PREMIUM EDITION FOR NURSING STUDENTS

Pharmacology Study Guide

NOTES READY TO STUDY

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Pharmacology Study Guide

Study of the biological effects of chemicals is known as pharmacology.
Pharmaceuticals used to treat, prevent, or diagnose diseases are known as pharmacotherapeutics.

NURSING PROCESS AND MEDICATION ADMINISTRATION

1. Assessment
    a. Allergies
    b. Pattern of health care
    c. Understanding of the disease process
    d. Financial support
2. Physical Assessment
    a. Age and weight
    b. Social support at home
    c. Chronic condition
3. Diagnostic test, Laboratory test
4. Medication History
    a. Prescriptions
    b. OTCS
    c. Herbals
    d. Response to medications

NURSING DIAGNOSIS

1. Human reaction to disease The use of drugs may only be a portion of the solution. The use of drugs is included in the bigger picture.

PLANNING

1. Identify potential draws
2. family and client education
3. collection tools, review processes, safety precautions, and the dosage and frequency of medications
4. storing pharmaceuticals

IMPLEMENTATION

1. enhancing therapeutic results
2. reducing negative consequences
3. SIX rights to administer drugs

IMPLEMENTATION

1. enhancing therapeutic results
2. reducing negative consequences
3. SIX rights to administer drugs

EVALUATION

track the patient's response to the intended effect of

the pharmacological therapy Unexpected result

The 5 RIGHTS of Medication Administration

1. Right drug
2. Right dose
3. Right time
4. Right route
5. Right patient

SIX ELEMENTS OF A DRUG ORDER

Name of the patient Date order is written Name of medication Dosage which includes size, frequency and number of doses Route of delivery Name and signature of the prescriber

DRUG NAMES

1. 1. Chemical Name Describe the chemical structure and composition
2. 2. Generic Name Non propriety name given by USANC
3. 3.Brand Name
    a. authorized trademark
    b. EXAMPLES
    c. Substantial Name
    d. Acid propionic
    e. Common Name
    f. Ibuprofen
    g. Company name
    h. Motrin

PHARMACOKINETICS

Absorption is the drug's departure from the administration site. Transporting a medicine into the bloodstream: distribution Drug metabolism changes in the body Elimination of the medication or a chemical derived from it from the body

PHARMACODYNAMICS

the process by which medications alter biological tissue.

a drug's intended outcome or effect
negative effects are harmful unintentional effects.
side effects - reactionary consequences
d. toxicity – the degree which something is poisonous digoxin = 0.5 – 2.0 ng/mL
lithium = 0.5 – 1.5 mEq/L

Pharmacologic Principles

1. DRUG
a. Any chemical that affects the physiologic mechanism of a vliving organism
2. PHARMACOLOGY
a. The study or science of drugs Pharmacologic Principles

1. PHARMACEUTICS

Research on drug formulations concerns the delivery system the rate of medication dissolution and absorption . Pharmacological stage dosage of a prepared medication

Administration

Dissolution and disintegration
in the body of the drug
Pharmacokinetic phase, part a.
Drugs that are readily absorbed
3. Pharmacodynamic Phase Drug Available for Action Absorption, distribution,

metabolism, and excretion

Effect

PHARMACOKINETICS

1. The examination of what a medicine from truly does to
2. from the moment it enters the body till it exits

NURSING DOSAGE CALCULATION

Conversions

- 1 mg = 1000 mcg
- 1 g = 1000 mg
- 1 kg = 1000 g
- 1 kg = 2.2 lbs
- 1 oz = 30 ml
- 1 ml = 1 cc
- 1 L = 1000 ml
- 1 tsp = 5 ml
- 1 tbsp = 15 ml (3 tsp)
- 1 cup = 8 ft oz

Abbreviations

:

- g = gram
- mg = milligram
- mcg = microgram
- kg = kilogram
- lbs = Pound
- oz = Ounce
- mL = milliliter
- tsp = teaspoon
- tbsp = tablespoon

Comprehensive:

Please Remember Conversions & Units

How many milliliter in 9oz (ounce)?

$\frac{9oz}{1} \times \frac{30mL}{} = 270mL1oz$

How many micrograms in 30 mg

(milligram)?

$\frac{30mg}{1} \times \frac{1,000mcg}{1mg} = 30,000mcg$

How many milligram in 10 tsp (teaspoon)?

$\frac{10tsp}{1} \times \frac{5mL}{1tsp} = 50mL$

How many microgram in 0.5 g (gram)?

$\frac{0.5g}{1} \times \frac{1000mg}{1g} \times \frac{1000mcg}{} = 50,000mcg$

How many kilogram in 170 lbs (Pound)?

$\frac{170lbs}{1} \times \frac{1kg}{2.2lbs} \times \frac{170}{2.2} = 77.3kg$

Rounding

Less than 1.0 = round to nearest hundredth.
Greater than 1.0 = round to nearest tenth.

Dimensional Analysis

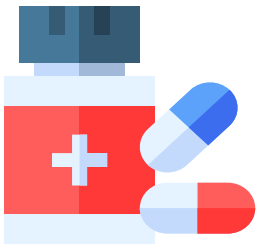
Determine the unit that you are calculating.(Tablets) Determine the quality available. (1 tablet) Determine the dose available. (300 mg) Determine the desired dose. (600 mg)

$\frac{\text{Quantity}}{\text{Available dose}} \times \text{Desired dose}$

$\frac{1\text{ Tablet}}{300\text{ mg}} \times 600\text{ mg}$

X

Solid Dose Medication:



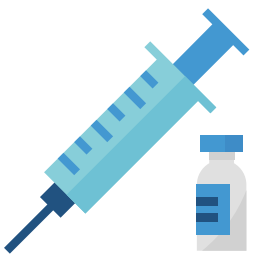
Order: 0.5mgdaily

Supplied: 25 mg/2mL 5

tab/dose

$\frac{0.5mg}{1} \times \frac{1,000mcg}{1mg} \times \frac{1tab}{100} \times \frac{500}{100} = 5$

Oral Liquid Medication:



Order: : 50mg 4 hours

Supplied: 25 mg/2mL

0.8 tab/dose

$\frac{50mg}{1} \times \frac{2mL}{1mg} \times \frac{1tab}{5mL} \times \frac{100}{125} = 0.8$

DOSAGE CALCULATION

IV Medication:

Order: 1mg IV

Supplied: 0.4 mg/mL

2.5mL

$$\frac{1\text{MG}}{1} \times \frac{1\text{mL}}{0.4\text{mg}} \times \frac{1}{0.4} = 2.5\text{ ml}$$

IV Flow Rates: (mL/hr)

Order: 2L (over 48 hours)

42mL/hr

$$\frac{2\text{L}}{48\text{hrs}} \times \frac{1000\text{mL}}{1\text{L}} = \frac{2000}{48}$$ 41.66

IV Flow Rates: (gtts/min

10 drops/mL approx

Order: 2L (over 48 hours)

Drip Factor: 15 gtts/mL

10mL

$$\frac{1\text{hr}}{60\text{min}} \times \frac{2\text{L}}{48\text{hrs}} \times \frac{1000\text{ml}}{1\text{L}} \times \frac{15\text{gtt}}{1\text{ml}} = \frac{30{,}000}{2{,}880}$$ 10.41gtts/min

Weight Based Calculation

Order: 2mcg/kg/min

Weight: 130 lbs Supplied:

250mg/250mL

$$\frac{130\text{lbs}}{1} \times \frac{1\text{kg}}{2.2\text{lbs}} \times \frac{2\text{mcg/min}}{1\text{kg}} = 7.09081 \times \frac{1\text{mg}}{1000\text{mcg}} \times \frac{250\text{mL}}{250\text{mg}} = \frac{65{,}000}{550{,}000}$$ 0.11818mL/min

$$\frac{1\text{hr}}{60\text{min}} \times \frac{0.11818}{1\text{min}}$$ 7mL/hr

Safety and Efficacy

Nursing Principles

:

Always verify the Five Rights .

the right medications the right client
the right dosage the right form,
route and technique the right time

Never chart drug administration before the medication has been administered. Never leave a tray or cart with medication unattended. The chart correctly and completely depicts the therapeutic and negative consequences. Before giving a newly authorized medicine, check past records for allergies and possible drug interactions. Any negative effects should be reported to the prescribing doctor; if they cannot be found, they should be reported to the nursing supervisor. Inquire about any drug orders that are confusing, seem to include mistakes, or seem to have the potential to cause harm. Take the following actions if an error occurs :

immediately notify the nursing supervisor, the prescribing physician, and the pharmacist
assess the client's condition and provide any necessary care.

For postpartum women, advice to take drugs after breastfeeding.

Eye medications :

Routes and Nursing considerations:

Enteral – oral, sublingual, rectal, gastric tubes- capsulated pill, sustained release and enteric coated should not be crushed.
Parenteral – IV, IM, SQ, ID, IT, IA, epidural.- vastus lateralis (safest site for IM)
Topical – skin, inhalants, mucus membrane.

Administration of Drugs

:

Apply eyedrops before applying ointment utilize a different bottle for every custome Tell the client to look up, tilt their head back, and open their eyes Avoid putting the prescription bottle near your eyes. dispense medication as directed into the lower conjunctival sac Give the client 30 to 60 seconds to press the inner canthus Tell the customer to gently close one eye.

Ear drops

Pull the pinna backward and downward in infants and kids under the age of three forward and backward in adults and older children Instead of immediately touching the ear drum, apply the solution to the ear canal's wall.

Pharmacotherapeutics

the clinical indications for medication use in the prevention and treatment of disease stroke and heart attack acute treatment Maintenance treatment for lipidemia and HPN Supplemental/replacement therapy: thyroid, iron, and insulin medications High-dose opioids used as a palliative for cancer Fluids and electrolytes for support antimicrobial precautions during surgery Empiric - experience indicates it works, although there is no proof

therapeutic drug surveillance Some medications only have a small spectrum of therapeutic and harmful effects. Digoxin and gentamycin are closely monitored Peak level – highest blood level lowest blood level is a trough. To determine the amount of medication in the body, blood is collected at particular intervals before and after administration.

Common Dosage Forms

Forms	Description
Caplet	Solid form for oral use; shaped like a capsule and coated for ease of swalowing
Capsule	Solid form for oral use; meds in powder, liquid, or oil form encased by gelatin shel
Elixir	Clear fluid containing water and/or alcohol; designed for oral use; Usually has sweetener
Enteric tablet	Tablet coated with materials that dissolve in intestine, where medication is absorbed
Extract	Concentrated form made by removing active portion of meds from its other components
Glycerite	Solution of medication combined with glycerin (at least 50%)external use

Drug Interactions

1. *action of one drug is altered by the action of another drug*
2. *Drug 1 + Drug 2 = increase activity of drug 1 and drug 2.*
3. *Drug 1 + Drug 2 = decrease activity of drug 1 and drug 2.*
    a. *For instance, antacids prevent the breakdown of ketoconazole. Antacids containing aluminum prevent tetracycline from being absorbed.*

1. *In terms of pharmacology, only unbound drugs are active.*
2. *Propoxyphene and aspirin together provide an additional analgesic effect, for example, which is an example of an additive effect.*
3. *SYNERGISTIC EFFECT: When two medications are administered together, their combined effects are higher than the sum of their individual effects. Codeine and aspirin increases the analgesic effect*
4. *Insulin and Gentamycin are two examples of medications that the stomach's acid can damage. Teeth that are brownish in color, Tetracycline Gray Baby Syndrome, and bone marrow toxicity---- Chloramphenicol*

Major Routes of Administration

1. *ORAL ADMINISTRATION OF MEDICATIONS*
    a. *Advantages Convenient affordable to administer Disadvantages: Each person has a different level of absorption. Oral medications may aggravate GI tract. Client must assist There are two gates for absorption. the digestive system Cavernous walls The small intestine absorbs most of an oral dosage. The pH of the stomach's contents determines the rate and extent of absorption. stomach full Gastric emptying period covering for drug preparation b. Topical medications(skin, nose, eye, ear, vagina, rectum)*

Forms	Description
Liniment	Preparation usualy containing alcohol, oil, or soapy emolient that is applied to the skin
Lotion	Medication in liquid suspension applied externaly to protect skin
Pill	Solid form containing 1 or more meds, shaped into globules, ovoid, or oblong shapes
Solution	Liquid that may be used oraly, parenteraly, or externaly; can also be insti led into body
Syrup	Medication dissolved Unconcentrated sugar solution; may contain flavoring for palatability
Tablet	Powder form pressed into hard disks or cylinders; also containsbinders(adhesive), disintegrators(for tablet dissolution), lubricants, and fi lers(for convenient tablet size)

Via the mouth

1. *Take with 50-100 ml of cold fluid unless contraindicated*
   a. *Contraindications: GI dysfxn(vomiting), unconscious or unable to swallow, NPO preor post-op*
   b. *Gastric irritability, inactivation by gastric acid, disagreeable taste or odor, and staining of the teeth are drawbacks.*

Via nose

Have client blow nose, lie supine and breath thru mouth Position head as follows for 5 min (to ensure absorption Squeeze the dropper or atomizer swiftly, being careful not to touch your nose with the applicator Client may wipe but not blow nose Meds may produce unpleasant taste or coughing Heart disease, diabetes, and hypertension are contraindications to decongestants (the most used nasal medication).

Remember

Posterior pharynx: head tilted or extended backward
Ethmoid and sphenoid sinus: head hyper extended or tilted over edge of bed (Parkinson's position)
Frontal & maxillary sinus: hyper extended and side wards (Proetz's)

Via EYE

1. *Remember that O.D. stands for right eye, O.S. for left eye, and O.U. Using gauze dipped in saline, gently clean the eyelid of any crusts or discharge. Always wipe the canthus from inner to outer. To get eye drops*
   a. *Pull down the cheekbone and lift up the lid while the client is looking up to reveal the lower conjunctiva.*
   b. *Asking the customer to blink or cover their eyes after stopping the recommended medication*
   c. *If a client shuts their eyes too soon, repeat. to apply eye ointment*
   d. *squeeze a thin stream from the inner to the outer canthus of the lover's conjunctiva. Keep container away from the eye; twist tube to break stream.*
   e. *Client closes eyes, then lightly rub lid in circular motion*

Via Ear

1. *Recall: A.D. = right ear, A.S.= left ear; A.U.= both ears*
2. *With client side*
3. *When lying down, pull the ear up and backward (for adults and older kids) or down and backward (for infants) to straighten the ear canal.*
4. *Assess eardrum perforation(contraindication to irrigation) or discharge (clean if present)*
5. *Warm medications in the hands (to prevent vertigo). Put medicine in by holding the dropper 1 cm above the ear. Hold for 2 to 3 minutes.*
6. *Place a cloth beneath the client's head and ask them to hold the basin under their ear for irrigation. Irrigate gradually with around 50 ml of liquid and let it all drain out.*

PARENTERAL MEDICATIONS

AMPULE PREPARATION

Tap the neck to release the fluid from the ampule, then break the neck off in your own direction. Holding the ampule upside down, quickly draw the medications out without letting the needle hit the rim Keep the needle's tip buried in the liquid to prevent sucking up air bubbles. Do not release air from the ampule if aspirated. Tap the syringe to move the bubbles up and draw to release them.

VIAL PREPARATION (SOLUTION)

Vials for many doses: Remove rubber stopper with alcohol pledget Draw up air without contaminating the plunger, equivalent to the number of medications required, and inject air into the vial. This helps to pull up medications and prevents the accumulation of negative pressure. Insert a needle through the rubber seal's center (the thinnest area). Maintain tip below fluid level and apply low pressure on the syringe tip in the vial. Change the scheduled needle before injecting the client.

Vial Preparation (Powder forReconstitution)

Create the diluent and inject it into the vial. Remove needle, then roll vial between hands. Do not tremble. When drawing up reconstituted medications, use a filter needle.

Mixing Medications

2Vials: Insert air into vial A and remove needle, making sure the tip doesn't touch the solution. air into vial B and remove the medications. alter the needle. fresh needle into vial A and remove the medications.

Vial to Ampule: Draw meds from vial first then from ampule

- When choosing a location for repeated injections, avoid bruised or painful areas and rotate the site as much as you can
- Swab the area with alcohol and let it air dry. To avoid coming into contact with client blood, always use gloves
- Quickly insert needle, bevel up, then release hold to lessen discomfort
- Sniff the air for blood. Place it back in with blood
- Inject gradually. Swab over spot and press down before withdrawing needle
- Massage the area, excluding the Z-track or the heparin injection site
- The abdomen is the most popular location for heparin injections.

INTRAMUSCULAR INJECTION SITES

across the capilary wall absorbed How water soluble the drug is determines the rate of absorption. How much blood reaches the injection site? Consequences: pain and potential local tissue damage

INTRAMUSCULAR INJECTION SITE

1. *VENTROGLUTEAL*
2. *DORSOGLUTEAL*
3. *DELTOID*
4. *VASTUS LATERALIS*

INTRAVENOUS THERAPY

1. *employ IV treatment solutions to replenish fluids, electrolytes, and other nutrients for patients who are unable to eat or drink enough. Examples of osmotic pressure comparable to plasma pressure 0.9% normal saline, 5% dextrose in water, and lactated Ringer's solution Examples of hypotonic solutions that exert lower osmotic pressure than plasma are 2.5% dextrose in water and half-strength normal saline. Plasma with an osmotic pressure of 0.45% hypertonic takes water out of the cells. examples: 5% dextrose in lactated Ringer's solution and 0.9% normal saline*

INTRAVENOUS THERAPY

venipuncture

assemble the infusion set. Put the roler clamp in the "off" position and lower it by 1-2 inches to the drip chamber. Attach a spike to the fluid bag. Fill or prime the drip chamber and the tubing with the cure By tapping the tubing, get rid of any air bubbles. Choose a vein that is large enough for the catheter and apply a tourniquet. Use the non-dominant arm's most distal location. Open or close the client's fist or milk arm toward the spot to dilate the vein. Cleanse the area, then use your thumb to anchor the vein and pull the skin away from the path of insertion. For both over-the-needle and butterfly catheters: Bevel up, insert at an angle of 20 to 30 degrees, little distal to the spot. Look for blood return before fully lowering the needle or catheter (remove the stylet if ONC). Stabilize the catheter, attach it to the infusion set, and tape it down.

4. PUSH VIA HEPARIN LOCK

1. SASH method S: saline flush (2 ml). A: give medication S: flush with 2 ml of saline H: provide 10-100 units of heparin.

4. INFUSION

1. Not through an air vent or an IV tubing port, but rather through the rubber stopper-sealed port in the IV bag. time and label rate

4. USH VIA EXISTING LINE

1. Give medications and release the tubing from the primary IV line by pinching it slightly above the injection port closest to the patient.

Household	Metric	Apothecary
1 drop	0.06 ml	1 minim
15 drops	1ml	15 minims
1 tsp	5 ml	1 fluidram= 60 min
1 tbsp	15 ml	4 fluidram
1 ounce	30 ml	1 fluidounce
1 glass= 1 measuring cup	240 ml	8 fluid ounce
2 measuring cups	480 ml= 500 ml	1 pint
1 quart	960 ml= 1 L	1 quart
1 gallon	3840 ml= 4 L	1 gallon
2.2 pounds	1 kg	1 grain
1 inch	2.54 cm	
	60 mg	

MEDICATION CALCULATIONS

1. System of Metrics Simply divide or multiply by multiples of 10 to translate inside the metric system: 1000 mg = 1 g, 1 = 1000 ml, and 0.45 L = 450 ml. Pharmacy System rarely used; the fundamental unit is the grain uses little Roman numerals (1/3 gr); fractions (16 grains; gr xvi); 60 grains = 1 dram in weight. 1 ounce = 8 grains. 1 pound = 12 grains Volume 60 minims equals one fluidram 2 fluidounces = 16 fluidrams = 1 pint 4 quarts = 8 pints = 1 galon Family System often used yet less precise than the metric system

CALCULATIONS DRUG DOSAGE

1. Prior to calculating, don't forget to convert the same unit. Basic equation for unknown amount (ml) of medication required (x): D/S X known amount = X(ml) Use the following diluents when diluted medications are required: use 2cc for IM Use 5 cc of IV fluid for 500 mg, or 10 cc of parenteral fluid for 500 mg.

RESPONSES TO MEDICATION

Desired effect - when desired effect occurs, the therapeutic aim is met and the medicine accomplishes its intended function. Side Effect - a little but bothersome reaction to medication, such as an aspirin-induced stomachache A side effect is when a medicine causes more severe symptoms or issues (for example, aspirin-induced significant gastrointestinal hemorrhage) Idiosyncratic Response: Weird, unusual, or unexpected reactions, such as blood in the urine after taking aspirin Against-the-odds responses are referred to as paradoxical reactions. Antigen-antibody response known as an allergic reaction causes the body to develop hives, rashes, itching, or swelling of the skin. Patients who are allergic to aspirin may occasionally have rash or shortness of breath. A severe allergic reaction known as an anaphylactic response can cause severe shortness of breath, cease breathing, or caus Drug interactions, which occur when one drug alters the effect of another drug, are a result of the cytochrome P450 enzyme pathways that each individual is born with. When two medications are administered simultaneously, the combined effect of the medications is equal to either the most active medication or the sum of the effects of both separate medications. Antagonistic effect – one drug interferes with action of another dru Displacement – takes place when one drug replaced another at the drug receptor sidte, increasing effect of first dru Incompatability – occurs when two drugs mixed together in a syringe produce chemical reaction, so they cannot be given Interference-occurs when one drug promotes the rapid excretion of another, thus reducing the activity Synergestic effect – takes place when effect of two drugs taken at same time is greater than the sum of the effects of each drug given alone Alcohol – strong reactions to certain meds (same with food)

Examples:

Analgesics –(Tylenol) – take on empty stomach for rapid relief, food may slow body's absorption of drug = avoid alchohol – may increase risk of liver damage or GI bleeding Analgesics-narcotics (codeine with aspirin, codeine with acetaminophen), morphine (Roxanol, MS Contin), oxycodone with acetaminophen (Percocet, Roxicet), meperidine (Demerol), hydrocodone with acetaminophen (Vicodin, Lorcet) – avoid alcohol because it increases sedative effect of these meds – take with meals, smal snack, meal – may cause stomach upset Antihistamines – (Brompheniraine(Dimetapp), diphenhydramine (B enadryl), clemastine (Tavist), fexofenadine (Alegra), Ioratadine (Claritin), cetirizine (Zyrtec) – avoid alcohol, may cause drowsiness and slowed reactions –take on empty stomach for increased effectiveness Bronchodilators (theophyline, albuterol, epinephrine) avoid eating or drinking large amts of food or beverages that contain caffeine, stimulate CNS – high fat meals increase amt of theophyline in body, high carbs may decrease it Aspirin – can cause stomach irritation – avoid alcohol – take with food – do NOT take with fruit juice Corticosteroids (Methylprenisone, prednisone(Deltasone, Pediapred, Prelone) – take with food or milk to avoid GI disress – avoid alcohol avoid foods high in sodium NSAIDS (Ibuprofen, Naproxen)-should be taken with food or milk – can irritate stomach – don't take with alcohol Indomethacin (Indocin) – should be taken with food – can irritate stomach – don't take with alcohol Piroxicam – should be taken with light snack – can cause stomach irritation Diuretics (Furosemide (Lasix), hydrochlorothiazide (HydroDiuril)-can lose potassium, calcium, May need potassium supplement

CLASSIFICATIONS OF DRUGS

DRUGS AFFECTING THE CENTRAL AND AUTONOMIC SYSTEM

(PARASYMPATHOLYTICS,ANTICHOLINERGICS)

Prototype

1. *Pilocarpine, carbachol, bethanecol (Urocholine), edrophonium (Tensilon), neostigmine (Prostigmine), and pyridostigmine (Mestinon) are examples of synthetic acetylcholine.*

Mechanism of action

1. *- cholinesterase inhibition or imitating acetylcholine stimulation of cholinergic receptors.*

Indications

1. *Tricyclic antidepressants and atropine are the antidotes to neuromuscular blocking medications for glaucoma, urinary retention, and Myasthenia Gravis.*

Adverse effects

1. *visual blurring, miosis (increased salivation), cramping in the intestines, bronchoconstriction, wheezing, DOB hypotension, and bradycardia*

Nursing considerations

1. *Inform and keep an eye on your clients' side effects.*
2. *a supply of atropine available for use as a remedy*

CHOLINERGIC BLOCKING AGENTS

Cholinergic Agents (Parasympathomemitics)

Prototype

1. *Propantheline (Pro Banthine), Scopalamine (Triptone), Dicyclomine (Bentyl), and Atropine*

Mechanism of action

1. *impede acetylcholine's ability to attach to parasympathetic nerve receptors.*

Indications

1. *e- dry up secretions before surgery by using. GI or urinary tract spasticity should be treated.*
2. *usage as a therapy for parkinsonism, asthma, and bradycardia.*
3. *usage as an antidote for poisoning by organophosphates.*

Adverse effects

1. *- tachycardia, dilated pupils, and dry mouth- heat stroke, ileus, and urine retention*

Nursing considerations

1. *Keep clients in a cool space.*
2. *Be on the lookout for dehydration and heatstroke symptoms.*
3. *Encourage them to drink more water and to use sugarless gum or candies to relieve dry mouth.*
4. *Give medication for GI spasticity before bedtime and 30 minutes before meals.*

DRUGS AFFECTING THE CENTRAL AND AUTONOMIC SYSTEM

Adrenergic Agents (Sympathomimetics)

Prototype

1. *phenylephrine, terbutaline, epinephrine, norepinephrine, ephedrine, dopamine, dobutamine, albuterol, and isoproterenol.*

Mechanism of action

1. *either directly or indirectly cause the release of catecholamines, which has sympathetic effects, on alpha and beta adrenergic receptors.*

Indications

1. *heart failure, pulmonary embolism, hypotension, COPD and asthma, stuffy nose, allergic response, and anaphylactic shock*

Adverse effects

1. *Angina, tachycardia, tremors, nausea, palpitations, agitation, sleeplessness, and HPN*

Nursing considerations

1. *pheochromocytoma, hyperthyroidism, and cardiovascular disease are contraindications.*
2. *Monitor vital signs and advice precautions.*
3. *Must be consumed with food.*

DRUGS AFFECTING THE CENTRAL AND AUTONOMIC SYSTEM

Adrenergic Agents (Sympathomimetics)

Prototype

1. *Beta blockers include clonidine (Catapress), methyldopa (Aldomet), phentolamine (Regintine), phenoxybenzamine, prazosin (Minipress), reserpine (Serpasil), and terazosin (Hytrin).*
2. *Beta blockers include: nadolol (Corgard), atenolol (Tenormin), esmolol (Brevibloc), metoprolol (Lopressor), propanolol (Inderal), and timolol (Blocadren).*

Mechanism of action

1. *inhibits action of*
   a. *receptors that promote vasodilation in vascular smooth muscle.*
   b. *epinephrine and beta blockers are competitors in*
2. *receptors in heart, pulmonary airways, peripheral circulation and CNS.*

Indications

1. *Pheochromocytoma, hypertension, and Raynaud's illness.*
2. *glaucoma, mitral valve prolapse, angina, and arrhythmias*

Adverse effects

bradycardia, CHF, depression, sleeplessness, vertigo, bronchospasm, dyspnea, stuffy nose, and cold extremities are some symptoms of orthostatic hypotension.

Nursing considerations

Oral alpha-blockers should be taken with milk to reduce GI adverse effects
If you experience insomnia, use oral beta-blockers before meals and in the morning
Before administering any drugs, check the client's apical pulse rate and refer if it is below 60 bpm preventions for hypotension.
Inform clients that until they have adjusted to their meds, they should not drive or use dangerous machinery.

SKELETAL MUSCLE RELAXANTS AGENTS

Prototype

1. *Metaxalone (Skelaxin), orphanedrine (Norgesic), methacarbamol (Robaxin), baclofen (Lioresal), dantrolene (Dantrium), metaxalone (Skelaxin), and chlorzoxazone*

Mechanism of action

1. *lower CNS*
2. *restrict the muscle's release of calcium ions*
3. *increase the gamma-amino butyric acid's (GABA) inhibitory effects.*

Indications

1. *to treat severe musculoskeletal pain*
2. *for the treatment of spinal cord injury, multiple sclerosis, cerebral palsy, and CVA-related muscle stiffness.*

Adverse effects

1. *Low muscle tone, ataxia, low blood pressure, sleepiness, impaired vision, bradycardia, depression, and retention of urine*

Nursing considerations

Inform clients that they may not be as mentally attentive as usual. Keep an eye on your neuromuscular health, bowel, and bladder movements. Tell your clients that it takes 1-2 months for baclofen to provide its full benefits. Because baclofen withdrawal can produce confusion, hallucinations, paranoia, and rebound spasticity, it is best to gradually reduce baclofen dosage.

ANTICONVULSANTS

Prototype

1. *Phenytoin (Dilantin) is a hydantoin.*
2. *Phenobarbital (Luminal), a kind of barbiturate*
3. *Carbamazepine (Tegretol), diazepam, clorazepate (Tranxene), valproic acid (Dapakene), and ethosuximide (Zarontin) are among the other medications.*

Mechanism of action

1. *dation, sleepiness, and hyperplasia of the gums*
2. *aplastic anemia, thrombocytopenia, vertigo, vertigo-like symptoms, nystagmus, and diplopia*

Adverse effects

1. *gingival hyperplasia, dation, and sleepiness*
2. *aplastic anemia, thrombocytopenia, vertigo, nystagmus, and diplopia*

Nursing considerations

1. *Encourage female clients to utilize birth control.*
2. *Customers taking phenytoin should be informed that harmless urine staining is frequent.*
3. *Inform diabetic consumers that hydantoins can raise blood sugar and that valproic acid can cause a false-positive urine ketone test result.*
4. *Teach patients taking carbamazepine how to recognize the signs of a bone marrow depression.*
5. *Assure people that low dosages of barbiturates do not cause addiction.*
6. *Don't combine alcohol and barbiturates.*
7. *In order to prevent cardiotoxicity, slowly administer IV phenytoin.*
8. *Do not inject phenytoin and other medications in the same syringe.*

ANTIPARKINSONIAN AGENTS

Prototype

1. *Trihexyphenidyl (Artane) and benztropine (Congentin) are anticholinergic medications.*
2. *Levodopa, carbidopalevodopa (Sinemet), amantidine (Symmetrel), pergolide (Permax), selegiline (Eldepryl), and bromocriptine are dopaminergic medications.*

Mechanism of action

1. *Anticholinergic drugs block the motor centers in the brain.*
2. *dopaminergic substances: raising dopamine levels or improving neurotransmitter activity.*

Indications

1. *for severe muscular discomfort*
2. *for the treatment of spinal cord injury, multiple sclerosis, cerebral palsy, and CVA-related muscle stiffness*

Adverse effects

1. *nausea, vomiting, anorexia, orthostatic hypotension, dark urine, and perspiration after using levodopa*
2. *ankle edema, constipation, amantidine*
3. *palpitations, tachycardia, and bromocriptine*

Nursing considerations

1. *After meals, provide dopaminergic medications to lessen GI discomfort.*
2. *Inform the client that taking levodopa may result in a harmless darkening of their urine and sweat.*
3. *Levodopa should not be taken with vitamin B6 (pyridoxine), as it accelerates metabolism.*
4. *Inform clients on how to reduce orthostatic hypotension.*
5. *Reduce ankle edema by raising the leg.*

CENTRAL NERVOUS SYSTEM STIMULANTS

Prototype

- Methylphenidate (Ritalin), amphetamines

Mechanism of action

1. *increases the action of excitatory CNS neurotransmitters and inhibits inhibitory impulses*

Indications

1. *- for attention deficit hyperactivity disorders (amphetamines) - for obesity and narcolepsy - respiratory depressions brought on by drugs.*

Adverse effects

1. *Anorexia, dry mouth, sleeplessness, restlessness, hypertension, tachycardia, and headaches.*

Nursing considerations

1. *Be given in the morning.*
2. *To prevent withdrawal symptoms, avoid suddenly stopping the amphetamine.*
3. *Follow your pulse and blood pressure.*
4. *For dry mouth, try ice chips or sugarless gum.*
5. *When giving methylphenidate to children, watch out for growth retardation.*

DRUG AFFECTING MENTAL FUNCTIONING

Sedatives, Hypnotics, and Anxiolytics

Prototype

1. *Benzodiazepines include flurazepam (Dalmane), lorazepam (Ativan), alprazolam (Valium), and lorazepam.*
2. *Amobarbital, phenobarbital, and secobarbital are barbiturates.*
3. *Chloral hydrate (Noctec), buspirone (Buspar), and paraldehyde (Paral) are among the other items.*

Mechanism of action

1. *Gamma amino butyric acid (GABA), an inhibitory neurotransmitter, is enhanced by benzos.*
2. *Barbiturates and Other Substances: CNS Depressant*

Indications

1. *induce sleep, sedate and calm clients*

Adverse effects

1. *hangover symptoms, lightheadedness, CNS depression, respiratory depression, and addiction*

Nursing considerations

1. *Inform clients of injuries and slips and falls.*
2. *With benzodiazepines, a brief period of disorientation and excitation is typical upon waking.*
3. *Remind customers not to stop taking their drugs suddenly without first visiting a doctor.*
4. *When using these medicines, stay away from alcohol.*
5. *Barbiturate ampules should be rotated rather than shaken. Avoid combining with other medications.*
6. *Inform female consumers that cleft lip and benzodiazepine use are linked.*

ANTIDEPRESSANTS AND MOOD DISORDER DRUGS

Prototype

1. *Amitriptyline (Elavil), protriptyline (Vivactil), imipramine (Tofranil), and desipramine are examples of tricyclic antidepressants.*
2. *Isocarboxazid (Marplan), phenelzine (Nardil), and tranylcypromine (Pernate) are examples of MAO (monoamine oxidase inhibitors).*
3. *Trazodone (Desyrel) and fluoxetine (Prozac) are second-generation antidepressants.*
4. *Lithium*

Mechanism of action

1. *Tricyclic antidepressants - boost serotonin and/or norepinephrine receptor sensitivity.*
2. *The neurotransmitters norepinephrine and serotonin are metabolized by the MAO enzyme, which is inhibited by MAO inhibitors.*
3. *Second-generation antidepressants prevent serotonin from being reabsorbed.*
4. *Lithium increases the absorption of serotonin and norepinephrine.*

Adverse effects

1. *Constipation (anticholinergic effects), dry mouth, blurred vision, urinary retention, orthostatic hypotension, sleeplessness, hypertensive crisis (MAO), and dehydration (Lithium) are some of the side effects.*

Nursing considerations

1. *Remind the client to stand up gradually to minimize the symptoms of orthostatic hypotension.*
2. *Antidepressants should be taken with food to improve absorption*
3. *Explain to client that full response may take several weeks (2 weeks).*
4. *Assess client for constipation resulting from tricyclic antidepressant use.*
5. *Tyramine-rich foods should be avoided by clients on MAO inhibitors to prevent hypertensive crises. The preferred medication for hypertensive crises is pentholamine (Regintine), which can be found in aged cheese, sour cream, yogurt, beer, wine, chocolate, soy sauce, and yeast.*
6. *Inform physician and withhold fluoxetine if client develop rashes.*
7. *To lessen GI side effects, take lithium with food.- Blood levels over 1.5 mEq/L may be toxic and cause symptoms like disorientation, lethargy, seizures, and hyperreflexia. Maintaining a sufficient salt and fluid intake is important. Tremors may occur, but they are brief.*

DRUG AFFECTING MENTAL FUNCTIONING

ANTICONVULSANTS/ANTISEIZURE MEDICATIONS

Prototype

1. *Hydantoins - phenytoin (Dilantin)*
2. *Barbiturates - phenobarbital (Luminal)*

Adverse effects

1. *- sleepiness, sedation, and gingival hyperplasia- dizziness, vertigo, nystagmus, and diplopia aplastic anemia, with thrombocytopenia*

Nursing considerations

1. *Encourage female clients to utilize birth control.*
2. *Customers taking phenytoin should be informed that harmless urine staining is frequent.*
3. *Inform diabetic consumers that hydantoins may raise blood sugar levels.*
4. *Assure people that low dosages of barbiturates do not cause addiction.*
5. *Don't combine alcohol and barbiturates.*
6. *In order to prevent cardiotoxicity, slowly administer IV phenytoin.*
7. *Do not inject phenytoin and other medications in the same syringe.*

ANTIPSYCHOTIC DRUG (NEUROLEPTICS)

Prototype

1. *Phenothiazines include thioridazine (Mellaril), trifluoperazine (Stelazine), and chlorpromazine (Thorazine).*
2. *Other Agents: haloperidol (Haldol), clozapine (Clozaril)*

Mechanism of action

1. *inhibit dopamine receptors in the hypothalamus, limbic system, and other parts of the brain.*

Adverse effects

1. *Additional pyramidal symptoms, include irreversible tardive dyskinesia, pseudoparkinsonism, and dystonia, as shown by:*
   a. *smacking lips*
   b. *tongue movement that resembles worms*
   c. *arm and leg movements that are not voluntary. neuropathic cancer syndrome*
2. *fecardiovascular collapse, tachycardia, tachypnea, diaphoresis*
3. *seizures and tight muscles. hypotension that is orthostatic*

Nursing considerations

1. *Teach family members the symptoms of EPS and NMS, and notify a doctor right away.*
2. *After starting therapy, normalization of symptoms may take several weeks.*
3. *avoiding intravenous haloperidol administration*
4. *Avoid neutropenia when taking clozapine.*
5. *Phenothiazine side effects include photosensitivity and orthostatic hypotension.*
6. *Make sure oral doses are properly swallowed and not saved.*

CHOLINERGIC BLOCKING AGENTS

Cholinergic Agents (Parasympathomemitics)

Prototype

1. *Enflurane (Ethrane), halothane, isoflurane (Forane), and nitrous oxide are inhalation anesthetics.*
2. *Fentanyl (Sublimaze), ketamine (Ketalar), thiopental Na (Penthotal), and etomidate (Amidate) are injection anesthetics.*

Mechanism of action

1. *produce CNS depression by resulting in loss of awareness, numbness to pain stimuli, and relaxation of the muscles.*

Nursing considerations

1. *Give the client NPO instructions eight hours before administration.*
2. *Keep an eye on hypotension and cardio pulmonary depression.*
3. *Observe any urine retention.*
4. *Keep an eye on your body temperature if you have a malignant hyperthermic crisis.*
5. *24 hours following general anesthesia, abstain from alcohol and CNS depressants.*
6. *Keep an eye out for the following symptoms in patients who have received halothane: rash, fever, nausea, vomiting, jaundice, and abnormal liver function.*

LOCAL AND TOPICAL ANESTHETIC

Prototype

1. *Topical: benzocaine, butacaine, dibucaine, lignocaine Ocal: bupivacaine, lidocaine, tetracaine, procaine, mepivacaine*

Mechanism of action

1. *stop the membrane of the nerve cell from conducting impulses.*

Adverse effects

1. *cardiac dysrhythmias*

Nursing considerations

1. *Apply lignocaine + prilocaine topically (EMLA cream) 60 minutes before the surgery.*
2. *Apply with caution to the areas of significant skin damage.*
3. *keep an eye out for fetal bradycardia in expectant patients*

ANALGESICS

Prototype

1. *Codeine, meperidine (Demerol), morphine, butorphanol (Stadol), and nalbuphine (Nubain) are narcotic analgesics.*
2. *Aspirin (aminosalicylic acid), mefenamic acid (Ponstan), ibuprofen (Motrin), naproxen, ketoprofen (Orudis), and ketorolac are non-narcotic analgesic NSAIDs. Acetaminophen (Tylenol) with paracetamol*

Mechanism of action

1. *In order to reduce pain, narcotic analgesics bind to opiate receptors in the central nervous system.*
2. *Non-narcotic analgesic that blocks the prostaglandin pathway to reduce pain and fever.*

Nursing considerations

1. *When a client takes a narcotic analgesic, keep an eye on their hypotension and respiratory depression.*
2. *narcotic analgesic users should take measures against injuries and accidents.*
3. *Inform customers of the potential for addiction, and avoid abruptly stopping drug use in those who are already addicted.*
4. *The antidote for drug overdose is naloxone.*
5. *Encourage clients to take NSAIDs with food and keep an eye out for bleeding issues.*
6. *Patients under the age of 18 who have flu-like symptoms should not use aspirin.*
7. *Track any hearing loss in aspirin-taking patients.*
8. *Customers taking acetaminophen should have their liver function checked.*
9. *The antidote for paracetamol overdose is N-acetylcysteine.*

DRUGS AFFECTING THE CARDIOVASCULAR SYSTEM

ANTICOAGULANTS

Prototype

1. *Heparin (SQ and IV) Warfarin (Orally)*

Mechanism of action

1. *Heparin inhibits thrombin's ability to convert fibrinogen into fibrin.*
2. *After 4-5 days, warfarin acts as a vitamin K antagonist to inhibit coagulation.*

Indications

1. *pulmonary embolism, myocardial infarction, and thrombosis*

Adverse effects

1. *bleeding*

Nursing considerations

1. *HEPARIN sodium: If administered subcutaneously, avoid aspirating or rubbing the injection site (above the scapula is ideal). - A therapeutic level is 1.5–2.5 times the average PTT, which is 20–35 seconds (50–85 sec). - Protamine sulfate is the antidote. 2. Warfarin sodium (coumadin), which is used over an extended period of time.*

THROMBOLYTICS

Prototype

1. *Streptokinase, Urokinase*

Mechanism of action

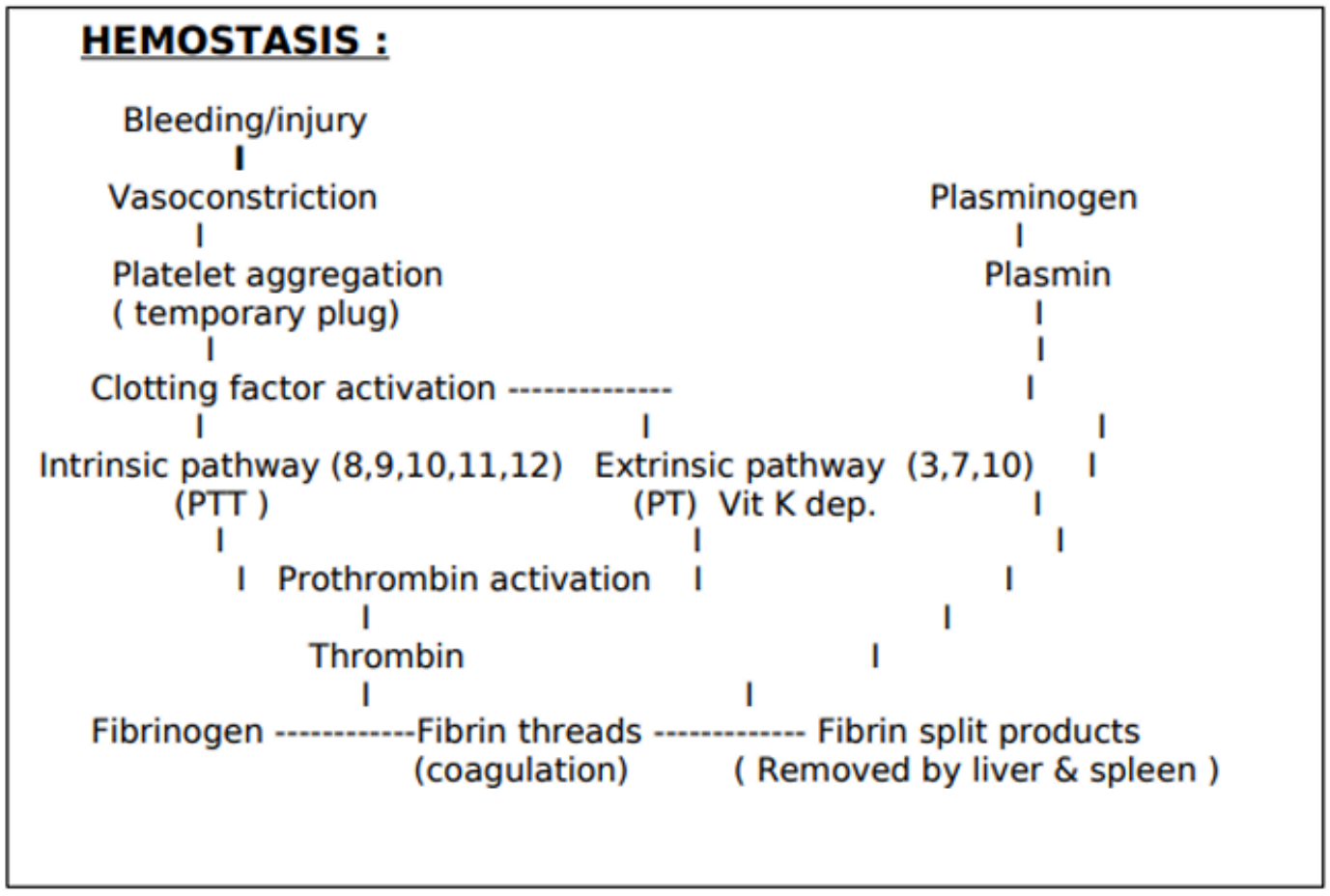
1. *creates plasmin, an enzyme that breaks apart clots, by activating plasminogen.*

Indications

1. *usage early on during a MI 4-6 hours after the beginning*

Nursing considerations

1. *monitor bleeding - antidote : Aminocarpic acid*



1. *starting point of action is 4-5 days.*
2. *The therapeutic level is 1.5–2.5 times the usual PT, which is 9.6–11.8 seconds, or 25–30 seconds. INR = 2 - 3*
3. *should be taken every day at the same time to keep the therapeutic level.*
4. *Limit your consumption of green leafy veggies.*
5. *Aquamephyton, a vitamin K antidote*

DRUGS AFFECTING THE CENTRAL CARDIOVASCULAR SYSTEM

ANTIPLATELET MEDICATIONS

Prototype

aspirin, Dipyridamole (Persantin)
Clopidoigrel (Plavix), Ticlopidine

Mechanism of action

- prevent platelet aggregation, extending the time of bleeding.

Indication

- used to prevent long-term complications after a MI, coronary revascularization, and thrombotic CVA.

Nursing considerations

- Track bleeding duration (NV = 1–9 minutes) - Take your medicine with a meal.

CARDIAC GLYCOSIDES

Prototype

-digoxin (Lanoxin) and digitoxin (Crystodigin)

Mechanism of action

-increase intracellular calcium, which improves the efficiency of the cardiac muscle fibers' contraction and results in positive inotropia and negative chronotropia

Indication

-use for CHF, atrial tachycardia and fibrillation

Nursing considerations

-Keep an eye out for symptoms of poisoning, such as anorexia, halo vision, disorientation, bradycardia, and heart blockages. - If the pulse rate is less than 60 beats, do not administer. - Patients with hypothyroidism and hypokalemia should be treated with caution. Digi-bind is the remedy. - Phenytoin is the preferred medication for treating digitalis-induced

NITRATES

Prototype

- isosorbide dinitrate (Isordil) - nitroglycerine (Deponit, Nitrostat)

Mechanism of action

-- produce vasodilatation including coronary artery

Indication

-angina pectoris, MI, peripheral arterial occlusive disease

Adverse effects

- headache, orthostatic hypotension .

Nursing considerations

1. Transdermal patch - use a new patch and different application site every day on a hairless area. - To prevent tolerance, remove the patch after 12 to 24 hours and give yourself 10 to 12 "patch free" hours daily. 2. Medicines taken sublingually: - take a BP reading before administering the medicine. - Offer sips of water before administering because dehydration could prevent absorption. - take one tablet for pain relief and repeat every five minutes for a total of three doses; if relief is not felt after 15 minutes, visit a doctor. – A scorching or stinging feeling suggests that the tablet is new. - Tell the patient not to swallow the tablet; sustained-release drugs should not be crushed but rather ingested whole. - shield the medication from light.

ANTI-ARRHYTHMIC DRUGS

Class I (block Na channels) IA
- quinidine, procainamide IB
- lidocaine IC - flecainamide
Class II (Beta-blockers)
propanolol, esmolol Class III
(block K channels)
amiodarone, bretylium Class
IV (block Ca channels)
verapramil, diltiazem

Nursing considerations

1. Keep an eye out for CHF symptoms. 2. Have the client self-weigh and disclose any weight gain. 3. Watch out for symptoms of harmful effects of lidocaine: - uncertainty and restlessness

ANTILIPEMICS

Prototype

Cholestyramine, colestipol, and lovastatin are cholesterol-lowering medications. Gemfibrozil and clofibrate are triglyceride-lowering medications.

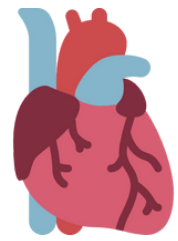
Mechanism of action

-reduce the production of lipoproteins and triglycerides while interfering with cholesterol synthesis.

Nursing considerations

- keep an eye on your liver while taking statins. Encourage people to consume more fluids and fiber to prevent cholelithiasis, indigestion, and gas.

DRUGS AFFECTING THE CARDIOVASCULAR SYSTEM



ANTI – HYPERTENSIVE

Angiotensin-Converting Enzyme (ACE) Inhibitors

Prototype

captopril (Capoten), enalapril (Vasotec), quinapril, lisinopri

Mechanism of action

- avoid peripheral vasoconstriction by preventing angiotensin I to angiotensin II conversion and lowering peripheral resistance

Adverse effects

It results in hyperkalemia. - trigger chronic coug

Nursing considerations

- to avoid stopping drugs abruptly because this can result in rebound hypertension. - Prevent the use of K+ sparing diuretics

CALCIUM-CHANNEL BLOCKERS

Prototype

- Nifedipine (calcibloc, adalat), Amlodipine (norvasc), Felodipine (Plendil) Verapramil (Isoptin)

Mechanism of action

- lessen the workload and cardiac contractility, which reduces the need for oxygen. - It also encourages coronary and peripheral vascular vasodilatation.

Indication

- hypertension, angina, arrhythmia s

Adverse effects

- bradycardia, headache, and hypotension - reaction tachycardia, diarrhea

Nursing considerations

- Give the medication between meals to improve absorption. - Before each dose, take the client's pulse and hold if it is below 60 beats. Refer for congestive heart failure symptoms.

DIURETICS

-usually given at morning

CARBONIC ANHYDRASE INHIBITORS

- Diamox (acetazolimide) - enhance the secretion of Na+, K+, and HCO3 as well as H2O Acidosis metabolic

THIAZIDE DIURETICS

- hydrochlorothiazide - blocks Na and K reabsorption; reabsorb Ca -hypercalcemia

OSMOTIC DIURETIC

- Mandate - Increase the glomerular filtrate's osmotic pressure. - Hypertension

LOOP DIURETICS

-Furosemide (Lasix) - blocks Na, K, and Ca reabsorption - hypocalcemia

POTASSIUM SPARING DIURETICS

-Spironolactone (Aldactone) - excrete Na and water but it reabsorb K - hyperkalemia

Thiazide diuretics prevent sodium, potassium, and chloride from being reabsorbed in the distal convoluted tubule and are prescribed for congestive heart failure, mitral regurgitation, and hypertension.
NC's: Complete cardiovascular evaluation prior to administration, watch potassium and sodium levels, reduce intake of meals high in salt.
ADx: N/V/D, headache, hypokalemia, hyperglycemia, cramping in the muscles, dehydration urine production rate
Loop diuretics (lasix) help lower preload and central venous pressures by acting on the loop of Henle to inhibit sodium and chloride re-absorption (reduces fluid volume and eliminates fluid from the body).
NCs: Complete cardiovascular evaluation prior to administration, watch potassium levels, reduce intake of meals high in salt.

RESPIRATORY MEDICATIONS

BRONCHODILATORS

Prototype

-Symphatomimetic Xanthines
- albuterol, salbutamol -
aminophylline - isoproterenol,
salmeterol - theophylline -
terbutalinev

Mechanism of action

-sympathomimetic bronchodilators, which widen airways by acting as a b-receptor agonist. xanthine bronchodilators activate the CNS to aid with breathing.

Indication

- bronchospasm, asthma, bronchitis, COPD

Adverse effects

- tachycardia and palpitations - trembling, anxiety, and restlessness - anorexia, nausea, headaches, and dizziness.

Nursing considerations

- Hyperthyroidism, cardiac dysrhythmia, or uncontrolled seizure disease are contraindicated. - Patients with HPN and narrow-angle glaucoma should exercise caution.

GLUCOCORTICOIDS (CORTICOSTEROIDS)

Prototype

- dexamethasone, budesonide, fluticasone, prednisone, beclomethasone.

Mechanism of action

- function as anti-inflammatory drugs and lessen pulmonary edema as well as airway edema

Adverse effects

-act as anti-inflammatory drugs and lessen pulmonary edema as well as airway edema.

Nursing considerations

- Consume medications with food or during meals. - Consume potassium- and sodium-rich meals. - Tell the client to stay away from people who have RTI. - Explain to the client that medicine should be weaned off gradually to prevent adrenal insufficiency. - Steroid users should refrain from taking NSAIDs. - Before using inhaled steroids, take bronchodilators first, then rinse your mouth.

MAST CELL STABILIZERS

Prototype

cromolyn sodium (Intal)

Mechanism of action

-stabilize mast cells to prevent histamine from releasing and causing asthma episodes

Nursing considerations

- Should be administered prior to asthma attacks. - For optimal absorption, take an oral capsule at least 30 minutes before a meal. - Drink a little water before and after inhaling to avoid coughing and an unpleasant taste. - Determine if you are lactose intolerant.

ANTI-HISTAMINES (H-1 BLOCKERS)

Prototype

- Astemizole (Hismanal), Loratidine (Claritin), Brompheniramine (Dimetapp), Diphenhydramine (Benadryl), Cetirizine (Iterax), Celestamine (Tavist).

Mechanism of action

- decrease nasopharyngeal secretions and decrease nasal itching by blocking histamine in H1-receptor

Indications

- common colds, rhinitis, nausea and vomiting, urticaria, allergies and as sleep aid.

Nursing considerations

- Give with meals and liquids. - Given orally via the Z-track technique or by IM. - Caution when using machinery and operating a vehicle while using these medications. - Candy or ice chips for dry mouth

RESPIRATORY MEDICATIONS

Prototype

First line
- Isoniazid (INH) -
Rifampicin (Rifadin) -
Ethambutol -
Pyrazinamide -
Streptomycin
Second line
-Kanamycin -Cycloserinev
-Kanamycin -Ethonamide
-Para-aminosalicylic acid

- active tuberculosis are treated with drug combination for 6-9 mos.
-multidrug-resistant strain (MDR-TB) are medicated for 1 year up to 2 years - given before meals

Pyrazinamide

- given for 2 months. - increase serum uric acid and cause photosensitivity.

Ethambutol

- not recommended for children under the age of 13. - measure your baseline vision because it may result in optic neuritis. - Tell the patient to call the doctor right away if they experience any vision issues.

Streptomycin

IM administration of antibiotic aminoglycoside. - ototoxic and nephrotoxic. - have an initial audiometric test, then repeat it every one to two months because the medicine affects the CN VIII.

Isoniazid

It should be administered one hour before or two hours after eating because food may slow absorption. - ought to be administered at least one hour before antacids. - tell them to call a doctor if they notice any hepatotoxic (jaundice) or neurotoxic (numbness in the extremities) symptoms. - Add vitamin B6 to the dosage to combat the neurotoxic adverse effects. - abstain from alcohol.

Rifampicin

-- taken with 8 ounces of water on an empty stomach, one or two hours before or after meals, and avoid taking antacids with medications. - hepatotoxic, thus stay away from alcohol. - Explain to the customer that sweat, tears, urine, and feces will all be reddish-orange in hue.

DRUGS AFFECTING GASTROINTESTINAL SYSTEM

ANTACIDS

Prototype

- aluminum/magnesium compounds (Maalox) - sodium bicarbonate (Alka-Seltzer) - calcium carbonate (Tums) - magnesium hydroxide (Milk of Magnesia).

Mechanism of action

- neutralize the stomach acidity.

Adverse effects

metabolic alkalosis, the development of stones • an electrolyte imbalance - constipation (aluminum), diarrhea (magnesium)

Nursing considerations

Give one hour after eating. - Because taking medicine within 1-2 hours of taking an antacid reduces absorption, avoid doing so. - Drink water to flush your system after taking antacid suspensions. - Keep an eye out for changes in bowel habits

Indications

- consuming hazardous or poisonous stuff.

HISTAMINE – 2 BLOCKERS

Prototype

- cimetidine (Tagamet), ranitidine (Zantac), famotidine (Pepcid), nizatidine (Axid)

Mechanism of action

-blocks H2 receptors in the stomach, reducing acid secretions

Nursing considerations

- Given with or before meals - Steer clear of administering additional medications that include cimetidine. - Cimetidine use over an extended period of time may cause gynecomastia.

PROTON – PUMP INHIBITORS (PPI)

Prototype

: ipecac syrup, apomorphine

Mechanism of action

-provoke vomiting by activating the medulla's vomiting center.

Nursing considerations

- Make a call to a poison control center before forcing yourself to vomit. • While consuming lots of water, administer the ipecac syrup.

DRUGS AFFECTING GASTROINTESTINAL SYSTEM

PROTON – PUMP INHIBITORS (PPI)

Prototype

-omeprazole (Losec), Lansoprazole (Lanz), pantoprazole (Pantoloc).

Mechanism of action

- inhibit the proton H+ to combine with Cl- toform hydrochloric acid.

Nursing considerations

- Given before meals preferably at morning.

Mucosal Barriers

Prototype

- omeprazole (Losec), Lansoprazole (Lanz), pantoprazole (Pantoloc)

Mechanism of action

- inhibit the proton H+ to combine with Cl- toform hydrochloric acid.

Nursing considerations

- Given before meals preferably at morning

ANTI-DIARRHEAL AGENTS

Prototype

-diphenoxylate (Lomotil), Imodium (loperamide), and Kaopectate (kaolin/pectin combination).

Mechanism of action

- decrease stomach motility and peristalsis.

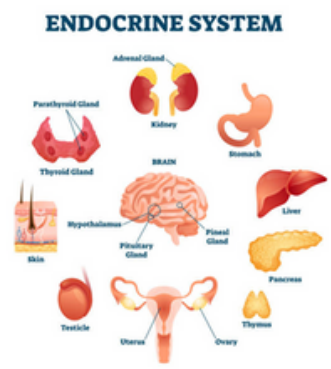
Nursing considerations

Watch out for constipation that returns. - If you have contagious diarrhea, take care. - Use diphenoxylate to track the toxicity of atropine. - Clay, white, or light-colored stools are frequent with kaopectate.

Laxatives

a. Lactulose (Cephulac), Na biphosphate (Fleet enema), and magnesium salt (Milk of Magnesia) are used to retain fluid and stretch the gut.
b. emulsify fecal fat and water with ducosate (Dialose).
c. Senna (X-prep) and bisacodyl (Dulcolax) irritate intestinal mucosa and stimulate intestinal smooth muscles.
d. Metamucil, a bulk-forming laxative that raises fecal bulk and water content
Mineral oil prevents intestinal absorption and lubricates.

DRUGS AFFECTING THE ENDOCRINE SYSTEM THYROID AGENTS



PROTON – PUMP INHIBITORS (PPI)

Prototype

-- Proloid (thryroglobulin) - Synthroid (levothyroxine) - Cytomel (liothyronine).

Mechanism of action

- function as natural or synthetic hormones

Nursing considerations

- Early in the day. - Take care if you have coronary artery disease. - Keep an eye out for hyperthyroidism symptoms and seek advice on dosage reduction.

PARATHYROID AGENTS

Prototype

A. calcitonin (Calcimar), B. calcitrol (Rocaltrol), C. calcifediol (Calcedrol), D. etidronate (Didronel).

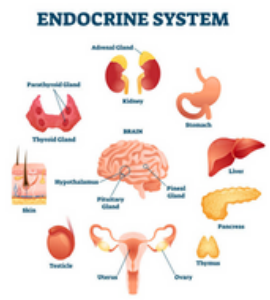
Mechanism of action

a. lessen the loss of bone mass improves the absorption of calcium.

Nursing considerations

- Keep an eye out for calcium imbalance symptoms. - Report any bone pain. - After taking etidronate, continue sitting up straight.

DRUGS AFFECTING THE ENDOCRINESYSTEM THYROID AGENTS



ORAL HYPOGLYCEMIC AGENTS (OHA)

1. Sulfonylureas

improve cellular sensitivity to insulin and induce insulin secretion. First Generation: Cautionary measures for chlorpropamide (Diabenese) and disulfiram Congenital abnormality involving olbutamide (Orinase) Glypizide and Glymepiride, second generation

2. Biguanides

- aids in the action of insulin on the peripheral receptor site. Lactic acidosis is a side effect of metformin and Glucophage (Glucovance).

3. Alpha-glucosidase inhibitors

a. calcitonin (Calcimar), etidronate (Didronel),
b. calcitrol (Rocaltrol), calcifediol (Calcedrol)

4. Thiazolinidine

- increase tissue sensitivity of insulin.
Rosiglitazone (Avandia)

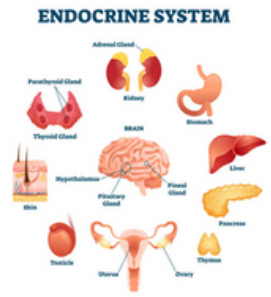
5. Meglitinides

-stimulate insulin release in pancreatic B-cells. Repaglinide (Prandin)

Nursing considerations

- Only works for kind II DM. - Not recommended for women who are pregnant or nursing. Given prior to meals. - Keep an eye out for hypoglycemic symptoms.

DRUGS AFFECTING THE ENDOCRINE SYSTEM THYROID AGENTS



INSULIN

Primary Disorder	pH	pCO2 or HCo3
Respiratory Acidosis	pH low	pCO2 high
Metabolic Acidosis	pH low	HCO3 low pCO2
Respiratory Alkalosis	pH high	low HCO3 high
Metabolic Alkalosis	pH high	

Nursing considerations

Usually given before meals. - Roll the bottle in palm of hands, don't shake. - Inject amount of air that is equal to each dose into the bottle – short acting last (clear). - Aspirate short acting first, then long or intermediate (cloudy). - Alcohol is recommended for cleansing bottle but not with skin. - Pinch skin, avoid I.M, don't aspirate. - Rotate the injection site an inch a part. - Prefilled syringes are stored vertically, needle-up. - May increase dose during illnesses. - Used bottles stored in room temperature, unused bottle stored in refrigerator. - Monitor for acute hypoglycemia : a. 3-4 commercially prepared glucose tablet b. 4-6 ounce of fruit juice or regular soda c. 2-3 teaspoon or honey d. Glucagon 1 gm SQ or IM e. D50-50 IV.

ESTROGENS AND PROGESTINS

PROTON – PUMP INHIBITORS (PPI)

Prototype

- conjugated estrogen (Premarin), estrone (Bestrone), estradiol (Estrace), diethylstilbestrol (DES).

Indications

- conjugated estrogen (Premarin), estrone (Bestrone), estradiol (Estrace), diethylstilbestrol (DES).

Adverse effects

endometrial CA, gallbladder illness, HPN, migraine, and breast soreness are all side effects of estrogen. altered menstrual flow and thromboembolism risk due to progesterone

Nursing considerations

1. Roll vials of estrogen or progestin between your palms before injecting them. 2. Keep track of blood pressure 3. Educate the patient on BSE. 4. A follow-up assessment is necessary on a regular basis to identify CA risk factors.

DRUG AFFECTING LABOR AND LACTATION

UTERINE STIMULATING AGENTS

Prototype

1. *Oxytocin (Pitocin), ergonovine (Ergotrate), methylergonovine (methergine)*
2. *carbopost (Prostin), dinoprostone (Prostin E2)*

Mechanism of action

1. *stimulates uterine smooth muscles*
2. *ripening of cervix*

Adverse Reactions

-oxytocin-induced fetal bradycardia, -ergonovine-induced hypertension, -palpitations - Allergies (Prostaglandins)

UTERINE INHIBITING AGENTS (TOCOLYTIC)

Prototype

-ritodrine (Yutopar), terbutaline (Brethine)

Mechanism of action

-relaxes the uterus by stimulating the B2 adrenergic receptors

Adverse Reactions

-tremors, nausea, vomiting and tachycardia

Lactation Suppressants

Prototype

1. *bromocriptine (Parlodel)*

Mechanism of action

1. *decrease serum prolactin levels*

Adverse Reactions

1. *drowsiness, headache, nausea, palpitations*

DRUGS FOR TREATING INFECTION

ANTIBACTERIAL AGENTS

1. Cell wall deterrents a. Penicillins, including pen G, amoxicillin, and cloxacillin b. Cephalexin and Cefaclor, cephalosphorins

c. Vancomycin glycopeptide

2. Blockers of protein synthesis

a. aminoglycosides, such as gentamycin and amikacin

b. erythromycins and roxithromycin are macrolides

c.lindamycins and lincosamides

d. Tetracyclines, chloramphenicol

3. Antimetabolites - cotrimoxazole, a sulfonamide, prevents the formation of folic acid.

4. DNA synthesis inhibitors

a. quinolones - ciprofloxacin, ofloxacin

b. metronidazole

Adverse effects

1. *Aminoglycoside - nephrotoxicity & ototoxicity*
2. *2. Sulfonamides - Steven-Johnson's syndrome, photo synsetivity*
3. *Quinolones - insomnia*
4. *Tetracyclines - bone problems*
5. *Chloramphenicol - Gray syndrome, bone marrow depression*
6. *Erythromycin - hepatitis*

Nursing considerations

1. *Collect appropriate specimen for C & S before starting antibiotics.*
2. *Check client's history of allergies.*
3. *Avoid administering erythromycin and quinolones with food.*
4. *Pregnant precautions.*
5. *Report for diarrhea - pseudomembranous colitis (clindamycin)*
6. *Monitor adverse effects.*

DRUGS FOR TREATING INFECTION

ANTIVIRAL AGENTS

Prototype

-acyclovir (Zovirax), ganciclovir (Cytovene), vidarabine (Vira-A), amantidine (Symmetrel), ribavirin (Virazole), zidovidine (Retrovir).

Mechanism of action

-prevents viral DNA synthesis involves certain enzymes. They do not cure the virus; they can only slow its growth.

Adverse effects

nephrotoxicity, granulocytopenia, thrombocytopenia, nausea, anxiety, headache, and anxiousness.

Nursing considerations

-cautions for women who are pregnant or nursing. -Inject antivirals intravenously to prevent crystallization in renal tubules. -Only administer ribavirin using an aerosol generator. -Monitor your creatinine and CBC levels. -Refer for any bleeding symptoms. -Snack on amantidine after.

ANTIFUNGAL AGENTS

Prototype

-nystatin, fluconazole (Diflucan), amphotericin B (Fungisone), and ketoconazole (Nizoral).

Mechanism of action

-inhibit the synthesis of fungal sterol.

Adverse effects

kidney damage and neurological damage - depression of the bone marrow - headache, fever, joint discomfort, and symptoms such as chills and fever.

Nursing considerations

-Do not dilute amphotericin B with electrolyte solution, but rather with sterile water solution. -Inform your customers that while the amphotericin B treatment continues, their fever, chills, GI upset, joint pain, and muscular discomfort will go away. -Instead of ingesting nystatin tablets for oral candidiasis, let them dissolve in your mouth. -Avoid using antacids with ketoconazole. -Report any bleeding, infection, or tiredness symptoms.

DRUGS FOR TREATING INFECTION

ANTIPARASITIC AGENTS

Prototype

1. *Quinine, mefloquine, primaquine, chloquine, and pyrimethamine are antimalarial medications.*
2. *Metronidazole (Flagyl), iodoquinol, and furozolidone (Furoxone) are antiamebic drugs.*

Mechanism of action

1. *Antimalarials modify protozoal DNA, deplete folates, and decrease the formation of nucleic acids.*
2. *Block protein synthesis with antiamoeba.*

Nursing considerations

1. *Give anti-malarial medications alongside food.*
2. *When giving out antimalarial medications, take safeguards against seizures.*
3. *Refer tinnitus, headache, vertigo, fever, and visual abnormalities as signs of cinchonism while receiving quinine medication.*
4. *Let customers know that iodoquinol can fudge thyroid function tests for up to six months.*

ANTIHELMINTIC

Prototype

1. *mebendazole (Vermox), thiabendazole, niclosamide (Niclocide), piperazine (Antepar), praziquantel (Biltricide).*

Mechanism of action

-act on parasite microtubules to paralyze larval and adult helmints.

Adverse effects

-GI distress, thiabendazole-induced urine odor, headache, lightheadedness, and exhaustion

Nursing considerations

1. *Treat all the family members for nematodes infection to prevent recurrence.*
2. *Due of its bitter taste, praziquantel must be eaten quickly to prevent gagging.*
3. *Chewable antihelminthics should also be taken.*

DRUGS FOR TREATING INFECTION

ANTI-NEOPLASTIC DRUGS

General considerations

-kills or prevents the proliferation of both cancerous and healthy cells.

-It might just affect a certain cell cycle phase or not at all.

-preferably administered by IV.

Prototype

1. *Alkylating Agents*
   - *inhibits cell production by causing cross linking of DNA*
   a. *Busulfan – hyperuricemia*
   b. *Chlorambucil – gonadal suppression*
   c. *Cisplatin – ototoxicity and nephrotoxicity*
   d. *Cyclophosphamide – hemorrhagic cystitis*
2. *Antitumor Antibiotic Agents*
   - *interfere in DNA and RNA synthesis*
   a. *Plicamycin – affects bleeding time*
   b. *Doxurubicin – cardiotoxicity*
   c. *Bleomycin – pulmonary toxicity.*
3. *Antimetabolites*
   - *replace normal proteins required for DNA synthesis by inhibiting the S phase*
   a. *Cytarabine – hepatotoxicity*
   b. *5-flourouracil – phototoxicity reaction and cerebellar dysfunctions*
   c. *6-marcaptopurine – hyperuricemia*
   d. *Methotrexate – photosensitivity- given with leucoverin to lessen its toxicity.*
4. *Mitotic Inhibitors (Vinca Alkaloids)*
   - *prevent mitosis acting on the M phase causing cell death*
   a. *Vincristine sulfate – neurotoxicity, numbness*
5. *Hormonal Medications and Enzymes*
   - *block the normal hormones in hormone sensitive tumors*
   a. *Tamoxifen citrate – visual problems– elevate cholesterol & triglycerides level*
   b. *Diethylstilbestrol – impotence and gynecomastia in men.*

Side Effects

-Stomatitis: bland diet, soft toothbrush, ice chips, avoid harsh mouthwash - Vomiting, diarrhea, and motion sickness - antiemetics, fluids, and electrolytes replacement -Reassure patients with alopecia that it will pass and advise them to use wigs, hats, and head scarves. -Skin pigmentation: explain that it is merely transient. - Force fluids; - hyperuricemia; - hyperkalemia; - tumor lysis syndrome - Infection: If WBC is less than 2000/mm3 contact a doctor. - keep an eye out for infection signs backward isolation -diet poor in bacteria -Anemia: Eat foods high in iron, vitamin B12, and folic acid, and take breaks. -Avoid NSAIDs if you are bleeding. - reduce the use of invasive procedures - Use an electric razor and a soft toothbrush - alterations in menstruation - reassurance that menstruation will start again.

DRUGS with MULTIPLE USES

CHOLINERGIC BLOCKING AGENTS
(Parasympatholytics, Anticholinergics)

Prototype

-atropine

Mechanism of action

-prevent acetylcholine from attaching to parasympathetic nerve receptors.

Indications

-to dry up secretions, use before to surgery. -treat GI or urinary tract spasticity. -use as a therapy for parkinsonism, asthma, and bradycardia. -use as an insecticide antidote for organophosphate poisoning

Adverse effects

-heat stroke, ileus, dry mouth, dilated pupils, tachycardia, urine retention

Nursing considerations

1. *Keep clients in a cool space.*
2. *Be on the lookout for dehydration and heatstroke symptoms.*
3. *Encourage them to drink more water and to use sugarless gum or candies to relieve dry mouth.*
4. *Give medication for GI spasticity before meals and at bedtime.*

MISCELLANEOUS DRUGS

ANTI-GOUT

-atropine, dicyclomine (Bentyl), scopalamine (Triptone), and propantheline (Pro Banthine)

Drugs and their Antidotes

1. *Digitalis – Digoxin Immune FAB*
2. *Heparin - Protamine Sulfate*
3. *Morphine sulfate - Naloxone Hydrochloride*
4. *Warfarin- Vitamin K*

DRUGS USED TO TREAT ANEMIAS

Prototype

-epoetin alfa Epogen, Procrit

Mechanism of action

-stimulates the formation of RBCs in the bone marrow by acting like the natural glycoprotein erythropoietin.

Indications

-treatment of renal failure and anemia the requirement for blood transfusions in individuals undergoing surgery -treatment of anemias associated with AIDS treatment -treatment of anemia brought on by cancer chemotherapy (only for Procrit)

Adverse effects

-hypertension that is uncontrolled and allergies - Negative Effects of Lactation - CNS effects as a result of the cellular response to the glycoprotein- diarrhoea, vomiting, and nausea - linked to low RBC counts CV signs

Nursing considerations

considerations for nurses Epoetin alfa should be administered three times a week, IV or SQ, without mixing it with any other medication. Access lines should be checked for clotting. Hematocrit readings should be scheduled prior to drug administration. Iron stores should be assessed both before and during therapy. Seizure precautions should be kept in place.

Prototype

-ferrous sulfate (Feosol)

Mechanism of action

-elevate the serum iron concentration

Indications

-treatment of iron deficiency anemias as a supplement to epoetin alfa therapy in patients

Adverse effects

Iron can be CNS toxic with rising serum levels, causing coma and death. -Direct GI irritation -parenteral iron: severe allergic reactions, local itchiness, tissue discoloration, and phlebitis

Nursing considerations

considerations for nurses Epoetin alfa should be administered three times a week, IV or SQ, without mixing with any other medication. Access lines should be monitored for clotting. A hematocrit reading should be scheduled before administering the medication. Iron stores should be assessed before and during therapy.

FOLIC ACID DERIVATIVES AND VITAMIN B12

Folate deficiencies usually occur o secondary to ↑ demands o absorption problems in the small intestine o secondary to the malnutrition of alcoholism

Folate, or folic acid

- Parenteral medications are preferred for patients who may have absorption issues Lack of intrinsic factor in the stomach or inadequate food are the two main causes of vitamin B12 deficiency.

Prototype

(Hydro-Crysti 12) hydroxocobalamin Prototype: Hydroxocobalamin (Hydro-Crysti 12), given intramuscularly (IM) every day for five to ten days, then once a month for the rest of one's life.

Mechanism of action

- Folic acid and vitamin B12: for cell division and growth as well as the development of a robust stroma in red blood cells - Myelin sheath maintenance in nerve tissue is facilitated by vitamin B12.

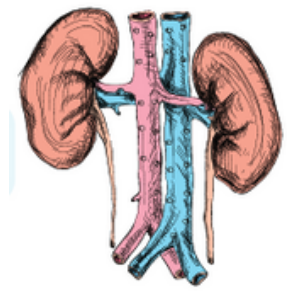
Indication

-Nutritional replacement medication for nutritional deficits - replacement during times of increased demand (like pregnancy and lactation) -treatment of megaloblastic anemia - Folic acid: a treatment that can save cells from several harmful chemotherapy drugs

Adverse effects

- confirm megaloblastic anemia's kind - provide both drug classes to treat pernicious anemia - Each patient must have parenteral Vitamin B12 injections. five to ten days, then once a month for the rest of one's life. - schedule a consultation regarding nutrition - keep an eye out for allergic reactions - schedule hematocrit and hemoglobin tests measurements taken both before and after therapy

INTRODUCTION TO THE KIDNEYS AND THE URINARY TRACT



Renal system:

- Urinary tract
- Ureters
- Urinary bladder
- Urethra

Maintain the value and composition of body fluids within a normal range; regulate vitamin D activation; control blood pressure; and control the production of red blood cells. The kidneys are two small organs that receive about 25% of the cardiac output.

The Bowman's capsule, proximal convoluted tubule, loop of Henle, distal convoluted tubule, and collecting duct make up the nephron, the functional unit of the kidneys.

Renal Processes

Filtration involves forcing fluid into the nephron.
A fluid volume of around 125 mL is 180L per day, or one minute, of filtering
More than 99% of the filtered liquid is back in the bloodstream
less than or equal to 1% of the filtrate
each person excretes more than 2 L of liquids.
the form of pee every day.
Secretion - aggressively eliminating elements obtained from the capillary system, then putting them in a tubule
About 99% of the water filtered at the glomerulus is reabsorbed; the filtrate contains vitamins, glucose, electrolytes, sodium bicarbonate, and sodium chloride; and the accuracy of the reabsorption process enables the body to maintain the proper extracellular fluid volume and composition.
preservation of body fluid volume and

composition

Sodium Regulation

One of the body's most important cations (ions with a positive charge) via a transit mechanism, reabsorbed that operates while being influenced if the carbonic catalyst Carbonic acid, anhydrase, and monosodium glutamate Sodium levels are influenced by two hormones

a hormone called aldosterone is generated in the filtrate. the adrenal
medulla is discharged
into the
circulation as a result of

sympathetic stimulation, elevated potassium levels, or
Ang III-Tensin
- promotes the Na-K exchange
pumping within the cells of
W/C reabsorbs in the distal tubule.
As an example, Na for K
result a is converted back into
K lost in the system and
filtrate

Natriuretic hormone, which is likely produced by the hypothalamus, is released in reaction to fluid excess or hemodilution and causes a decrease in Na reabsorption from the distal tubules with a subsequent rise in volume.
Under the effect of ADH released by the hypothalamus, countercurrent mechanisms in the medullary nephrons allow for the concentration or dilution of urine.

Potassium Regulation

Another cation that is essential for the healthy operation of the nervous system, muscles, and cell membranes is potassium. 65% of the filtrate from the glumerulus is reabsorbed at the Bowman's capsule, while 25% to 30% of the proximal convoluted tubule's filtrate is reabsorbed at
the Henle loop.

Chloride Regulation

Chloride
is a crucial negatively charged ion that facilitates the flow of cations across the cell membrane, maintaining electrical neutrality. The kidneys play a role because most of it is absorbed in the loop of Henle, which encourages the migration of sodium out of the cell

.

Sodium Regulation

Calcium is crucial for bone growth, blood clotting, muscular contraction, muscle function, and muscle
movement.
Filtered at the glomerulus and primarily reabsorbed in the ascending Loop of Henle and proximal convoluted tubule. The distal convoluted tubule is where precise reabsorption takes place.

Urinary Tract

The female urethra is extremely short and connects to a region where normal flora, including e. coli, can be found. The prostate gland is passed through via the male urethra, which is significantly longer.
A tiny gland called the prostate produces an acidic fluid that is vital for sperm maintenance and tract lubrication.

DRUGS:

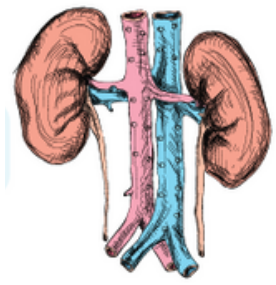
Antibiotics and anti-infectives are two sorts that work to make urine more acidic.

Antibiotics

- Cinoxacin (Cinobac) - prevents gram-negative bacteria from replicating DNA.
- Norfloxacin (Noroxin), a more recent medication with a broader spectrum of activity, is more effective than cinoxacin against gram-negative bacteria.

Anti-infective works to acidify urine

- Methenamine (Hiprex) is metabolized in the liver and eliminated through the urine.
- Methylene blue, also known as ureolene blue, is metabolized in the tissues and eliminated in the urine, bile, and feces.



Mechanism of action

In the presence of any of these medications, these medications are contraindicated. Due to the possibility of negative effects on the fetus or newborn, they should be used with caution during pregnancy and lactation as well as in the presence of renal impairment, which may interfere with the excretion and action of these medications.

Adverse effects

These drugs are contraindicated when any of these medications are present. They should be used with caution during pregnancy and lactation as well as in the presence of renal impairment, which may interfere with the excretion and action of these medications, due to the likelihood of harmful effects on the fetus or newborn.

Urinary Tract Antispasmodics

DRUGS Flavoxate (Urispas), which prevents smooth muscle spasms primarily in the urinary system, is less desirable to use in some individuals due to its association with CNS side effects (blurred vision, dizziness, and disorientation). • Oxybutynin (Ditropan) is a strong urinary antispasmodic, but because of its multiple anticholinergic side effects, it should not be used in conditions or circumstances where urine retention, tachycardia, and changes in GI activity may make a condition or situation worse. • A more recent medication called tolterodine (Detrol, Detrol LA) inhibits muscarinic receptors to stop bladder contraction and spasm. The most recent medication authorized to prevent urinary tract spasms is trospium (Sanctura). Additionally, it particularly inhibits muscarinic receptors and lowers the bladder's muscular tone. It is especially prescribed to treat overactive bladder symptoms like urgency, urge incontinence, and frequent urination.

Mechanism of actions

These medications are broadly dispersed, quickly absorbed, processed in the liver, and eliminated through the urine. Due to the possibility of changes in the drugs' metabolism or excretion, care should be taken when taking medications in the presence of hepatic or renal impairment.

Adverse effects

• adverse effects of urinary antispasmodics are related to blocking of the parasympathetic system • nausea and vommitng, dry mouth, nervousness, tachycardia, and vision changes

ACTION

Smooth muscle spasms along the urinary tract are brought on by inflammation of the urinary tract, such as cystitis, prostatics, urethritis, and euthrocystitis/ urethrotrigonitis. Patients with neurologic bladders might also have urinary tract irritation that causes muscular spasms.

Urinary Tract Analgesic

DRUGS: • Phenazopyridine (Azo Standard, Baridium, and others) is a dye that is used to relieve pain.

ACTION

Phenazopyridine has a direct, topical analgesic action on the mucosa of the urinary tract when it is eliminated in urine. It is employed to treat symptoms of urinary tract irritation brought on by an infection, injury, or surgery.

CONTRAINDICATIONS

Any drug allergy and severe renal impairment, which would affect the excretion and efficacy of the medication, are contraindications for this medication.

Mechanism of actions

Phenazopyridine has a very quick beginning of action and is quickly absorbed. It spreads widely, passing through the placenta and getting into breast milk. It is broken down in the liver and eliminated through the urine.

Adverse effects

• GI upset, headache, rash, reddish-orange coloring of urine • Hepatic toxicity, this drug should not be used for longer than 2 days because the toxic effects may be increased.

Name of the Drug	Brand Name	Date Ordered	Classification	Dose/ Frequency/ Route	Mechanism of Action	Indication	Contraindication	Side Effects	Nursing Precautions
Ciprofloxacin		Sept. 22, 2010	Anti-infectives	500mg; 1tab/ TID/ PO	inhibits DNA enzyme in susceptible microorganisms. It interferes with bacterial DNA replication.	• UTI • Prostatitis • Skin and skin infection	• Hypersensitivity • Sparfloxacin • History of photosensitivity	• Nausea • Diarrhea • Vomiting • Constipation • Abdominal pain or discomfort • Headache • Rash • Bad taste • Redness of the eyelid • Confusion • Hallucination • Dry mouth	• May be given without regards to meals. Preferred dosing time 2 hours after meals. • Do not administer antacids within 2 hours of Ciprofloxacin.

Name of the Drug	Brand Name	Date Ordered	Classification	Dose/ Frequency/ Route	Mechanism of Action	Indication	Contraindication	Side Effects	Nursing Precautions
Paracetamol		Sept. 22, 2010	Anti-pyretics	500mg; 1tab/ TID/ PO	Inhibits the synthesis of prostaglandins that may serve as mediators of pain and fever	• Mild pain • fever	• Previous hypersensitivity • Products containing alcohol	• Hepatic Failure • Hepatotoxicity • Renal Failure • Rash • Urticaria	• Advise patient or caregiver that many over the counter products contain acetaminophen; be aware of this when calculating total daily dose. • Warn patient that high doses or unsupervised long term use can cause liver damage.

IMPORTANT

NMBA: During surgery, maintaining regulated breathing Moa- Depolarizing: first bind to cholinergic receptors on muscles; this causes an initial depolarization, which is thereafter blocked. Non-depolarizing moa: prevent acetylcholine binding at the muscle Vital signs, BP, HR, temperature, and RR should all be closely monitored both during and after anesthesia.When a person with malignant hyperthermia has general anesthesia, it rapidly raises their body temperature and induces violent muscle contractions Opioi

> Opioids are any medication, whether they are produced artificially or naturally, that has morphine-like effects. Analgesia is produced by opiates and opioid medications. Agonists, partial agonists, and agonists are the three types of drugs. Surgical analgesics are used to reduce moderate to severe pain. Supplemental drugs used during anesthesia suppression of the cough, treatment of diarrhea NC's: Properly evaluate the patient's suffering, Check your vital signs and the way and when you administer other analgesics. determine whether the patient is addicted, Record the results of the intervention, Constipation is quite typical.

Opioid-Induced Side Effects and Adverse Effects by Body System

Body System	Side Effect or Adverse Effect
Central nervous system	Sedation, disorientation, euphoria, ligh-headedness, dysphoria, lowered seizure threshold, and tremors
Cardiovascular system	Hypotension, palpitations, and flushing
Respiratory tract	Respiratory depression and aggravation of asthma
Gastrointestinal tract	Nausea, vomiting, constipation, and biliary tract spasm
Genitourinary tract	Urinary retention
Other	Itching, rash, and wheal information

QUIZ QUESTION ANSWERS FOR PRACTICE AND EXAM PREPARATION

1. Anticholinergics used in Parkinson's disease control symptoms by
   a. blocking cholinergic receptor
2. Carbadiazipine (Tegretol) treatment contraindications include
   a. preexisting hematologic abnormalities
3. a nurse tending to an 80-year-old patient after throat surgery who has urine retention following morphine therapy
   a.Tricyclic antidepressant
4. Persistent pain should be managed by
   a. every four hours, continuously

Major indication for intraspinal and IV opiods
pain that cannot be controlled with pain medicine by mouth
Triptan therapy for migraines complains of heavy sensation in arms and chest; nurse should tell him:
About half the patients experience similar symptoms and symptoms should go away
Dantrolene for spasticity:
Monitor liver enzyme
Valproic acid (as opposed to lithium) has a
greater therapeutic inde
Carbadiazipines (Tegretol): lab value--
complete blood count
Benzodiazipines hav
built in limit to the depth of CNS depression they can produc
Benzodiazipines (as a group) differ from one another in terms o
onset and duration of actio
Preparing for wound closure with use of local anesthetic; which statement is most accurate
Local anesthetics block conduction in motor nerves as well as sensory nerve
Lidocaine as an Axillary block for a surgical procedure, a nurse checks pulse rate 5 minutes after and pulse is slightly irregula and slow; the nurse understands that th
Pt has absorbed lidocaine and may have cardiac toxicit
Teaching session on opiates (potency of morphine and phetynol
Fetynal is more potent than morphine sulfat
Chronic pain taking morphine sulfate for 4 months; expect which effect
Toleran
Prozac- decreased sexual interest/ orders a drug holiday; which is
Don't take the drug on Friday and Saturda
Local anesthetic administered; w/in minutes-- vital signs are pulse 55/min, respirations 18/min and BP 90/42, the nurse should monitor th
for further signs of heart bloc
Pt in labor, local anesthetic, nurse monitors Fetus via a maternal fetal monitor, anticipate
Fetal bradycardi
Good symptom control with levadopa, however he reports symptoms begin to return before next dose; remedy for the wearing off phenomenon is to:
Switch to the long-acting form of the drug such as Sintamate C
Important contraindication for valproic acid (Depakote) use is
Preexisting liver disease
Patient at risk for respiratory depression; how long after the nurse administers the dose of IV morphine should the respiratory depressant effects last?
4 – 5 hour
History of migraines asks for preventative medication; which would the paitent be given
Propanolol (inderal
MS pt admitted for acute exacerbation and given inferon Beta 1 a (Avonex); what should the nurse include in the assessment
Do you have headaches, chills, or muscle aches
Reviewing lab findings: lithium level 2.2 drawn yesterday; 300 mg of lithium a day
Hold next dose and notify prescribe
Always takes 4 medications with bacon and eggs; can he take levodopa at the same time?
You should take levodopa at least one hour before breakfas
Mild to moderate alzheimer's disease; recommen
Cholinesterase inhibitor
How does cholinesterase inhibitory drugs work
Helps healthier nerve cells transmit impulses bette
. Dilantin works b
Inhibiting sodium entry into hyperactive neuron
Valproic acid; drinks 6 pack of beer daily & on the weekend
Liver function tests

Tegret
o Monitor for blood sodium conten
26 year old; head injury at 19; seizure free; wants to discontinu
Dose must be gradually reduced as to not initiate status epilepticu
Which class of drug should be avoided with opiods for fear of respiratory depression
Barbiturate
Suspected of having opioid overdose ; prepare to administer what if pt becomes comatose or develops respiratory depression
Narca
Preferred route of opioid administration with mild pain is
Or
Ergotamine for headaches reports fingers getting cold and numb; instruct pt t
Come for evaluation; this could be a sign of ergotoxicit
Aspirin and requests another med when headache first begins, which would be most suitable
Ergotamin
Prozac; begins to take st john's wart; the nurse should explain th
Risk of serotonin syndrome and discourage the use of herbal preparation
Taking MAOI which of the following would indicate need for additional teaching
Cheese omele
Blurred vision, dry mouth, and constipation are adverse effects of antidepressants; these adverse effects are classified a
Anticholinergic effect
Drug that once replaced lithium as a treatment of choice for bipolar disorder
Valproic acid (Depakote
Which electrolyte channels inhibit axonal conduction as a result of administration of local anesthetics
Sodiu
Lidocaine with epinephrine together
Epinephrine prolongs local anesthesia and reduces the risk of systemic toxicity from lidocain
Opiates for 2 year
Taper drug slowly over 7-10 day
Which symptom is not an adverse effect of morphine sulfate
Diarrhe
Antipsychotic pt complains of dizziness and lightheadedness upon standin
Get up slowly; tolerance to this effect should go away in 2-3 month
Pt on antipsychotic begins to Drool, tremors and shuffling gait; nurse knows the pt is experiencing extrapyramidal symptoms consistent with Parkinsonis

MAOIs, nausea and vomiting, headache, pulse 128, respirations 30/min; red wine with dinner each nigh
Hypertensive crisis

THE END