disease-producing microorganisms
12. Acquired Immune Deficiency Syndrome affects the body's ability to fight infections. It is spread through body fluids by vaginal, anal, oral sex, sharing IV needles, blood transfusions, mother to fetus

Down
2. bacteria that causes pneumonia
3. rubbing your hands together in a circular motion when washing them aseptically
4. communicable disease that manifests itself in lesions of the lung, bone and other bodily parts
5. counteracts bacteria
6. a substance that inhibits the growth of germs; antiseptic solutions are used as cleaning agents to prevent or inhibit the spread of infections
7. destroys or suppresses the growth of microorganisms
10. any substance or device that destroys the harmful bacteria, viruses, etc; to sterilize
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<thead>
<tr>
<th>Word</th>
<th>Clue</th>
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<tbody>
<tr>
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</tr>
<tr>
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</tr>
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Core Lesson 1

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Instructions: Complete the crossword puzzle. Use the clues to help you solve the puzzle.

Across:
2. A malicious statement or report
3. Any written statement that damages a person's character.
5. The threat of use force upon another person
11. Doing only those things that you have been trained to do; acting as others would act in the same or similar situations
12. Well-qualified or capable

Down:
1. A description of conduct that illustrates what a reasonably prudent person would have done, or would not have done under similar circumstances.
4. Performance of services that meet common standards.
6. Any drug or other substance used in treating disease, healing or relieving pain.
7. Any illegal touching or beating of another person either directly or with an object.
8. Omission or neglect of any reasonable precaution, care or action.
9. Improper, injurious or negligent treatment or care of a client by the professional staff.
10. A voluntary set of rules that influence relationships between people.
Living in the Community: Vocabulary Activities

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Instructions: Complete the crossword puzzle. Use the clues to help you solve the puzzle.

Across
2. a brief loss of consciousness
4. normal fullness and elasticity of the skin.
10. swelling caused by large amounts of fluid in the tissues.
11. paralysis of both arms and both legs
13. no urinary output
14. waste excreted from the bowels.
15. eliminating urine.

Down
1. extremely overweight
3. paralysis of the legs and lower part of the body, caused by disease or injury to the spine.
5. drowsiness; sleepiness
6. dizziness
7. white tissue covering all of the eyeball except the cornea.
8. painful or difficult urination.
9. solid particles in the urine
12. paleness of the skin
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Instructions: Complete the word search puzzle. Use the clues to help you identify the words.

Clues:
1. difficulty in breathing
2. swelling caused by large amounts of fluid in the tissues
3. an open wound that is caused by the pressure of lying or sitting in one position for a long period of time. Also called a pressure sore or bedsore
4. lack or loss of appetite for food
5. the brain and spinal cord are part of the central nervous system which transmits sensory impulses and from which motor impulses originate
6. shivering or shaking
7. a bluish discoloration of the skin, caused by lack of oxygen in the blood
8. difficult, incomplete or infrequent bowel movements
9. vomiting
10. the force exerted by the blood against the arterial walls when the heart contracts (systolic) or relaxes (diastolic)
11. painful or difficult urination
12. slowness of the heartbeat; less than 50 beats per minute
13. abnormal, uncontrolled movement of all or part of the body
14. thin, underweight
15. black and blue area caused by injury to the surface of the skin
16. cannot be aroused; unconsciousness
17. no urinary output
18. permanent shortening of a muscle that produces a deformity
19. difficulty in swallowing
20. frequent loose bowel movements
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Instructions: Complete the word search puzzle. Use the clues to help you identify the words.

Clues
1. eliminating urine.
2. normal fullness and elasticity of the skin.
3. excessively rapid heartbeat, usually applied to a pulse rate above 100 beats per minute.
4. involuntary trembling or shaking.
5. solid particles in the urine.
6. dizziness.
7. drowsiness; sleepiness.
8. a brief loss of consciousness.
9. a skin eruption, usually reddened and raised.
10. rhythmical throbbing of the arteries caused by the heartbeat.
11. white tissue covering all of the eyeball except the cornea.
12. a sound in the ears, such as buzzing, ringing, or whistling.
13. process of breathing.
14. moving a joint through its full range in an attempt to prevent muscle contractures and joint deformity.
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Living in the Community: Vocabulary Activities

Core Lesson 4

Instructions: Complete the word search puzzle. Use the clues to help you identify the words.

Clues
1. paralysis of the legs and lower part of the body, caused by disease or injury to the spine
2. large amounts of urinary output
3. a scratch on the skin, usually covered with a scab
4. localized heat, redness, swelling and pain as a result of irritation, injury or infection
5. body temperature above normal
6. a wound made by tearing
7. pallor of the skin
8. 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
9. inability to breathe except in an upright position
10. red, swollen, itchy areas
11. paralysis on only one side of the body
12. extremely overweight
13. not alert, drifts off to sleep, drowsy, sluggish
14. a spasmodic, involuntary motion of the eyeball
15. waste excreted from the bowels
16. feeling the need to vomit
17. a small spot on the body surface caused by a minute hemorrhage
18. inability to sleep
19. redness of the skin
20. secretion of diminished amounts of urine in relation to fluid intake
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1. paralysis of the legs and lower part of the body, caused by disease or injury to the spine
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Living in the Community: Vocabulary Activities

Core Lesson 5

Instructions: Use the clues to help you solve the puzzle.

Across
2. medication is injected with a needle
4. an alcohol solution of a volatile substance
6. fluid mixtures that need to be shaken; only stay together for a short period of time.
7. by mouth
12. inner lining of the mouth and the labia minora
14. alcohol solution of an animal or vegetable drug or chemical substance
15. pertaining to a particular spot; local
17. to draw in by breathing
18. a device used to administer medication by the act of breathing in
19. substance dissolved in water

Down
1. concentrated alcohol solution of a vegetable based drug
3. used to cleanse the lower bowel, relieve constipation; some types will relieve gas or act as an emollient and method of medication administration
5. solid medication designed to melt within a body cavity other than the mouth
7. outer corner of the eyelid
8. solution used as a vehicle to distribute medication
9. mixtures of medications with a fatty base, soft enough to spread at room temperature or melt at body temperature
10. a device used to deliver a fine spray of medicine
11. tubular passages or ducts that assist in hearing or in the sense of hearing
13. medication is placed into a specific area of the body, usually with the fingers
Living in the Community: Vocabulary Activities

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Instructions: Use the clues to help you solve the puzzle.

Across
2. area between the anus and the posterior part of the external genitalia
9. the corner of the eyelid closest to the nose
11. medication in small cylinder-like containers
12. medications administered by an atomizer
13. water-alcohol solutions which may contain sugar and flavoring
14. solid medication that has been ground into a powder and is used in that form
15. dried, powdered medication pressed into shapes
16. medication made with water, flavoring and sugar
17. watery preparation that contains medication; are to be patted on, not rubbed in
18. flat, rounded discs made up of medication and sugar

Down
1. medication is designed to be slowly absorbed by the system so that is has a longer lasting effect
2. method of introducing medicine into the body, by mouth, injection, rectally, inhalation, etc.
4. substances that evaporate easily at normal temperature and pressure
5. medication is placed between the teeth and the mucous membrane of the cheek
6. bulky suspension in water that are insoluble and must be shaken
7. suspension of oils, water and other substances
8. an air cavity in one of the cranial bones that connects with the nose
9. process of administering a liquid usually drop by drop
10. lowest or last segment of the large intestine that ends at the anus
11. medication applied to the skin or mucous membrane that is more easily absorbed by the skin than ointments
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Living in the Community: Vocabulary Activities

Core Lesson 5

Instructions: Use the clues to help you identify the words.

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S D Q Q S S X V H M N I P A C Q U C E D
U V C J D Y V D S L J M R C E H T C U E
P E O C J B R R C I G E W Z C G I I P N
P L C L O I U H N B D P B N Q N C O T
O O G O A X N G P I A R B W D X C I U O
S Z X I I T Z D O M S E K S N E T Y A P
I E O L G Y I X L E B L B W U U U C X I
T N E H Y Z E L G N S E R T L K R Q C C
O G D I N H A E E T U A C O H O E O Y A
R E Z B A C K S I N U S S B Y G K L O L
I S R A H E O W W P Q E T H F Q V J S L
E I V R E C P T I O N S D Q I R Z X I
S B Q X I N H A L E R Y O I N T M E N T
P S E U Q V U B V A G I N A K B Y P P H
D A U R W B T B U C C A L M I L K S M T
S B Z O U T E R C A N T H U S S A I E J
Y E M E V C A U D I T O R Y C A N A L V

Clues
1. solution used as a vehicle to distribute medication
2. bulky suspensions in water that are insoluble and must be shaken
3. method of introducing medicine into the body, by mouth, injection, rectally, inhalation, etc.
4. substances that evaporate easily at normal temperature and pressure
5. tubular passages or ducts that assist in hearing or in the sense of hearing
6. medication is designed to be slowly absorbed by the system so that it has a longer lasting effect
7. medication made with water, flavoring and sugar
8. mixtures of medications with a fatty base, soft enough to spread at room temperature or melt at body temperature
9. flat, rounded discs made up of medication and sugar
10. substance dissolved in water
11. canal leading from the vulva to the uterus in the female
12. an air cavity in one of the cranial bones that connects with the nose
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17. outer corner of the eyelid
18. concentrated alcohol solution of a vegetable based drug
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| 1. by mouth                                    | <br>by mouth<br>1. by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by mouth<br>by month
Clues

1. by mouth
2. suspensions of oils, water and other substances
3. used to cleanse the lower bowel, relieve constipation; some types will relieve gas or act as an emollient and method of medication administration
4. medication applied to the skin or mucous membrane that is more easily absorbed by the skin than ointments
5. inner lining of the mouth and the labia minora
6. lowest or last segment of the large intestine that ends at the anus
7. medications administered by an atomizer
8. fluid mixtures that need to be shaken; only stay together for a short period of time.
9. the corner of the eyelid closest to the nose
10. to draw in by breathing
11. medication is placed into a specific area of the body, usually with the fingers
12. medication is injected with a needle
13. dried, powdered medication pressed into shapes
14. medication in small cylinder-like containers
15. watery preparation that contain medication; are to be patted on, not rubbed in
16. a device used to deliver a fine spray of medicine
17. solid medication that has been ground into a powder and is used in that form
18. an alcohol solution of a volatile substance
19. process of administering a liquid usually drop by drop
20. area between the anus and the posterior part of the external genitalia
Instructions: Unscramble the letters for each word. Use the clues to help you solve the puzzles.

**Clues**
1. solid medication that has been ground into a powder and is used in that form
2. flat, rounded discs made up of medication and sugar
3. medications administered by an atomizer
4. mixtures of medications with a fatty base, soft enough to spread at room temperature or melt at body temperature
5. fluid mixtures that need to be shaken; only stay together for a short period of time.
6. by mouth
7. medication is placed into a specific area of the body, usually with the fingers
8. medication is injected with a needle
9. the corner of the eyelid closest to the nose
10. solution used as a vehicle to distribute medication
### Clues

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2. Flat, rounded discs made up of medication and sugar.
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5. Fluid mixtures that need to be shaken; only stay together for a short period of time.
6. By mouth.
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8. Medication is injected with a needle.
9. The corner of the eyelid closest to the nose.
10. Solution used as a vehicle to distribute medication.
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Unscramble the letters for each word. Use the clues to help you solve the puzzles.

<table>
<thead>
<tr>
<th>LNINAAITOH</th>
<th>HNALIRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOTDRAYLANCI</td>
<td>KSCINUSAB</td>
</tr>
<tr>
<td>SSULPACE</td>
<td>REZTMOAI</td>
</tr>
<tr>
<td>AESRMIC</td>
<td>MENE A</td>
</tr>
<tr>
<td>QUESNMLIS</td>
<td>LUCBCA</td>
</tr>
</tbody>
</table>

### Clues
1. to draw in by breathing
2. tubular passages or ducts that assist in hearing or in the sense of hearing
3. medication in small cylinder-like containers
4. medication applied to the skin or mucous membrane that is more easily absorbed by the skin than ointments
5. suspensions of oils, water and other substances
6. a device used to administer medication by the act of breathing in
7. an air cavity in one of the cranial bones that connects with the nose
8. a device used to deliver a fine spray of medicine
9. used to cleanse the lower bowel, relieve constipation; some types will relieve gas or act as an emollient and method of medication administration
10. medication is placed between the teeth and the mucous membrane of the cheek
# Clues

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<thead>
<tr>
<th>LN INAAI TOH</th>
<th>HN ALIRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INHALATION</td>
<td>INHALER</td>
</tr>
<tr>
<td>A O T DRA Y LAUNCI</td>
<td>K S C I NUS A B</td>
</tr>
<tr>
<td>AUDITORY CANAL</td>
<td>BACK SINUS</td>
</tr>
<tr>
<td>S S ULPACE</td>
<td>R E Z T MOAI</td>
</tr>
<tr>
<td>CAPSULES</td>
<td>ATOMIZER</td>
</tr>
<tr>
<td>A E S R M C</td>
<td>M E N E A</td>
</tr>
<tr>
<td>CREAMS</td>
<td>E N E M A</td>
</tr>
<tr>
<td>O U E S N M L I S</td>
<td>L U C B C A</td>
</tr>
<tr>
<td>EMULSIONS</td>
<td>BUCCAL</td>
</tr>
</tbody>
</table>
Living in the Community: Vocabulary Activities

Instructions: Unscramble the letters for each word. Use the clues to help you solve the puzzles.

<table>
<thead>
<tr>
<th>Clues</th>
<th>Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. method of introducing medicine into the body, by mouth, injection, rectally, inhalation, etc.</td>
<td>IROEENCT</td>
</tr>
<tr>
<td>2. canal leading from the vulva to the uterus in the female</td>
<td>IVGANA</td>
</tr>
<tr>
<td>3. substances that evaporate easily at normal temperature and pressure</td>
<td>LLEVOTA</td>
</tr>
<tr>
<td>4. medication made with water, flavoring and sugar</td>
<td>USYRP</td>
</tr>
<tr>
<td>5. solid medication designed to melt within a body cavity other than the mouth</td>
<td>PISPIOOTSES</td>
</tr>
<tr>
<td>6. dried, powdered medication pressed into shapes</td>
<td>NOSULTO</td>
</tr>
<tr>
<td>7. alcohol solution of an animal or vegetable drug or chemical substance</td>
<td>AETBTL</td>
</tr>
<tr>
<td>8. an alcohol solution of a volatile substance</td>
<td>UTCRNT</td>
</tr>
<tr>
<td>9. area between the anus and the posterior part of the external genitalia</td>
<td>RISPTSI</td>
</tr>
<tr>
<td>10. substance dissolved in water</td>
<td>IEMUENREP</td>
</tr>
</tbody>
</table>

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### Clues

1. method of introducing medicine into the body, by mouth, injection, rectally, inhalation, etc.
2. canal leading from the vulva to the uterus in the female
3. substances that evaporate easily at normal temperature and pressure
4. medication made with water, flavoring and sugar
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8. an alcohol solution of a volatile substance
9. area between the anus and the posterior part of the external genitalia
10. substance dissolved in water
Living in the Community: Vocabulary Activities

Core Lesson 5

Instructions: Unscramble the letters for each word. Use the clues to help you solve the puzzles.

<table>
<thead>
<tr>
<th>Clues</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. watery preparation that contain medication; are to be patted on, not rubbed in</td>
</tr>
<tr>
<td>2. pertaining to a particular spot; local</td>
</tr>
<tr>
<td>3. water-alcohol solutions which may contain sugar and flavoring</td>
</tr>
<tr>
<td>4. lowest or last segment of the large intestine that ends at the anus</td>
</tr>
<tr>
<td>5. outer corner of the eyelid</td>
</tr>
<tr>
<td>6. process of administering a liquid usually drop by drop</td>
</tr>
<tr>
<td>7. medication is designed to be slowly absorbed by the system so that is has a longer lasting effect</td>
</tr>
<tr>
<td>8. bulky suspensions in water that are insoluble and must be shaken</td>
</tr>
<tr>
<td>9. inner lining of the mouth and the labia minora</td>
</tr>
<tr>
<td>10. concentrated alcohol solution of a vegetable based drug</td>
</tr>
</tbody>
</table>
# Living in the Community: Vocabulary Activities

## Core Lesson 5

<table>
<thead>
<tr>
<th>Clues</th>
<th>Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Watery preparation that contain medication; are to be patted on, not rubbed in</td>
<td><strong>Lotions</strong></td>
</tr>
<tr>
<td>2. Pertaining to a particular spot; local</td>
<td><strong>Topical</strong></td>
</tr>
<tr>
<td>3. Water-alcohol solutions which may contain sugar and flavoring</td>
<td><strong>Elixirs</strong></td>
</tr>
<tr>
<td>4. Lowest or last segment of the large intestine that ends at the anus</td>
<td><strong>Rectum</strong></td>
</tr>
<tr>
<td>5. Outer corner of the eyelid</td>
<td><strong>Outercanthus</strong></td>
</tr>
<tr>
<td>6. Process of administering a liquid usually drop by drop</td>
<td><strong>Instillation</strong></td>
</tr>
<tr>
<td>7. Medication is designed to be slowly absorbed by the system so that it has a longer lasting effect</td>
<td><strong>Timed release</strong></td>
</tr>
<tr>
<td>8. Bulky suspensions in water that are insoluble and must be shaken</td>
<td><strong>Milk</strong></td>
</tr>
<tr>
<td>9. Inner lining of the mouth and the labia minora</td>
<td><strong>Mucous membrane</strong></td>
</tr>
<tr>
<td>10. Concentrated alcohol solution of a vegetable based drug</td>
<td><strong>Fluid extracts</strong></td>
</tr>
</tbody>
</table>
Instructions: Complete the crossword puzzle. Use the clues to help you solve the puzzle.

Across
1. the process by which a substance is changed into a form that is more easily excreted by the body
4. the ability to endure or resist the effects of a drug; can build up with repeated usage
8. medication acts at the site of administration usually on the skin or mucous membrane
9. commonly available drugs that are not protected by trademark
10. by mouth
11. medications that relieve muscle, joint and bone pain
13. negative side effect of a medication; undesirable reaction
15. the name, given by the manufacturer, by which a medication is known
16. the taking up of fluids or other substances by the skin, mucous surfaces, or absorbent vessels

Down
2. elimination of body wastes through the lungs, urine or feces
3. unusual or unexpected effect from a medication
5. protective coating on medication that allows for easier swallowing
6. to divide and dispense in portions
7. medications that can become poisonous to the body
12. the action of one medication interfering with the action of another
14. medication in small cylinder-like containers
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Instructions: Complete the word search puzzle. Use the clues to help you identify the words.

Clues
1. negative side effect of a medication; undesirable reaction
2. medications that can become poisonous to the body
3. the name, given by the manufacturer, by which a medication is known
4. medication in small cylinder-like containers
5. to divide and dispense in portions
6. by mouth
7. elimination of body wastes through the lungs, urine, or feces
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15. the taking up of fluids or other substances by the skin, mucous surfaces, or absorbent vessels
16. the process by which a substance is changed into a form that is more easily excreted by the body
Instructions: Unscramble the letters for each word. Use the clues to help you solve the puzzles.

Clues:
1. The name, given by the manufacturer, by which a medication is known.
2. Protective coating on medication that allows for easier swallowing.
3. By mouth
4. Medications that can become poisonous to the body.
5. Commonly available drugs that are not protected by trademark.
6. The ability to endure or resist the effects of a drug; can build up with repeated usage.
7. The action of one medication interfering with the action of another.
8. The taking up of fluids or other substances by the skin, mucous surfaces, or absorbent vessels.

Living in the Community: Vocabulary Activities

Core Lesson 6

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## Living in the Community: Vocabulary Activities

Core Lesson 6

<table>
<thead>
<tr>
<th>Clue</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Trade name given by the manufacturer, by which a medication is known.</td>
</tr>
<tr>
<td>2.</td>
<td>Protective coating on medication that allows for easier swallowing.</td>
</tr>
<tr>
<td>3.</td>
<td>By mouth</td>
</tr>
<tr>
<td>4.</td>
<td>Medications that can become poisonous to the body.</td>
</tr>
<tr>
<td>5.</td>
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<td>6.</td>
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<td>7.</td>
<td>The action of one medication interfering with the action of another.</td>
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<tr>
<td>8.</td>
<td>The taking up of fluids or other substances by the skin, mucous surfaces, or absorbent vessels.</td>
</tr>
</tbody>
</table>

### Clues

<table>
<thead>
<tr>
<th>Clue</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>TRADE NAME</td>
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<td>2.</td>
<td>ENTERICOATED</td>
</tr>
<tr>
<td>3.</td>
<td>ORAL</td>
</tr>
<tr>
<td>4.</td>
<td>TOXICEFFECT</td>
</tr>
<tr>
<td>5.</td>
<td>GENERIC</td>
</tr>
<tr>
<td>6.</td>
<td>TOLERANCE</td>
</tr>
<tr>
<td>7.</td>
<td>INTERACTION</td>
</tr>
<tr>
<td>8.</td>
<td>ABSORPTION</td>
</tr>
</tbody>
</table>
Instructions: Unscramble the letters for each word. Use the clues to help you solve the puzzles.

Clues
1. Medications that relieve muscle, joint and bone pain
2. Medication acts at the site of administration usually on the skin or mucous membrane.
3. Elimination of body wastes through the lungs, urine, or feces.
4. Unusual or unexpected effect from a medication.
5. The process by which a substance is changed into a form that is more easily excreted by the body.
6. Negative side effect of a medication; undesirable reaction
8. To divide and dispense in portions.
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2. Medication acts at the site of administration usually on the skin or mucous membrane.
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6. Negative side effect of a medication; undesirable reaction
8. To divide and dispense in portions.
Instructions: Complete the crossword puzzle. Use the clues to help you solve the puzzle.

Across
4. a stoppage of the flow of blood or other body fluids in part of the body
6. the act of breathing in
8. a circumscribed, non-inflammatory growth arising from existing tissue, but growing independently of the normal rate or structural development of such tissue; serves no physiological function
12. a contagious fungal infection of the feet
13. an acute or chronic disease marked by inflammation and infection in the lungs
14. activity of disease-producing bacteria, virus or fungus in the body and the reaction of the body to the microorganisms and their products
15. inflammation of a joint

Down
1. transmission of a disease from an original site to one or more sites elsewhere in the body
2. inflammation of a bursa, usually at the shoulder, elbow or knee joints
3. a cancer-causing substance
5. substances produced by certain fungi, bacteria and other organisms that are effective in inhibiting the growth of or destroying microorganisms
7. localized heat, redness, swelling and pain as a result of irritation, injury or infection
9. a severely inflamed and infected throat
10. an acute highly contagious infection; flu
11. the treatment of a disease with chemicals
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Instructions: Complete the word search puzzle. Use the clues to help you identify the words.

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<table>
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<th>Word 1</th>
<th>Word 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENCOIIFN</td>
<td>ESATTISSMA</td>
</tr>
<tr>
<td>NIULFENZA</td>
<td>OHFETTOEATLS</td>
</tr>
<tr>
<td>STRPTEROTTHA</td>
<td>EOMCATEHRPYH</td>
</tr>
<tr>
<td>TIRASTHIR</td>
<td>IAPRTONSAIL</td>
</tr>
<tr>
<td>URTOM</td>
<td>TBRSIUSI</td>
</tr>
</tbody>
</table>

**Clues**

1. activity of disease-producing bacteria, virus or fungus in the body and the reaction of the body to the microorganisms and their products
2. a stoppage of the flow of blood or other body fluids in part of the body
3. transmission of a disease from an original site to one or more sites elsewhere in the body
4. an acute highly contagious infection; flu
5. localized heat, redness, swelling and pain as a result of irritation, injury or infection
6. an acute or chronic disease marked by inflammation and infection in the lungs
7. inflammation of a joint
8. a severely inflamed and infected throat
9. a circumscribed, non-inflammatory growth arising from existing tissue, but growing independently of the normal rate or structural development of such tissue; serves no physiological function
10. inflammation of a bursa, usually at the shoulder, elbow or knee joints
11. a cancer-causing substance
12. a contagious fungal infection of the feet
13. the treatment of a disease with chemicals
14. substances produced by certain fungi, bacteria and other organisms that are effective in inhibiting the growth of or destroying microorganisms
15. the act of breathing in
Clues
1. activity of disease-producing bacteria, virus or fungus in the body and the reaction of the body to the microorganisms and their products
2. a stoppage of the flow of blood or other body fluids in part of the body
3. transmission of a disease from an original site to one or more sites elsewhere in the body
4. an acute highly contagious infection; flu
5. localized heat, redness, swelling and pain as a result of irritation, injury or infection
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