DAY ONE AGENDA

- ⇨ DEFINITIONS

- ⇨ MEDICATION BASICS
  - o naming of medications
  - o medication components

- ⇨ MEDICATIONS AND THE BODY
  - o different forms of medication
  - o routes of medication delivery
  - o how medications interact with the body
  - o steady states

- ⇨ DRUG INTERACTIONS

- ⇨ ADVERSE DRUG REACTIONS
  - o some factors that increase the possibility of having adverse drug reactions
  - o anaphylactic shock
  - o medication-related emergencies

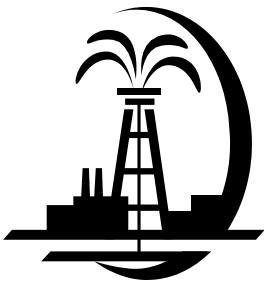
- ⇨ MEDICATION INFORMATION RESOURCES

- ⇨ LEVELS OF SUPPORT WITH MEDICATION

- ⇨ KEY PEOPLE AND THEIR ROLES

- ⇨ THE SIX RIGHTS

COURSE OUTCOMES



➲ PARTICIPANTS WILL . . .

- Have a basic understanding of how medications affect the body.
- Understand agency policies and procedures related to medication, including how to complete medication-related documents.
- Be competent to assist individuals with medication in a safe manner.
- Learn effective strategies for teaching individuals to self-administer medication.
- Know how to respond appropriately to possible medication-related emergencies.
- Be the "eyes and ears" of the agency healthcare coordinator(s).
- Help the IDT determine the appropriate level of support to provide the individual with his/her medication.

➲ INDIVIDUALS RECEIVING SERVICES WILL . . .

- Learn how to self-administer medication as safely and independently as possible.
- Receive safe assistance with medication from trained, competent staff.

DEFINITIONS

MEDICATIONS: are substances intended for use in the diagnosis, cure, treatment or prevention of conditions and diseases. These substances are approved for use in the USA by the Federal Drug Administration.

PRESCRIPTION MEDICATIONS: are drugs which are not safe to use except under the supervision of a practitioner licensed by law to direct the use of such drugs. A practitioner is defined as a physician, dentist, or other person licensed to prescribe drugs. The drug is dispensed only by a verbal or written prescription by the practitioner.

NON-PRESCRIPTION MEDICATIONS: are over-the-counter drugs that can be purchased without a written *prescription*. However, a written *order* (e.g., a comfort measures form) needs to be signed by the person's doctor before he/she can take over-the-counter drugs.

***PRO RE NADA (*PRN) MEDICATIONS**: are prescription or non-prescription drugs that are only taken on an "as needed" basis, depending upon specific signs and symptoms (such as pain, fever, shortness of breath, chest pain, blood glucose levels, etc.).

CONTROLLED SUBSTANCES: are drugs/substances that can be habit forming (addictive) and abused. They are listed in the Controlled Substances Act.

SUSTAINED-RELEASE FORMULATIONS: are drugs that are designed to release active ingredients slowly into the body.

METABOLISM: chemical and physical changes that occur in the body's tissues.

GASTROINTESTINAL SYSTEM: relating to the stomach and intestines.

NEBULIZER: a device that produces an extremely fine mist to inhale deeply into the lungs.

ENTERIC-COATED: allows a medication to be released in the intestine instead of the stomach.

CENTRAL NERVOUS SYSTEM: consists of the brain and spinal cord.

NAMING OF MEDICATIONS

GENERIC NAME: is the common name used to identify a medication and can be the same name as the chemical name of a medication; however, this is not always the case.

CHEMICAL NAME: identifies the chemical makeup of a medication.

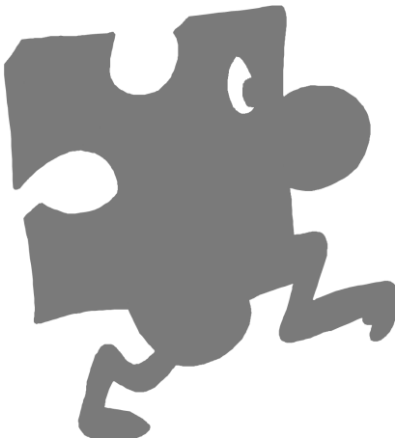
BRAND/TRADE NAME: is used to identify the medication name given to it by the drug manufacturing company. A drug may have multiple brand names.

EXAMPLES OF MEDICATION NAMES

GENERIC NAME	CHEMICAL NAME	BRAND/TRADE NAME
Aspirin	Acetylsalicylic Acid	Ecotrin, Bufferin
Prednisone	11β,17,21-Trihydroxy-Predna-1,4-Diene-3-2-Dione	Deltasone, Meticorten
Minocycline	Minocycline Hydrochloride	Minocin
Acetominophen	Acetominophen	Tylenol
Carbamazapine	Carbamazapine	Tegretol
Valproic Acid	Divalproex Sodium	Depakote

MEDICATION COMPONENTS

ACTIVE INGREDIENTS:

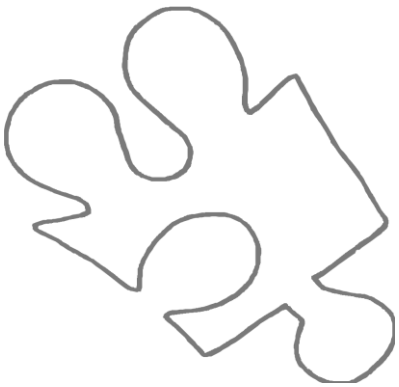


Active Ingredients are responsible for the medication action and the desired medication effect on the targeted area of the body.

Some prescriptions may have only one active ingredient. Over-the-counter (OTC) medications commonly have more than one active ingredient.

Since over-the-counter medications commonly have more than one active ingredient, it is important to have an awareness of the active ingredients in the medication.

ADDITIVES:



Additives are inactive substances added to medication preparations. These include fillers, binders, flavorings, dyes and preservatives, etc. Each gives a desired property to the medication preparation.

OVERVIEW OF MEDICATIONS AND THE BODY

ABSORPTION

The process where a cell, tissue, or organ takes up a medication.

The type of medication _____ (solid, semisolid, or liquid) will also affect the _____ of absorption.

_____ _____ can significantly affect absorption.

ACTION

How the medication alters or affects the body.

Some medications have to be _____ by the liver before they can be effective.

The _____ of medication a person has in his/her body will affect how _____ the medication works.

EXCRETION

The elimination of waste from the body.

Different _____(e.g., age, liver functioning, kidney functioning, the acidity of urine) _____ how well a person's body can excrete medications.

People with _____ _____ are at a higher risk for experiencing _____ with excretion (due to possible physical conditions).

SOME DIFFERENT FORMS OF MEDICATIONS

SOLIDS

Tablets/Pills	maintain shape and are absorbed slowly after swallowing. Enteric coated tablets are absorbed in the small intestine and should not be crushed.	
Capsules	have cases that contain medication, cannot be compressed, and melt quickly after being swallowed.	
Caplets	are tablets shaped like capsules.	
Lozenges	have medicinal powders and a filler.	
Dermal Patches	are solid material with medications attached to them. They allow for steady, continual absorption through skin.	
Powders/Granules	are drug particles of medications.	

SEMISOLIDS

Suppositories	are cone-shaped drugs whose vehicle (usually cocoa butter) melts at body temperature. They are molded to fit the shape of the body cavity they are used in (e.g., rectum).	
Ointments	are fatty, soft substances used for topical application to the skin or eyes.	
Creams	are not as thick as ointments. They are used topically and are easier to spread.	

LIQUIDS

Solutions	are mixtures of two or more substances dissolved in another substance.	
Suspensions	are mixtures of solids and liquids in which the solid particles do not dissolve.	
Elixirs	are clear liquids containing water, alcohol, sweeteners and flavors. The alcohol content sometimes can be a problem when taken with other medications.	
Lotions	are similar to creams but contain more water than creams.	
Drops	are drugs in sterile liquids to be applied with a dropper.	
Sprays/Mists	are liquid drug forms that may be inhaled as fine droplets.	

ROUTES OF MEDICATION DELIVERY

ORAL

Because the oral route (*Per Os* → PO → by mouth) is comfortable, convenient and economical, it is the most commonly used route.



I. The form of the medication determines how fast it dissolves and is absorbed. In general, liquids absorb faster than capsules, and capsules absorb faster than tablets/caplets.

II. Abnormal digestion can significantly affect absorption of medication.

III. Some medications are taken to produce effects in the gastrointestinal system (such as laxatives, antacids, etc.), but most are taken to produce effects somewhere else in the body.

IV. Medications taken orally must be resistant to destruction by stomach acids.



V. Some foods and drinks can prevent the absorption of certain medications. So it is important to know which foods and drinks an individual should not have when taking medication.

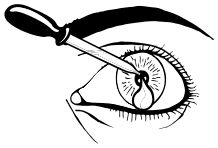
VI. In general, medications taken with food are absorbed more slowly than medications taken on an empty stomach.

VII. Sustained-release formulations prolong the time period that the medication will work.

VIII. Some medications cannot be crushed and taken with food. Usually medications that are sustained release or enteric coated cannot typically be crushed.

IX. Some medications cannot be divided (split) and taken. Usually medications that are sustained release or enteric coated cannot be divided.

ROUTES OF MEDICATION DELIVERY
(CONTINUED)



MUCOUS MEMBRANES

These membranes are thin and moist and absorb medications easily. They can allow medications to enter the bloodstream when a person cannot take oral medications (such as when they are vomiting).

- ⇨ Sublingual - mucous membrane under the tongue
- ⇨ Buccal - inside mucous membrane of the mouth (excluding under the tongue)
- ⇨ Conjunctival – inside of lower eyelid
- ⇨ Nasal – mucous membrane inside the nose
- ⇨ Vaginal – mucous lining of the vagina
- ⇨ Rectal – mucous membrane inside the rectum

SKIN

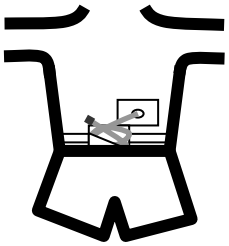
Dermal patches are put on the surface of the skin so that the medication is absorbed slowly through the skin into the bloodstream.

INJECTION

Some medications must be given by a form of injection. The methods of injection are:

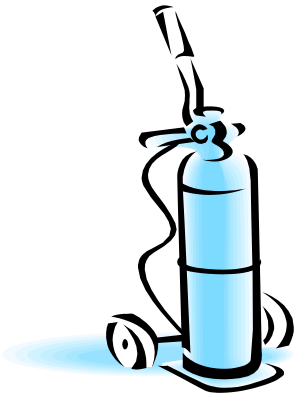
- ⇨ Subcutaneous (SQ) – under the skin
- ⇨ Intramuscular (IM) – into the muscle
- ⇨ Intravenous (IV) – into the vein

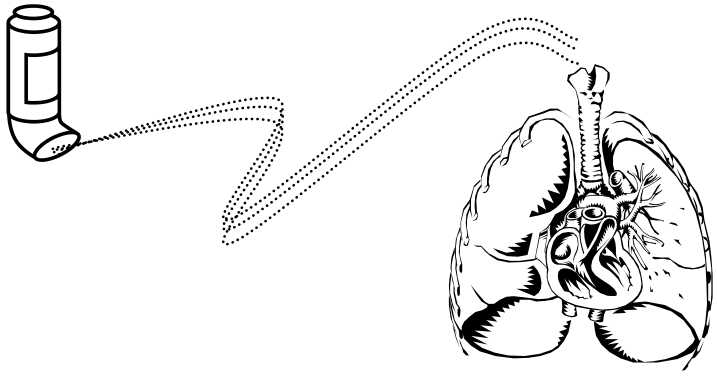
ENTERAL



There are special situations when a person cannot swallow medication, so the medications enter the body through a feeding tube (e.g., Gastrostomy Tube, Jejunostomy Tube). The absorption is the same as if it were taken by mouth.

ROUTES OF MEDICATION DELIVERY
(CONTINUED)





INHALATION

⇨ Medications absorbed by the lungs must be in a gas or fine mist form.

⇨ Devices used for this route of administration include nebulizers and hand-held inhalers (either nasal or oral inhalers).

⇨ The lungs provide a very large surface for absorbing medications. In addition, there is a lot of blood circulating in the lungs because of the body's need for oxygen.

⇨ Supplemental oxygen is used as a "medication" for individuals whose lungs or heart are diseased or not functioning properly.

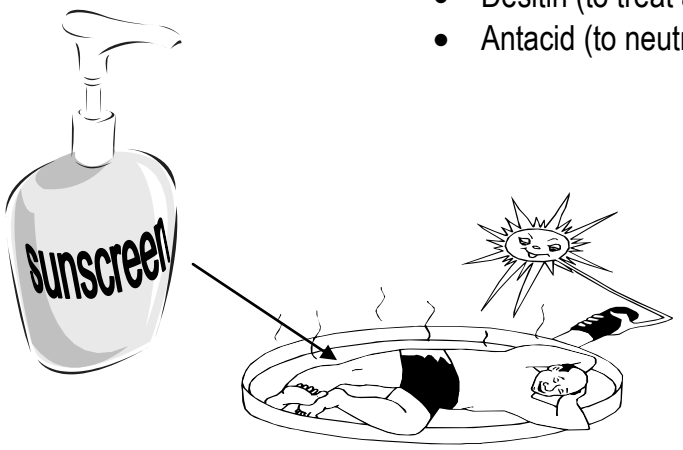
MEDICAL EMERGENCY RESPONSE PLANS MUST BE IN PLACE FOR MANY CONDITIONS THAT REQUIRE THE USE OF INHALED MEDICATIONS.

HOW MEDICATIONS INTERACT WITH THE BODY

Medications act either to change the physical environment of the cell or change how the cell functions.

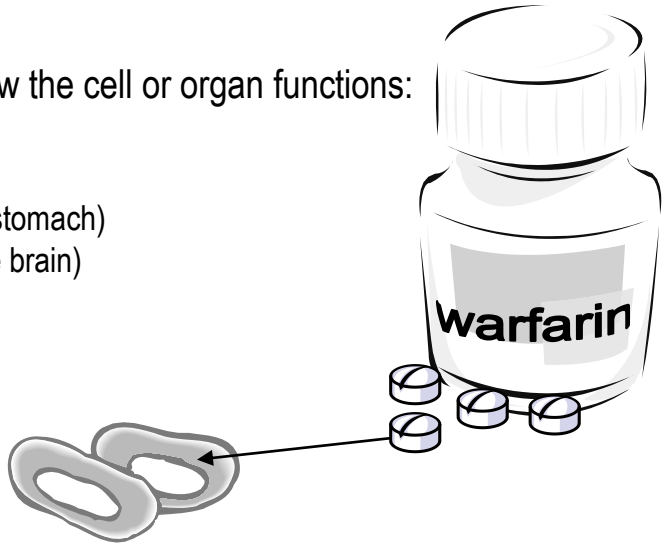
Examples of medications that change the physical environment of cells:

- Sunscreen (to decrease exposure of the skin to ultraviolet rays)
- Desitin (to treat a rash)
- Antacid (to neutralize stomach acid)



Examples of medications that change how the cell or organ functions:

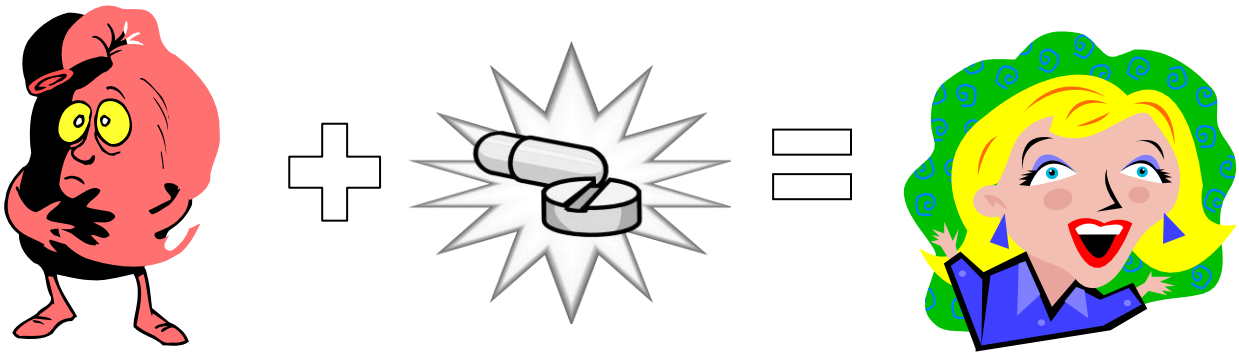
- Warfarin (to delay clotting of the blood)
- Prilosec (to delay production of acid in stomach)
- Tegretol (to alter electrical activity in the brain)



HOW MEDICATIONS INTERACT WITH THE BODY
(CONTINUED)

MODE OF ACTION – what the medication does in the body

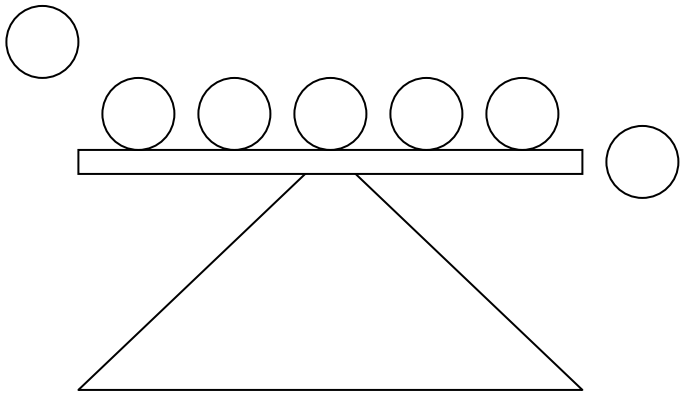
THERAPEUTIC EFFECT – what the medication treats



What do all three of these medications have in common?

MEDICATION NAME	TUMS (calcium carbonate)	TAGAMET (cimetadine)	PRILOSEC (omeprazole)
MODE OF ACTION *(what the medication does in the body)*	a base that neutralizes acid in the stomach	blocks receptors in stomach wall to reduce acid secretion	works in stomach wall cells to inhibit acid production
THERAPEUTIC EFFECT *(what the medication treats)*	decreases heartburn	decreases heartburn and allows for healing of stomach ulcers	decreases heartburn and inflammation of esophagus, as well as allow for healing of stomach ulcers

STEADY STATES



- ⇨ When the amount of a medication leaving the body equals the amount of the medication entering the body, a "steady state" is reached. Reaching and maintaining a steady state is the goal of most medication therapy.

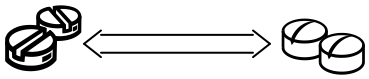
- ⇨ A steady state is very important in managing such conditions as asthma, epilepsy (seizures), hypertension (high blood pressure), cardiac (heart) disease, and diabetes.

- ⇨ Medication toxicity is a buildup of too much medication in the body. This can occur when the amount of medication entering the body is greater than the amount leaving the body.

- ⇨ The kidney is the most important organ for getting rid of medication from the body. The second most important organ for getting rid of medications is the liver. So individuals with kidney and/or liver damage have to be monitored very carefully by their physician for signs of toxicity.

DRUG INTERACTIONS

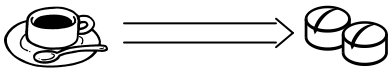
DRUG-DRUG INTERACTIONS



- ⇨ These interactions may be helpful or harmful.
- ⇨ Chances of drug-drug interactions occurring increase with the number of medications a person takes, the number of prescribing physicians a person has, and the variety of drugs taken.
- ⇨ Prescribing physicians and pharmacies are responsible for preventing drug-drug interactions. This is why it is important to take (to each appointment) a current Health Passport, which contains a list of ALL medications an individual is taking, including homeopathic remedies, over-the-counter medications, vitamins/minerals, herbal supplements, and prescription medications.
- ⇨ When an individual begins taking a new medication, pay close attention to any changes you notice (skin rash, behavioral changes, excess sleepiness, etc.)

Examples

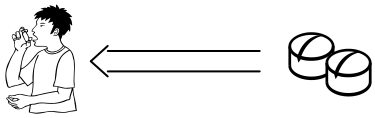
FOOD-DRUG INTERACTIONS



- ⇨ Food-drug interactions can occur with both prescription and non-prescription medications.
- ⇨ Only some medications are affected by foods (including beverages).
- ⇨ Food-drug interactions can occur when nutrients in foods bind with active ingredients in medications, thus changing the way the medications affect the body.

Examples

DISEASE-DRUG INTERACTIONS



- ⇨ Because medications travel throughout the body, they may affect more than one area of the body. For example, a medication that is taken for the lungs may also affect the heart.
- ⇨ Individuals with certain conditions are more susceptible to disease-drug interactions (diabetes, high/low blood pressure, enlarged prostate, poor bladder control, insomnia, etc.).
- ⇨ Some medications can aggravate pre-existing conditions (e.g., diabetes).

Examples

REACTIONS TO MEDICATION

1. Desired (Therapeutic) Effects

What all does this drug treat?

EXAMPLES:

2. Undesired (Adverse) Effects

What rotten things might happen?

EXAMPLES:

ADVERSE DRUG REACTIONS

⇨ Adverse drug reactions are undesired responses to a medication. Common examples are:

- ❍ Side effects
- ❍ Overdose toxicity
- ❍ Drug allergies

⇨ Most medication-related side effects are minor such as nausea, vomiting or skin rashes but some are very serious, causing severe injury or even death.

⇨ Adverse drug reactions can be caused by medications themselves, an allergic reaction caused by a person's immune system, or toxicity from too much drug in the body.

⇨ One medication can affect the rate of elimination of another medication, possibly resulting in toxicity.

⇨ Medications most likely to cause adverse drug reactions are:

- ❍ Anticoagulants (decrease blood's ability to clot)
- ❍ Antibiotics
- ❍ Pain medication
- ❍ Heart (cardiovascular) medication
- ❍ Central nervous system medication
- ❍ Psychiatric medication

⇨ It is critical that the history of any adverse drug reaction be known by those supporting an individual.

⇨ Your agency must have a policy for reporting adverse drug reactions.

You MUST notify the agency nurse <u>immediately</u> whenever you suspect or observe an adverse drug reaction.

SOME FACTORS THAT INCREASE THE POSSIBILITY OF HAVING ADVERSE DRUG REACTIONS

- The individual takes multiple medications.
- The individual is undergoing treatment by two or more physicians at the same time. These physicians may not know all of the medications a person is taking.
- The individual's age (very young or old) and body size (very large or thin) can be a factor.
- The individual has a chronic illness (such as pneumonia or kidney failure).
- The individual is receiving a newly manufactured medication.
- The individual uses over-the-counter (OTC) preparations, including homeopathic remedies and vitamin/mineral supplements, which can interact with prescribed medications.
- The body's ability to use the medication has decreased. Some possible causes could be kidney failure, liver failure, and dehydration.
- The individual's history shows previous adverse drug reactions (e.g., the person has drug allergies).
- Not taking medications regularly can increase the possibility of having adverse drug reactions.

ANAPHYLACTIC SHOCK

Anaphylactic shock is a severe allergic reaction involving the cardiovascular system (heart and blood vessels) and the respiratory system. Anaphylactic shock can lead to death.

Because people can die from anaphylactic shock, it is urgent that they receive medical attention as quickly as possible.

The signs and symptoms of anaphylactic shock may include:

- ⇨ Swelling of lips and tongue
- ⇨ Difficulty breathing
- ⇨ Wheezing and coughing
- ⇨ Swelling in the large airway leading to the lungs (laryngeal edema)
- ⇨ Hives (pink/red, swollen, and/or itchy blotches of skin)
- ⇨ Turning blue due to a lack of enough oxygen in the blood (cyanosis)
- ⇨ Rapid swelling of fluid under the skin (angioedema)
- ⇨ Paleness, sweating, dizziness
- ⇨ Shut down of the cardiovascular system (e.g., decreased pulse rate)
- ⇨ Seizures/convulsions (rare)
- ⇨ Unconsciousness

ANAPHYLACTIC SHOCK IS LIFE THREATENING.
FOLLOW YOUR AGENCY'S EMERGENCY PROCEDURES.

MEDICATION-RELATED EMERGENCIES

EXAMPLES OF MEDICATION-RELATED EMERGENCIES:

- Possible overdose
- Severe allergic reaction (such as anaphylactic shock)
- Severe side effects
- A severe reaction someone has from *not* receiving their medications

WHAT TO DO DURING A MEDICATION-RELATED EMERGENCY

MEDICATION INFORMATION RESOURCES

To get information about medications, you can consult the following:

- ☐ The Pill Book
- ☐ Nursing Drug Reference
- ☐ Therap
- ☐ New Mexico Poison Center - (800) 222-1222
- ☐ Physicians
- ☐ Nurses
- ☐ Pharmacists
- ☐ Pharmacy information sheets
- ☐ Health Central - http://www.healthcentral.com/medications/r/medications/
- ☐ Healthline - http://www.healthline.com/
- ☐ Medline Plus – http://medlineplus.gov/
- ☐ WebMD - http://www.webmd.com/
- ☐ Physicians' Desk Reference

MEDICATION NAME	PRESCRIBED FOR	SOME POSSIBLE SIDE EFFECTS	POSSIBLE INTERACTIONS (DRUG OR FOOD)	OTHER IMPORTANT INFORMATION

LEVELS OF SUPPORT WITH MEDICATION

INDEPENDENT SELF-ADMINISTRATION OF MEDICATION

The individual is . . .

- Able to determine if he/she is receiving the expected response.
- Able to identify each medication, including purpose, prescribed dose, correct medication route, and most common potential side effects. Essentially, they know all about their medications.
- Able to understand the times the medication is to be taken and what to do if a dose is missed; and
- Able to complete the entire process of taking the medication independently from start to finish.
- Able to take measures to report side effects.

SELF-ADMINISTRATION OF MEDICATION WITH PHYSICAL ASSISTANCE

- Individuals with physical challenges that prevent them from completing the process of taking medication independently, but who otherwise meet all criteria for Independent Self-Administration, may receive support from trained staff.
- The individual served must be able to identify each medication, including its purpose, most common expected side effects, prescribed dose, and times to be taken.
- The person must be able to take measures to report side effects.
- These criteria do not apply to the following routes: intramuscular, subcutaneous, intravenous, nebulizer inhalation (unless pre-mixed) and/or nasogastric tube.

ASSISTANCE WITH MEDICATION DELIVERY

With consent of the guardian or surrogate health decision maker, support staff may assist with medication delivery if:

- The condition(s) for which the individual takes medication is/are stable as determined by a nurse, according to criteria in the Medication Administration Assessment Tool (MAAT).
- The individual is unable to independently complete the entire process of taking the medication and/or determine if they are receiving the expected response.
- The individual has the ability to communicate to staff (e.g., verbally, through gestures, or using assistive technology) that he/she is experiencing pain or discomfort.
- Staff have completed this two-day training for assisting with medication.
- Staff have completed individual-specific training requirements specified in the ISP.
- Staff have the ability to teach the individual how to self-administer medications.
- The individual may know some, but not all steps of the process.

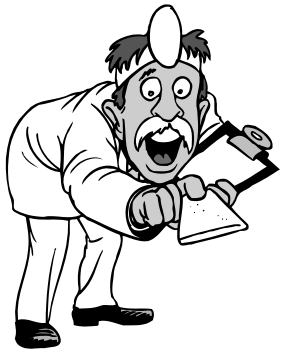
MEDICATION ADMINISTRATION BY LICENSED/CERTIFIED PERSONNEL

If the individual cannot independently self-administer, licensed/certified personnel are needed when . . .

- The individual takes medication via specific routes: intramuscular, subcutaneous, intravenous, nasogastric tube, and/or nebulizer inhalation (if not pre-mixed, if used in an acute or on an as needed basis, or if the medication is new and the person is not yet stable).
- Pre-delivery assessment is needed before each dose is taken (until specific criteria are met).
- The individual's medical condition is not stabilized and requires ongoing nursing assessment of medication effectiveness.

There are specific exceptions to these guidelines (e.g., a Family Living provider who is related by blood, adoption, or marriage who has completed this course and has received individual-specific training conducted by the individual's healthcare practitioner). Additional exceptions are described in the DDSD Medication Delivery Policy.

KEY PEOPLE AND THEIR ROLES



The Physician examines the person and writes a prescription.

The agency keeps copies of prescriptions for recordkeeping purposes

The pharmacist will receive the original prescription, fill the prescription, and give a medication information sheet..

.

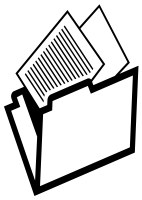
The agency nurse will monitor the health of the person, administer medications, conduct assessments, and provide individual-specific training.

The agency healthcare coordinator helps schedule appointments, often provides transportation to and from appointments, and ensures prescriptions are filled.

The medication will be stored properly at the person's home, according to state regulations and agency policies and procedures.

The person takes his/her medication as independently and safely as possible.

Trained staff observe, support, assist, teach, document, and report.

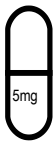
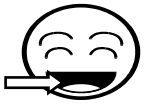


Know what to take with you to medical appointments (i.e. Health Passport) and where these things are located.

The consultant pharmacist will consult and promote quality improvement. This person also helps to dispose of discontinued, contaminated, and refused medications.

THE SIX RIGHTS

There are six things that must be verified each time a person takes medication:

	**RIGHT TIME**	
	**RIGHT PERSON**	
	**RIGHT MEDICATION**	
	**RIGHT DOSE**	
	**RIGHT ROUTE**	
	**RIGHT DOCUMENTATION**	

WHAT ARE SOME THINGS THAT CAN HAPPEN IF ALL OF THE SIX RIGHTS ARE NOT VERIFIED?

1. _____
2. _____
3. _____
4. _____

ALSO LOOK AT: The oral route of medication delivery, examples of adverse drug reactions, the definition of anaphylactic shock, and levels of support with medication.